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## Ground Investigation Report

Proposed Residential Development

Cefn Isaf, Merthyr Tydfil

November 2023



## Project Details

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<b>Appendix N</b>	<b>Consultants Coal Mining Report</b>	
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### Drawing Register

Title	Produced by	Date	Reference
Site Location Plan	Soiltechnics	July 2023	STV6119-D01-A
Exploratory Hole Location Plan	Soiltechnics	September 2023	STV6119-D02-A
Geological Section	Soiltechnics	September 2023	STV6119-D03-A

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## Non-technical Summary

Topic	Commentary
Site description	The proposed development currently comprises vacant residential buildings, located on the southern outskirts of Cefn-coed-y-cymmer, which is situated on the northwestern edge of Merthyr Tydfil.
Development proposals	The project consists of the demolition of the currently vacant 4 storey residential buildings on site, and the construction of 2 new, 5 storey residential buildings comprised of 1 and 2 bedroom apartments.
Ground conditions	<p>Exploratory excavations encountered Made Ground to depths of up to 3.3m, largely resulting from terracing on site, which overlies Devensian Till (sand and gravel) with the Bishopstone Mudstone Formation at depth. The Bishopstone Mudstone Formation generally comprised bedded argillaceous sandstone with some layers of limestone.</p> <p>With the exception of a seepage in a trial pit in the south of the site, no groundwater has been encountered during ground investigations at the site.</p>
Quarrying and Mining Risk	<p>The site is located within a Coal Mining Reporting Area, but outside of a Development High Risk Area. The Consultants Coal Mining Report for the site, obtained from the Coal Authority, indicates that there are no records of coal mining within the area. The site is not considered to be at a significant instability or subsidence risk from the historical coal mining legacy in the area.</p> <p>There are no historical quarries or active mineral sites recorded within close proximity of the site.</p>
Foundation solution	The Bishopston Mudstone Formation will adequately support concentrated loads on spread foundations, depending on the magnitude of the proposed loads, however, due to the thickness of Made Ground locally, alternative foundations in the form of piles or ground improvement may require consideration.
Drainage potential	The Devensian Till soils display a degree of permeability, although further testing to BRE 365 will be required to confirm viability and inform the design of soakaways systems and SUDS.
Chemical contamination and remedial requirements	<p>Providing new landscaped areas are constructed using site won or imported Topsoil, which is confirmed as suitable for use, end users are at low risk from ground conditions.</p> <p>Sporadic fragments of ACM may be present at surface and will require removal.</p> <p>Asphalt on site potentially contains coal tar in some areas and requires testing to confirm or otherwise.</p>
Radon, gas risk and protection measures	Radon protection measures are not considered necessary. The gas risk at the site is considered low and no protection measures are considered necessary.
Soil waste management	<p>Soils should be reused in preference to disposal at landfill where possible.</p> <p>Coal tar, and any soils cross contaminated with coal tar materials is classified as hazardous waste. Where implemented appropriately and safely, asphalt containing coal tar can be re-used on site subject to the relevant permissions/permits/consents, in favour of disposal.</p> <p>Should disposal be proposed, Topsoil can likely be disposed of to a non-hazardous landfill.</p> <p>Made Ground (excluding asphalt/coal tar containing materials) can be classified as non-hazardous but this assessment is likely to be impacted by a single sample containing high PAH concentrations (likely from cross-contamination with overlying asphalt). Further testing is recommended in order to determine if the classification can potentially be reduced to inert.</p> <p>All natural deposits are classified as inert.</p>
Recommendation for further works	<p>Testing of existing asphalt confirm the presence and extent of coal tar impacted surfacing is recommended which will inform a detailed and targeted remedial solution.</p> <p>In the absence of testing, it must be assumed that all surfacing contains coal tar and an appropriate remedial strategy and subsequent verification report will be required with regard to protection of end users.</p> <p>Sporadic fragments of ACMs could remain at surface. If present it will require segregation and removal. Specialist visual inspection recommended.</p> <p>Further infiltration testing to determine feasibility of soakaways.</p> <p>The principal contractor should have a discovery strategy in place for unexpected contamination.</p>



# 1 Introduction

## 1.1 Scheme Outline

1.1.1 The project consists of the demolition of the currently vacant 4 storey residential buildings on site, and the construction of 2 new, 5 storey residential buildings comprised of 1 and 2 bedroom apartments. Proposal drawings are presented within Appendix A.

1.1.2 The report is based on the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

## 1.2 Brief

1.2.1 This report has been prepared following instructions received from our Client, Merthyr Valley Homes Limited. The overall brief of works is to:

- i) Undertake a ground investigation at the site to establish the prevailing ground conditions and identify potential abnormal development constraints.
- ii) Support a future planning application by assessing the potential risks from contamination at the site.
- iii) Determine geotechnical parameters and provide a geotechnical appraisal for the scheme.

1.2.2 The objectives of this report are outlined below:

- i) Review and summarise desk study information.
- ii) Undertake a land contamination Tier 1 preliminary risk assessment.
- iii) Summarise the intrusive investigation works undertaken and associated laboratory testing.
- iv) Present a ground model summarising the ground and groundwater conditions at the site including relevant geotechnical parameters.
- v) Provide a geotechnical appraisal for the project and highlight key geotechnical issues that may impact upon the proposed scheme.
- vi) Undertake a land contamination Tier 2 generic quantitative risk assessment.
- vii) Provide recommendations to inform an Options Appraisal and Remediation Strategy, should they be required.
- viii) Provide a waste characterisation assessment of soils at the site for potential disposal to landfill.

## 1.3 Definition of Scope

1.3.1 The phasing and scope of the ground investigation works is broadly defined by the following documents.

Title	Document Reference	Publisher	Investigation Scope
Code of practice for ground investigations	BS 5930: 2015	British Standards Institution	Phase 1: Desk study Phase 2: Preliminary investigation
Eurocode 7 — Geotechnical design Part 2: Ground investigation and Testing	BS EN 1997-2: 2007	British Standards Institution	Preliminary Investigation Design Investigation
Investigation of potentially contaminated sites – Code of practice	BS 10175: 2011+A2:2017	British Standards Institution	Preliminary Investigation (desk study) Exploratory Investigation
Land contamination risk management	Online resource, updated April 2021	Environment Agency	Stage 1 Risk Assessment: Tier 1: Preliminary risk assessment Tier 2: Generic quantitative risk assessment
Geotechnical Investigation Brief	1759	Simple Works	Site-specific investigation brief

Table 1-A: Definition of Ground Investigation Scope

## 1.4 Limitations

- 1.4.1 Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

## 2 Desk Study

### 2.1 Sources of information

2.1.1 Reference has been made to the following sources of information:

- An Envirocheck Report and historical map records, presented as Appendix P.
- British Geological Survey (BGS) GeoIndex – Onshore database.
- BGS Sheet 231 (Scale 1:50 000) – *Merthyr Tydfil* (1979).
- Ordnance Survey OpenData
- Coal Authority Development and Specific Risk databases.
- Environment Agency open-source databases
- Google mapping services
- Interrogation of search engines for anecdotal information on the site history and other readily available online resources.

### 2.2 Site Description

2.2.1 The proposed development lies on the southern outskirts of Cefn-coed-y-cymmer, which is situated on the northwestern edge of Merthyr Tydfil. The post code for the site is CF48 2RH, and the site is accessed from Wern Road which lies adjacent to the site's southern boundary.

2.2.2 An aerial image showing the approximate site boundary is presented below, followed by a table summarising the key site features. A site plan is provided within Appendix A.



Figure 2-A: Aerial photograph and approximate site boundary

Theme	Feature
Current site use	The site currently comprises vacant residential buildings and is secured from public access.
Local area land use	The site is located in a predominately residential area with associated amenities. Woodland extends southwards from the site's southern boundary.
Topography	The topography of the surrounding area generally falls steeply to the southwest, towards Taff Fawr. On site, there is a ~10m fall in level from north to south. The site has been terraced to create level areas for construction of the existing buildings and external areas.
Buildings, surfacing and other permanent features	Approximately 50% of the site area is occupied by the existing buildings. The buildings appear to be of concrete frame construction with brickwork infill. The buildings are separated by a grassed area which cuts from west to east through the centre of the site. The southern part of the site is predominately surfaced with asphalt with areas of grassed landscaping.
Boundary features	The site is bound by roads to the north and the west, dwellings to the east and woodland to the south.
Vegetation	No significant vegetation was noted within the site boundary.
On-site / adjacent surface water features	Taf Fawr is located roughly 100m to the south of the site.
Environmental Designations	The site is not reported to be within or in close proximity to any areas of designated sensitive land use, such as a Ramsar Site, Site of Special Scientific Interest (SSSI), or Special Area of Conservation.
Injurious and invasive weeds	None observed
Asbestos containing material (ACM) in buildings	The scope of this report excludes identifying asbestos within buildings on site, and an asbestos survey was not made available at the time of writing.
ACMs on site	No suspected ACMs were observed in any surface debris.
Potential sources of contamination	None observed
Evidence for ground instability	None observed

*Table 2-A: Site Description*

2.2.3 The observations provided above are made by a Geoenvironmental Engineer, who is not a specialist in asbestos surveying or invasive weed identification. Any associated comments are intended for use by this report only, and not for any other purpose.

## 2.3 Planning Records

2.3.1 A search of online planning records held for the site by Merthyr Tydfil Council reveals an application for refurbishment of the existing buildings was approved in July 2019. There is no information relevant to this investigation attached to this application.

## 2.4 Previous Reports

- 2.4.1 Soiltechnics have been provided with a ground investigation report carried out by Integral Geotechnique for Merthyr Valley Homes Limited in September 2022. The investigation comprised a series of windowless sample boreholes and hand excavated trial pits.
- 2.4.2 Ground conditions are reported as up to 3.7m of Made Ground onto ‘*natural superficial soils*’ assumed to be the Devensian Till. These were described as loose, slightly silty, sandy gravels of sandstone and limestone or gravel and cobbles of sandstone and limestone. No groundwater was recorded. Natural soils were only penetrated in a limited number of locations.
- 2.4.3 Integral Geotechnique recommend that further ground investigations are undertaken to inform foundation and floor slab design as the window sample investigation did not achieve sufficient depth. Soil infiltration testing was recommended to inform SUDS design.
- 2.4.4 Concentrations of chemical contaminants were below guideline values, with the exception of a number of speciated PAH compounds within a single sample of Made Ground. Fragments of asbestos containing material were also noted on the ground surface during that investigation phase. Both of these identified contaminants were considered to pose a risk to human health and remedial action was recommended. Environmental receptors are assessed to be at low risk from ground conditions at the site.
- 2.4.5 A potential source of ground gas was identified, associated with the type and age of the Made Ground encountered. The report recommends ground gas monitoring is undertaken.
- 2.4.6 A copy of the Integral Geotechnique report is presented in Appendix M.

## 2.5 Site History

- 2.5.1 A chronological summary of the site’s history is provided below.

Date	On-site	Off-site
Late 1800s to early 1900s	Buildings are recorded in the northwest quadrant of the site. The remainder of the site appears to be undeveloped.	The local area is occupied by a mix of open space and apparent residential development with associated amenities. ‘Ruin’ is recorded adjacent to the east in the late 1880s but is absent by 1901. The Brecon & Merthyr Railway is recorded ~200m to the west. Open ground is recorded to the south and to the east, with Taf Fawr recorded 100m to the south.
1920s	No significant change.	A sewage works is recorded 50m to the southeast. Increased residential development recorded to the north and the northeast.
1951	The southern half of site is recorded as “Allotment Gardens”, with this land use extending so the southeast.	No significant change.
Late 1950s	The majority of the site is undeveloped, with the exception of ‘Ruins’ recorded in the northwestern corner. Allotments are no longer recorded on site.	No significant change.
1960s	‘Refuse Tip’ recorded in the northeast of the site.	A row of small buildings is recorded adjacent to the northeastern boundary, consistent with the location of the present day garages.



Date	On-site	Off-site
1970s	'Cefn Isaf' with the current site layout recorded.	The railway is recorded as 'Dismantled Railway' with the viaduct being recorded until current day.
1990s to present day	No significant change.	The sewage works to the south is no longer recorded.

Table 2-B: Summary of site history

## 2.6 Regulatory Enquiries

2.6.1 Soiltechnics have contacted Local Authority Building Control and Environmental Health and at the time of writing the report, no reply has been received. Should any pertinent information be received following issue, this will be forwarded onto the client.

## 2.7 Anticipated Geology

2.7.1 Based on a review of available records, the site is anticipated to be underlain by the following geological units: Devensian Till overlying the Bishopston Mudstone Formation.

2.7.2 In addition, due to historical construction and demolition phases occurring at the site, Made Ground could be expected to various depths across the entire site footprint, with deepened deposits in areas of former foundations and basements. With reference to the Integral Geotechnique report, Made Ground was encountered between 0.5-3.7m although the full thickness was proven in only three of eight exploratory positions. The shallowest deposits were to the far south of the site.

2.7.3 A summary of the anticipated geology underlying the site is summarised as follows:

Stratum	Bedrock / superficial	Anticipated thickness (m)	Typical description
Made Ground	Superficial	0.5-4	Coarse soils with cobbles and boulders.
Devensian Till	Superficial	3-5	Sand, gravel and cobbles of sandstone and limestone.
Bishopston Mudstone Formation	Bedrock	Up to 750	Mudstone, siltstone and sandstone.

Table 2-C: Summary of anticipated geology at the site

## 2.8 Hydrogeology and Groundwater Sensitivity

2.8.1 The general hydrogeological profile of the site is provided in the table above.

Stratum	Aquifer Designation	Groundwater commentary
Devensian Till	Secondary Aquifer - Undifferentiated	No groundwater encountered in previous investigation or recorded in nearby boreholes. Potentially present in basal deposits confined by the rockhead.
Bishopston Mudstone Formation	Secondary Aquifer - A	Groundwater likely to be present within rock fractures .

Table 2-D: Preliminary Hydrogeological Model

2.8.2 The site is not located within a Source Protection Zone

2.8.3 There are no recorded potable abstraction licenses and no active groundwater abstraction licenses associated with industrial processes within 1km of the site.

## 2.9 Hydrology and Surface Water Sensitivity

2.9.1 The closest surface water feature is Taf Fawr, which is located ~100m south of the site and flows in a southeasterly direction.

2.9.2 There are no active surface water abstraction licenses down-gradient of the site.

## 2.10 Flood Risk

2.10.1 The site falls within a Flood Zone 1 area. This designation indicates there is less than a 0.1% chance of flooding from rivers or the sea in any year.

2.10.2 The site is recorded outside an area with the potential for surface water flooding.

2.10.3 The site is recorded in area shown to have a limited potential for groundwater flooding to occur.

2.10.4 It should be noted that this information does not constitute a site-specific Flood Risk Assessment and one may be required for the scheme.

## 2.11 Non-Mining Ground Instability Hazard

2.11.1 The Envirocheck Report includes hazard ratings due to natural ground instability, which have been derived by the BGS. These hazards have been summarised in the table below.

Hazard	Hazard Potential
Collapsible ground	Very Low
Compressible ground	No Hazard
Ground dissolution	No Hazard
Landslide	Very Low
Running sand	Very Low
Shrinking or swelling clay	Very Low

Table 2-F: Non-Mining Ground Stability Hazards

## 2.12 Quarrying and Mining

2.12.1 The site is located within a Coal Mining Reporting Area, but outside of a Development High Risk Area. On this basis a Consultants Coal Mining Report has been obtained from the Coal Authority and a copy is presented as Appendix M. The report indicates that there are no records of coal mining within the area. On review of the data, the site is not considered to be at a significant instability or subsidence risk from the historical coal mining legacy in the area.

2.12.2 There are no historical quarries or active mineral sites recorded within close proximity of the site.

## 2.13 Landfill and infilled ground

2.13.1 No records of landfill sites, infilled ground or historical mineral sites are held within 500m of the site.

## 2.14 Recent industrial activity

2.14.1 There are no regulated facilities or activities in the vicinity of the site under IPPC or LAPPC control, and no registered radioactive substances.

- 2.14.2 The site is in a primarily residential area. As such there are a limited number of commercial and industrial properties in close proximity to the site. There are no pertinent, potentially contaminating Contemporary Trade Directory entries within 100m of the site.
- 2.14.3 The site lies close to Taff Fawr, a tributary of the River Taff. All local discharge consents are positioned down-gradient of the site and therefore are not considered further. There are a number of pollution incidents to controlled waters recorded within 1km, primarily associated with raw sewage discharges. Again, all recorded incidents are down gradient of the site and therefore not considered further.

## **2.15 Radon**

- 2.15.1 The site is in an area where the above ground radon Affected Area status is classed as an Intermediate Probability Radon Area.

## **2.16 Underground Infrastructure**

- 2.16.1 Copies of all utility plans obtained are presented as Appendix O. The plans are provided for information only and should not be relied upon to be accurate. In addition, it is worth noting that the public utility plans provided by the asset owners typically exclude private service runs.

## **2.17 Unexploded Ordnance (UXO) Hazard Screen**

- 2.17.1 A preliminary risk review has been undertaken by a UXO specialist to assess the risk of encountering UXO during ground investigation works undertaken by Soiltechnics only and to identify any precautionary measures required. It should be noted that the risk assessment has not been carried out fully in accordance with CIRIA report C785 'Unexploded Ordnance (UXO) A guide for the construction Industry'.
- 2.17.2 The risk review concluded that there was not a credible risk of encountering UXO during the ground investigation. It should be noted that this preliminary risk review does not consider risks to the construction phase.

## 3 Tier 1 Preliminary Contamination Risk Assessment

### 3.1 Objectives

3.1.1 The objective of this preliminary risk assessment (PRA) is to determine the suitability of the site for the proposed redevelopment and end users, in terms of the risk from contamination. The assessment comprises the following steps:

- Identify potential contaminant linkages (PCLs) between sources, pathways and receptors.
- To provide data to assist in the design of potential exploratory and detailed intrusive investigations and to give an early indication of possible remedial requirements, if necessary.

### 3.2 Evaluation Criteria

3.2.1 The following assessment is undertaken within the legislative framework of the planning system. Therefore, the assessment needs to identify if land contamination could pose an unacceptable risk to human health or the environment, within the context of the proposed development site. In the context of the existing site use, as a minimum, land should not be capable of being determined as 'contaminated land' under Part IIA of the Environmental Protection Act 1990.

3.2.2 The risk criteria for the proposed development is based on a 'minimal risk' approach, whereas under the existing land use a designation of 'contaminated land' would only apply if there is a significant possibility of significant harm (SPOSH).

### 3.3 Methodology

3.3.1 The objectives listed above are achieved by utilising the information presented within the desk study to develop an initial conceptual site model (iCSM) and identification of potential unacceptable risks. Depending upon the outcome of the Tier 1 assessment, it may be necessary to undertake a Tier 2 generic quantitative risk assessment (GQRA).

3.3.2 An iCSM relies upon the identification and assessment of PCLs. A contaminant linkage comprises of three key components:

- Source – a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution.
- Pathway – Current and post-development routes by which a receptor is, or could be, affected by a contaminant.
- Receptor – Something that could be adversely affected by a contaminant, for example a person (current and proposed end users or neighbours), controlled waters and ecosystems.

3.3.3 The Tier 1 risk assessment has been produced with reference to the following guidance:

- ['Land contamination risk management'](#) (EA, 2021).
- BS 10175:2011+A2:2017 'Investigation of potentially contaminated sites – Code of Practice'.
- CIRIA C552 'Contaminated land risk assessment- a guide to good practice', 2001.
- BS EN ISO 21365:2020 'Soil quality – Conceptual site models for potentially contaminated sites'
- BS 8576:2013 'Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOC)'.

## 3.4 Source Assessment

3.4.1 The table below summarises identified sources based on the findings of the desk study. Where appropriate, further discussion has been provided in the paragraphs which follow.

Potential Sources	Contaminant(s) of concern	Detail	Viable source?
<b>On-site sources</b>			
Historical 'refuse tip' recorded on site	Various inorganic and organic compounds (hydrocarbons, metals, asbestos)	Refuse tip recorded on site from the 1960s until construction of Cefn Isaf in the 1970s. Given the history of the area, the location of the recorded tip and surrounding topography, it is considered unlikely this record relates to depositing of waste and it is more likely the site was used for collection and sorting of waste prior to transport elsewhere for disposal. Indeed, the site is not recorded as a landfill site. On this basis, the potential for buried waste which could result in a significant source of chemical contaminants or ground gas is considered low.	N
	Permanent ground gases (CH <sub>4</sub> and CO <sub>2</sub> )		
Asbestos at surface	Asbestos	Although no obvious ACMs were identified during this investigation, the previous ground investigation did identify fragments of asbestos cement sheeting at surface on the central grassed embankment. Given the site is vacant, it is possible that sporadic ACM fragments remain.	Y
Made Ground	Metals, polycyclic aromatic hydrocarbons (PAH), asbestos	Made Ground is expected to be encountered across site due to historical construction phases and potential terracing works. The previous ground investigation undertaken by Integral Geotechnique encountered Made Ground up to 3.7m, which included demolition-type waste.	Y
	Permanent ground gases (CH <sub>4</sub> and CO <sub>2</sub> )	It is considered unlikely that the Made Ground will be a significant source of ground gas as high concentrations of organic or putrescible material was not recorded and is not anticipated.	N
Radon	Radon	The site is recorded as being in an Intermediate Probability Radon Area with between 1-3% of homes at or above the Action Level. On this basis, no radon protection measures are necessary.	N
Aggressive ground conditions due to potentially pyritic ground	Pyrite and sulphates	Ground is potentially pyritic.	Y
Asphalt	Coal tar	Given the age of the existing hardstanding areas, the asphalt may contain coal tar.	Y
Unexploded Ordnance	UXO	The Preliminary Risk Assessment indicates there is not a credible risk of encountering UXO during construction works.	N
<b>Off-site sources</b>			
Historical sewage treatment plant recorded 50m to the south	Various inorganic and organic compounds (Metals, acids/alkalis, asbestos), Micro-organisms (Pathogens).	There are no recorded pollution incidents relating to the works. The plant is also located downgradient from the site and therefore migration of contaminants from this source to the subject site is unlikely.	N



Potential Sources	Contaminant(s) of concern	Detail	Viable source?
	Permanent ground gases (CH4 and CO2)	Generally, sewage treatment plants send treated solid wastes off site for disposal and therefore organic waste within the ground, which is capable of being a significant source of ground gases is considered unlikely.	N

Table 3-A: Contamination source assessment

## 3.5 Receptor Assessment

3.5.1 The following table summarises the identified receptors based on current site conditions and our understanding of the proposed end use:

Receptor Category	Principal Receptor	Receptor present?	Detail
Human health	Users of the current site	No	Currently vacant.
	End user of the developed site	Yes	Proposed residential use with soft landscaping.
	Construction operatives and other site investigators	Yes	Site to be developed.
	Adjacent site users and off-site members of the public	Yes	Public footpath and residential properties present adjacent to site.
Controlled waters	Surface waters	Yes	Taf Fawr is located ~100m south of site.
	Groundwater	Yes	Site over secondary aquifers.
Sensitive ecosystems and species	Current site	No	Site is not currently within, or proposed to form, a designated environmentally sensitive area (e.g. SSSI, RAMSAR, AONB, SPA, SAC)
	Developed site	No	
Property	Soft landscaping (current)	No	No significant vegetation present
	Soft landscaping (proposed)	Yes	Soft landscaping proposed, potentially including planting.
	Building materials	Yes	Concrete classification to be assessed under the geotechnical investigation. Water supply pipes will be required within the development.

Table 3-B: Receptor assessment

## 3.6 Pathway Assessment

3.6.1 The following table summarises the generic human health pathway assessment for the site, assuming a range of contaminant sources within the underlying soils. Source-specific pathways are considered within the iCSM in subsequent report sections.

Human Health Exposure Pathway	Residential land with communal soft landscaping (proposed)	Construction operatives	Adjacent Site Users
Ingestion, inhalation and dermal contact with soils and dusts	✓	✓	✓ (inhalation only)
Ingestion, inhalation and dermal contact with site derived dusts indoors	✓	✓	✗
Ingestion of home-grown vegetables	✗	✗	✗
Inhalation of vapours in outside spaces	✓	✓	✓

Human Health Exposure Pathway	Residential land with communal soft landscaping (proposed)	Construction operatives	Adjacent Site Users
Intrusion and inhalation of vapours indoors	✓	✓	✗
Accumulation and Inhalation of ground gas in enclosed structures	✓	✓	✗
Permeation into below-ground drinking water pipes	✓	✗	✗

Table 3-C: Generic pathway assessment

3.6.2 The following table summarises generic pathways for the site which could be viable for the identified controlled water receptors, given our understanding of the hydrogeological model and assuming a range of contaminants in the sub-surface.

Controlled Water Exposure Pathways	Current Setting	Proposed Setting	Mechanism
<b>Site characteristics</b>			
Leaching via infiltration through unsurfaced areas, and surface run-off	✓	✓	Mobilisation
Leaching via infiltration through cracks/joints in hardstanding areas and drainage infrastructure	✓	✓	Mobilisation
Leaching via saturation from groundwater flooding and shallow/perched groundwater bodies	✓	✓	Mobilisation
Infiltration through sustainable drainage systems	✗	✓	Mobilisation
Preferential lateral pathways (e.g. underground services)	✓	✓	Migration
Preferential vertical pathways (e.g. piling, vibro-stone columns)	✗	✓	Migration
<b>Hydrogeological characteristics</b>			
Vertical migration through permeable strata into shallow aquifers and perched groundwater bodies	✓	✓	Migration
Vertical migration through permeable strata into sensitive aquifers at depth	✓	✓	Migration
Lateral migration within shallow and perched groundwater bodies into surface waters	✓	✓	Migration

Table 3-D: Generic pathway assessment

## 3.7 Initial Conceptual Site Model (iCSM)

3.7.1 The table below presents our approach to the assessment of risks associated with PCLs. The categories below are based upon the definitions within CIRIA C552 (2001), with the addition of a 'negligible likelihood' scenario, which is to be used where there is no realistic scenario in which harm could occur.

3.7.2 The initial conceptual site model (iCSM) is presented within the following tables overleaf.

		Consequence of harm			
		Severe	Medium	Mild	Minor
Probability of harm	High likelihood	<b>Risk: Very high</b> (high – severe)	<b>Risk: High</b> (high – medium)	<b>Risk: Moderate</b> (high – mild)	<b>Risk: Moderate/Low</b> (high – minor)
	Likely	<b>Risk: High</b> (likely – severe)	<b>Risk: Moderate</b> (likely – medium)	<b>Risk: Moderate/Low</b> (likely – mild)	<b>Risk: Low</b> (likely – minor)
	Low Likelihood	<b>Risk: Moderate</b> (low – severe)	<b>Risk: Moderate/Low</b> (low – medium)	<b>Risk: Low</b> (low – mild)	<b>Risk: Very low</b> (low – minor)
	Unlikely	<b>Risk: Moderate/Low</b> (unlikely – severe)	<b>Risk: Low</b> (unlikely – medium)	<b>Risk: Very low</b> (unlikely – mild)	<b>Risk: Very low</b> (unlikely – minor)
	Negligible Likelihood	<b>Risk: Low</b> (negligible– severe)	<b>Risk: Very Low</b> (negligible– medium)	<b>Risk: Very Low</b> (negligible– mild)	<b>Risk: Negligible</b> (negligible– minor)

Table 3-E: ICSM Risk Ratings

RECEPTOR: PROPOSED END USERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Asbestos at surface	Asbestos	Inhalation of dusts	<b>Risk: Moderate</b> (likely – medium)	ACMs have previously been noted at surface on the central embankment. Although no obvious ACMs were noted during this investigation, the presence of sporadic fragments is possible.
Made Ground of unknown origin	Metals, polycyclic aromatic hydrocarbons (PAH), asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Moderate</b> (likely – medium)	Made Ground has been recorded on site and is associated with previous developments and terracing on site. Elevated levels of inorganic and organic contaminants could be present in the Made Ground deposits due to its origin and composition (e.g., potentially containing uncontrolled demolition materials). The previous site investigation recorded elevated concentrations of PAH within this material. Testing undertaken to date has not detected any asbestos within soils.
Organic contaminants associated with Made Ground	PAHs, total petroleum hydrocarbons (TPH)	Permeation into drinking water pipes	<b>Risk: Moderate</b> (likely – medium)	Organic contaminants could be present in soils at depths at concentrations which could pose a risk of penetrating drinking water pipes.
Asphalt	Coal tar	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Moderate/Low</b> (low – medium)	Given the age of the development, it is possible that asphalt on site contains coal tar. Based on current development proposals, the existing access road along the southern boundary is to remain. It is not known if it is proposed to resurface the area. Where coal tart containing asphalt might remain, there will be a potential risk to future site users should the surface become damaged or worn.

Table 3-F: iCSM – Proposed End Users

RECEPTOR: CONSTRUCTION WORKERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion

RECEPTOR: CONSTRUCTION WORKERS				
General Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	<b>Risk: Moderate/Low</b> (low – medium)	If present, asbestos in soils can present an acute risk to construction workers, particularly during the enabling works phases. Very low and trace concentrations often pose a low risk if appropriate controls are put in place. Testing undertaken to date has not detected any asbestos within soils.
	Metals, PAH, TPH	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Low</b> (unlikely – medium)	No gross contamination of high-risk contaminants anticipated (e.g., cyanide, benzene, and vinyl chloride) based on the history of the site and the previous ground investigation. Standard PPE and hygiene protocols for working on brownfield sites are likely to be sufficient to the mitigate risk.
Asbestos at surface	Asbestos fibres and ACMs	Inhalation of dusts	<b>Risk: Low</b> (unlikely – medium)	ACM fragments were observed at surface on the central embankment during the original ground investigation. Any residual fragments are likely to be sporadic and localised and will pose a low risk if appropriate controls are put in place.
Asphalt	Coal tar	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Low</b> (unlikely – medium)	Possible risk from coal tar during removal of asphalt. Standard PPE and hygiene protocols for working on brownfield sites are likely to be sufficient to the mitigate risk but testing to confirm extent of coal tar within the asphalt is recommended to confirm/refine the risk.

Table 3-G: iCSM – Acute Exposure to Construction Workers

RECEPTOR: ADJACENT SITE USERS FOLLOWING COMPLETION				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
General Made Ground	Metals, PAH, TPH, asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Low</b> (unlikely – medium)	Based on the exposure pathways that would be present from the developed site, and on the anticipated levels of contamination, it is considered unlikely that a pollutant linkage could pose an unacceptable risk to off-site receptors.

Table 3-H: iCSM – Chronic Exposure to Adjacent Site Users

RECEPTOR: ADJACENT SITE USERS DURING THE CONSTRUCTION PHASE				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion



RECEPTOR: ADJACENT SITE USERS DURING THE CONSTRUCTION PHASE				
General Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	<b>Risk: Moderate/Low</b> (low – medium)	Potential risk associated with generation of air-borne asbestos fibres and dust during construction main earthworks phase. Whilst there is a low likelihood of harm occurring due to the effect of fresh-air dilution, the risk cannot be discounted at this stage.
	Metals, PAHs, TPH	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Low</b> (unlikely – medium)	Unlikely to pose a viable risk to off-site receptors.

Table 3-I: *iCSM – Acute Exposure to Adjacent Site Users*

RECEPTOR: PROPOSED PLANTING				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Contaminants within topsoil and the shallow sub-surface	Metals, pH and inorganics	Direct contact and root uptake	<b>Risk: Very low</b> (low – minor)	Given the site’s location in an urban environment, elevated levels of phytotoxic contaminants may be present; however, areas of soft landscaping are currently limited and therefore a suitable growing medium will likely need to be imported for any proposed landscaping scheme.

Table 3-J: *iCSM – Phytotoxic Risk to Proposed Planting Scheme*

RECEPTOR: CONTROLLED WATERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Made Ground	Metals, PAHs, TPHs	Leaching and lateral migration (Surface water)	<b>Risk: Moderate/Low</b> (low – medium)	Potential leachable contaminants within the Made Ground. There is a potential for contaminants to be mobilised through the infiltration of rainwater, followed by the lateral migration along preferential pathways and the underlying Devensian Till, ultimately discharging into the Taf Fawr.
		Leaching and vertical migration (Groundwater)	<b>Risk: Moderate/Low</b> (low – medium)	Potential leachable contaminants within the Made Ground. There is a potential for contaminants to be mobilised through the infiltration of rainwater into groundwater.

Table 3-K: *iCSM – Controlled Waters Risk*

3.7.3 The risk to identified receptors from the proposed developments under the planning regime are assessed under a ‘minimal risk’ approach. Whereas the risk to receptors under the current and continued use of the site is dealt with under the regulatory framework of the Part IIA regime, where Soiltechnics consider if there is a reasonable chance of a ‘significant potential of significant harm’ (SPOSH) occurring. This is not equivalent to a due diligence assessment for the continued use of the site to aid in determining potential contaminated land liabilities or land valuations.

The following table sets out the risk to current users considering a SPOSH approach:

Receptor	Potential Source	Contaminants of Concern	Pathway	Preliminary Assessment: Is their reasonable evidence of SPOSH?	Discussion
Human Health (Current and adjacent site users)	All potential contaminant sources identified above	Various Contaminants	Inhalation, ingestion and contact with soils, dusts and vapours.	<b>No</b>	Whilst potential contamination sources have been identified, Soiltechnics have not encountered any evidence which indicates there could be a significant possibility of significant harm to human health occurring from contamination on site.
Controlled Waters (Surface water and groundwater)	All potential contaminant sources identified above	Various Contaminants	Mobilisation and migration	<b>No</b>	Whilst potential contamination sources have been identified, Soiltechnics have not encountered any evidence which indicates there could be a significant possibility of significant harm to controlled waters occurring from contamination on site.
Ecosystems	All potential contaminant sources identified above	Various Contaminants	Direct contact and root uptake	<b>No</b>	The site does not fall within a relevant designation for environmentally sensitive land (e.g. SSSI, NRA, Ramsar).
Property	All potential contaminant sources identified above	Various Contaminants	Various pathways	<b>No</b>	Through undertaking the desk study, no evidence of potentially significant harm occurring to property has been identified.

Table 3-L: iCSM – Current Site Risks (Part IIA)

### 3.8 Preliminary Risk Assessment Conclusions and Recommendations

- 3.8.1 In summary, the PRA has not highlighted any potential contaminant linkages (PCL) which could pose a significant possibility of significant harm under the current land use. In terms of the proposed development scheme, a minimal risk approach applies, and PCLs have been identified which require further consideration.
- 3.8.2 In particular the historical refuse tip recorded to the east of the site and potential for Made Ground deposits could give rise to a wide range of contaminants. Further intrusive investigation works are recommended to further refine the assessment and to determine if any remedial measures are necessary.
- 3.8.3 Overall, each PCL identified as posing a risk of ‘Moderate/Low’ or higher should be considered as part of an intrusive Tier 2 generic quantitative risk assessment (GQRA). The following table summarises the principal receptors at risk which require further investigation to support the proposed development.

Receptor Category	Principal Receptor	PCL Present Requiring Further Investigation?
Human health	Current site users	No
	Proposed site users (soils, dusts, and vapour)	Yes
	Proposed site users (permanent ground gas)	No
	Proposed site users (radon)	No
	Adjacent site users and off-site members of the public (during the long-term use of the site)	No
	Adjacent site users and off-site members of the public (during the construction phase)	Yes
	Construction operatives	Yes
Controlled waters	Surface waters	Yes
	Groundwater	Yes
Property	Soft landscaping (current)	No
	Soft landscaping (proposed)	No
	Potable infrastructure	Yes
	Building materials	To be considered by the specifier

Table 3-M: Receptors at Risk Under The Proposed Scheme

## 4 Ground Investigation

### 4.1 Objectives

4.1.1 The initial ground investigation scope was provided by the client and was updated in consultation with Soiltechnics.

4.1.2 The objectives of the fieldwork were to:

- i) Establish ground and groundwater conditions at the site.
- ii) Obtain samples for subsequent laboratory testing.
- iii) Prove existing foundation, floor slab and retaining wall arrangements.

### 4.2 Fieldwork summary

4.2.1 Fieldwork was undertaken between 1<sup>st</sup> August and 8<sup>th</sup> August 2023.

4.2.2 A summary of the works completed is set out in the table below, along with the location of the exploratory logs. Photographic records of the trial pits and rock cores are presented in Appendix E, and the exploratory hole location plan is presented within Appendix A.

Exploratory Hole Logs	Method	Qty	Final Depth Range (m bgl)	Comments
Appendix B	Hand Pits	8	0.15 – 1.00	TP02, TP04 & TP05 To investigate existing foundations and retaining walls.
			1.20	TP03 & TP06 Drill probing techniques used to find extent of foundations
			0.20 – 0.44	TP01, TP01B & TP07 Terminated due to service obstruction
Appendix B	Machine-excavated trial pits	2	1.40 - 2.30	TP08 & TP09 Trial pits used for infiltration testing
Appendix C	Rotary core boreholes	5	10.00 – 15.00	BH01 & BH02. Terminated at target depth.
			4.00	BH04 Terminated within superficial deposits
			0.55	BH03 & BH03B Terminated due to obstruction
Appendix D	Concrete cores and non-intrusive ferro scanning.	4	-	IN01 & IN02 investigated floor slab construction IN03 & IN04 investigation wall construction

Table 4-A: Summary of fieldwork undertaken

4.2.3 All soils encountered were described in accordance with BS EN ISO 14688 'Identification and Classification of soil'. Rock was described in accordance with BS EN ISO 14689 'Identification and classification of rock'.

### 4.3 Unexploded Ordnance (UXO)

4.3.1 In the absence of a UXO Risk Assessment in accordance with CIRIA C681, Soiltechnics commissioned a UXO specialist to undertake a preliminary risk review for the purpose of the ground investigation works phase only.

4.3.2 The review concluded that the UXO risk to the ground investigation works is low within the site boundary and therefore no special precautions were required.

## 4.4 Sampling

4.4.1 During the fieldwork, sampling of soil, rock and groundwater for geotechnical purposes has been undertaken in accordance with BS EN ISO 22475-1 'Geotechnical Investigation and testing – sampling by drilling and excavation and groundwater measurements'.

4.4.2 Samples collected for chemical analysis have been taken and handled in accordance with BS ISO 18400-105:2017 'Soil quality — Sampling Part 105: Packaging, transport, storage and preservation of samples'.

4.4.3 Various sampling and sub-sampling methodologies have been adopted as appropriate, with the primary aim of obtaining the highest quality sample class practicable. Untested chemical and geotechnical samples will be held for a period of 4 weeks from the date of the first report issue.

## 4.5 In-situ Testing

4.5.1 The following table summarises the field testing carried out. The results are summarised on individual exploratory hole logs where appropriate and detailed within the Appendices indicated.

Tests	Qty	Applicable standard / guidance	Location of Results
Dynamic cone penetrometer (DCP) using TRL probe	4	DMRB: CS229	Appendix F
Infiltration test	2	BRE 365	Appendix G

Table 4-B: Summary of field testing undertaken

## 4.6 Monitoring Installations

4.6.1 Instrumentation installed within exploratory holes during the fieldwork are shown on the logs within Appendix B and are summarised below:

Installation type	Target Stratum	Qty	Exploratory hole ID
Combined gas and groundwater well	Devensian Till	2	BH01 & BH04

Table 4-C: Summary of monitoring installations

## 4.7 Investigation Constraints

4.7.1 The table below outlines restrictions and constraints to the investigation methods which either limited the design of the original scope of work or resulted in a deviation from the agreed scope.

Detail	Impact
<b>Pre-commencement constraints</b>	
Limited height room to locations BH03 and BH04 due to overhead walkways.	Excavator used to reduce ground level beneath the walkways to allow access to locations for the drilling rig.
<b>Fieldwork constraints</b>	
Locations TP03 and IN04 were inaccessible	Brickwork had to be removed to gain access.
Services encountered at locations TP07, TP01 and BH03	Intrusive works were terminated at shallow depth.

Table 4-D Table of site restrictions

## 5 Laboratory testing

### 5.1 Overview

5.1.1 Samples obtained from exploratory holes were sent to independent accredited laboratories for geotechnical and chemical testing.

### 5.2 Geotechnical Testing

5.2.1 The geotechnical testing schedule was prepared by Soiltechnics using a targeted and judgemental approach, based upon the scheme proposals and our initial understanding of the ground conditions.

5.2.2 Geotechnical laboratory test results are presented in Appendix H, and the total number of geotechnical tests undertaken is summarised below:

Qty	Test
4	Atterberg limits
2	Particle size distribution (coarse)
2	Point load testing (axial and diametral)
2	Uniaxial compressive strength of rock cores
2	BRE SD1 Suite C
2	BRE SD1 Suite D

Table 5-A: Summary of geotechnical laboratory testing

### 5.3 Chemical Testing

5.3.1 The chemical testing schedule was prepared by Soiltechnics using a targeted and judgemental approach, based upon the initial conceptual site model and fieldwork observations. This is further elaborated on within subsequent report sections.

5.3.2 Chemical laboratory test results are presented in Appendix J, and the total number of chemical tests undertaken is summarised below:

Sample Type	Qty	Testing	Suite Name
Soils	6	Basic Contamination Suite [metals, cyanides, PAHs, phenol]	ST Suite 1
	7	Asbestos screening	-
	1	Waste Acceptance Criteria (WAC) testing	-

Table 5-B: Summary of chemical laboratory testing

### 5.4 Materials Testing

5.4.1 Concrete laboratory test results are presented in Appendix I, and the total number of chemical tests undertaken is summarised below:

Sample Type	Qty	Testing	Suite Name
Concrete	4	Concrete compressive strength	-
	4	Carbonation assessment	-

Table 5-C: Summary of concrete laboratory testing



## 6 Ground Investigation Findings

### 6.1 Ground Model

6.1.1 Ground conditions encountered were relatively consistent across the site and were broadly in line with those anticipated from the desk study.

6.1.2 The table below presents our generalised interpretation of geological conditions at the site. Unless otherwise stated in subsequent interpretive report sections, this represents the adopted ground model. A geological cross section through the site is presented on Drawing 03 and an extract is presented below.

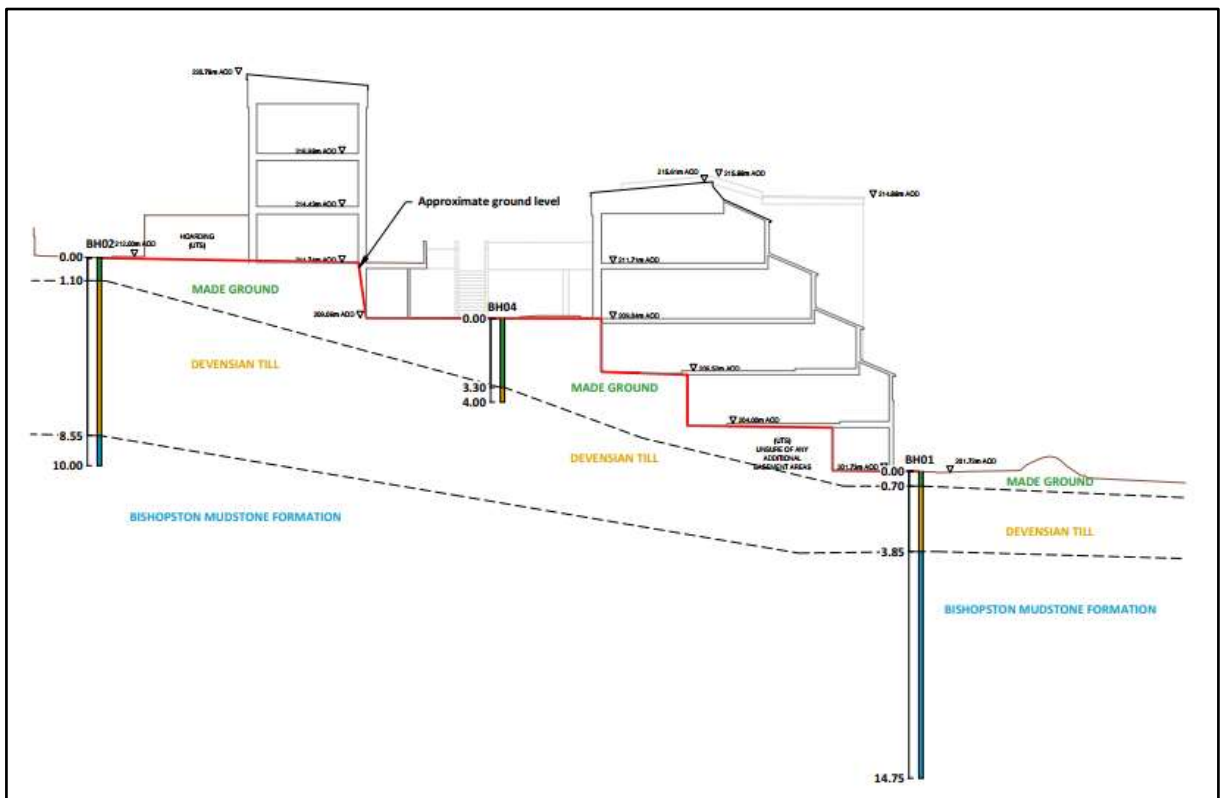


Figure 6-A: Geological cross section through the site

6.1.3 Further detail about the ground conditions encountered is provided in the relevant sub-sections below.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Hard surfacing	Asphalt, concrete and paving slabs	G.L.	G.L.	0.05-0.2
Topsoil (Central courtyard)	Firm dark brown, slightly gravelly, organic, clay	G.L.	G.L.	0.20-0.55
Made Ground	Light brown and light grey sand and gravel of, brick, concrete and sandstone and soft to firm dark grey and black slightly gravelly clay. Gravel of brick and concrete.	0.05 - 0.2	0.2	0.2-3.1

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Devensian Till	Orangish gravelly sand with gravels of sandstone with occasional cobbles of sandstone or mudstone.	0.28 – 3.3	1.0	3.15-7.45
Bishopston Mudstone Formation	Light grey and dark grey sandstone and siltstone.	3.85 – 8.55	6.0	Not proven (>10m)

Table 6-A: Ground Model

6.1.4 It is suspected that no groundwater was encountered, although any seepages would be obscured by drilling techniques.

## 6.2 Topsoil

6.2.1 Topsoil was encountered in exploratory holes within the central courtyard. The base of the unit was typically 0.20m BGL and varied between 0.2m and 0.55m thick.

6.2.2 Topsoil was typically encountered as firm, brown, slightly gravelly, organic clay. Gravels consisted of fine to medium, subrounded to subangular sandstone.

6.2.3 A photograph of typical topsoil deposits encountered is presented below.



Figure 6-B: Topsoil encountered within BH03

## 6.3 Made Ground

- 6.3.1 Made Ground was encountered across the site. Where the base of the unit was proven, it varied between 0.28m and 3.3m.
- 6.3.2 Excavations to the north and the south of the site encountered Made Ground to depths generally up to 1m. The deepest Made Ground was encountered in BH04, undertaken within the central grassed area to the east of the site. These depths appear reasonably consistent with those encountered by Integral Geotechnique during the previous investigation and is consistent with terracing on site (see Figure 6-A above). Shallow Made Ground was encountered to the south and Made Ground to the far north was encountered to 1.8m. Boreholes within the central grassed courtyard did not penetrate the Made Ground due to obstructions but proved it extended beyond 1.5m. There is some variation to the southeastern corner of the site, where Made Ground was encountered to 0.7m in this investigation but Integral Geotechnique recorded Made Ground to 3.7m some 5-6m west of this position.
- 6.3.3 Made Ground was typically encountered as light brown, sandy, gravel of mudstone, sandstone, brick and concrete over black and brown, slightly sandy, gravelly, clay. Gravels comprised concrete, brick, sandstone.
- 6.3.4 Photographs of the typical Made Ground encountered are presented below.



Figure 6-C: Made Ground excavated from BH02





*Figure 6-D: Made Ground encountered beneath surfacing in BH04*

## **6.4 Devensian Till**

- 6.4.1 Devensian Till was encountered across the site. The base of the unit was encountered at 3.85m to the north (BH01). Within BH02 to the south of the site, the Devensian Till was proven to 4.2m. Between 4.1-8.55m there was poor recovery, although based on the material recovered, it was suspected to be Devensian Till. On this basis, it would appear that the deposits deepen across the site to the south.
- 6.4.2 The Devensian Till comprised orangish brown, gravelly, silty sand with suspected cobbles of sandstone. Gravels consisted of sandstone and limestone.
- 6.4.3 A photograph of the typical Devensian Till is presented below.





Figure 6-E: Devensian Till excavated from BH01

## 6.5 Bishopstone Mudstone Formation

- 6.5.1 Bishopstone Mudstone Formation was located beneath the Devensian Till. The base of the unit was not penetrated.
- 6.5.2 Bishopstone Mudstone Formation was typically encountered as weak, grey, thinly to thickly bedded, argillaceous sandstone with closely spaced to medium spaced bedding fractures, occasionally infilled with soft, grey, slightly sandy, slightly gravelly clay. Occasional beds of medium strong, light grey limestone were also encountered.
- 6.5.3 A photograph of the typical Bishopston Mudstone Formation encountered is presented below.



Figure 6-F: Bishopstone Mudstone Formation encountered between 10.5m and 13.5 within BH01

## 6.6 Groundwater

6.6.1 No groundwater was encountered during the ground investigation with the exception of a slight seepage at the base of TP08.

## 6.7 Evidence of Possible Contamination

6.7.1 During the ground investigation works, no significant visual or olfactory evidence of contamination was noted, except for the presence of anthropogenic materials contained within the Made Ground (brick and concrete).

## 6.8 Obstructions and Instability

6.8.1 The table below summarises the instability encountered that affected the progress of the investigation works.

6.8.2 The general stability of trial pits during excavation are also recorded on the trial pit logs.

Strata / Area	Depth range (m bgl)	Issue	Description
Devensian Till	0.35 – 2.30	Instability	Collapse of exploratory holes due to addition of water for soakaway testing
Made Ground	0.3-0.55	Obstruction	Boreholes BH03A and BH03B and trial pit TP01B terminated due to presence of concrete.
Made Ground	0.2-0.35	Obstruction	Suspected service in TP01 and TP07

Table 6-B: Summary of obstructions and instability encountered during the investigation works



## **6.9 Internal works**

- 6.9.1 IN01 and IN02 were undertaken through the existing concrete floor slabs and IN03 and IN04 were undertaken through existing walls. In all locations, the concrete was confirmed to be reinforced. Scanning was also undertaken to confirm the presence and spacing of reinforcement within.
- 6.9.2 With regard to the floor slabs, a screed finish of 100mm thick was observed in IN01 but was absent in IN03. The concrete was recorded at 215mm and 300mm respectively.
- 6.9.3 The walls were confirmed to have a thickness of 240mm and 245mm.
- 6.9.4 Core and scan records are presented in Appendix D

## 7 Geotechnical Discussion

### 7.1 Scheme Overview

7.1.1 The following assessments are made on the investigatory data presented in the preceding sections of this report and are made with reference to the specific nature of the development. Should scheme proposals change then it is recommended that the validity of the conclusions of this report in relation to the revised scheme are checked.

7.1.2 In view of the scheme proposals, the geotechnical elements considered in this report are outlined below:

- Building foundations
- Drainage
- Pavement
- Floor slab

### 7.2 Geotechnical Category

7.2.1 In accordance with BS EN1997-1:2004 + A1:2013 (Eurocode 7), the project is designated as Geotechnical Category 2. This category includes projects with *conventional types of structures and foundations with no exceptional risk, or difficult ground or loading conditions*. Furthermore, *routine design procedures* are appropriate.

7.2.2 It should be noted that this Report does not constitute a Geotechnical Design Report (GDR) as defined in Eurocode 7. Accordingly, a GDR should be prepared by the designer during the detailed design phase.

### 7.3 Key Geotechnical Issues

7.3.1 In view of the ground conditions, the following list summarises the key geotechnical issues that may impact the scheme and will therefore need to be appropriately managed during the lifecycle of the project:

- Made Ground
- Groundwater

### 7.4 Made Ground

7.4.1 Deep Made Ground was encountered in the northeast of the site during both Soiltechnics and Integral Geotechnique ground investigations. The Made Ground is unsuitable for supporting concentrated foundation loads due to their variable characteristics. Accordingly, foundations should extend, as a minimum, through such deposits and where Made Ground thicknesses exceed 2.5m, this may ultimately require alternatives to spread foundations to be considered.

### 7.5 Building Foundation Strategy

7.5.1 Due to the deep Made Ground discussed above a range of foundations types are considered suitable for the project;

- Spread foundations
- Piles
- Ground improvement

## 7.6 Geotechnical Parameters

7.6.1 Characteristic values of geotechnical parameters have been derived, in accordance with Eurocode 7. The following tables present the recommended characteristic values for the strata encountered:

Variable	Characteristic value	Derivation
Weight density above water table, $\gamma_b$ (kN/m <sup>3</sup> )	17	BS8004:2015 Figure 1
Weight density below water table, $\gamma_{sat}$ (kN/m <sup>3</sup> )	19	BS8004:2015 Figure 2
Critical state angle of shearing resistance, $\phi_{cv}$ (°)	34	Literature

Table 7-A: Summary of characteristic geotechnical parameters –Devensian Till

## 7.7 Spread Foundations

7.7.1 The naturally deposited soils underlying the foundations are coarse grained in nature and therefore are not shrinkable and thus their volume will not be influenced by the water demands of the variety of trees at the site Accordingly and in isolation of other considerations affecting foundation depth, foundations extend a minimum of 0.75m below ground level.

7.7.2 Made Ground was encountered across the site. All foundations should extend through Made Ground and into the underlying Devensian Till deposits by a minimum of 0.3m. The deepest areas of Made Ground were encountered within the centre of site extending up to 3.30m BGL. Where Made Ground is shallow, say <2.5m then spread foundation are likely to be suitable. In areas of deepened Made Ground, pile foundations are likely to be required.

7.7.3 Based on the considerations outlined above, it is anticipated that spread foundations will be a minimum 1.4m deep. Ultimate limit state analyses (bearing capacity) have been undertaken in accordance with the approach outlined in Annex D of Eurocode 7 to derive the following design bearing resistances. These bearing resistance will also be applicable where foundation depth is increased in order to penetrate the Made Ground.

Type	Size / width (m)	Founding depth (m BGL)	Founding stratum	Bearing resistance	
				Combination 1	Combination 2
Pad	1.0m x 1.0m	1.40	Devensian Till	1348 kN/m <sup>2</sup>	640 kN/m <sup>2</sup>
	1.5m x 1.5m	1.40	Devensian Till	1475 kN/m <sup>2</sup>	691 kN/m <sup>2</sup>
	2.0m x 2.0m	1.40	Devensian Till	1603 kN/m <sup>2</sup>	742 kN/m <sup>2</sup>
Strip	0.45m	1.40	Devensian Till	396 kN/m run	197 kN/m run
	0.6m	1.40	Devensian Till	563 kN/m run	277 kN/m run
	0.75m	1.40	Devensian Till	748 kN/m run	363 kN/m run

Table 7-B: Summary of foundation ultimate limit state analyses

7.7.4 Serviceability limit state (SLS) has been assessed by undertaking settlement analyses in accordance with the approach outlined in Annex F of Eurocode 7 and adopting the following variables:

Stratum	Variable	Value adopted	Derivation
Devensian Till	SPT N Value	20	Literature

Table 7-C: Key geotechnical variables used in settlement analyses

7.7.5 The proposed loads are not known at this stage. Accordingly, the maximum bearing pressures have derived to ensure settlement is less than 25mm, which is typically adopted as a maximum tolerable limit. The following table summarises the results.

Foundation type	Size / width (m)	SLS bearing resistance
Pad	1.0m X 1.0m	650 kN/m <sup>2</sup>
	1.5m x 1.5m	555 kN/m <sup>2</sup>
	2.0m x 2.0m	535 kN/m <sup>2</sup>
Strip	0.45m width	330 kN/m run
	0.6m width	365 kN/m run
	0.75m width	400 kN/m run

Table 7-D: SLS bearing resistance to ensure total settlement to <25mm

7.7.6 Differential settlement is dependent upon the variation of loads imposed on the ground and consistency of the foundation supporting ground. Assuming foundation loads are reasonably uniform and in line with the values outlined above, it is estimated that differential settlement is unlikely to exceed say 15mm. It is likely settlement will be substantially achieved within say 10 years of construction.

7.7.7 It should be noted that foundation design is iterative. Accordingly, a final check of ultimate and serviceability limit states should be undertaken following confirmation of foundation size and loads. Both ultimate limit state and serviceability limit state MUST be verified.

## 7.8 Pile Resistance

7.8.1 In areas where there is deep Made Ground (>2.5m) a piled foundation may be required. Accordingly, a preliminary assessment of single pile capacity has been undertaken to assist the foundation designer in establishing a foundation layout who will also retain design responsibility. The assessment has been undertaken in accordance with BS EN1997-1:2004 + A1:2013 and BS 8004:2015. It is recommended that the design and installation of the piles are determined by a specialist piling contractor who has experience in pile installation in these or similar ground conditions.

7.8.2 It is assumed that the piles will be installed using replacement piling techniques; i.e. bored piles.

7.8.3 The calculations have been undertaken with the aid of PILE, a specialist geotechnical software programme developed by OASYS. The analyses have been undertaken without explicit verification of serviceability limit state. Accordingly, set R4 partial factors have been adopted for Combination 2. However, as a general guide, the settlement of a single pile at working loads (factor of safety > 2) is typically of the order of 1% of the pile diameter.

7.8.4 A model factor of 1.4 has been adopted in the analyses. The value may be reduced to 1.2 if the resistance is verified by a maintained load test taken to the required, unfactored ultimate resistance.

7.8.5 Shaft resistance within any Made Ground is assumed to be zero. It is further assumed that the Made Ground will not cause downdrag on the pile.

7.8.6 Unit base and shaft resistance within the granular strata have been derived using an effective stress approach, adopting the variables detailed in Table 7-E. When deriving unit base resistance, a bearing pressure coefficient has been adopted based on the relationship suggested by Berezantsev (1961).

Stratum	Variable	Value	Derivation
Devensian Till	Earth pressure coefficient, $K_s$	0.7	BS 8004:2015 – Table 8
	Angle of interface friction, $\delta$ (°)	34	BS 8004:2015 – Eqn 36

Table 7-E: Variables used for determining pile resistance - granular strata

7.8.7 Unit shaft resistance within the Bishopstone Mudstone Formation has been derived based on the compressive strength of the material and the formulae presented in Table 54.8 of the ICE Manual of Geotechnical Engineering; an average value has been adopted. It is assumed that ‘good’ construction practices will occur when the piles are installed, and as a result full bonding between the concrete and rock has been assumed. On this basis a unit shaft resistance of 2.2 MPa has been adopted.

7.8.8 Unit base resistance within the Bishopstone Mudstone Formation has been derived based on the compressive strength of the material and the guidance given in Section 54.3.7.2 of the ICE Manual of Geotechnical Engineering. The value has been reduced based on the limiting compressive strength of the concrete. On this basis a unit base resistance of 7.5 MPa has been adopted

7.8.9 The table below summarises resistances for a 7m length pile, assuming 1m embedment into the rockhead. It should be noted that the resistance of a single pile is reduced in the vicinity of other piles. Accordingly, detailed design of the piled foundation arrangement should take into account spacing between piles and pile group effects.

Pile Length	0.15m diameter		0.3m diameter		0.45m diameter	
	ULS C1 (kN)	ULS C2 (kN)	ULS C1 (kN)	ULS C2 (kN)	ULS C1 (kN)	ULS C2 (kN)
7.0	881.7	539.2	1952.7	1173.1	3213	1901.6

Table 7-F: Summary of preliminary pile assessment

## 7.9 Ground Improvement

7.9.1 Ground improvement is typically associated with increasing the strength and stiffness of the ground, thereby leading to increased bearing capacity and lower settlement. This has the consequential benefit that foundation designs can be leaner, economical and more sustainable.

7.9.2 There are many techniques associated with ground improvement and consultation with specialist contractors should be undertaken. The following table summarises potentially viable techniques at the site and the relative advantages and disadvantages of each:

Technique	Overview	Advantages	Disadvantages
<b>Vibro-compaction</b>	Insertion of a poker into the ground which vibrates leading to settlement of overlying fill.	Densifies granular soils. Reduces risk of liquefaction and collapse settlement.	Unsuitable in clay soils Induces vibration.
<b>Controlled modulus columns</b>	Installation of low strength concrete columns.	Effective up to tens of metres. Alternative option to driven piles.	Tight spacing required in very soft soils.
<b>Grouting</b>	Cement or polymer based grout is injected into the ground.	Minimal surface footprint required – can repair existing problems in situ.	Less suitable in clayey soils.

Technique	Overview	Advantages	Disadvantages
<b>Excavate and recompact</b>	Excavate existing soft deposits, condition if required (dry out) and place back in compacted layers.	Straightforward with no specialist plant required	Can be time consuming as material is conditioned.

Table 7-G: Summary of common ground improvement techniques

## 7.10 Residential Ground Floor Construction

7.10.1 Ground bearing floor slabs can be adopted where they are remote from trees and where Made Ground and Topsoil deposits are fully removed within the footprint of the building. Following completion of excavations to formation levels it is recommended that the formation is proof rolled to identify any soft areas, which if encountered should be excavated and replaced with suitably compacted engineered fill. It is further recommended that a layer of durable, well graded compacted granular material be placed prior to construction of the floor slabs.

7.10.2 In areas close to existing major vegetation at the site (or where ground floors are elevated requiring in excess of 600mm of fills) then it is recommended that suspended ground floors are adopted with a sub floor void determined in accordance with NHBC Standards.

## 7.11 Basement

7.11.1 It is understood that a single lower ground floor will be formed for both structures on site. The southern edge will be at ground level while the northern edge will be cut into the slope. It is anticipated that the basement excavation will extend to a depth of the order of 3.5m at the northern edge. The characteristic geotechnical parameters presented in Section 7.6 should be adopted for retaining wall design purposes.

7.11.2 Groundwater is not anticipated to be encountered during excavation of the basement.

## 7.12 Aggressiveness Of The Ground To Buried Concrete

7.12.1 The aggressiveness of the ground with respect to buried concrete has been assessed in accordance with Building Research Establishment Special Digest 1: Concrete in Aggressive Ground Third Edition (2005).

7.12.2 The site is interpreted to be a brownfield site where pyrite is likely to be present.

7.12.3 Laboratory testing has been undertaken on soil samples obtained from the investigation works.

7.12.4 The proposed foundations will extend into previously undisturbed soils that contain pyrite. Excavating to form a foundation does not create 'disturbed' ground as defined in BRE SD-1. However any arisings resulting from foundation excavation or replacement piling for example would be classified as 'disturbed' ground. Accordingly, the amount of oxidizable sulphides has also been considered when categorising the strata.

7.12.5 The classification of the strata is tabulated below:

Stratum	Disturbed / Undisturbed	Design sulphate class	Aggressive chemical environment for concrete class
Made Ground	Disturbed	DS-1	AC-1
Devensian Till	Disturbed	DS-1	AC-1

Stratum	Disturbed / Undisturbed	Design sulphate class	Aggressive chemical environment for concrete class
	Undisturbed	DS-1	AC-1

Table 7-H: Summary of the aggressiveness of the ground to buried concrete

7.12.6 At the time of issue, sulphate concentration results for the Bishopstone Mudstone Formation remain outstanding. This report will be updated on receipt of the test results.

## 7.13 Drainage

7.13.1 The predominantly granular deposits of the Devensian Till may be suitable for disposal of stormwater.

7.13.2 There is extensive Made Ground across the site. Soakaways would promote leaching of contaminants within the Made Ground soil. Consequently, soakaways should extend through the Made Ground and sufficiently sealed to ensure that stormwater is only discharged into the underlying Devensian Till.

7.13.3 Infiltration testing has been undertaken at the site following principles of BRE 365: Soakaway Design (2016). The results are presented as Appendix G and summarised below:

Exploratory hole ID	Stratum tested	Cycle	Infiltration rate (m/s)	Comments
TP08	Devensian Till	1	N/A	Test abandoned due to rising water level caused by collapse of trial pit sides.
TP09	Devensian Till	1	1.59x10 <sup>-5</sup> .	Limited infiltration observed over 90 minute cycle. The rate presented is based on a partially completed cycle i.e. trial pit base depth adjusted to final recorded water depth. The rate is likely to be an overestimate and should therefore be treated as preliminary only.

Table 7-I: Summary of infiltration test results undertaken following of BRE 365

7.13.4 Further testing would be required to fully assess the potential for soakaway drainage, with testing potentially extending over a number of days to achieve three full cycles of testing in accordance with the guidance. It should be noted that clean gravel backfill was required to maintain stability at TP09 and any future testing should be planned with the in mind.

## 7.14 Pavement Foundation

7.14.1 As part of the scheme development it is understood that hardstanding areas will be constructed at or about existing ground level. In situ California Bearing Ratio (CBR) value for the subgrade has been determined from dynamic cone penetrometer testing in accordance with CS 229 Data for Pavement Construction. Results of these tests are presented as Appendix F and indicate a CBR value of 10% would be appropriate.

7.14.2 It is recommended that the design values are validated with in situ testing immediately prior to construction. Furthermore, it is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600.



- 7.14.3 The silty nature of the Devensian Till deposits will render them moisture susceptible with small increases in moisture content giving rise to a rapid loss of support to construction plant. It is therefore recommended that the sub-base is laid as soon as practicable following establishment of formation.

## **8 Tier 2 Generic Quantitative Risk Assessment**

### **8.1 Objectives**

8.1.1 The objective of this generic quantitative risk assessment (GQRA) is to further assess the potential contaminant linkages (PCLs) identified by the preliminary risk assessment using the following:

- The findings of the intrusive site investigation and resulting site specific ground and hydrogeological model.
- Laboratory analysis of soils and groundwater.

### **8.2 Fieldwork Observations**

8.2.1 Fieldwork observations on the potential for contamination and the underlying ground conditions did not identify any new contaminant sources or significant pathway alterations to the anticipated ground model.

### **8.3 Laboratory Testing Rationale**

8.3.1 Laboratory testing has been scheduled by targeting potential contaminant linkages identified within the iCSM and observations made during fieldworks. The sampling and testing strategy is based on a judgemental approach.

8.3.2 The testing of the general Made Ground deposits was undertaken across various locations to gain spatial coverage over the site and to characterise the strata encountered. Testing included a broad suite of analysis due to the potential for unknown contamination to be present.

8.3.3 No other contaminant sources were identified within the iCSM and subsequent fieldworks with the exception of asphalt surfacing. Testing for the presence/absence of coal tar is outside of the current brief but is recommended prior to redevelopment in order to refine the risk assessment.

### **8.4 Generic Assessment Criteria**

8.4.1 Assessment of laboratory test data has been carried out using published generic assessment criteria (GACs). The GACs act as screening values to provide a 'trigger' to an assessor that soil concentrations above these limits might present an unacceptable risk.

8.4.2 Various GAC sources are used within this report. Key assumptions are made in the derivation of screening values in regard to their use and application, and exposure modelling is based on precautionary national scenarios. This generic approach can result in an overly conservative assessment; therefore, the assessor is required to review the outcome of the GQRA screening in the context of the site specific CSM and identified potential contaminant linkages.

8.4.3 Asbestos does not currently have published GACs which can be used for generic assessment purposes, at this stage a present/absent trigger limit has been adopted.

8.4.4 Specific details regarding the published GAC sources chosen and any parameter refinements made are summarised within Appendix K, along with the order of preference where multiple GAC sources are available. The exposure models adopted are discussed in the relevant sections below.

## 8.5 Human Health GQRA (soils and vapour)

8.5.1 The results of the human health screening assessment for soils and vapours are detailed in Appendix K. The following table outlines the exposure models adopted, along with summarising the outcome of each screening assessment.

Receptor	Exposure Model	Outcome
All human health receptors	Presence of asbestos	No suspected ACMs observed during fieldworks. No fibres detected through laboratory analysis.
Proposed users	Residential without homegrown produce	1 sample showing multiple PAH exceedances. 2 samples showing singular PAH exceedances. All other results below GAC screening values.
Construction operatives	Acute occupational exposure (assumed no PPE worn)	No exceedances.
Adjacent site users and the public	Acute off-site public exposure during construction phase	No exceedances.

Table 8-A: Human health GQRA models and outcomes

8.5.2 The table below summarises the instances where contaminants have exceeded the generic screening criteria.

Receptor	Strata	Contaminant	Locations & Depths	Test Result (mg/kg)	GAC (mg/kg)
Proposed user	Made Ground	Dibenzo(a,h)anthracene	BH02 – 0.90m	0.43	0.31
			TB02B – 0.25m	0.33	
			TP08 – 0.25m	20	
		Benzo(a)anthracene		110	11
		Benzo(a)pyrene		120	5.3
		Benzo(b)fluoranthene	TP08 – 0.25	160	3.9
Chrysene		130	30		
Indeno(1,2,3-cd)pyrene		85	45		

Table 8-B: Human health GQRA exceedances

## 8.6 Proposed Site Users Risk Assessment (soils and vapour)

8.6.7 All reported concentrations of contaminants are below the relevant generic assessment criteria for human health receptors with the exception of PAH. In two locations, minor exceedances of dibenzo(a,h)anthracene were detected, which is consistent with the findings of the Integral Geotechnique report, which identified marginal exceedances of benzo(k)fluoranthene and dibenzo(a,h)anthracene in one of six samples when compared to a guideline values associated with a residential without homegrown produce exposure model. This is considered likely to be representative of general site conditions.

- 8.6.8 Testing of a sample of Made Ground taken from TP08 at 0.25m identified multiple PAH exceedances at concentrations ranging from 20-160mg/kg, which are significantly higher than the concentrations recorded in the other 11 samples that have been tested from the site (by both Integral Geotechnique and Soiltechnics). No obvious source of PAH was observed within the soils and given the presence of asphalt surfacing immediately above the soils that were sampled, it is considered likely the concentrations are a result of cross contamination within the sample. Furthermore, the recorded concentrations are reflective of coal tar within the surfacing. These concentrations are not considered representative of the general Made Ground.
- 8.6.9 Overall, some sporadic and low-level PAH contamination has been identified within the Made Ground, however as concentrations are only marginally above GACs and within the analytical margin of error, these concentrations do not pose a risk to health. Some Topsoil-type soils were encountered in the central part of the site, which were noted to be free of deleterious material and potentially suitable for re-use. Confirmation testing should be undertaken before such soils are re-used within soft landscaping.
- 8.6.10 Although no ACMs were observed during this investigation, Integral Geotechnique did note some ACM fragments (cement sheeting) located on the grassed embankment during their works. On this basis, sporadic and localised surface contamination could remain. All ACM surface debris will require removal.
- 8.6.11 In addition, although testing of asphalt for coal tar is outside of the current brief, however the concentrations of PAH within TP08 are indicative of coal tar, with benzo(a)pyrene in excess of 50mg/kg. Based on development proposals, the access road and car park are likely to remain and therefore, while the risk from coal tar is relatively low while it remains bound in place, the risk to end users will increase through road wear and damage. It is recommended that testing of asphalt surfacing is undertaken to confirm it is the source of the elevated PAHs and to inform a detailed remedial strategy.

## **8.7 Construction Workers Risk Assessment**

- 8.7.1 Analysis indicates that contaminant levels do not pose an acute risk to construction workers. In general, standard PPE and hygiene protocols for working on brownfield sites is considered adequate to mitigate against the potential risk from contaminants on site, and no special precautions are required.
- 8.7.2 Although no ACMs were observed during this investigation, Integral Geotechnique did note some ACM fragments (cement sheeting) located on the grassed embankment during their works. On this basis, sporadic and localised surface contamination should be anticipated and will require consideration in the construction phase health and safety plan. As with any brownfield site, there is also the potential to encounter further asbestos containing materials, and a discovery strategy should be in place as standard.
- 8.7.3 It is possible that coal tar is present within the existing asphalt based on the concentrations of PAH identified within TP08. Further testing is recommended to determine the presence/absence of coal tar derived material and thus any remedial measures required. Alternatively, all material should be assumed to contain coal tar as a precaution.

8.7.4 In general, standard PPE and hygiene protocols for working on brownfield sites is considered adequate to mitigate against the potential risk from contaminants on site, and no special precautions are required.

## **8.8 Adjacent Site Users Risk Assessment**

8.8.1 Based upon the laboratory results and our understanding of the site, there is not considered to be an unacceptable level of risk to adjacent site users, both during construction and following completion of the development.

8.8.2 However, it is possible that coal tar is present within the existing asphalt on site and further testing is recommended to confirm this assessment and determine any remedial requirements. Careful management will be required during any removal of any coal tar to limit the risk to adjacent site users. Consideration will also need to be given to the risk of any such material remaining insitu.

## **8.9 Controlled Waters Risk Assessment**

8.9.1 Whilst geology on site is granular in nature and pathways to controlled waters are present, no evidence of significant contamination has been encountered within the proposed development area.

8.9.2 Due to the low to moderate sensitivity of the site and relatively low levels of contamination observed through field observations and total soil testing, Soiltechnics are of the opinion that the site does not pose an unacceptable level of risk to controlled waters. Risks to groundwater associated with coal tar will likely be reduced either through further testing to confirm absence, or removal or encapsulation of the source following an approved remediation strategy.

## **8.10 Water Supply Pipes**

8.10.1 A full site investigation as set out in the UK Water Industry Research (UKWIR) document '*Guidance for the selection of Water supply pipes to be used in Brownfield sites*' has not been undertaken.

8.10.2 The UKWIR document advises a trigger concentration of 0.125mg/kg for the 'extended VOC (volatile organic compounds) suite', which includes the PAH (polycyclic aromatic hydrocarbons) suite that has been included in the soil analysis during this investigation.

8.10.3 The maximum summed concentration of PAH congeners from individual samples obtained from the site at likely pipe depths (0.50m to 1.50m bgl) exceeds the trigger concentration of 0.125mg/kg and on this basis the installation of protective barrier-pipes in below ground water infrastructure is recommended as a precaution, unless service trenches are over-dug and backfilled with suitable clean materials.

8.10.4 In all instances, it is advised to consult the water company for advice to determine if protective pipe is necessary or if further assessment and investigation works are warranted. Irrespective of the assessment made here, water companies may insist on barrier pipe being installed. Once the initial consultation has taken place, Soiltechnics can support you in any further assessments that may be required.

## **8.11 Updated Conceptual Site Model (uCSM)**

8.11.1 Following on from the discussions above, an updated conceptual site model has been tabulated overleaf.

RECEPTOR: PROPOSED END USERS				
Potential Source	Contaminants of Concern	Pathway	Tier 2 Risk Assessment (probability of harm x consequence)	Discussion
Asbestos at surface	Asbestos	Inhalation of dusts	<b>Risk: Moderate</b> (likely – medium)	ACMs have previously been noted at surface on the central embankment. Although no obvious ACMs were noted during this investigation, the presence of sporadic fragments is possible. Removal of any ACMs encountered is required, likely through hand picking.
Made Ground	Metals, polycyclic aromatic hydrocarbons (PAH), asbestos	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Low</b> (unlikely – medium)	Following removal of coal tar asphalt and immediately underlying soils (or encapsulation), residual PAH concentrations are not considered to pose a risk to health. Soft landscaping constructed using either site-won Topsoil (subject to suitability for use verification) and/or imported Topsoil will further reduce risk of exposure to PAH in the Made Ground.
Organic contaminants associated with Made Ground	PAHs, total petroleum hydrocarbons (TPH)	Permeation into drinking water pipes	<b>Risk: Moderate/Low</b> (low – medium)	PAHs have been identified within Made Ground at water pipe installation depths (0.5-1.5m) at low concentrations but exceeding water supply pipe thresholds. On this basis, it is likely barrier pipes will be required.
Asphalt	Coal tar	Ingestion, inhalation and contact with soils, dusts and vapours	<b>Risk: Moderate/Low</b> (low – medium)	Although the asphalt on site has not been tested for the presence of coal tar, high PAH concentrations have been identified in shallow soils potentially cross contaminated with asphalt during excavation. If the source of the PAH is the overlying asphalt, the concentrations of benzo(a)pyrene are indicative of the presence of coal tar. Specific testing is recommended to confirm this assessment and refine the risk.

Table 8-C: uCSM – Proposed End Users

RECEPTOR: CONSTRUCTION WORKERS				
Potential Source	Contaminants of Concern	Pathway	Tier 2 Risk Assessment (probability of harm x consequence)	Discussion
General Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	<b>Risk: Low</b> (unlikely – medium)	No asbestos has been detected in any samples of Made Ground.

Table 8-D: uCSM – Acute Exposure to Construction Workers

RECEPTOR: ADJACENT SITE USERS DURING THE CONSTRUCTION PHASE				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
General Made Ground	Asbestos fibres and ACMs	Inhalation of dusts	<b>Risk: Low</b> (unlikely – medium)	No asbestos has been detected in any samples of Made Ground.

Table 8-E: uCSM – Acute Exposure to Adjacent Site Users

RECEPTOR: CONTROLLED WATERS				
Potential Source	Contaminants of Concern	Pathway	Tier 1 Risk Assessment (probability of harm x consequence)	Discussion
Made Ground	Metals, PAHs, TPHs	Leaching and lateral migration (Surface water)	<b>Risk: Low</b> (unlikely – medium)	
		Leaching and vertical migration (Groundwater)	<b>Risk: Low</b> (unlikely – medium)	

Table 8-F: uCSM – Controlled Waters Risk



## 8.12 Risk Assessment Conclusions

8.12.1 The updated CSM has identified potential contaminant linkages which exceed the low-risk threshold and require further investigation, mitigation, or remediation. These are discussed in further detail below.

Contaminant Source	Receptor	Recommended Action	Discussion
Asbestos at surface	All human receptors	Remediation	Sporadic fragments of ACMs could remain at surface. If present it will require segregation and removal. Specialist visual inspection recommended.
Elevated organic contaminants within the Made Ground	Drinking water infrastructure	Remediation	There is a requirement for installation protective barrier pipes for drinking water.
Asphalt	All human receptors	Remediation/disposal	It is considered likely that coal tar is present within the asphalt of the access road and car park. Testing of the asphalt is recommended to confirm this assumption and refine the risk assessment and determine any mitigation measures required. Subject to detailed remedial strategy, asphalt containing coal tar could be reused and left in-situ by adopting overlay or stabilisation techniques. Excavated tar-bound material can be reused providing it is stabilised and mixed with a binder using ex-situ cold processes. Careful management during the removal of such material will also be required to limit the risk to adjacent site users and construction operatives.

Table 8-G: GQRA Risk Assessment Conclusions

8.12.2 Subject to further testing and refinement of the risk assessments a Remediation Strategy is likely to be required to detail the measures to be taken, along with including the verification plan for all necessary works.

8.12.3 Anticipated remedial requirements of the project are unlikely to be inherently complex, and therefore an Options Appraisal is not considered necessary.

8.12.4 Once all investigations and remedial works are completed (and assuming that remedial works are considered necessary following any further works/risk assessment refinement), a Verification Report will also be required.

## 8.13 Unexpected and Previously Unencountered Contamination

8.13.1 With the development of any site, there is a residual risk of contamination being found that is unexpected or has not been encountered during investigation or other siteworks.

8.13.2 Should any previously unencountered and unexpected contamination be encountered, works should be temporarily halted and Soiltechnics informed. The Consultant should then assess the situation to determine what remedial action is required and inform the Local Authority at the earliest opportunity.

- 8.13.3 It is often a requirement of Local Authority planning conditions that the building/demolition contractor has a contamination discovery/contingency strategy in place for dealing with unexpected contamination. Soiltechnics are pleased to provide advice on such a strategy if required.

## 9 Soil and Waste Management

### 9.1 Sustainability

- 9.1.1 Where possible, disposal of soils to landfill should be avoided in preference for more sustainable alternatives. Such alternatives are set out below and rely on appropriate planning and design.
- 9.1.2 Soiltechnics can provide additional support and guidance to assist in overall material management and soil waste minimisation upon request.

### 9.2 Waste Hierarchy

- 9.2.1 Under the Waste Regulations, there is a requirement to apply (where reasonable) the waste management hierarchy, which is summarised below. Within the hierarchy, soil disposal to landfill should be limited to the necessary minimum.

Stage (in order of preference)	Example application
Prevention / Reduce	Design, planning, Site Waste Management Plans (SWMP).
Reuse	Reuse of soils under exemption, permit or Materials Management Plan (MMP), sorting at the point of excavation, screening of excavated material.
Recycling	Recycling aggregate, waste segregation, screening and sorting.
Recovery	Remediation works, transfer to a Soil Treatment Facility
Pre-treatment	Non-hazardous and hazardous soils do not need to be treated, where such treatment would not reduce the volume of waste.
Disposal	If the waste hierarchy steps outline above are followed, the remaining waste can be disposed of to a landfill without any further treatment.

Table 9-A: Waste management hierarchy

### 9.3 Liability Of Waste Management

- 9.3.1 Part III of the Finance Act was amended in 2018 to extend the scope of landfill tax to cover any site (not exclusively landfills) operating without an appropriate environmental permit, exemption, or MMP.
- 9.3.2 These changes have given HMRC the powers to work with the Environment Agency to identify non-compliant sites and pursue and penalise the person(s) illegally disposing of waste, and anyone who knowingly facilitates the disposal. This includes sites filling site-won soils which are surplus to requirement.

### 9.4 Materials Management

- 9.4.1 In terms of the development, where reasonably practicable, landfill disposal should be minimised through the reuse of site-won materials on site, or off-site transfer of surplus soils to other development schemes or Soil Treatment Facilities. Early consideration of the site’s overall material balance at the design stage is also critical in reducing the need for off-site disposal, limiting costs, and increasing the overall sustainability of the development.
- 9.4.2 Where Made Ground soils are to be reused onsite or materials transferred between sites, a Materials Management Plan (MMP) or Waste Exemption is recommended.

9.4.3 The process of an MMP allows soils that are suitable for reuse and have a certainty of use to not be considered a waste, and therefore not fall under the waste regulations. This scheme is self-regulated within the industry and is supported in principle by the Environment Agency.

## 9.5 Waste Characterisation governance

9.5.1 The classification of soils for disposal to landfill is undertaken in accordance with WM3 (v1.2GB), and a Waste Acceptance Criteria assessment (WAC) undertaken in accordance with the limits in Annex II of the Landfill Directive (Directive 1999/31/EC).

## 9.6 Waste Populations

9.6.1 Based on the site observations, development proposals and laboratory results, the following potential soil waste populations have been identified for preliminary assessment purposes:

Potential Waste Population	Description
Topsoil	Firm dark brown, slightly gravelly, organic, clay
Made Ground	Light brown and light grey sand and gravel of, brick, concrete and sandstone and soft to firm dark grey and black slightly gravelly clay. Gravel of brick and concrete.
Clean naturally occurring soils	Natural, uncontaminated clays and sands.

Table 9-B: Potential waste populations

9.6.2 Although no asbestos has been identified within soils at the site, fragments of ACM were identified at surface during previous works. Any residual visually identifiable fragments of ACM should be picked out and segregated for disposal as hazardous waste.

9.6.3 It is possible that fragments of ACM will be present within near surface Topsoil/Made Ground soils although given they have not been identified at this stage, these are likely to be random and infrequent occurrences at low levels.

9.6.4 Where suspected ACMs are visible to the naked eye and waste disposal is necessary, a hazardous waste classification applies. The material should be segregated at the point of excavation and placed in a covered stockpile prior to disposal. Delineation of impacted materials should be feasible by visual inspection in a watching brief by a competent specialist, this would also facilitate the bulk segregation and localised handpicking of ACMs to reduce the overall volume of asbestos waste.

## 9.7 Sampling And Testing

9.7.1 The hazardous waste classification assessment has been undertaken by adopting the maximum recorded concentration of each compound from all the samples tested within the identified waste population, as outlined in WM3, Approach D.

9.7.2 For the Waste Acceptance Criteria (WAC) assessment, a representative composite sample was obtained by combining soils from multiple exploratory holes:

- CS01: Made Ground

9.7.3 The rate of testing has been chosen to provide a preliminary waste categorisation only.

## 9.8 Waste Characterisation

- 9.8.1 Where testing has been carried out, the waste classification assessment sheets are enclosed within Appendix L, and a summary of the findings is presented in the table below.
- 9.8.2 Observations from the fieldwork indicate that the underlying natural soils are not impacted by contamination, and therefore are considered suitable for disposal as non-hazardous waste in an inert landfill site without the requirement for further testing (delete or amend this is you have contamination – e.g. hydrocarbons – of natural soils).
- 9.8.3 Due to the elevated organic content of topsoil materials in general, they are typically unsuitable for disposal at an inert landfill, therefore disposal to a non-hazardous waste landfill site is likely to be the appropriate disposal route. However, topsoil is also a nationally limited resource and efforts should be made to avoid landfill disposal where possible. Where topsoil is in surplus, it should be separated from the underlying natural soils and set aside to be recovered elsewhere, for instance through a Direct Transfer scenario or to a Soil Treatment Facility under the DoW CoP.
- 9.8.4 As previously discussed, high concentrations of PAH were measured within TP08. Given these are significantly higher than concentrations recorded in 11 other samples (Integral Geotechnique and Soiltechnics), they are not considered representative of the general Made Ground. Asphalt surfacing was present immediately above the soils that were sampled, and it is considered likely the concentrations are a result of cross contamination within the sample.
- 9.8.5 It should be noted that the combined sample submitted for WAC testing was a combined sample of Made Ground, including soils excavated from TP08.

Potential Waste Population	Hazardous Classification (LoW code)	Landfill Classification	Comments
Topsoil	Non-hazardous (17-05-04)	Inert	N/A
Made Ground (excluding TP08)	Non-hazardous (17-05-04)	Non hazardous	Soils considered non-hazardous based on current WAC testing but cannot be classified as inert by virtue of elevated PAH (likely associated with Made Ground from TP08). Additional WAC testing is recommended as it may be possible to reclassify soils as inert as there were no other exceedances.
Made Ground at TP08	Hazardous (17-05-03*)	Stable non-reactive hazardous waste cell within a non-hazardous waste landfill site	Hazardous by virtue of elevated PAH. Re-testing recommended if soil in this area is proposed for disposal with careful segregation of asphalt surfacing, which could enable reclassification as non-hazardous.
Clean naturally occurring soils	Non-hazardous (17-05-04)	Inert	N/A

Table 9-C: Waste characterisation summary

## **9.9 Managing Reclaimed Asphalt**

- 9.9.1 A near surface sample taken from immediately under an asphalt covered area contained exceedances of PAH indicative of coal tar. On this basis, it is recommended that samples of asphalt from across the site be tested to determine the presence/absence of coal tar in order to inform mitigation measures and off-site disposal costs, if relevant.
- 9.9.2 The 2019 ADEPT guidance 'Managing Reclaimed Asphalt –Highways and Pavements' provides further information on the reuse, treatment, recycling, and disposal of the material.

## **9.10 Application Of Advice**

- 9.10.1 Where assessments have been carried out of soils currently in-situ at the time of investigation and not of stockpiled waste soils, they should be treated as provisional only.
- 9.10.2 There is no obligation on any waste operator to accept our waste characterisation assessments. Landfill operators may consider your waste to fall under a different classification and/or may require additional testing of waste soils prior to acceptance. It is therefore recommended that this report along with the chemical results is provided to the preferred facility to confirm (or otherwise) it can accept the waste.
- 9.10.3 It should be noted that there remains the potential for unexpected or previously unencountered contamination to be encountered. Any such materials intended for waste disposal should be segregated and tested to determine the appropriate classification and disposal route.

## **9.11 Further Recommendations**

- 9.11.1 As the waste classifications provided are preliminary only and based on limited sampling of soils in-situ, it is recommended to undertake additional sampling and testing to fully characterise the waste soils intended for disposal. This should include further WAC testing of general Made Ground to determine whether the classification can be reduced to inert.
- 9.11.2 The overall frequency of testing should be dependent upon the composition, volume and variability of the material excavated.
- 9.11.3 At this stage, ACMs have only been observed sporadically at surface in the centre of the site. However, it is possible that fragments of ACM will be present within near surface Topsoil/Made Ground soils. Where suspected ACMs are visible to the naked eye, the material should be segregated at the point of excavation and placed in a covered stockpile prior to disposal. Further testing and/or delineation by a competent specialist will be required.

## 10 Recommendations for further works

10.1.1 The following table summarises the additional works which should be undertaken prior to commencement of any construction works and in support of the planning conditions.

Aspect	Delivered By	Description	Necessity
Asphalt/coal tar	Soiltechnics	Testing has indicated that asphalt on site may contain coal tar. Testing of surfacing is recommended to determine the presence/absence of coal tar and, if present, delineate the extent.	<b>RECOMMENDED</b>
Discovery Strategy	Principal Contractor	The Principal Contractor should have a discovery strategy in place in the event of exposing unexpected or previously unencountered contamination. Soiltechnics should be informed at the earliest opportunity to undertake an assessment, and to inform the Local Authority as appropriate.	<b>REQUIRED</b>
Asbestos	3 <sup>rd</sup> Party	Visual inspection of the ground surface and buildings and advice on any required mitigation measures is recommended ahead of demolition.	<b>RECOMMENDED</b>
Infiltration testing	Soiltechnics	Further infiltration testing to BRE 365 to determine feasibility of soakaways and SUDS and provide design values.	<b>RECOMMENDED</b>

Table 10-A: Recommended Further Works (Pre-Commencement)

10.1.2 The following table summarises the additional works which should be undertaken during the enabling and construction works phases to support the safe development of the site.

Aspect	Delivered By	Description	Necessity
Waste classification	Soiltechnics/ 3 <sup>rd</sup> Party	Based on current testing, Made Ground soils can be disposed of to non-hazardous landfill. However, it is considered likely the PAH, which resulted in an exceedance of inert concentrations, is the result of asphalt contamination. It is recommended further WAC testing be undertaken to determine if Made Ground soils can be reclassified as inert.	<b>RECOMMENDED</b>
Installation barrier pipe	3 <sup>rd</sup> Party	The Principal Contractor should liaise with the statutory undertaker to confirm the requirement for barrier pipe installation and associated verification.	<b>REQUIRED</b>
Re-use of site won Topsoil	Soiltechnics	Site-won Topsoil intended for reuse within landscaped areas should be tested to confirm suitability for use.	<b>RECOMMENDED</b>
Imported soil	Soiltechnics	If it is proposed to import Topsoil within landscaping areas, it should be tested to confirm it is suitable for use.	<b>RECOMMENDED</b>

Table 10-B: Recommended Further Works (Enabling Works & Construction Phase)



## **Appendix A Drawings**





Key:

Site Boundary

**Notes**

- 1) Base image provided by Google.
- 2) All drawn features are approximate.

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Map data © 2022 Google

A	July 2023	First issue
REV	DATE	COMMENT ON VARIATION

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PROJECT  
Cefn Isaf, Merthyr Tydfil

TITLE  
Site Location Plan

PROJECT No. STV6119	DRAWING 01	REVISION A
------------------------	---------------	---------------





**Key:**

- Site Boundary
- Trial Pit
- Rotary Borehole
- DCPs
- Concrete Cores
- Infiltration Testing
- Water Monitoring Installation

**Notes**

- 1) Base image provided by Google.
- 2) All drawn features are approximate.

Contains OS data © Crown copyright [and database right] [2022]  
Map data © 2022 Google


A	Sept 2023	First issue
REV	DATE	COMMENT ON VARIATION

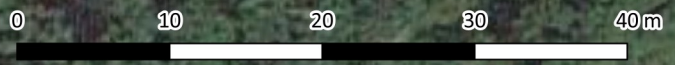
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PROJECT  
Cefn Isfa, Merthyr Tyfil

TITLE  
Exploratory Hole Location Plan

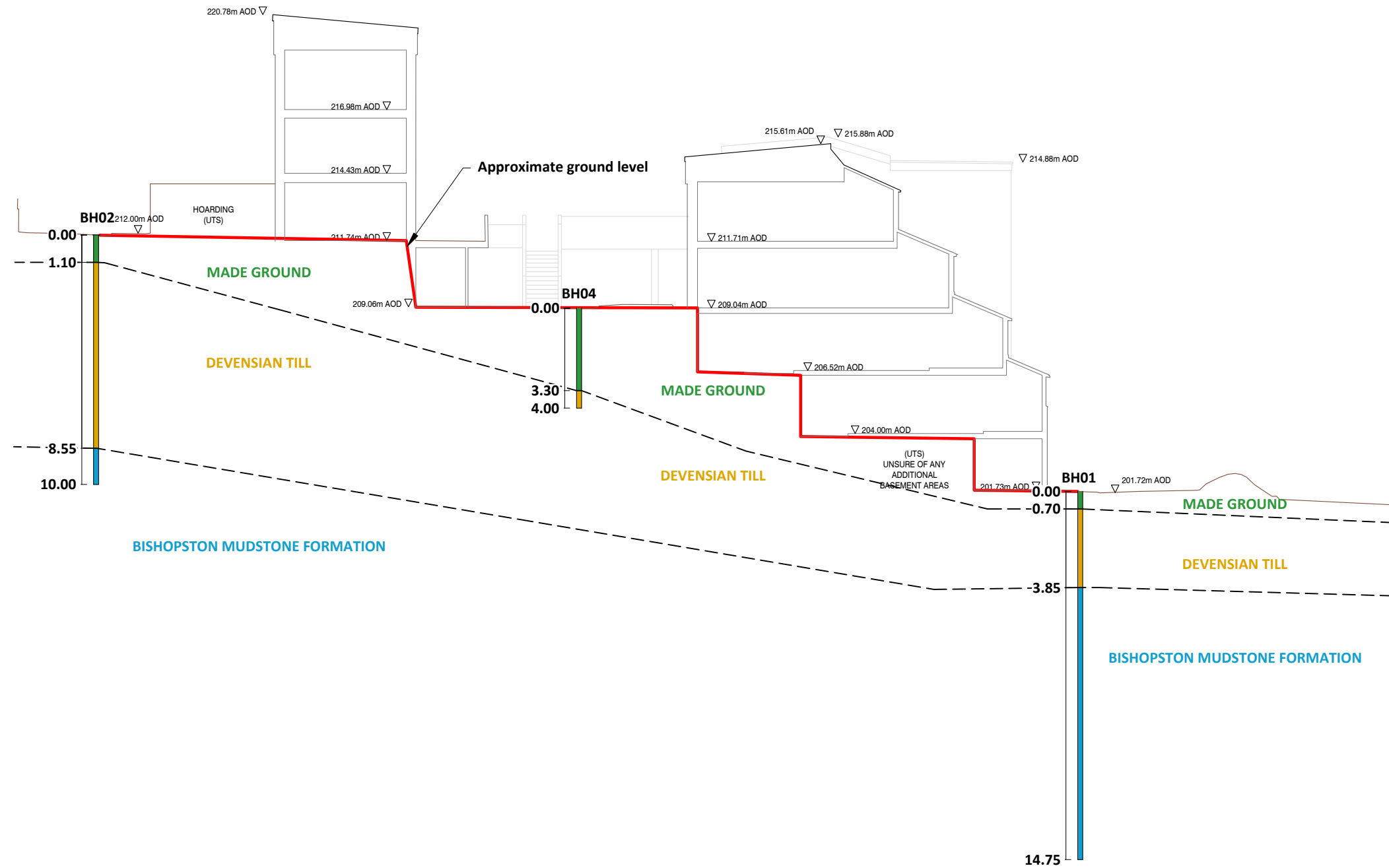
PROJECT No. STV119	DRAWING 02	REVISION A
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**Key**

- Made Ground**
- Devensian Till**
- Bishopston Mudstone Formation**



**Notes**

1. Base drawing provided by Client.
2. Exploratory locations are approximate.

A	First issue	AM	15.09.2023
REV	DESCRIPTION	PREP	DATE

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PROJECT  
 Cefn Isaf, Merthyr Tydfil

TITLE  
 Geological section

















DRAWING NO.  
 STV6119-D03-A

SCALE AT A3  
 1:200

## **Appendix B     Exploratory Hole Logs: Trial Pits**

## Key to legends

### Composite materials, soils and lithology

	Topsoil		Made Ground		Boulders		Chalk
	Clay		Coal		Cobbles		Concrete
	Gravel		Limestone		Mudstone		Peat
	Sand		Sandstone		Silt		Siltstone

Note: Composite soil types are signified by combined symbols.

## Key to 'test results' and 'sampling' columns

### Test result



Depth	Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)
	PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m <sup>2</sup> ) by applying a factor of 50.
Result	SV – Hand held shear vane result reported as an undrained shear strength (kN/m <sup>2</sup> ). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.

### Sampling

From (m) To (m)	Records depth of sampling
	D Disturbed sample
	B Bulk disturbed sample
	ES Environmental sample
	W Water sample
Type	U Undisturbed thick-walled sample 100mm diameter sampler
	UT Undisturbed thin walled sample 100mm diameter sampler
	UTF Failed undisturbed sample

## Water observations

Described at foot of log and shown in the 'water strike' column.

-  Water level observed after specified delay in drilling
-  Water strike

## Density





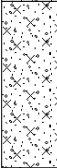
Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).







STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
PAVING SLAB (MADE GROUND)	0.05								
Medium dense brown gravelly clayey SAND. Gravel is fine to medium subangular sandstone. (MADE GROUND)	0.35								
TRIAL PIT TERMINATED AT 0.35m									
									

<b>Notes</b> Trial pit terminated due to service, suspected gas line.	<b>Title</b> Trial pit record	<b>Dimensions (w x l)</b> 0.30m x 0.30m	<b>Date(s)</b> 01/08/2023
	<b>Method</b> Hand tools	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>TP01</b>

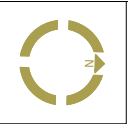


STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
ASPHALT (ASPHALT)	0.20								
[Loose] light grey slightly sandy GRAVEL of fine to coarse subrounded to subangular sandstone. (MADE GROUND)	0.30						0.25		ES
Grey sandy GRAVEL of fine to coarse subangular to subrounded mudstone. (MADE GROUND)	0.35						0.80		B
[Loose] orangish red gravelly clayey SAND with occasional cobbles of limestone. Gravel is fine to coarse subrounded to subangular sandstone. (DEVENSIAN TILL)	1.20						1.30		B
[Medium dense] yellowish brown mottled orange and brown slightly gravelly silty SAND with occasional boulders of limestone. Gravel is fine to medium subrounded sandstone. (DEVENSIAN TILL)	1.70						1.70		B
TRIAL PIT TERMINATED AT 2.30m	2.30								

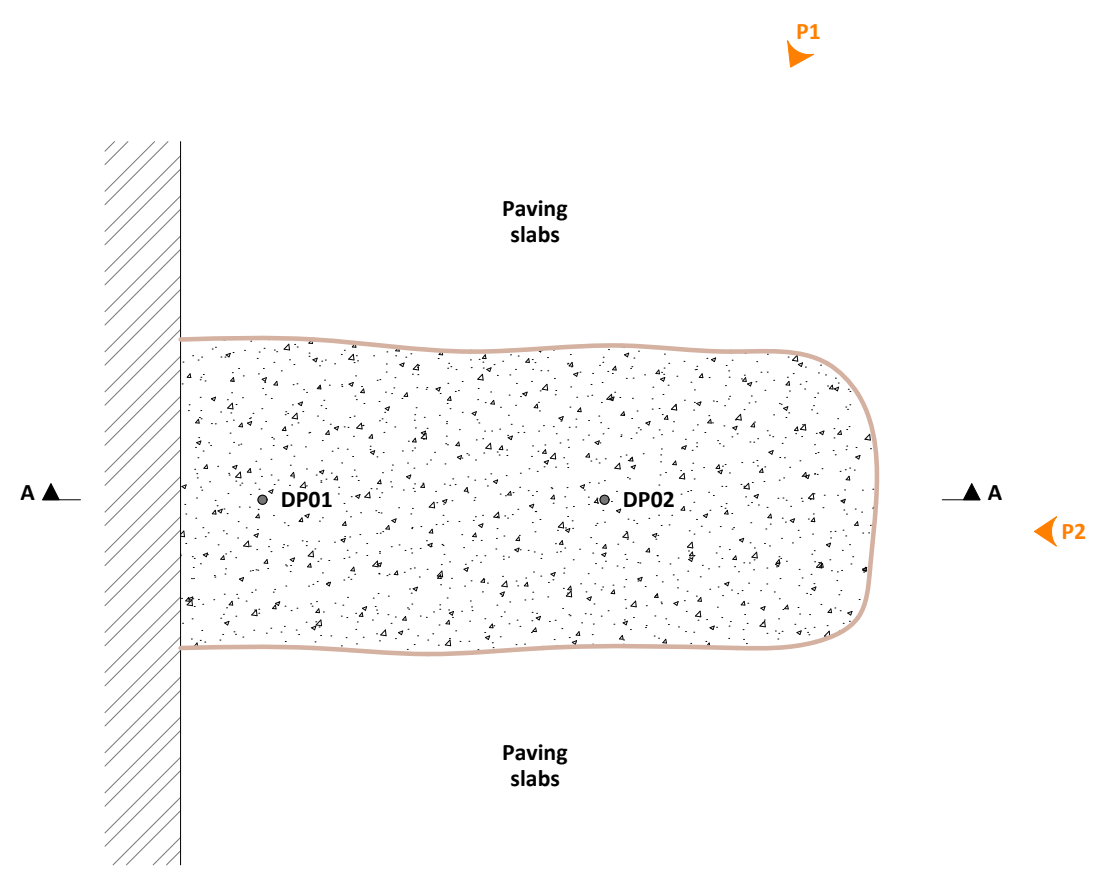
<b>Notes</b> Infiltration testing performed. Continual collapse of trial pit sides during infiltration testing widening pit by 0.55m on north and south sides.	<b>Title</b> Trial pit record	<b>Dimensions (w x l)</b> 0.80m x 2.10m	<b>Date(s)</b> 01/08/2023
	<b>Method</b> Machine excavator	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> Small accumulation of groundwater at base of trial pit.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>TP08</b>

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
ASPHALT (ASPHALT)	0.15								
Light grey sandy GRAVEL of fine to medium subrounded to subangular sandstone. (MADE GROUND)	0.30								
Soft dark grey slightly gravelly CLAY. Gravel is fine to medium subrounded to subangular brick and concrete. (MADE GROUND)	0.70								
[Dense] orangish brown gravelly clayey SAND. Gravel is fine to coarse subrounded sandstone. (DEVENSIAN TILL)	1.40								
TRIAL PIT TERMINATED AT 1.40m									

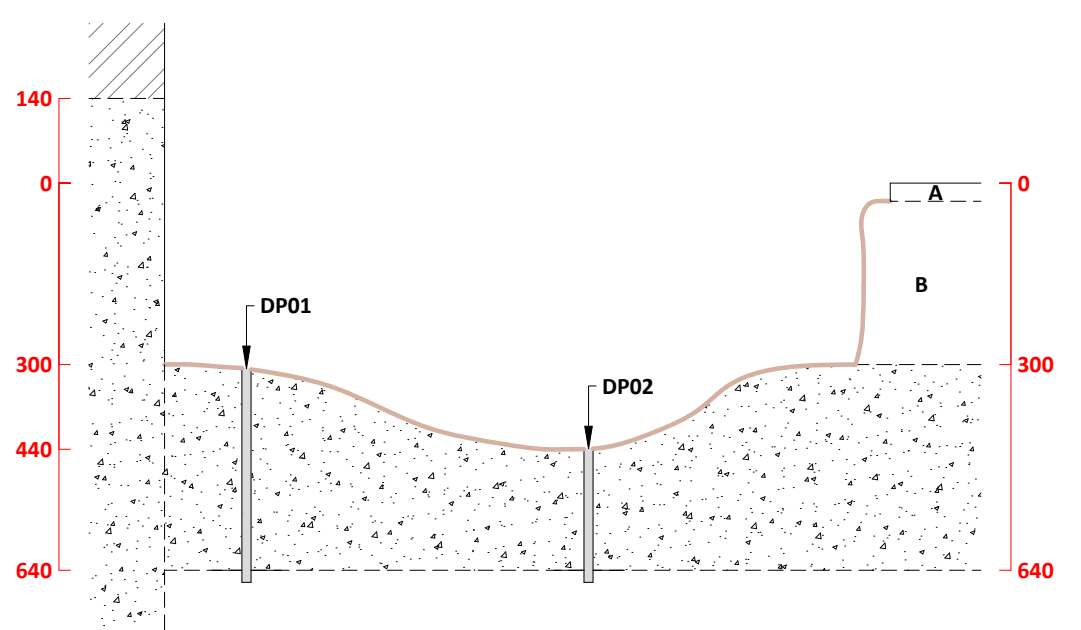
<b>Notes</b> Trial pit stabilised using coarse gravel backfill. Infiltration testing performed.	<b>Title</b> Trial pit record	<b>Dimensions (w x l)</b> 0.75m x 1.40m	<b>Date(s)</b> 01/08/2023
	<b>Method</b> Machine excavator	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>TP09</b>



**Plan**



**Section A-A**



**Photographic records**



P1



P2

**Key:**

- A. PAVING SLAB.
- B. Black sandy clayey fine to medium subrounded to subangular GRAVEL of mudstone. (MADE GROUND)

- Observed features
- - - Assumed features
- Excavation outline
- P1 ▶ Location and orientation of photograph
- ◻ Concrete ◻ Brickwork
- | Drill probe (plan and section views)

**Notes**

1. Dimensions shown in millimetres.
2. No groundwater encountered.
3. Concrete obstruction fully penetrated at DP01 and DP02.

**Samples - Disturbed (D) / Environmental (ES) / Bulk (B)**

- 0.25 - ES

REV	DESCRIPTION	LOGD	PREP	DATE
A	First issue	RF	KD	22.08.2023

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PROJECT  
Cefn Isaf, Merthyr Tydfil

TITLE  
Trial pit record

METHOD  
Hand tools

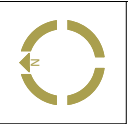
DATE OF WORKS  
03.08.2023

PROJECT NO.  
STV6119

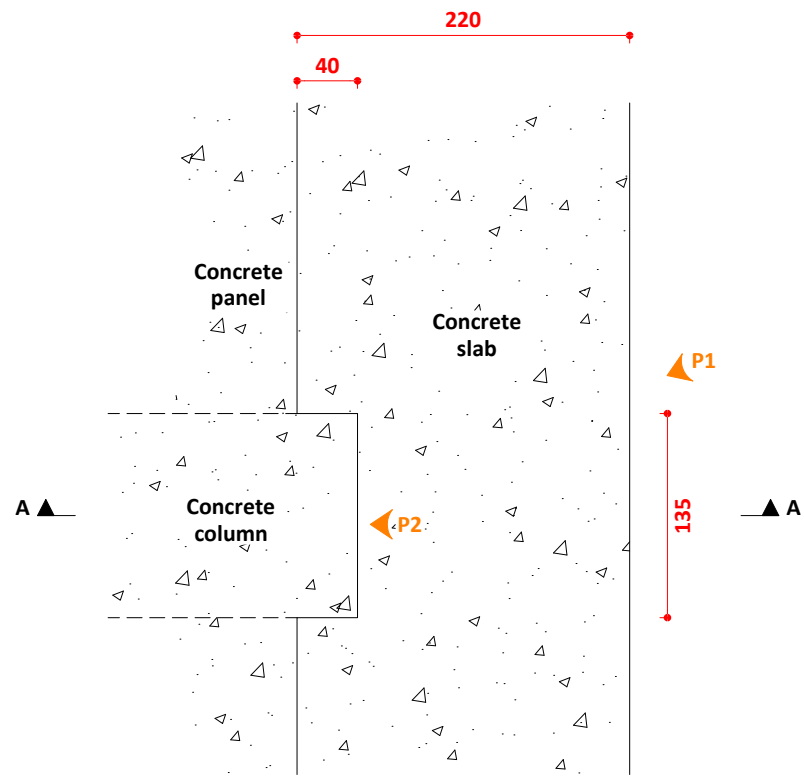
SCALE AT A3  
1:12.5

LOCATION REFERENCE  
TP01B

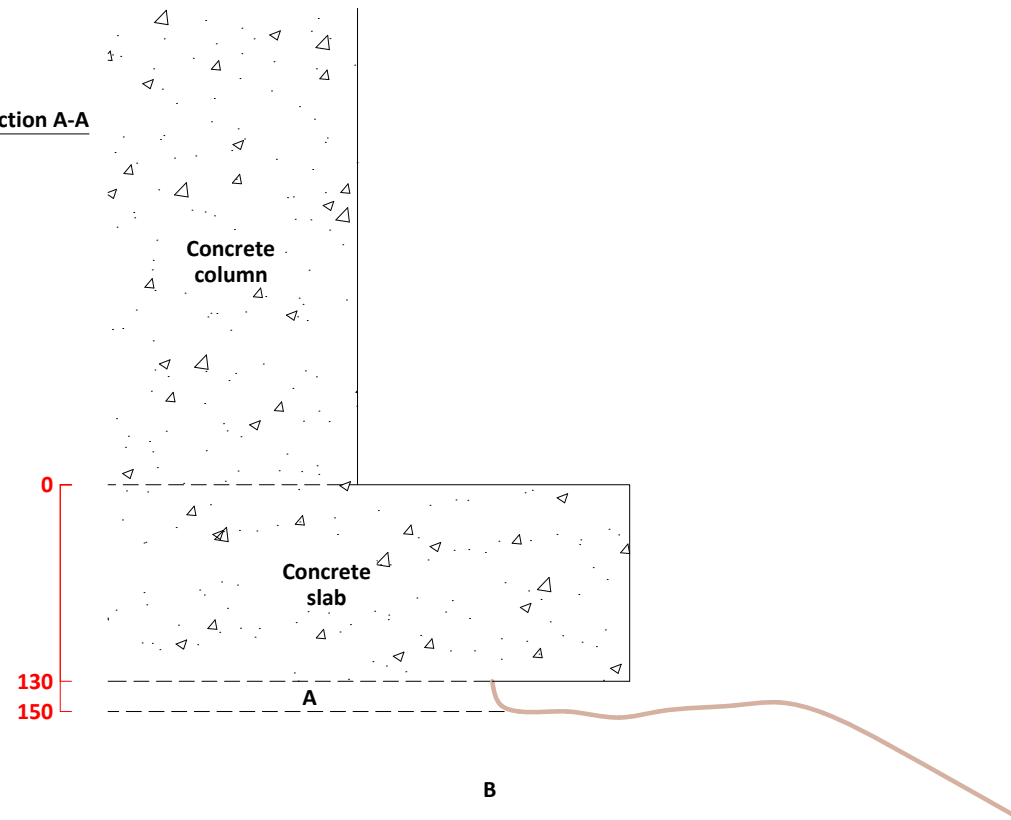




**Plan**



**Section A-A**




**Photographic records**



P2


**Key:**

- A. BRICK, SLATE and CONCRETE cobbles.
- B. Brown slightly gravelly CLAY. Gravel is fine to medium subrounded to subangular flint and concrete. (MADE GROUND)

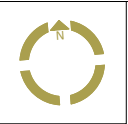
- Observed features
- - - Assumed features
- Excavation outline
- P1** ▶ Location and orientation of photograph
-  Concrete

**Notes**

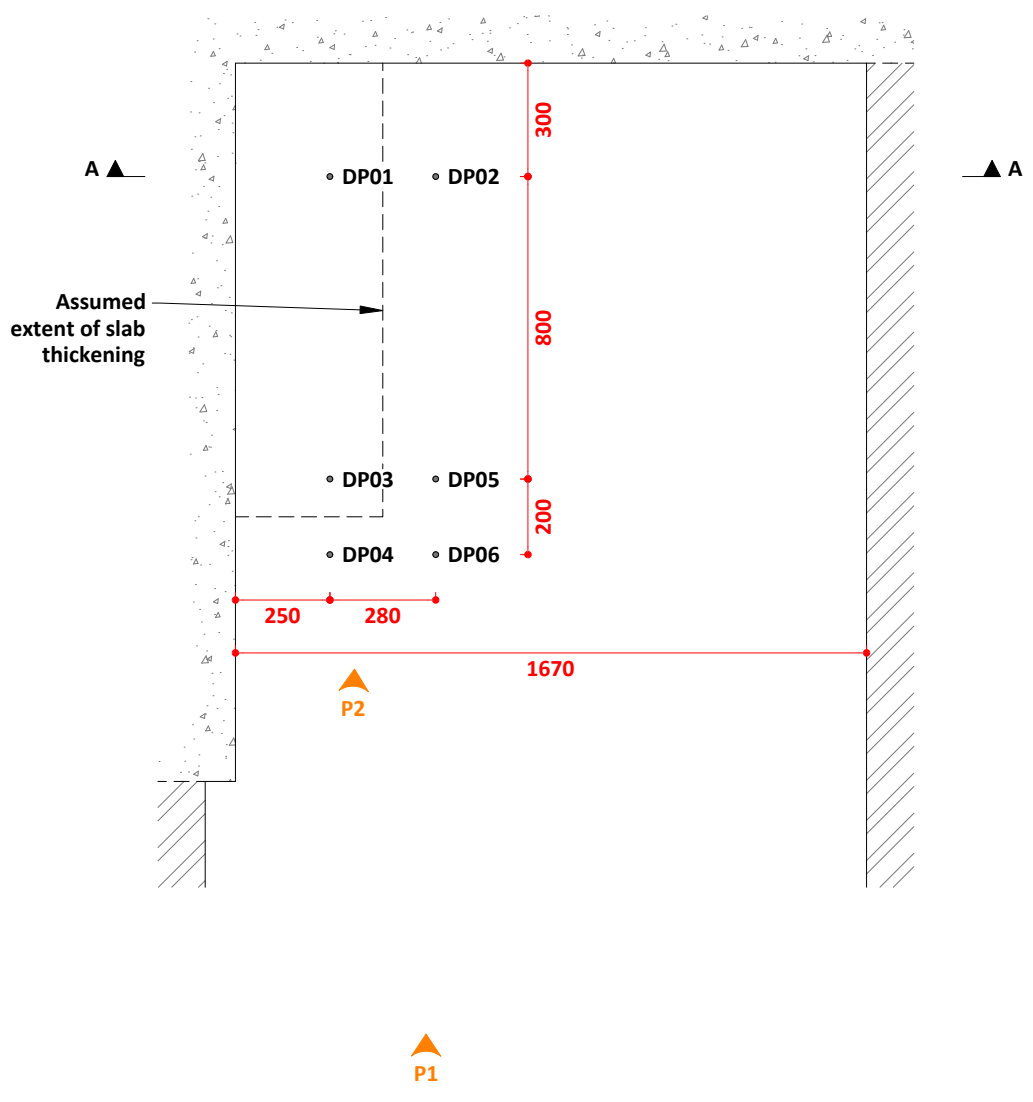
1. Dimensions shown in millimetres.
2. No groundwater encountered.
3. Excavation extent limited due to vegetation and instability of slope.

REV	DESCRIPTION	LOGD	PREP	DATE
A	First issue	RF	KD	22.08.2023
 environmental • geotechnical • building fabric				
PROJECT Cefn Isaf, Merthyr Tydfil				
TITLE Trial pit record				
METHOD Hand tools			DATE OF WORKS 02.08.2023	
PROJECT NO. STV6119	SCALE AT A3 1:5	LOCATION REFERENCE TP02		

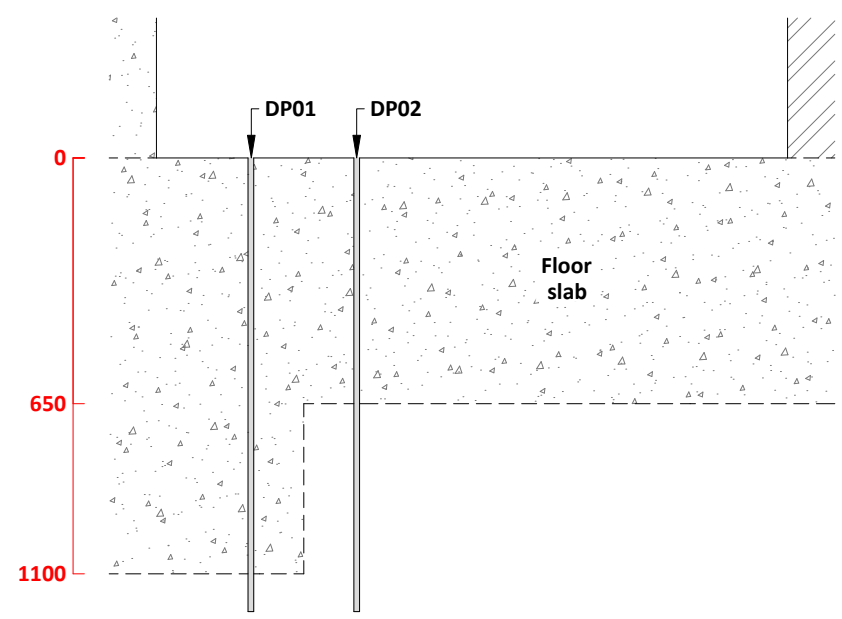




**Plan**



**Section A-A**



**Photographic records**



P1



P2

**Drill probe log**

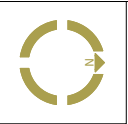
Location	Description
DP01	Concrete penetrated 1100mm depth, no further obstruction to 1200mm.
DP02	Concrete penetrated 650mm depth, no further obstruction to 1200mm.
DP03	Concrete penetrated 950mm depth, no further obstruction to 1200mm.
DP04	Concrete penetrated 500mm depth, no further obstruction to 800mm.
DP05 & DP06	Concrete penetrated 400mm depth, no further obstruction to 800mm.

- Observed features
- - - Assumed features
- Excavation outline
- P1** Location and orientation of photograph
- Concrete Brickwork
- Drill probe (plan and section views)

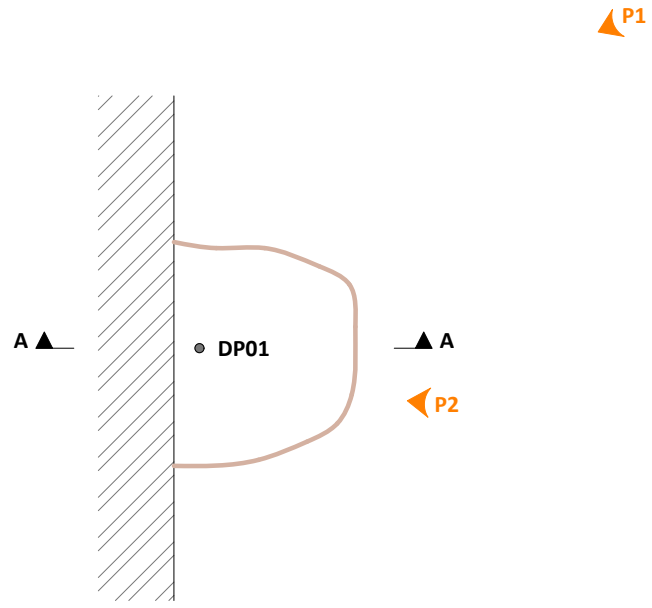
- Notes**
- Dimensions shown in millimetres.
  - No groundwater encountered.

A	First issue	RF	KD	18.08.2023
REV	DESCRIPTION	LOGD	PREP	DATE
 environmental • geotechnical • building fabric				
PROJECT Cefn Isaf, Merthyr Tydfil				
TITLE Trial pit record				
METHOD Hand tools			DATE OF WORKS 07.08.2023	
PROJECT NO. STV6119	SCALE AT A3 1:20	LOCATION REFERENCE TP03		

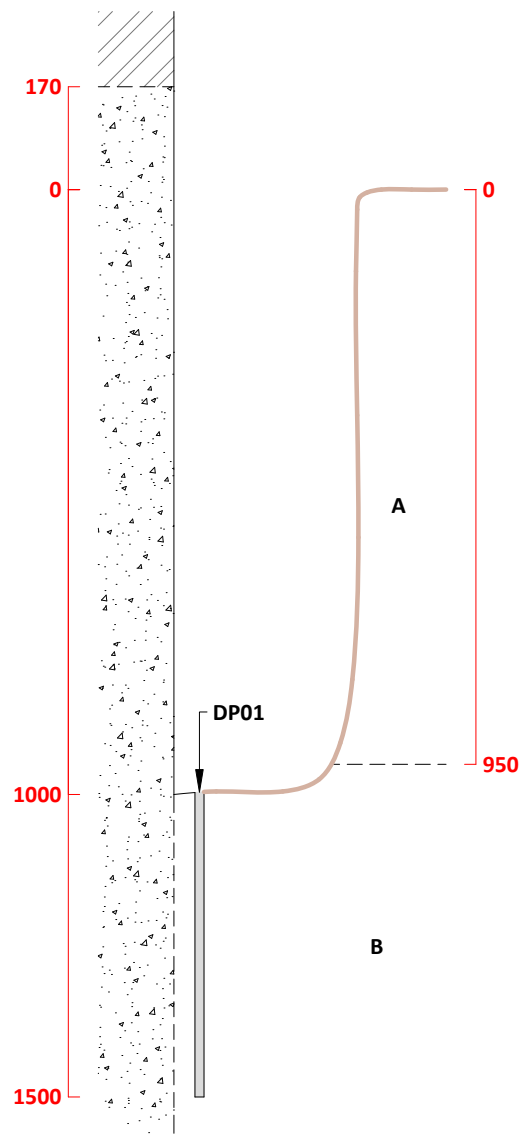




**Plan**



**Section A-A**



**Photographic records**



P1



P2

**Key:**

- A. Grey sandy slightly clayey fine to coarse subrounded to subangular GRAVEL of brick, concrete and metal. (MADE GROUND)
- B. COBBLES of concrete. (MADE GROUND)

- Observed features
- - - Assumed features
- Excavation outline
- P1 > Location and orientation of photograph

- Concrete
- Brickwork
- Drill probe (plan and section views)

- Notes**
1. Dimensions shown in millimetres.
  2. No groundwater encountered.

**Samples - Disturbed (D) / Environmental (ES) / Bulk (B)**

- 0.75 - ES

A	First issue	RF	KD	22.08.2023
REV	DESCRIPTION	LOGD	PREP	DATE

**soiltechnics**  
environmental • geotechnical • building fabric

PROJECT  
Cefn Isaf, Merthyr Tydfil

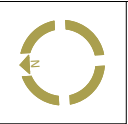
TITLE  
Trial pit record

METHOD  
Hand tools

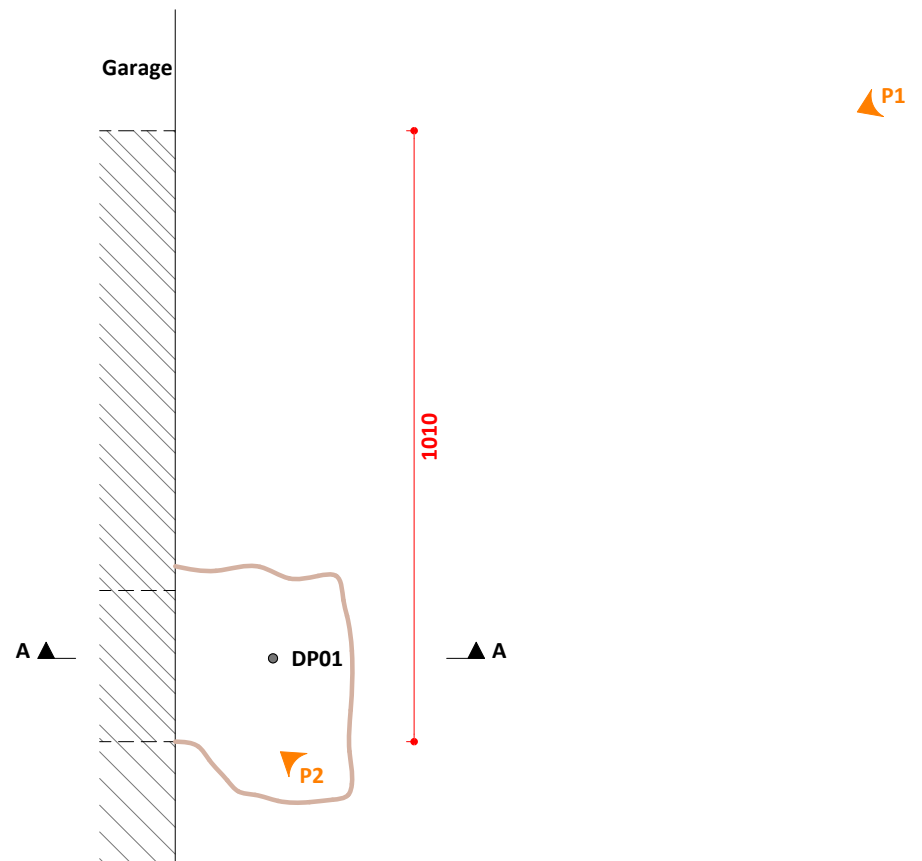
DATE OF WORKS  
03.08.2023

PROJECT NO. STV6119	SCALE AT A3 1:12.5	LOCATION REFERENCE TP04
------------------------	-----------------------	----------------------------

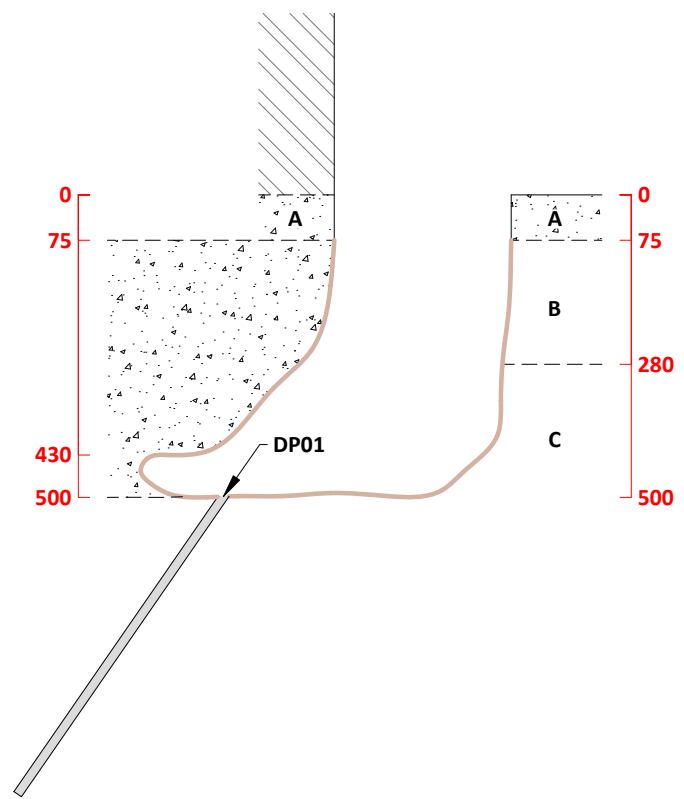




**Plan**



**Section A-A**



**Photographic records**



P1



P2

**Key:**

- A. Light grey unreinforced CONCRETE.
- B. Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to subangular concrete and brick. (MADE GROUND)
- C. Firm brown CLAY. (DEVENSIAN TILL)

- Observed features
- - - Assumed features
- Excavation outline

**P1** Location and orientation of photograph

- Concrete
- Brickwork
- Blockwork

Drill probe (plan and section views)

**Notes**

1. Dimensions shown in millimetres.
2. No groundwater encountered.

**Samples - Disturbed (D) / Environmental (ES) / Bulk (B)**

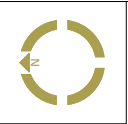
- 0.1 - ES
- 0.3 - D

REV	DESCRIPTION	LOGD	PREP	DATE
A	First issue	RF	KD	22.08.2023

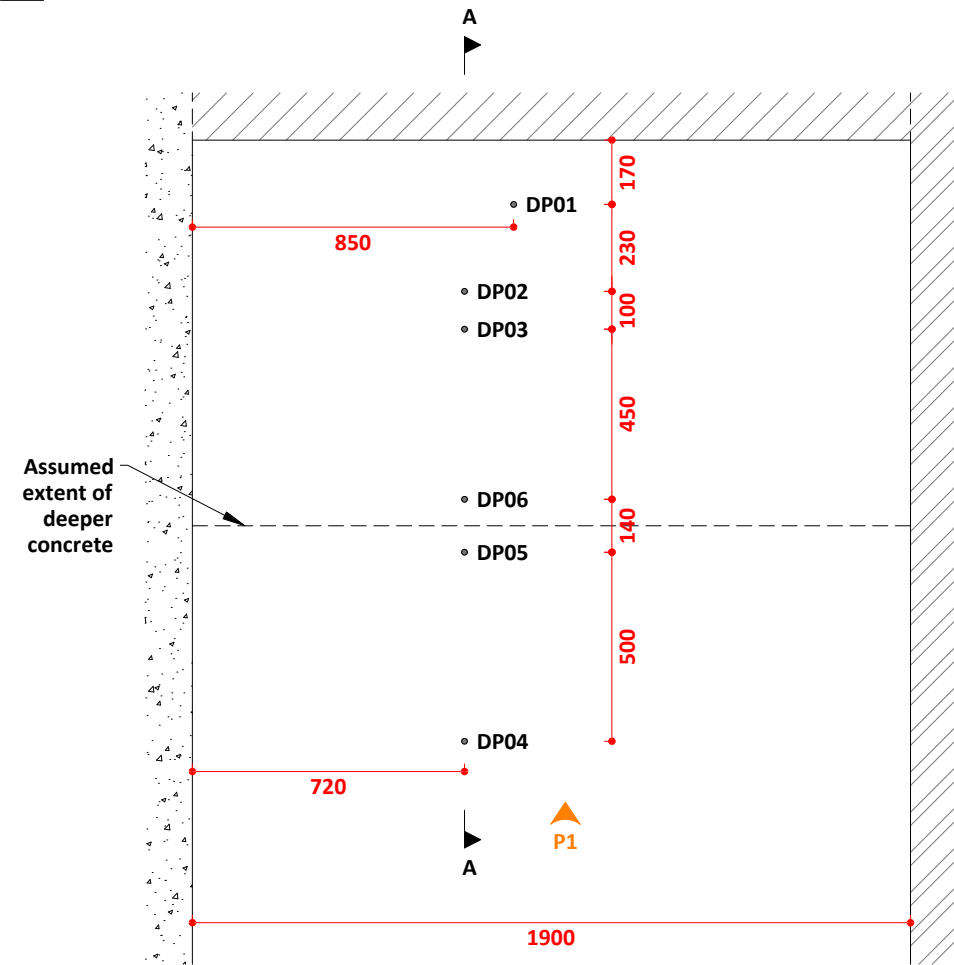
soiltechnics

environmental • geotechnical • building fabric

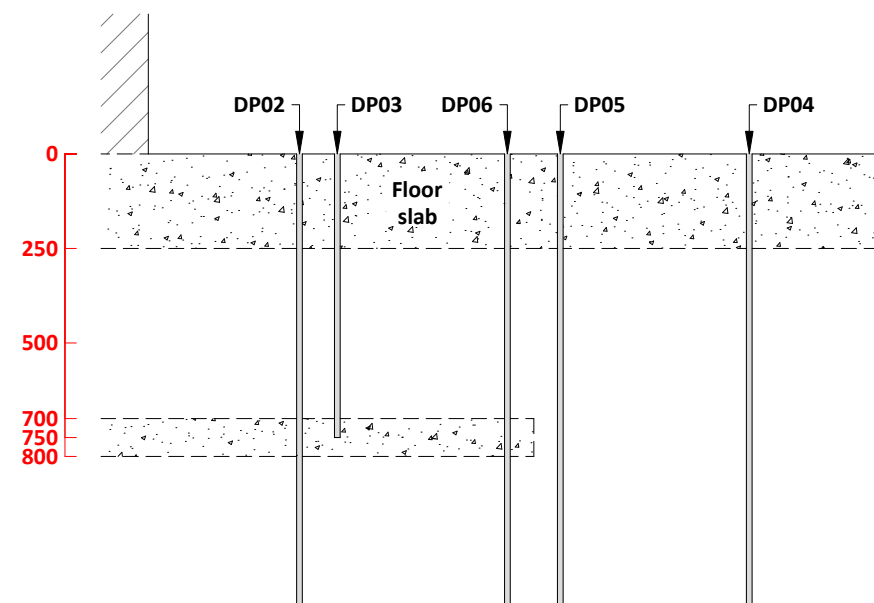
PROJECT Cefn Isaf, Merthyr Tydfil	
TITLE Trial pit record	
METHOD Hand tools	DATE OF WORKS 01.08.2023
PROJECT NO. STV6119	SCALE AT A3 1:12.5
LOCATION REFERENCE TP05	



**Plan**



**Section A-A**



**Photographic records**



P1

**Drill probe log**

Location	Description
DP01	Concrete penetrated 250mm depth, second layer of concrete between 700mm and 1050mm depths, no further obstruction to 1200mm.
DP02	Concrete penetrated 250mm depth, second layer of concrete between 700mm and 800mm depths, no further obstruction to 1200mm.
DP03	Concrete penetrated 250mm depth, second layer of concrete encountered at 700mm depth, terminated at 750mm depth due to suspected reinforcement bar.
DP04 & DP05	Concrete penetrated 250mm depth, no further obstruction to 1200mm.
DP06	Concrete penetrated 250mm depth, second layer of concrete between 500mm and 800mm depths, no further obstruction to 1200mm.

















Observed features  
 Assumed features  
 Excavation outline  
P1 ▶ Location and orientation of photograph  
 Brickwork  
  Blockwork  
  Concrete  
 Drill probe (plan and section views)

- Notes**
- Dimensions shown in millimetres.
  - No groundwater encountered.

A	First issue	RF	KD	18.08.2023
REV	DESCRIPTION	LOGD	PREP	DATE
<h1 style="margin: 0;">soiltechnics</h1> <p style="margin: 0; font-size: small;">environmental • geotechnical • building fabric</p>				
PROJECT Cefn Isaf, Merthyr Tydfil				
TITLE Trial pit record				
METHOD Hand tools			DATE OF WORKS 03.08.2023	
PROJECT NO. STV6119	SCALE AT A3 1:20	LOCATION REFERENCE TP06		

## **Appendix C    Exploratory Hole Logs: Boreholes**

## Key to legends

Composite materials, soils and lithology			
	Topsoil		Made Ground
	Clay		Coal
	Gravel		Limestone
	Sand		Sandstone
	Boulders		Mudstone
	Cobbles		Silt
	Chalk		Concrete
	Peat		Siltstone

Note: Composite soil types are signified by combined symbols.

## Key to 'test results' and 'sampling' columns

Test result		Sampling	
Depth	Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)	From (m) To (m)	Records depth of sampling
Result	PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m <sup>2</sup> ) by applying a factor of 50.	D	Disturbed sample
	SV – Hand held shear vane result reported as an undrained shear strength (kN/m <sup>2</sup> ). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.	B	Bulk disturbed sample
	SPT – Standard Penetration Test result (N value) (uncorrected) <sup>1,2,3</sup>	ES	Environmental sample
	SPT(c) – Standard Penetration Test result (solid cone) (N value) (uncorrected) <sup>1,2,3</sup>	W	Water sample
UT – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample	U	Undisturbed thick-walled sample 100mm diameter sampler	Type
	UT	Undisturbed thin walled sample 100mm diameter sampler	
		UTF	Failed undisturbed sample


Note 1: Seating blows recorded in brackets.

Note 2: Casing depth records depth of casing when SPT or SPT(c) was carried out.

Note 3: Water depth records depth of water when SPT or SPT(c) was carried out.









## Water observations

Described at foot of log and shown in the 'water strike' column.

 Water level observed after specified delay in drilling

 Water strike

## Installation details

	Gravel filter		Bentonite
	Slotted pipe		Unslotted pipe
	Arisings		Grout
	Extensometer magnet		Vibrating wire piezometer

## Density

Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).



INSTALL	STRATA				WATER STRIKES	CORING					SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		DEPTH (m)	TCR (%)	SCR (%)	RQD (%)	FI	TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Light grey unreinforced CONCRETE. (CONCRETE)	0.17																	
	Crushed aggregate [driller's description]. (MADE GROUND)	0.48																	
	Light brown medium SAND and GRAVEL of brick and concrete [driller's description]. (MADE GROUND)	0.70																	
	Slightly silty coarse SAND and GRAVEL with cobble [driller's description]. (DEVENSIAN TILL)	1.30														1.50	1.90	B	
	Brown gravelly silty SAND. Gravel is fine to medium subrounded to subangular sandstone. (DEVENSIAN TILL)					1.00 - 2.50	75	0	0										
						2.50 - 4.00	60	0	0										
	Grey sandy GRAVEL of fine to medium subrounded to subangular sandstone. (BISHOPSTON MUDSTONE FORMATION)	3.85														3.75	4.00	D	
	Medium strong light grey becoming grey thinly to medium bedded fine grained arenaceous SANDSTONE. (BISHOPSTON MUDSTONE FORMATION)	4.00				4.00 - 5.00	100	100	50										
	<i>...between 4.1m and 4.5m depth, vertically inclined closed fracture and medium spaced bedding fractures, 3mm - 5mm wide, clean.</i>																		
	<i>...between 5.4m and 6.5m depth, closely spaced bedding fractures, 5mm - 20mm wide, clean and widely spaced. Closed vertical fractures, faces are weathered brown.</i>					5.00 - 6.00	90	85	20							5.30		B	
	<i>...between 6.5m and 7m depth, very close clean bedding fractures.</i>																		
	<i>...between 7m and 7.25m depth, vertically inclined closed fracture.</i>																		
	<i>...between 7.5m and 8.15m depth, vertically inclined closed fractures occasional brown weathered surfaces.</i>																		
	<i>...between 8.6m and 9m depth, medium spaced, closed, clean bedding fractures.</i>					7.50 - 9.00	95	90	40							8.60		B	

CONTINUED ON NEXT SHEET

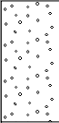

<b>Notes</b> Inspection pit excavated to 1.2m depth.	<b>Title</b> Borehole record		<b>Date(s)</b> 07/08/2023
	<b>Method</b> Comacchio 205	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 2
<b>Groundwater observations</b> Groundwater observations obscured by drilling techniques.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>BH01</b>




INSTALL	STRATA				WATER STRIKES	CORING					SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		DEPTH (m)	TCR (%)	SCR (%)	RQD (%)	FI	TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	PAVING SLAB (MADE GROUND) Firm black slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to subangular concrete and brick. (MADE GROUND)	0.05																	
	Orangish brown gravelly silty SAND. Gravel is fine to medium subrounded to angular sandstone. Suspected cobbles throughout. (DEVANSIAN TILL)	1.10				0.00 - 1.20	35	0	0							0.90		ES	
						1.20 - 2.70	60	0	0							1.90		B	
						2.70 - 3.00	90	0	0							2.90 3.00	8.00	B B	
	Orangish brown sand and cobbles recovered as GRAVEL of fine to coarse subrounded to subangular sandstone [driller's description]. Poor recovery, assumed Devensian Till. (DEVANSIAN TILL)	4.10				3.00 - 8.00	0	0	0										
	Strong grey sandstone recovered as GRAVEL of fine to coarse sub angular sandstone	8.55				8.00 - 8.50	50	10	0							8.40		D	
					8.50 - 9.00	55	30	0											

CONTINUED ON NEXT SHEET

<b>Notes</b>	<b>Title</b> Borehole record	<b>Date(s)</b> 07/08/2023
	<b>Method</b> Rotary core	<b>Logged by</b> RF
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM
	<b>Co-ordinates</b> -	<b>Checked by</b> SC
		<b>Sheet number</b> Sheet 1 of 2
		<b>Revision</b> A
		<b>BH02</b>

INSTALL	STRATA				WATER STRIKES	CORING					SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		DEPTH (m)	TCR (%)	SCR (%)	RQD (%)	FI	TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	with occasional pockets of fine gravelly clay. <b>(BISHOPSTON MUDSTONE FORMATION)</b> <i>...at 8.6m depth, suspected cobbles of sandstone.</i>	9.50			9.00 - 10.00	10	0	0											
	<i>...at 8.8m depth, suspected cobbles of sandstone.</i> Recovered as fine to coarse subrounded to subangular GRAVEL of sandstone <b>(BISHOPSTON MUDSTONE FORMATION)</b>																		
	BOREHOLE TERMINATED AT 10.00m																		

<b>Notes</b>	<b>Title</b> Borehole record	<b>Date(s)</b> 07/08/2023	
	<b>Method</b> Rotary core	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 2 of 2
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>BH02</b>

INSTALL	STRATA				WATER STRIKES	CORING					SPT TESTING			OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		DEPTH (m)	TCR (%)	SCR (%)	RQD (%)	FI	TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)
	Grass onto firm brown slightly gravelly organic CLAY. Gravel is fine to medium subrounded to subangular sandstone. (TOPSOIL)	0.30																
	Firm brown slightly gravelly CLAY. Gravel is fine to medium subrounded to subangular sandstone and brick. (MADE GROUND) ...at 0.55m depth, concrete obstruction. BOREHOLE TERMINATED AT 0.55m	0.55																

<b>Notes</b> Borehole terminated due to concrete obstruction.	<b>Title</b> Borehole record	<b>Date(s)</b> 07/08/2023	
	<b>Method</b> Hand tools	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>BH03A</b>

INSTALL	STRATA			WATER STRIKES	CORING					SPT TESTING			OTHER IN SITU TESTING		SAMPLING			
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)		LEGEND	DEPTH (m)	TCR (%)	SCR (%)	RQD (%)	FI	TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)
	Grass onto firm brown slightly gravelly organic CLAY. Gravel is fine to medium subrounded to subangular sandstone. (TOPSOIL) <i>...at 0.55m depth, concrete obstruction.</i> BOREHOLE TERMINATED AT 0.55m	0.55																

<b>Notes</b> Borehole terminated due to concrete obstruction.	<b>Title</b> Borehole record	<b>Date(s)</b> 07/08/2023	
	<b>Method</b> Hand tools	<b>Logged by</b> RF	<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> No groundwater encountered.	<b>Level (m OD)</b> -	<b>Compiled by</b> AM	<b>Revision</b> A
	<b>Co-ordinates</b> -	<b>Checked by</b> SC	<b>BH03B</b>



INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Made ground (Topsoil) [driller's description]. (TOPSOIL)	0.20												
	Crushed aggregates [driller's description]. (MADE GROUND)	0.40												
	Crushed aggregates. Blackish grey sand and gravel, brick and cobbles [driller's description]. (MADE GROUND)	1.00									1.00			ES
	Dark grey sandy GRAVEL of fine to medium subrounded to subangular limestone. (MADE GROUND)	1.70									1.80			D
	Medium to coarse subrounded to subangular GRAVEL of limestone, concrete and brick. (MADE GROUND)	2.00									2.25			ES
Soft dark grey slightly gravelly sandy CLAY. Gravel is fine to medium subrounded to subangular sandstone. (MADE GROUND)	3.30									3.50	4.00		B	
Orangish brown gravelly clayey SAND. Gravel is fine to medium subrounded to subangular sandstone. (DEVANSIAN TILL)	4.00													
BOREHOLE TERMINATED AT 4.00m														

<b>Notes</b> Inspection pit excavated to 1.0m depth.	<b>Title</b> Dynamic Windowless Sampling record			<b>Date(s)</b> 07/08/2023 - 08/08/2023		
	<b>Recovery details</b>		<b>Method</b> Windowless sampling	<b>Logged by</b> RF		<b>Sheet number</b> Sheet 1 of 1
<b>Groundwater observations</b> No groundwater encountered.	1.00 - 2.50	70		<b>Level (m OD)</b> -	<b>Compiled by</b> AM	
	2.50 - 4.00	40	<b>Co-ordinates</b> -		<b>Checked by</b> SC	

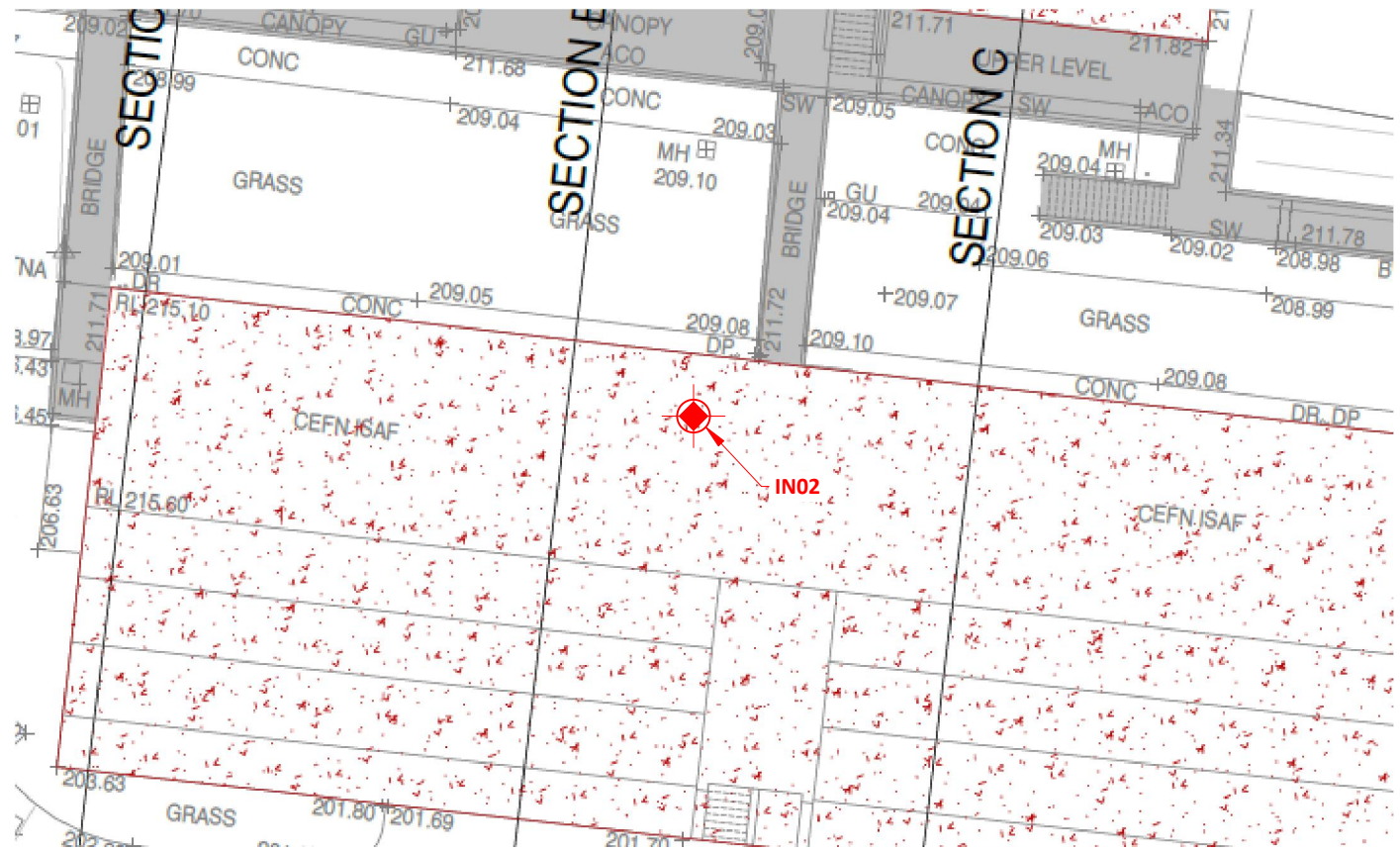
## **Appendix D    Exploratory Hole Logs: Concrete Cores**



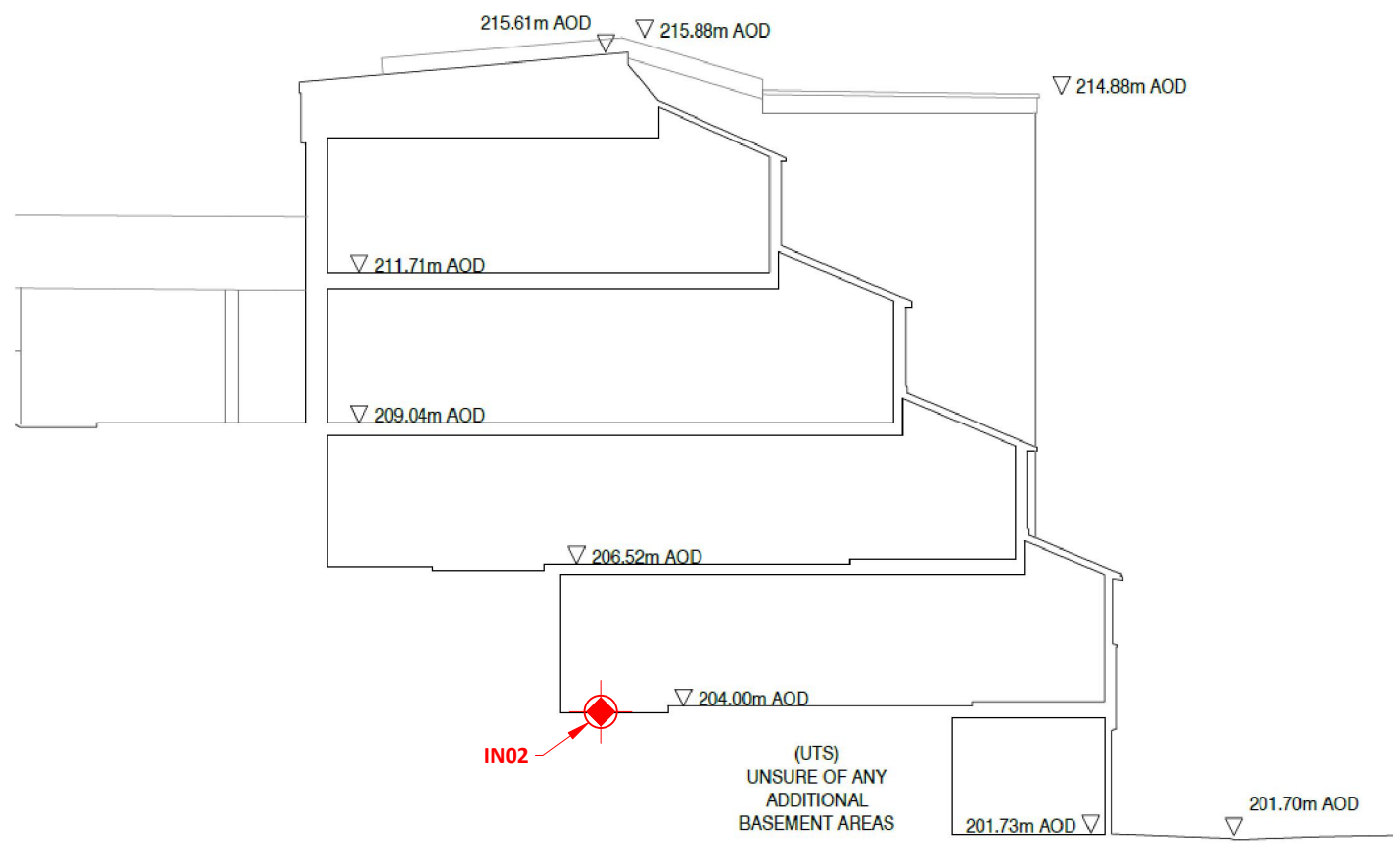




Plan: (Not to scale)



Section: (Not to scale)

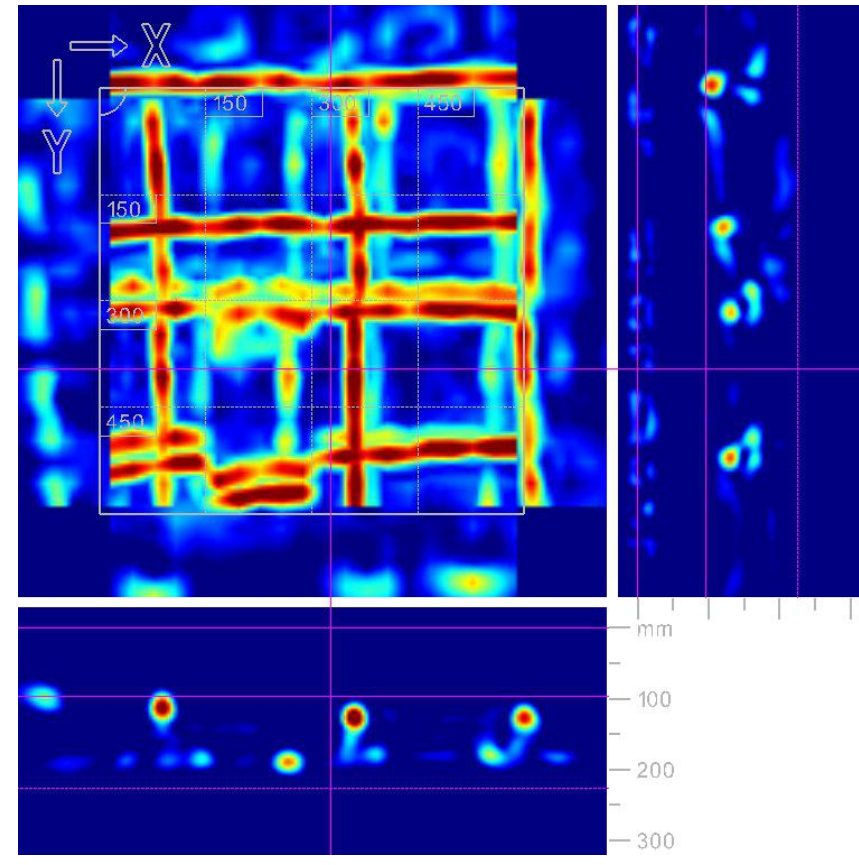


Concrete core log

Depth (mm)	Description
0 - 300	Light grey reinforced CONCRETE. Aggregates up to 20mm diameter. <2% air voids up to 5mm diameter. 15mm reinforcement bar located at 90mm depth. 25mm reinforcement bar located at 150mm depth.
Corehole terminated at 0.3m depth, encountering Made Ground of sands and gravels at base	

Scan analysis:

Reinforcement at 100-150mm depth with 200-230mm centres.



Notes

- 100mm diameter core barrel used.

A	First issue	RF	KD	05.09.2023
REV	DESCRIPTION	LOGD	PREP	DATE

**soiltechnics**  
environmental • geotechnical • building fabric

PROJECT  
Cefn Isaf, Merthyr Tydfil

TITLE  
Floor scan investigation

METHOD  
Diamond tipped core barrel and Hilti PS1000 scan

DATE OF WORKS  
08.08.2023

PROJECT NO.  
STV6119

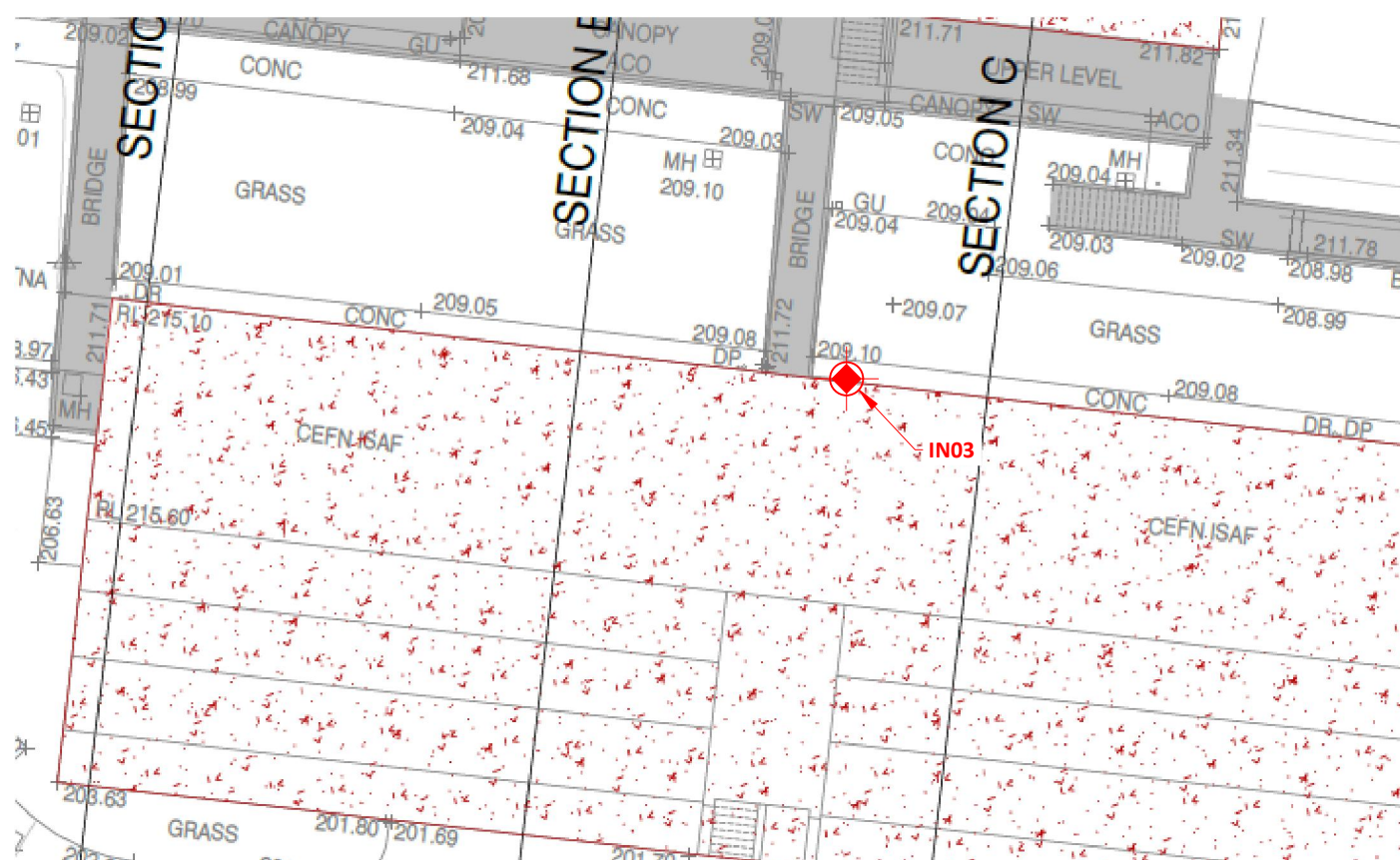
SCALE AT A3  
Not to scale

LOCATION REFERENCE  
IN02

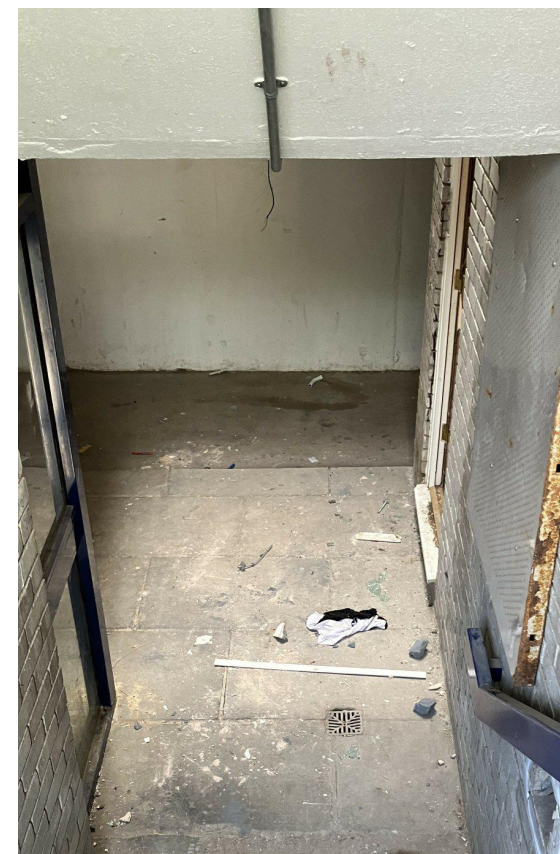
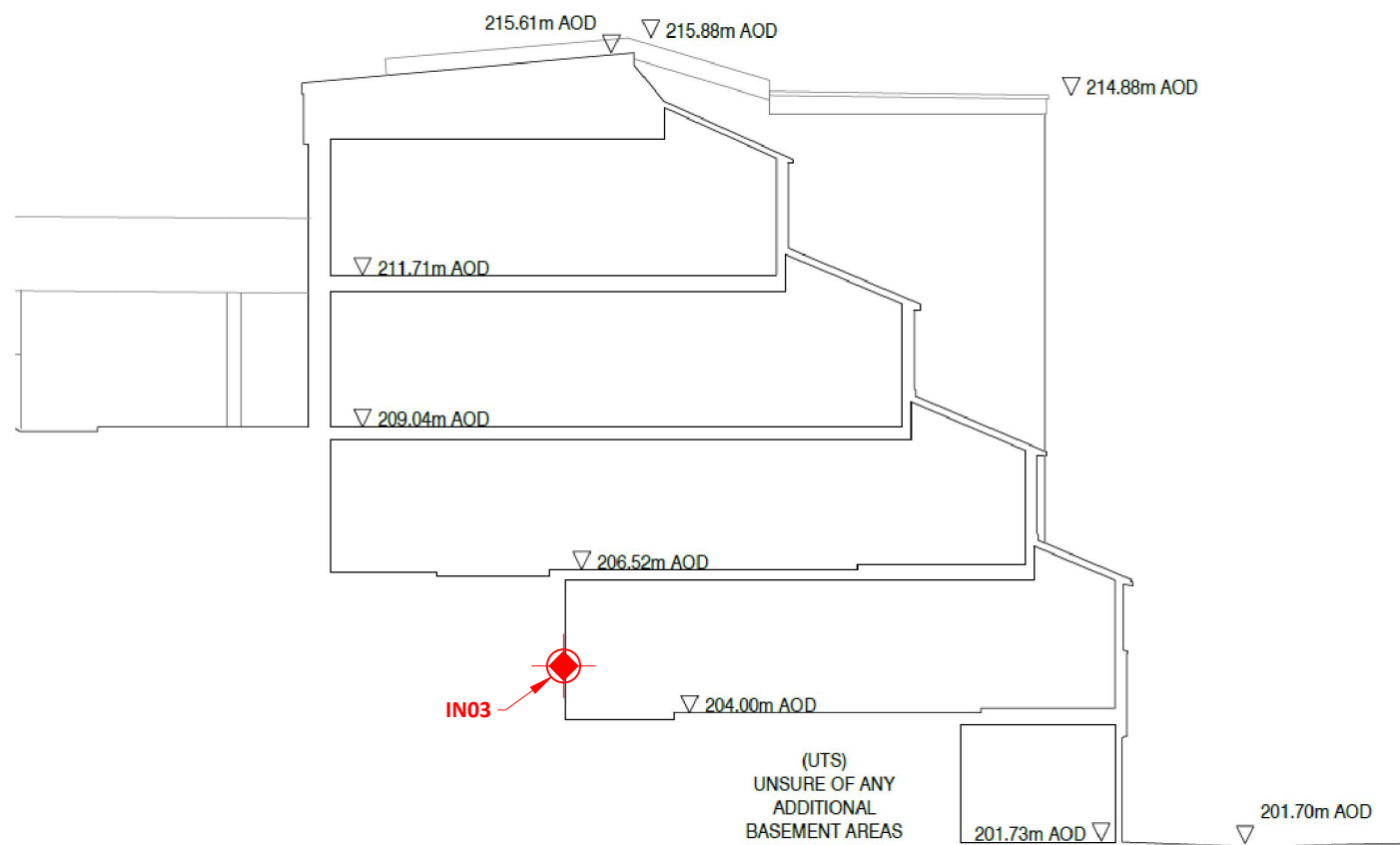




Plan: (Not to scale)

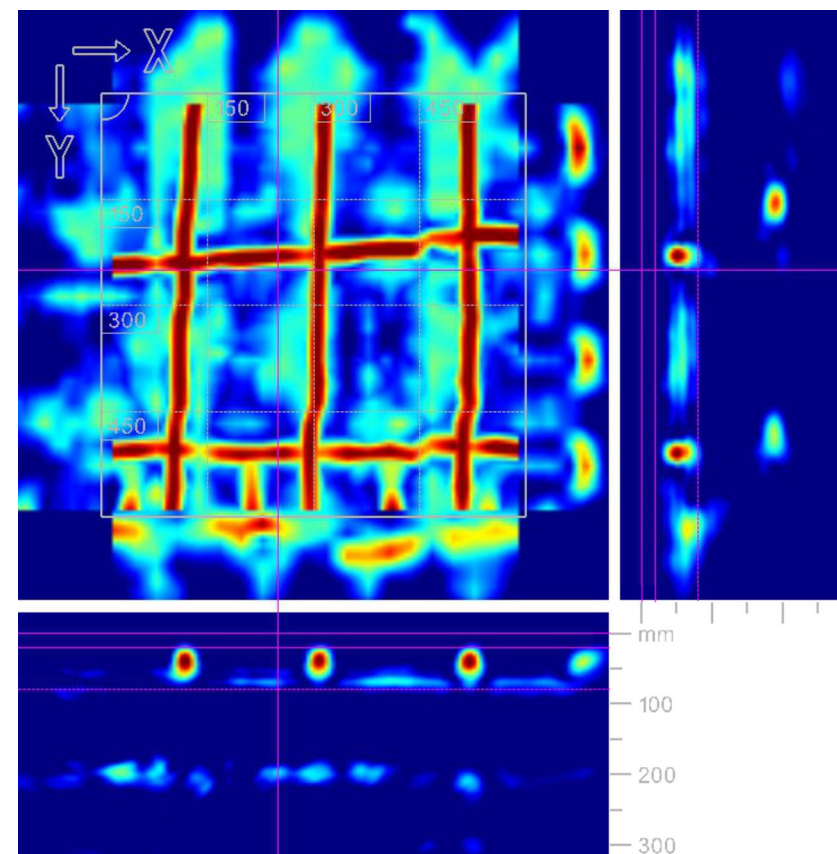


Section: (Not to scale)



Concrete core log

Depth (mm)	Description
0 - 245	Grey reinforced CONCRETE. Aggregates up to 15mm diameter. <2% air voids up to 2mm diameter. 20mm reinforcement bar located at 50mm and 165mm depths.
Corehole terminated at 0.245m depth, encountering soils, Suspected Made Ground at base	



Scan analysis:

Reinforcement at 40mm to 50mm depth. Centres at 200mm to 240mm.

Notes

- 100mm diameter core barrel used.

A	First issue	RF	KD	05.09.2023
REV	DESCRIPTION	LOGD	PREP	DATE

**soiltechnics**  
environmental • geotechnical • building fabric

PROJECT  
Cefn Isaf, Merthyr Tydfil

TITLE  
Floor scan investigation

METHOD  
Diamond tipped core barrel and Hilti PS1000 scan

DATE OF WORKS  
08.08.2023

PROJECT NO.  
STV6119

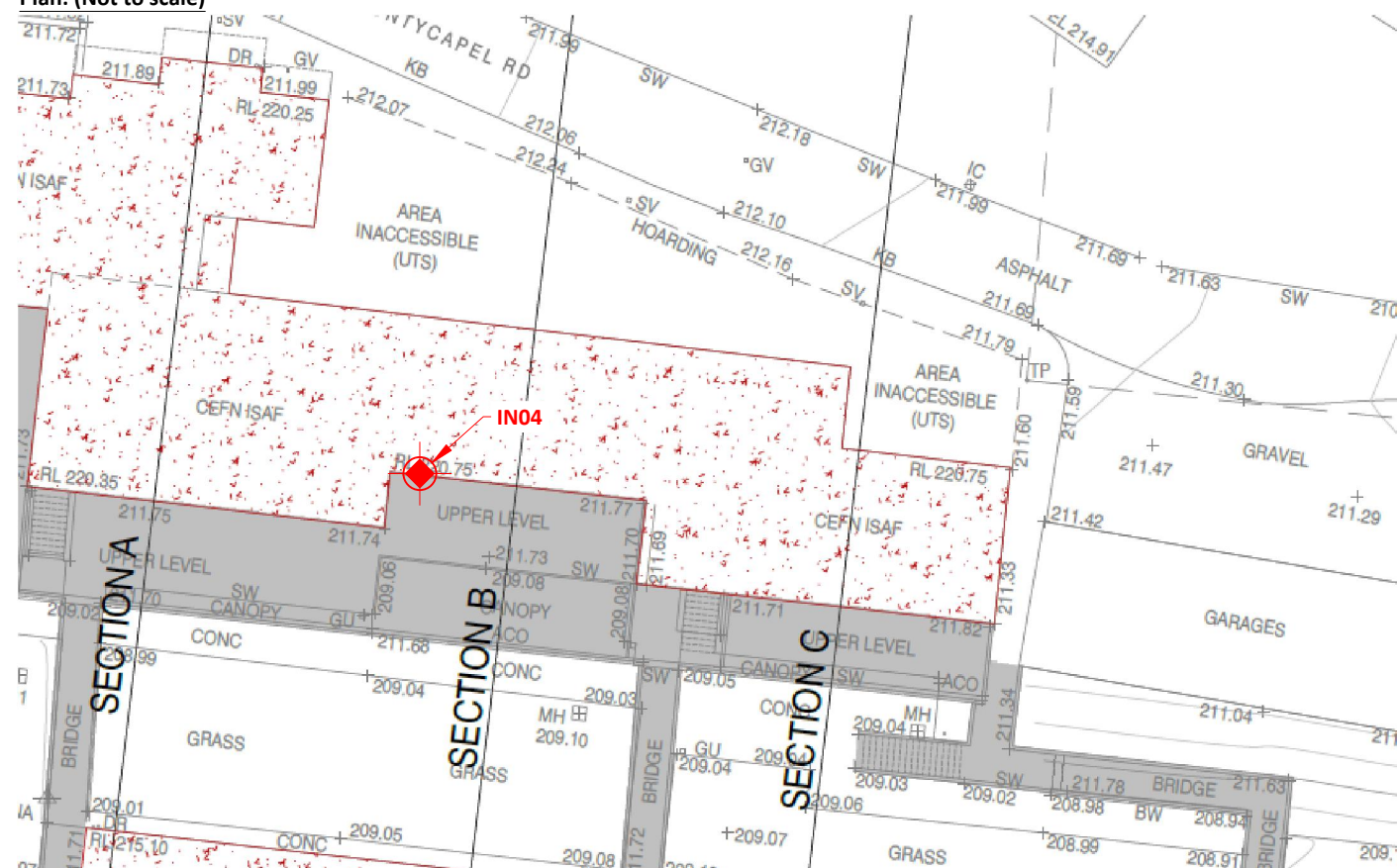
SCALE AT A3  
Not to scale

LOCATION REFERENCE  
IN03

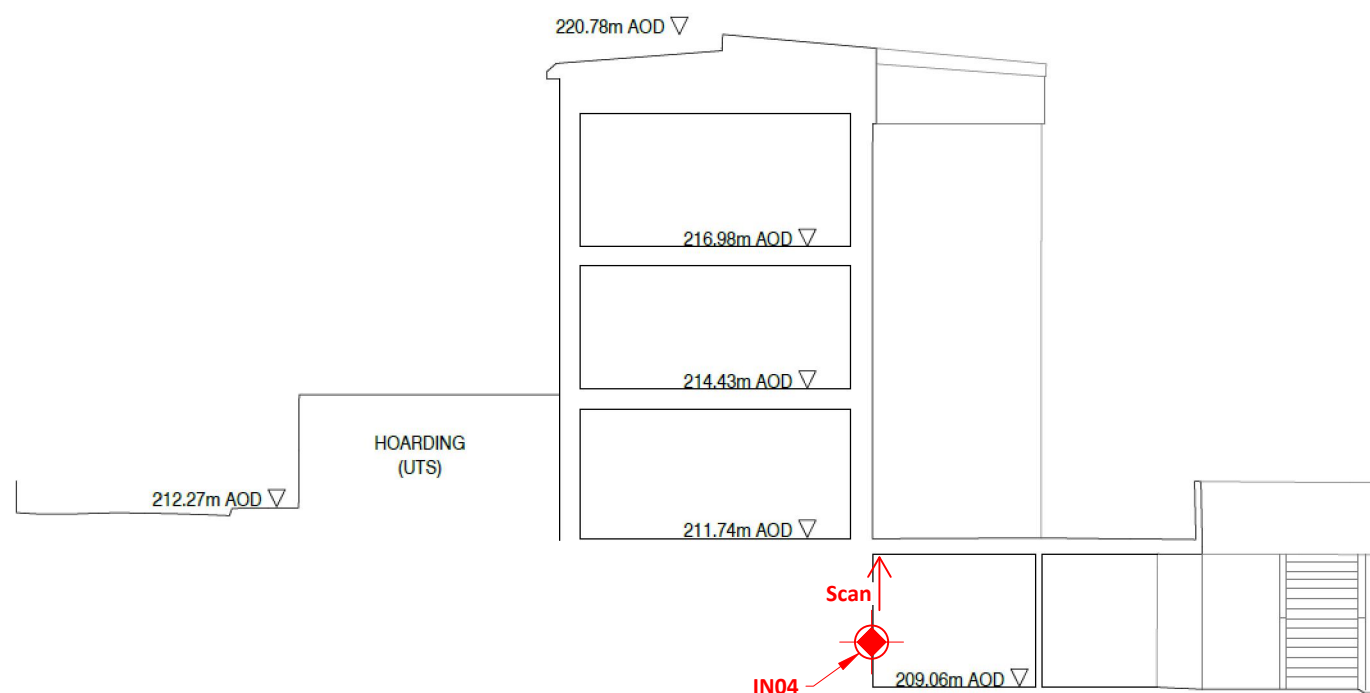




Plan: (Not to scale)

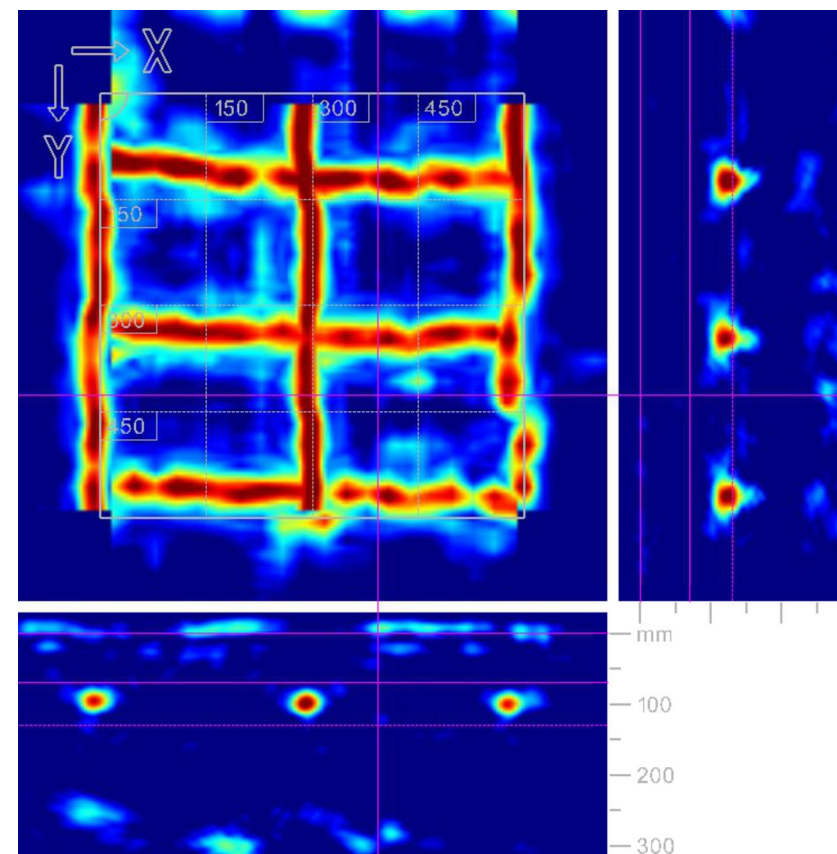


Section: (Not to scale)



Concrete core log

Depth (mm)	Description
0 - 240	Brown reinforced CONCRETE. Aggregates up to 15mm diameter. <2% air voids up to 2mm diameter. 15mm reinforcement bar located at 80mm depth. 10mm reinforcement bar located at 90mm and 185mm depths.
Corehole terminated at 0.24m depth, encountering suspected Made Ground at base.	



Scan analysis:

Reinforcement at 300mm and 200mm centres at a depth of ~80-100mm.

Notes

- 100mm diameter core barrel used.

A	First issue	RF	KD	05.09.2023
REV	DESCRIPTION	LOGD	PREP	DATE
 environmental • geotechnical • building fabric				
PROJECT Cefn Isaf, Merthyr Tydfil				
TITLE Floor scan investigation				
METHOD Diamond tipped core barrel and Hilti PS1000 scan			DATE OF WORKS 08.08.2023	
PROJECT NO. STV6119	SCALE AT A3 Not to scale	LOCATION REFERENCE IN04		

## **Appendix E      Photographic Records**



**P1:** Photograph showing BH01 Location



**P2:** Photograph showing Concrete encountered in BH01



Title

Photographic records of boreholes

Photo sheet number

P3

Appendix

E

**P3:** Photograph showing BH01, 1.0m – 4.0m



**P4:** Photograph showing BH01, 4.0m – 5.0m



Title

Photographic records of boreholes

Photo sheet number

P3

Appendix

E

**P5:** Photograph showing BH01, 5.0m – 7.5m



**P6:** Photograph showing BH01, 7.5m – 10.5m



Title

Photographic records of boreholes

Photo sheet number

P3

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E



**P7:** Photograph showing BH01, 10.5m – 13.5m



**P8:** Photograph showing BH01, 13.5m – 15.0m



Title

Photographic records of boreholes

Photo sheet number

P3

Appendix

E

**P9:** Photograph showing BH02, 0.0m – 3.03m



**P10:** Photograph showing BH02, 3.0m - 9.0m



Title

Photographic records of boreholes

Photo sheet number

P3

Appendix

E



**P11:** Photograph showing BH02, 8.0m – 10.0m



**P12:** Photosheet showing BH04, 1.0m – 4.0m



Title

Photographic records of boreholes

Photo sheet number

P3

Appendix

E

**P1:** Photograph showing Eastern end of central courtyard



**P2:** Photograph showing North Eastern site boundary



Title

Photographic records of the general site

Photo sheet number

P1

Appendix

E



**P3:** Photograph showing western site of central courtyard



**P4:** Photograph showing Northern courtyard looking west



Title

Photographic records of the general site

Photo sheet number

P1

Appendix

E

**P5:** Photograph showing western boundary fencing



**P6:** Photograph showing garages located on sites northeastern boarder



Title

Photographic records of the general site

Photo sheet number

P1

Appendix

E



**P7:** Photograph showing access road running along site western boundary



**P8:** Photograph showing southern carpark area



Title

Photographic records of the general site

Photo sheet number

P1

Appendix

E



**P1:** Photograph showing TP01 Location



**P2:** Photograph showing TP01, service tape



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E

**P3:** Photograph show TP01B Location



**P4:** Photograph showing concrete obstruction at base of TP01B



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E



**P5:** Photograph showing TP03 Location



**P6:** Photograph showing location of TP04



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E

**P7:** Photograph showing TP04



**P8:** Photograph showing TP05 Location



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E



**P9:** Photograph showing TP05



**P10:** Photograph of TP06 Location



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E

**P11:** Photograph showing TP07 Location



**P12:** Photograph showing gas main encountered in TP07



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E

**P13:** Photograph showing TP08 during soakaway testing



Title

Photographic records of Trial Pits

Photo sheet number

P2

Appendix

E

## **Appendix F     Dynamic Cone Penetrometer Results**



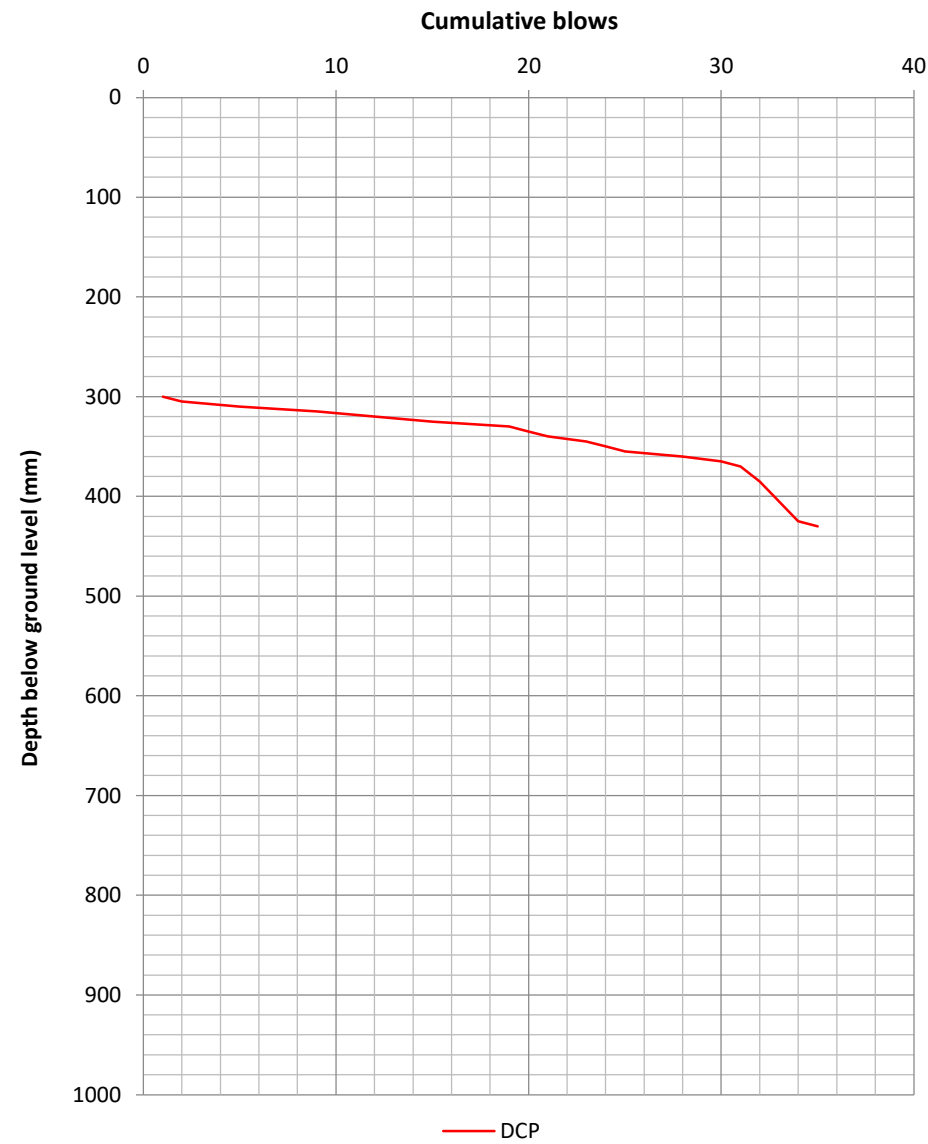
## Dynamic Cone Penetrometer (DCP) summary

Location	Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
DCP01	1	105.3	65	285	350
DCP01	2	37.1	80	350	430
DCP02	1	2.3	200	0	200
DCP03	1	10.6	190	0	190
DCP04	1	1.7	200	0	200
DCP04	2	13.1	185	200	385

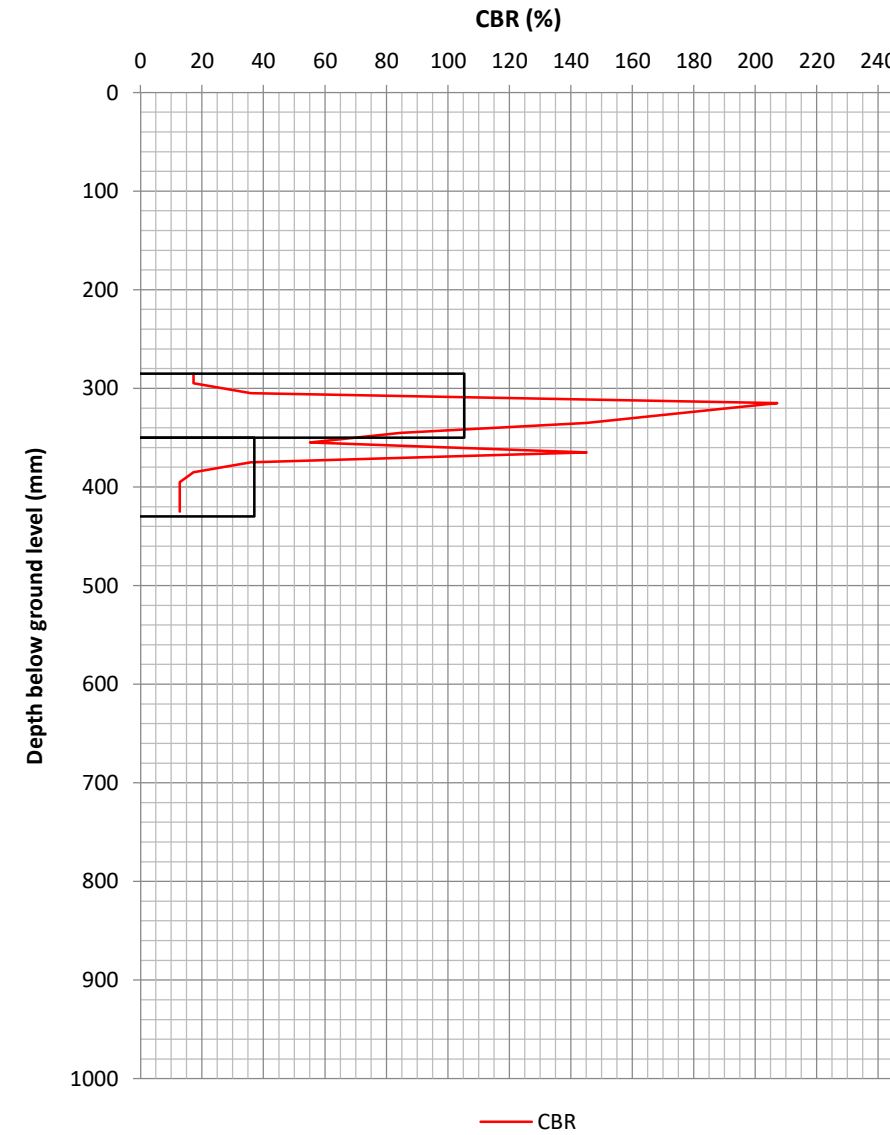
## Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP01	08/08/2023	285	340	RF

### Plot showing number of blows against depth



### Plot showing CBR (%) against depth



### Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	105.3	65	285	350
2	37.1	80	350	430

### Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

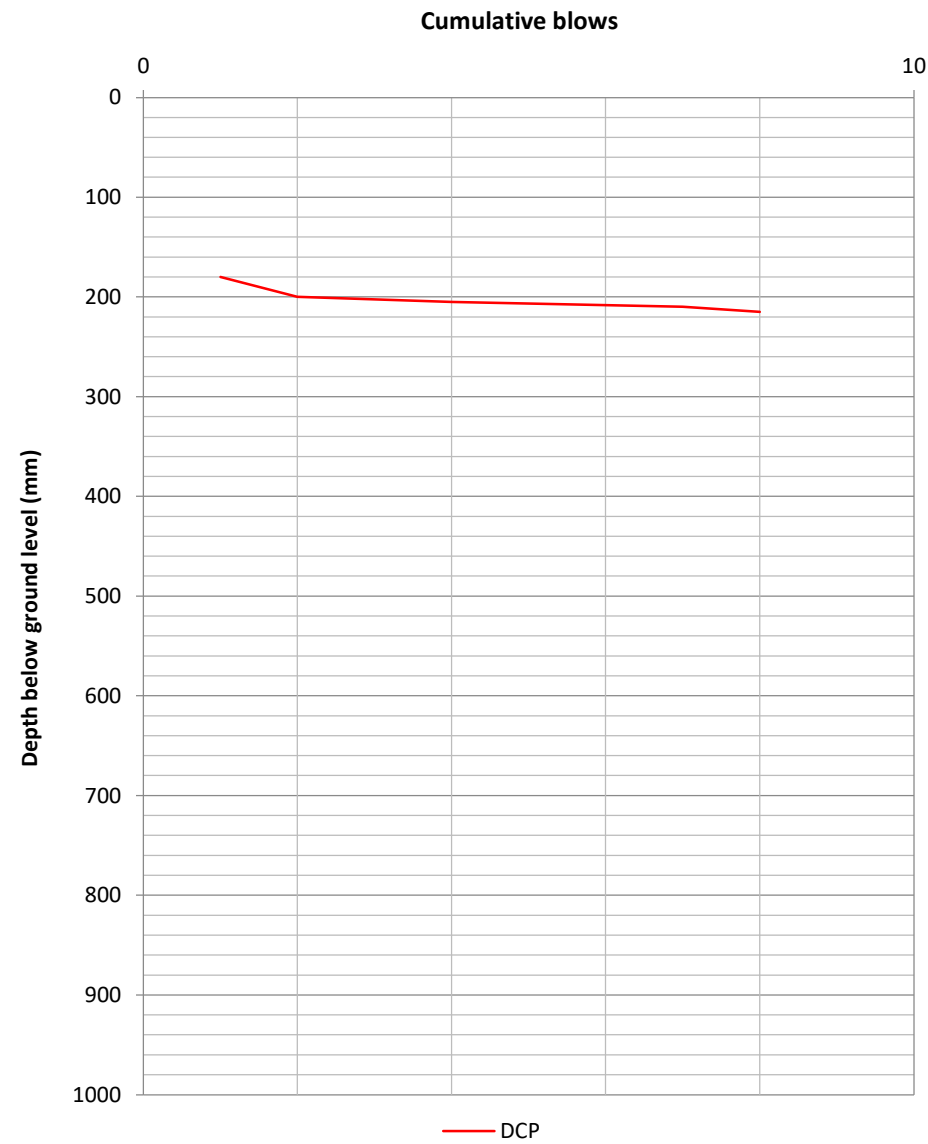
### Calculations

$$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$$

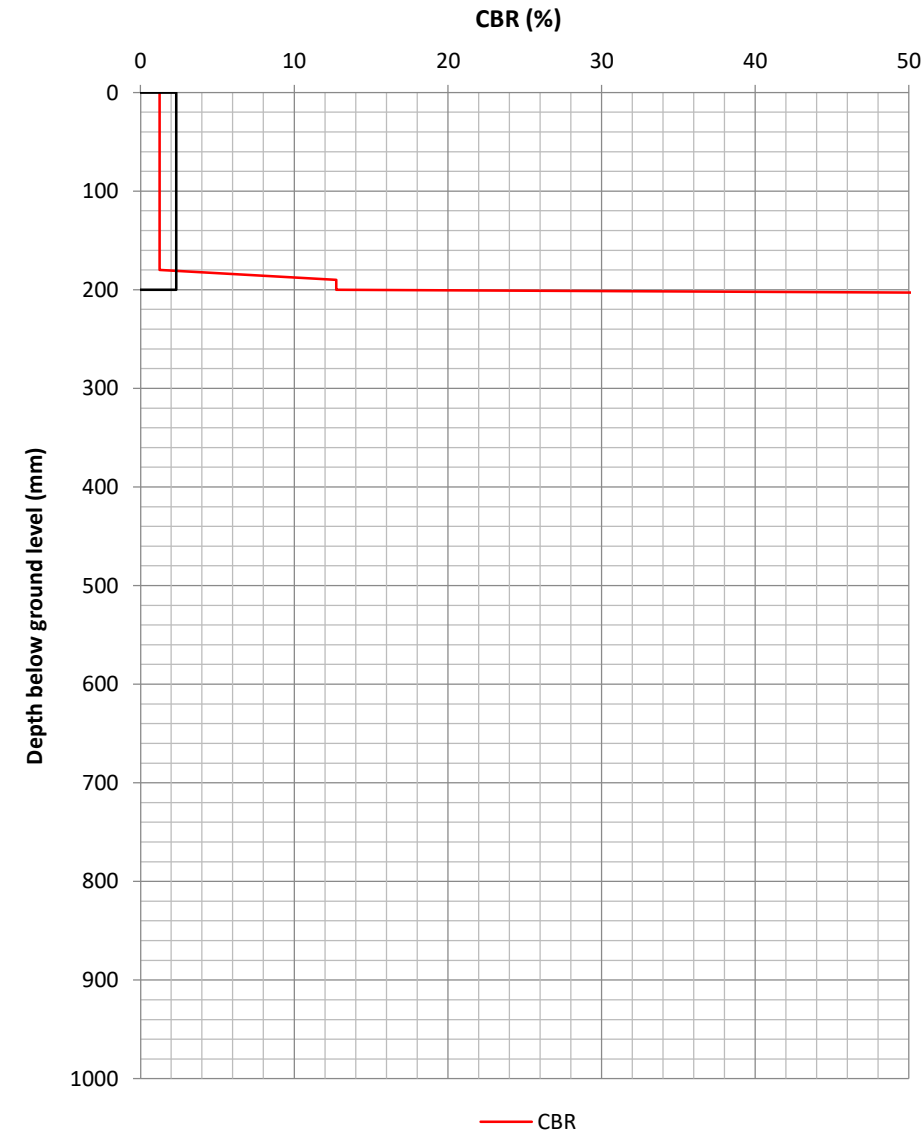
## Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02	08/08/2023	0	85	RF

### Plot showing number of blows against depth



### Plot showing CBR (%) against depth



### Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	2.3	200	0	200

### Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.
2. Refusal on assumed concrete obstruction.

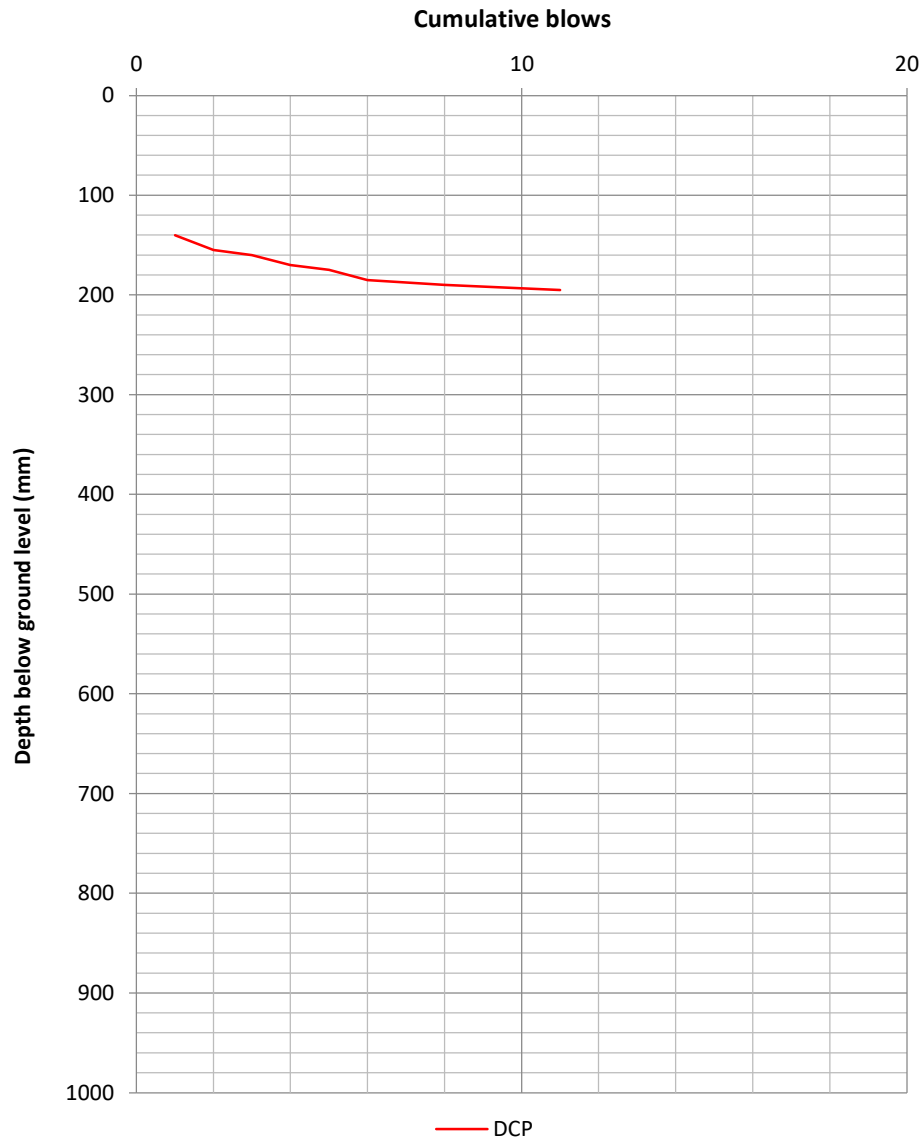
### Calculations

$$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$$

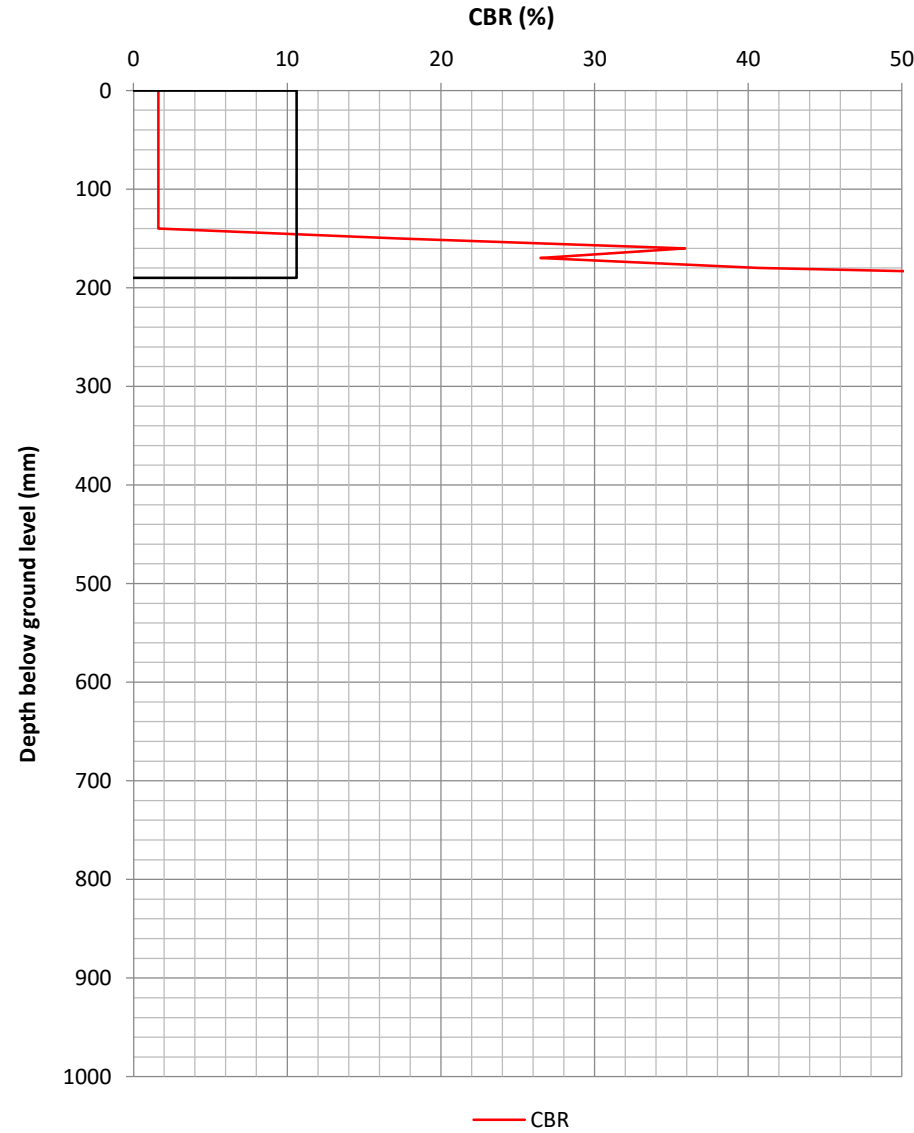
### Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03	08/08/2023	0	55	RF

#### Plot showing number of blows against depth



#### Plot showing CBR (%) against depth



#### Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	10.6	190	0	190

#### Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

#### Calculations

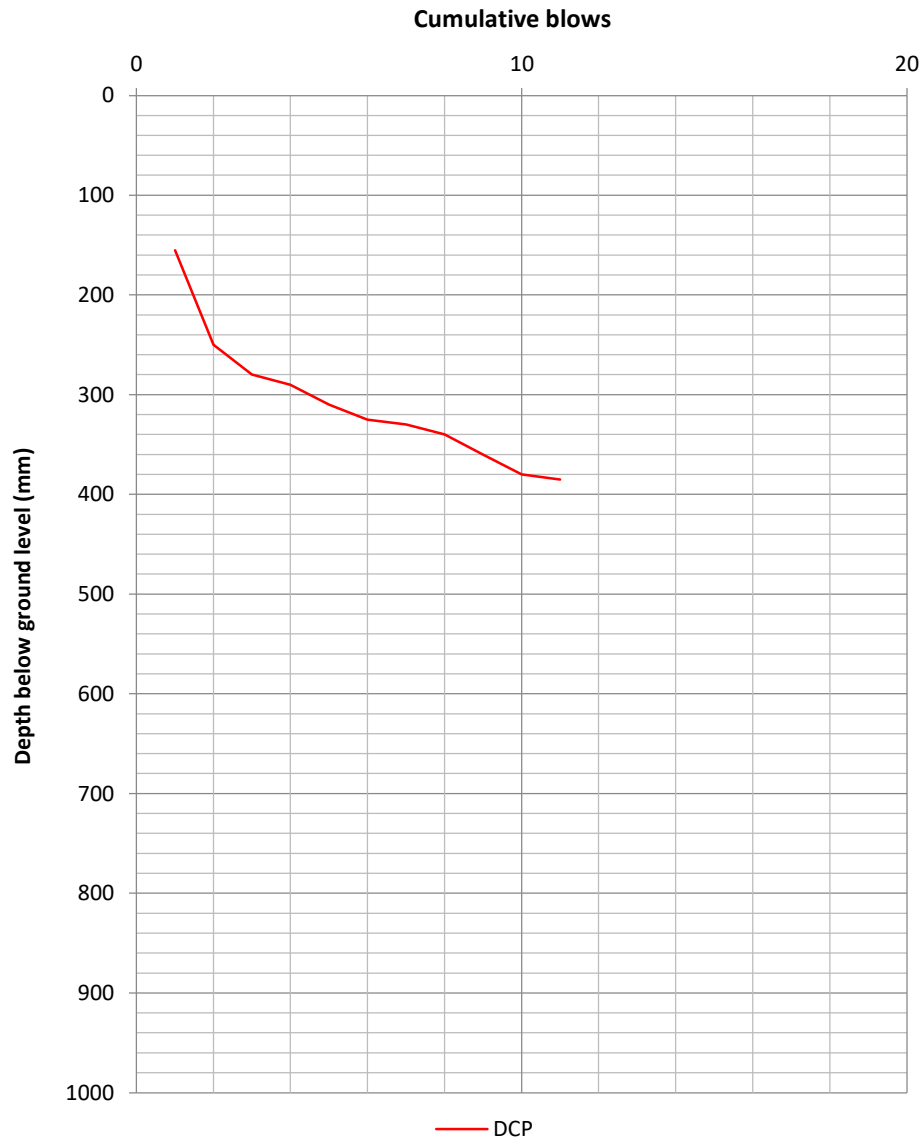
$$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$$



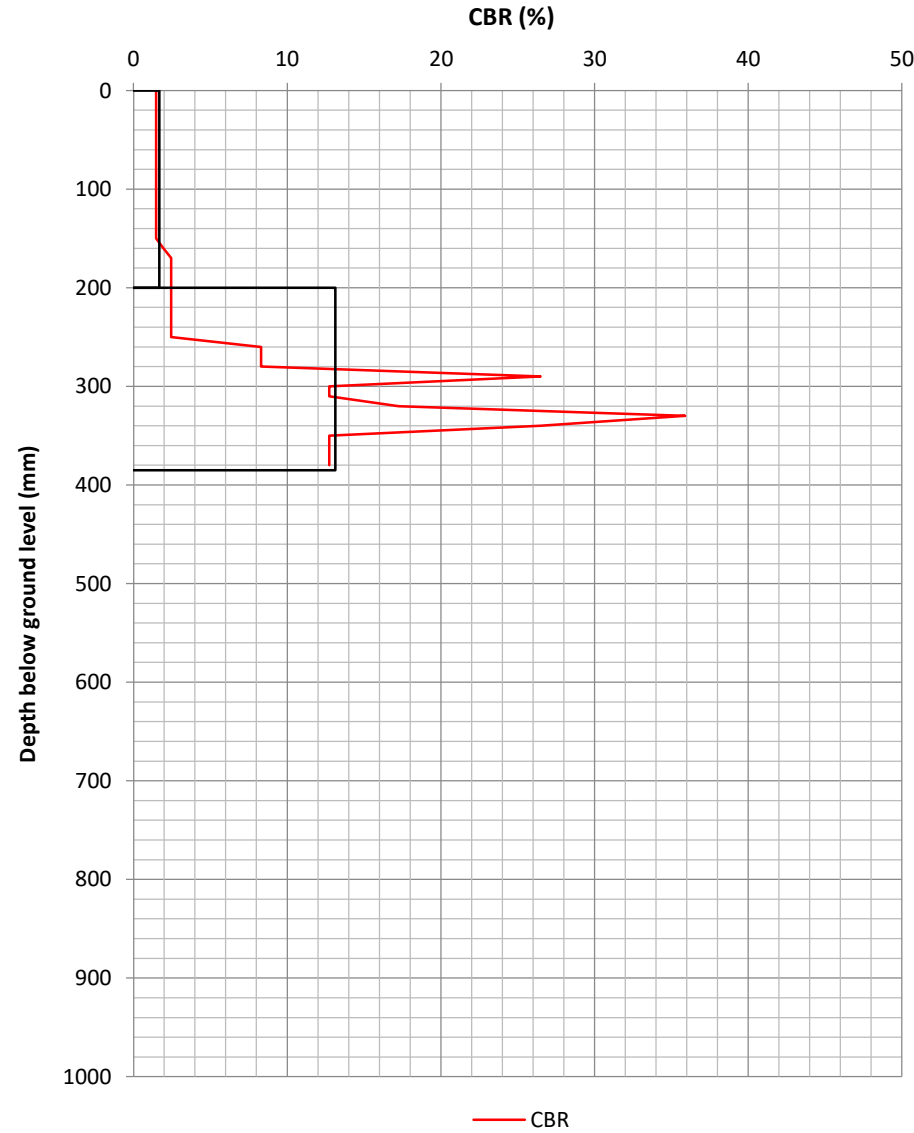
### Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04	08/08/2023	0	110	RF

#### Plot showing number of blows against depth



#### Plot showing CBR (%) against depth



#### Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	1.7	200	0	200
2	13.1	185	200	385

#### Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

#### Calculations

$$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$$

## **Appendix G    In situ Permeability Testing Results**

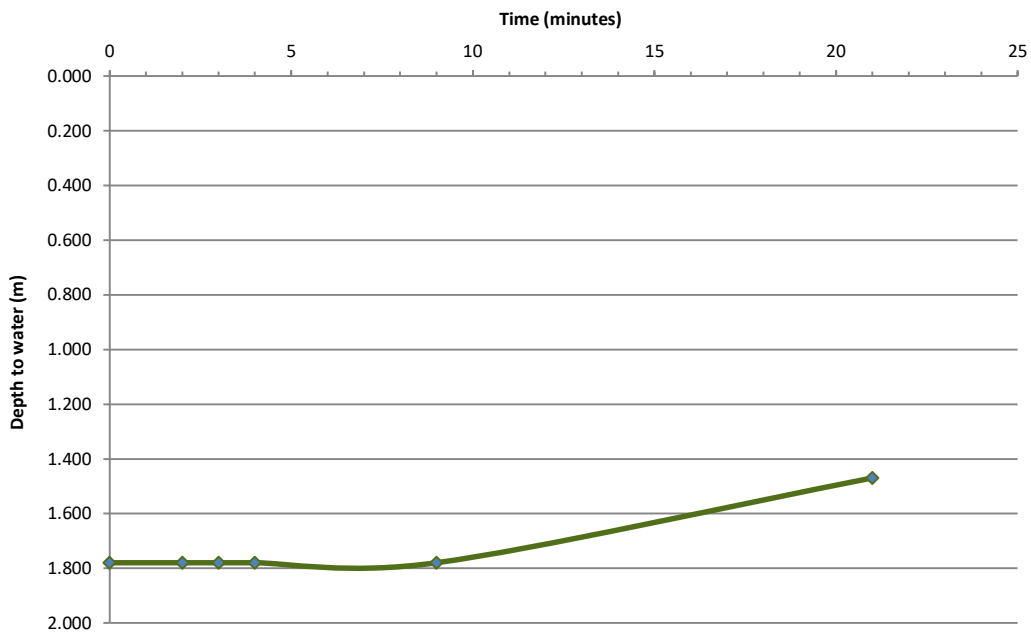
### Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
TP08	1	01/08/2023	0.80 x 2.10

#### Groundwater observations (at time of excavation)

Small accumulation of groundwater at base of trial pit.

Depth of pit at start (m)	Depth of pit at end (m)
2.1	2.1



Test abandoned due to rising water level caused by collapse of trial pit sides.

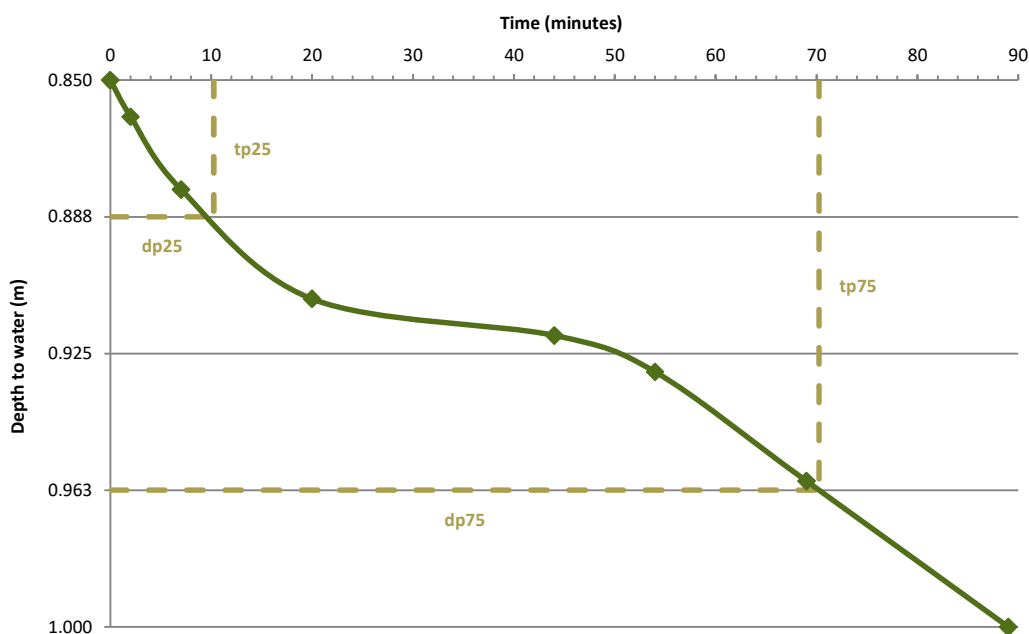
## Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
TP09	1	01/08/2023	0.75 x 1.40

### Groundwater observations (at time of excavation)

No groundwater encountered.

Depth of pit at start (m)	Depth of pit at end (m)
1.4	1.4



$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

$V_{p75-25}$ Effective storage volume of water between 75% (dp75) and 25% (dp25) effective depth	0.07875	m <sup>3</sup>
$a_{p50}$ Internal surface area up to 50% effective depth and including the base	1	m <sup>2</sup>
$t_{p75} - t_{p25}$ Time for the water level to fall from 75% to 25% effective depth	3600	s
<b>f</b> Soil infiltration rate	<b>1.59E-05</b>	<b>m/s</b>



## **Appendix H      Geotechnical Laboratory Test Results**



# TEST CERTIFICATE

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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



4041

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-1  
 Date Sampled: 07/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

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

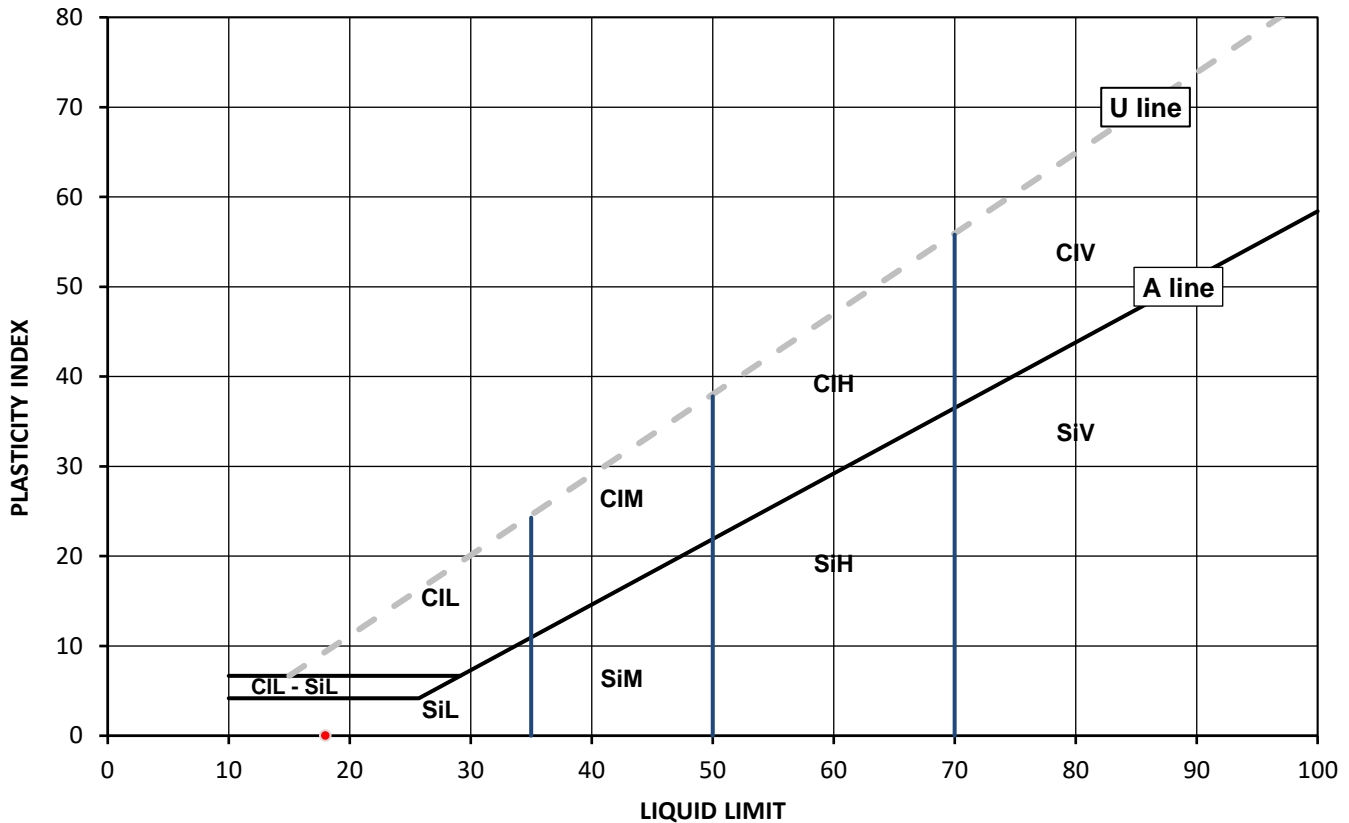
**Test Results:**

Laboratory Reference: 2779162  
 Hole No.: BH01  
 Sample Reference: BH013.752  
 Sample Description: Grey sandy GRAVEL

Depth Top [m]: 3.75  
 Depth Base [m]: 4.00  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
0.5	18	NP	NP	18



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP - non plastic

Signed:

*Katarzyna Koziel*

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

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



# TEST CERTIFICATE

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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



4041

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-1  
 Date Sampled: 07/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

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

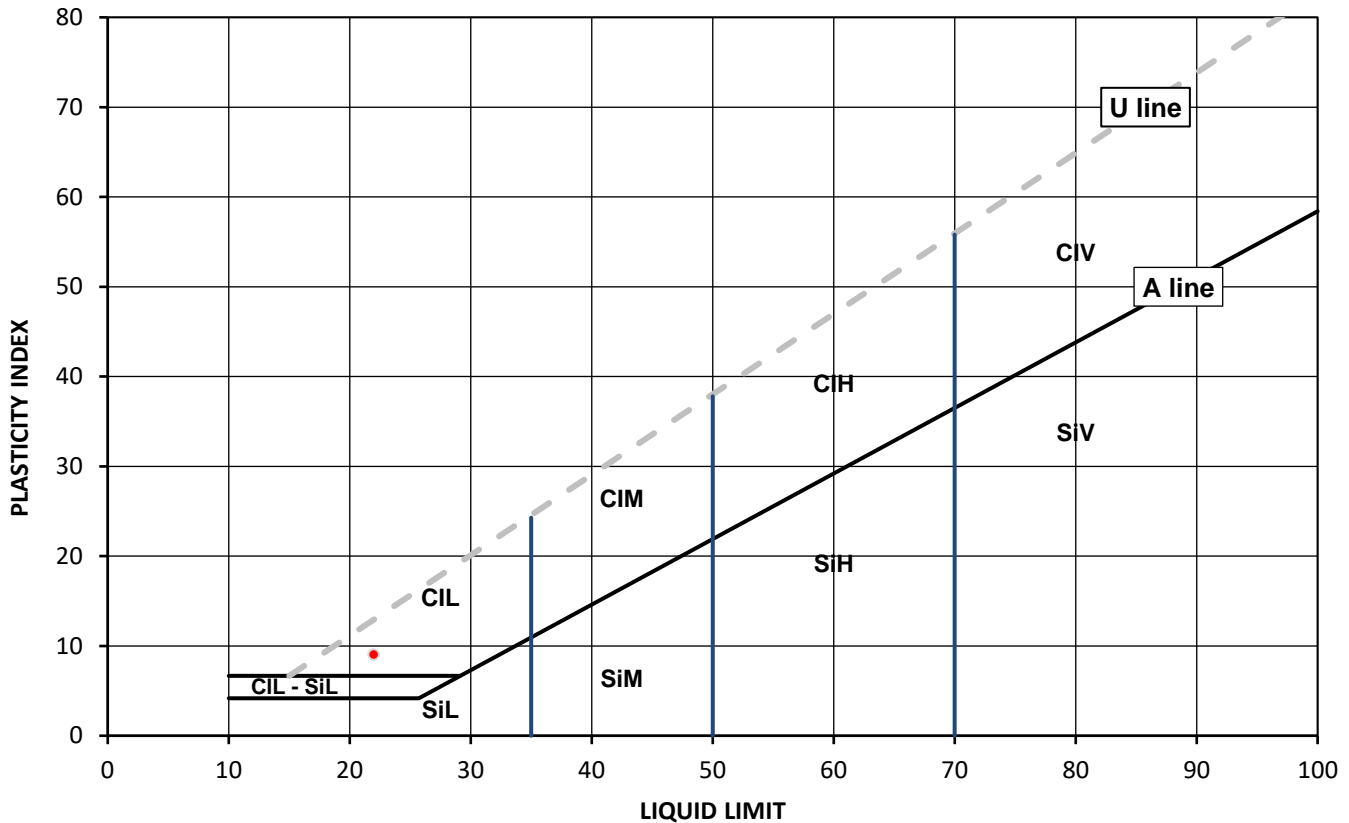
**Test Results:**

Laboratory Reference: 2779167  
 Hole No.: BH02  
 Sample Reference: BH028.405  
 Sample Description: Brown gravelly clayey SAND

Depth Top [m]: 8.40  
 Depth Base [m]: Not Given  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
7.5	22	13	9	49



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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

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# TEST CERTIFICATE

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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



4041

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-1  
 Date Sampled: 01/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

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

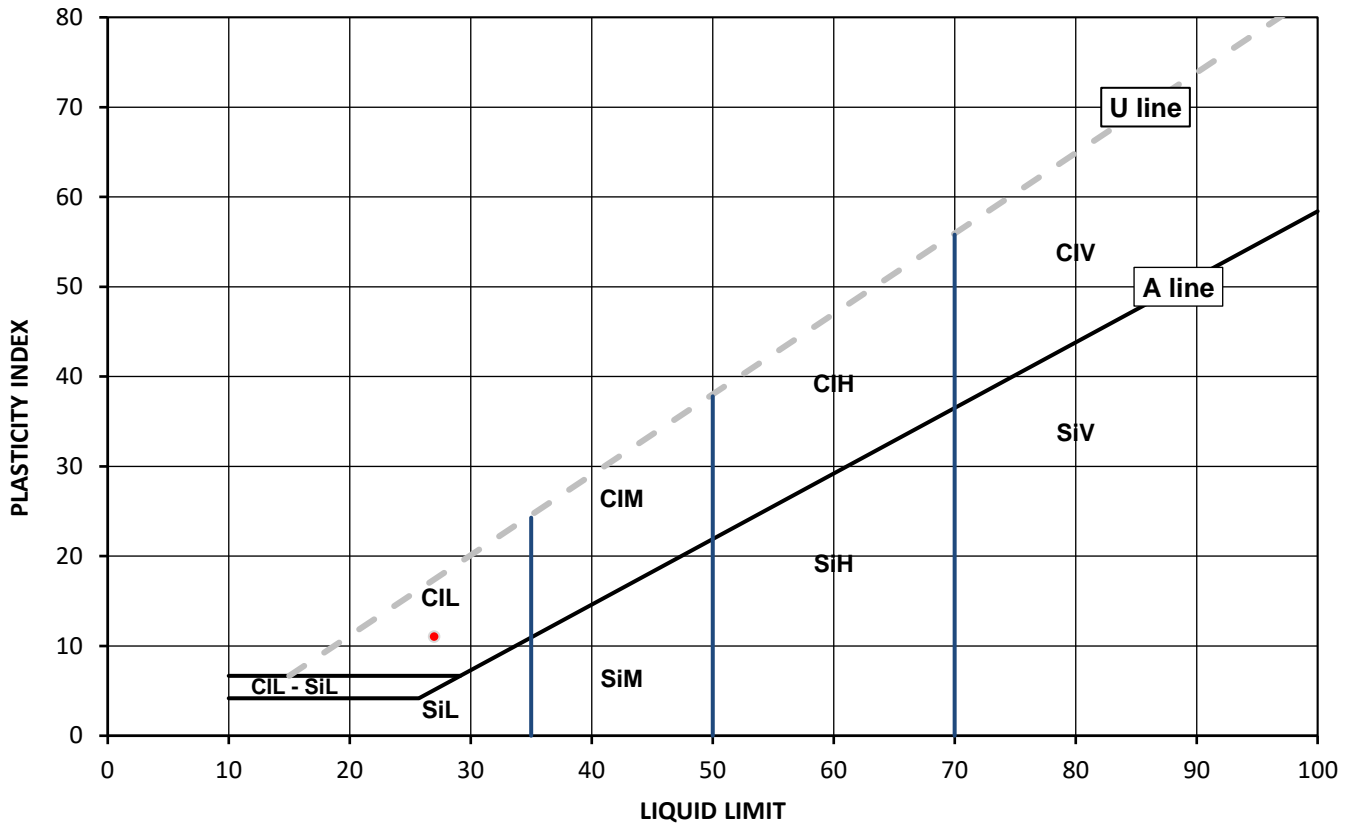
**Test Results:**

Laboratory Reference: 2779169  
 Hole No.: TP05  
 Sample Reference: TP050.302  
 Sample Description: Brown gravelly very sandy CLAY

Depth Top [m]: 0.30  
 Depth Base [m]: Not Given  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
13	27	16	11	64



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

Cl	Clay	Plasticity	Liquid Limit
Si	Silt	L	below 35
		M	35 to 50
		H	50 to 70
		V	exceeding 70
		O	append to classification for organic material ( eg CIHO )

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

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

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# SUMMARY REPORT

## SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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



Environmental Science

4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY

Water Content by BS 1377-2:1990: Clause 3.2 Atterberg by BS 1377-2: 1990:  
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 01/08 - 07/08/2023  
Date Received: 11/08/2023  
Date Tested: 21/08/2023  
Sampled By: Not Given

Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [ W ] %	Water Content BS EN ISO 17892-1 [ W ] %	Atterberg				Density			Total Porosity# %	
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3		
2779162	BH01	BH013.752	3.75	4.00	D	Grey sandy GRAVEL	Atterberg 1 Point	0.5		18	18	NP	NP					
2779167	BH02	BH028.405	8.40	Not Given	D	Brown gravelly clayey SAND	Atterberg 1 Point	7.5		49	22	13	9					
2779168	BH04	BH041.803	1.80	Not Given	D	Brownish grey GRAVEL		3.0										
2779169	TP05	TP050.302	0.30	Not Given	D	Brown gravelly very sandy CLAY	Atterberg 1 Point	13		64	27	16	11					

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

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

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# SUMMARY REPORT

## DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

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



Environmental Science

4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 01/08 - 07/08/2023  
Date Received: 11/08/2023  
Date Tested: 21/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC %	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2779162	BH01	BH013.752	3.75	4.00	D	Grey sandy GRAVEL		0.5	Sample was quartered, oven dried at 106 °C			
2779167	BH02	BH028.405	8.40	Not Given	D	Brown gravelly clayey SAND		7.5	Sample was quartered, oven dried at 108.3 °C			
2779168	BH04	BH041.803	1.80	Not Given	D	Brownish grey GRAVEL		3.0	Sample was quartered, oven dried at 108.3 °C			
2779169	TP05	TP050.302	0.30	Not Given	D	Brown gravelly very sandy CLAY		13	Sample was quartered, oven dried at 108.3 °C			

Comments:

Signed:

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

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# TEST CERTIFICATE

**DETERMINATION OF PARTICLE SIZE DISTRIBUTION**  
Tested in Accordance with: BS 1377-2: 1990

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



4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

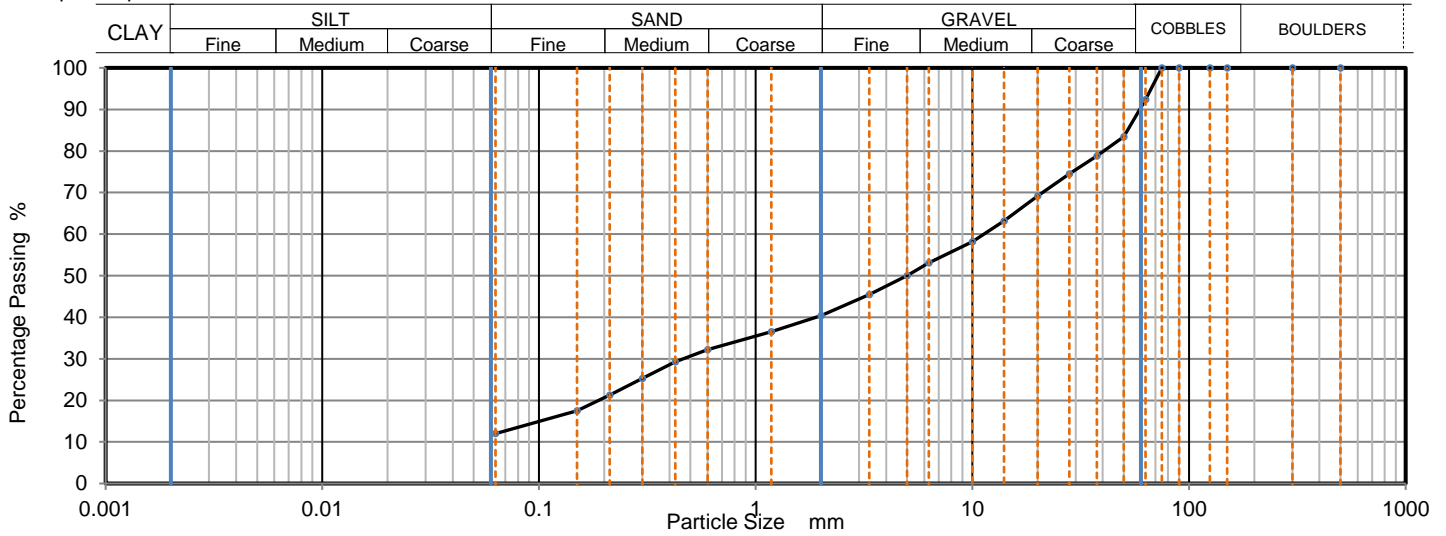
Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 01/08/2023  
Date Received: 11/08/2023  
Date Tested: 18/08/2023  
Sampled By: Not Given

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

**Test Results:**

Laboratory Reference: 2779170  
Hole No.: TP08  
Sample Reference: TP080.802  
Sample Description: Brown sandy GRAVEL  
Sample Preparation: Sample was quartered, oven dried at 108.0 °C and broken down by hand.

Depth Top [m]: 0.80  
Depth Base [m]: Not Given  
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	92		
50	83		
37.5	79		
28	75		
20	69		
14	63		
10	58		
6.3	53		
5	50		
3.35	46		
2	40		
1.18	37		
0.6	32		
0.425	29		
0.3	25		
0.212	21		
0.15	18		
0.063	12		

Sample Proportions	% dry mass
Very coarse	8
Gravel	52
Sand	28
Fines <0.063mm	12

Grading Analysis		
D100	mm	75
D60	mm	11.3
D30	mm	0.461
D10	mm	
Uniformity Coefficient		> 180
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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

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# TEST CERTIFICATE

**DETERMINATION OF PARTICLE SIZE DISTRIBUTION**  
Tested in Accordance with: BS 1377-2: 1990

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



4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

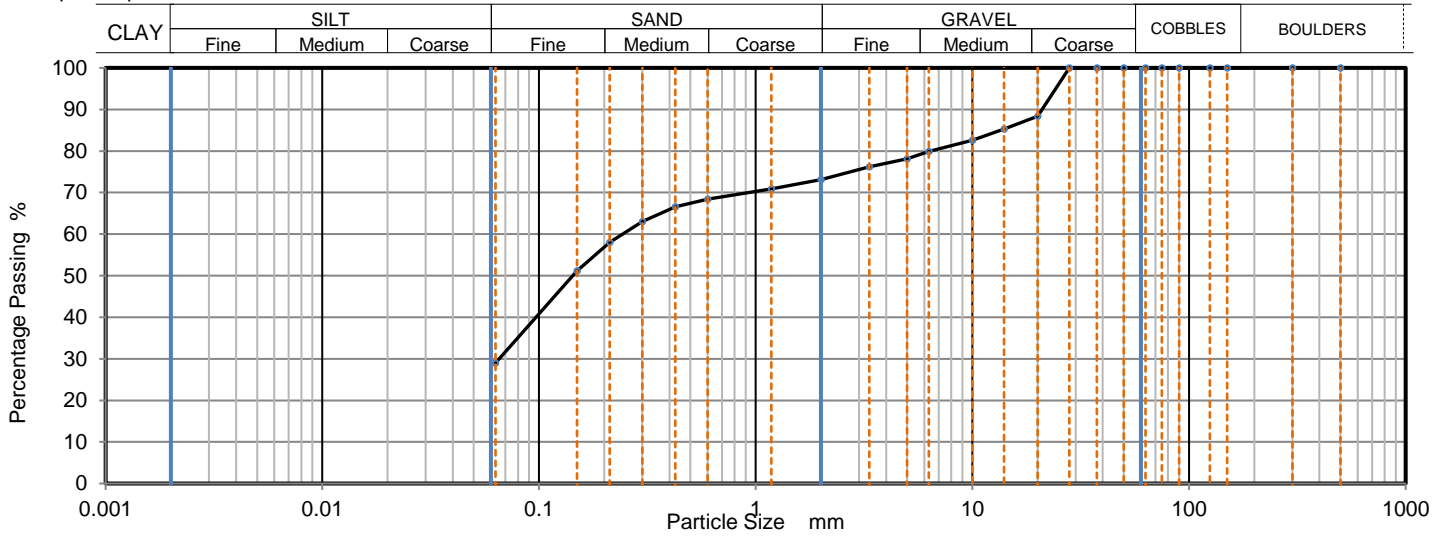
Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 01/08/2023  
Date Received: 11/08/2023  
Date Tested: 18/08/2023  
Sampled By: Not Given

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

**Test Results:**

Laboratory Reference: 2779171  
Hole No.: TP08  
Sample Reference: TP081.704  
Sample Description: Brownish gravelly clayey SAND  
Sample Preparation: Sample was quartered, oven dried at 107.9 °C and broken down by hand.

Depth Top [m]: 1.70  
Depth Base [m]: Not Given  
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	85		
10	83		
6.3	80		
5	78		
3.35	76		
2	73		
1.18	71		
0.6	68		
0.425	67		
0.3	63		
0.212	58		
0.15	51		
0.063	30		

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	43
Fines <0.063mm	30

Grading Analysis		
D100	mm	28
D60	mm	0.243
D30	mm	0.0633
D10	mm	
Uniformity Coefficient		> 3.9
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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

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# SUMMARY REPORT

## DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

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



Environmental Science

4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 08/08/2023  
Date Received: 11/08/2023  
Date Tested: 29/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks # (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
2779165	BH01	BH0111.906	11.90	Not Given	B	Grey QUARTZITE	WC = 0.4%	1	D	U	YES	69.7	89.6	89.0	85.0	40.8	87.3	5.35	6.87
2779165	BH01	BH0111.906	11.90	Not Given	B	Grey QUARTZITE	WC = 0.4%	2	A	U	YES	-	89.8	66.0	58.0	34.2	81.4	5.15	6.42
2779166	BH01	BH0113.307	13.30	Not Given	B	Light grey QUARTZITE	WC = 0.2%*	1	D	U	YES	62.3	89.5	89.0	80.0	50.0	84.6	6.99	8.85
2779166	BH01	BH0113.307	13.30	Not Given	B	Light grey QUARTZITE	WC = 0.2%*	2	A	U	YES	-	89.6	70.0	64.0	50.0	85.4	6.85	8.72

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;  
Dimensions: Dps - Distance between platens ( platen separation ), Dps' - at failure ( see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;  
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 14/03/2023 - 14/03/2024

Comments: \*Test terminated at 50 kN load. Unable to determine maximum Point Load Strength – result reported at maximum achievable load.

Signed:

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

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# SUMMARY REPORT

## DETERMINATION OF UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Tested in Accordance with: ISRM, 2007, p153, part 1

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



Environmental Science

4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-1  
Date Sampled: 08/08/2023  
Date Received: 11/08/2023  
Date Tested: 29/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Specimen Dimensions (2)				Bulk density (2) Mg/m3	Water Content (1) %	Uniaxial Compression (3)			
		Reference	Depth Top m	Depth Base m	Type			Diameter mm	Length mm	H/D	Orientation of sample			Condition	Stress Rate Mpa/s	Mode of failure	UCS Mpa
2779163	BH01	BH018.604	8.60	Not Given	B	Grey QUARTZITE	Duration of test exceeded time specified in ISRM method, 2007, p153, part1.	89.9	253.6	2.8	Vertical	2.54	0.4	as received	0.1574	MS + AC	173

Note: 1 - ISRM p87 test 1, water content at 105 ± 3 °C - not accredited, specimen as tested for UCS, 2 - ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density, 3 - ISRM p153 part 1, determination of Uniaxial Compressive Strength ( UCS ) of Rock Materials, above notes apply unless annotated otherwise in the remarks. Compaction machine: VJ Tech AUTOCON - VJT 51-3011; Mode of failure legend: S - Single shear, MS - multiple shear, AC - Axial cleavage, F - Fragmented

Comments:

Signed:

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

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**TEST METHOD**

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-2  
 Date Sampled: 07/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

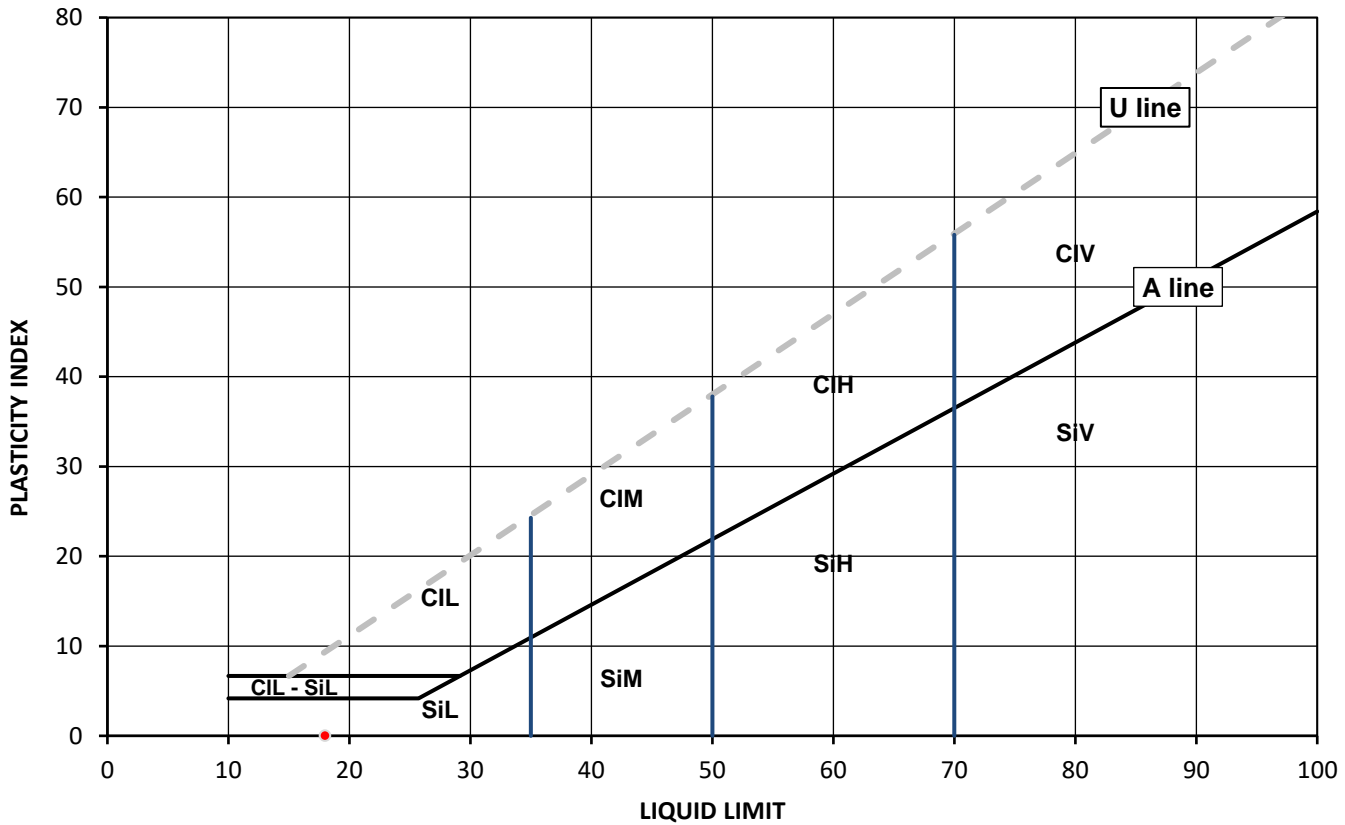
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

**Test Results:**

Laboratory Reference: 2779162  
 Hole No.: BH01  
 Sample Reference: BH013.752  
 Sample Description: Grey sandy GRAVEL  
 Depth Top [m]: 3.75  
 Depth Base [m]: 4.00  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
0.5	18	NP	NP	18



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP - non plastic

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Signed:  


Monika Siewior  
 Reporting Specialist

for and on behalf of i2 Analytical Ltd

**TEST METHOD**

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-2  
 Date Sampled: 07/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

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

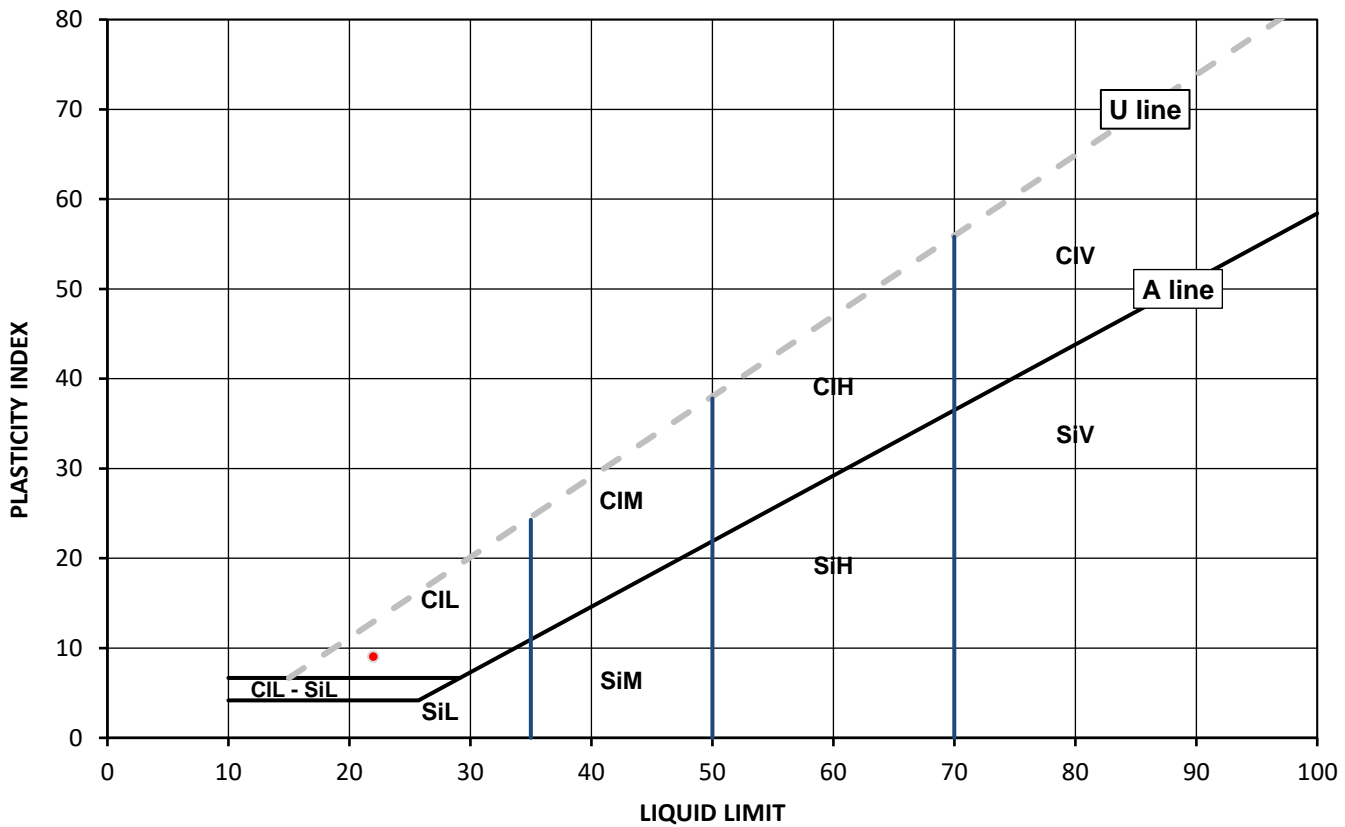
**Test Results:**

Laboratory Reference: 2779167  
 Hole No.: BH02  
 Sample Reference: BH028.405  
 Sample Description: Brown gravelly clayey SAND

Depth Top [m]: 8.40  
 Depth Base [m]: Not Given  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
7.5	22	13	9	49




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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed:  


Monika Siewior  
 Reporting Specialist

for and on behalf of i2 Analytical Ltd



**TEST METHOD**

**DETERMINATION OF LIQUID AND PLASTIC LIMITS**  
 Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-2  
 Date Sampled: 01/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 21/08/2023  
 Sampled By: Not Given

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

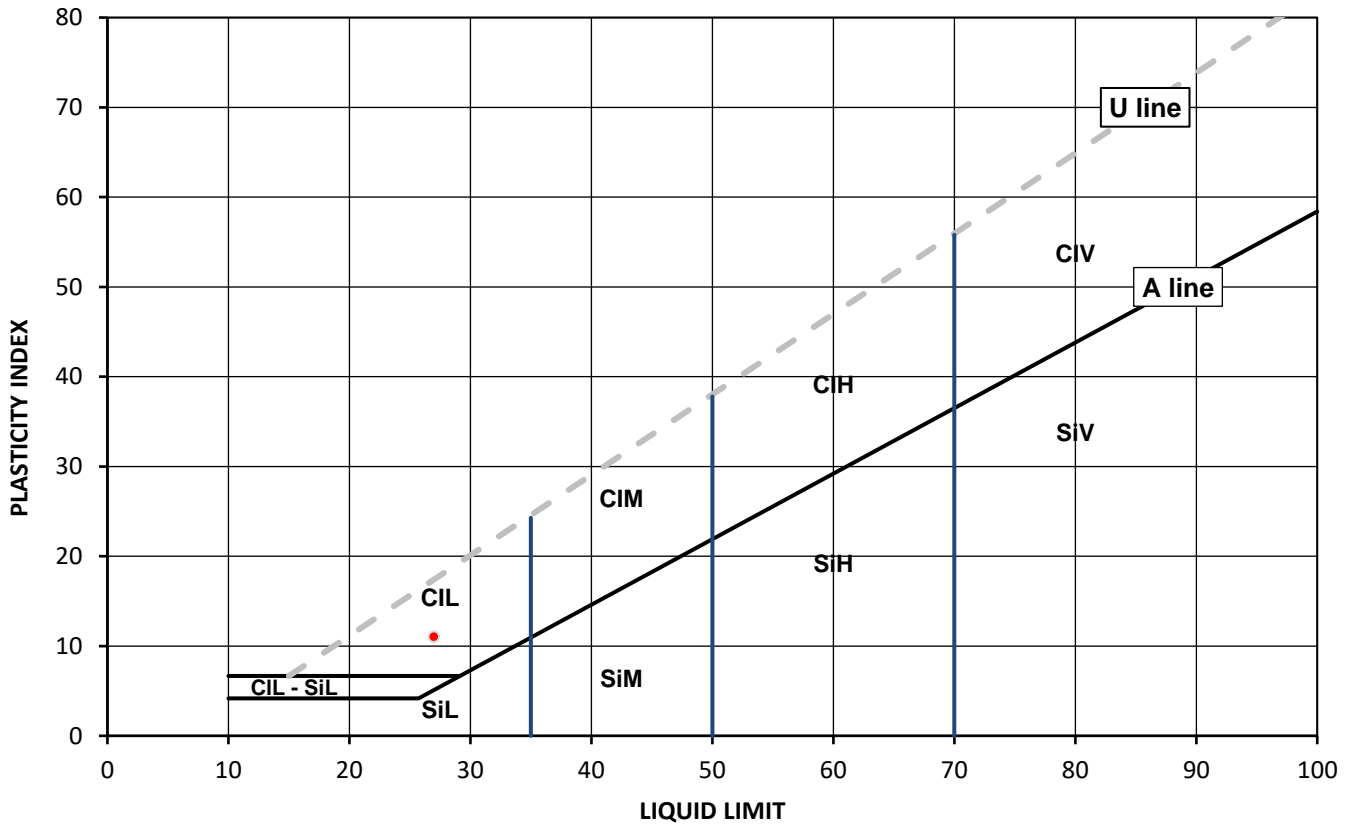
**Test Results:**

Laboratory Reference: 2779169  
 Hole No.: TP05  
 Sample Reference: TP050.302  
 Sample Description: Brown gravelly very sandy CLAY

Depth Top [m]: 0.30  
 Depth Base [m]: Not Given  
 Sample Type: D

Sample Preparation: Tested after washing to remove >425 µm

As Received Water Content [ W ] %	Liquid Limit [ WL ] %	Plastic Limit [ Wp ] %	Plasticity Index [ Ip ] %	% Passing 425µm BS Test Sieve
13	27	16	11	64



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

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

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed:  


Monika Siewior  
 Reporting Specialist

for and on behalf of i2 Analytical Ltd



4041



# SUMMARY REPORT

## SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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



Environmental Science

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfil

Water Content by BS 1377-2:1990: Clause 3.2 Atterberg by BS 1377-2: 1990:  
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

Client Reference: STV6119  
Job Number: 23-50614-2  
Date Sampled: 01/08 - 07/08/2023  
Date Received: 11/08/2023  
Date Tested: 21/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [ W ] %	Water Content BS EN ISO 17892-1 [ W ] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m															
2779162	BH01	BH013.752	3.75	4.00	D	Grey sandy GRAVEL	Atterberg 1 Point	0.5		18	18	NP	NP						
2779167	BH02	BH028.405	8.40	Not Given	D	Brown gravelly clayey SAND	Atterberg 1 Point	7.5		49	22	13	9						
2779168	BH04	BH041.803	1.80	Not Given	D	Brownish grey GRAVEL		3.0											
2779169	TP05	TP050.302	0.30	Not Given	D	Brown gravelly very sandy CLAY	Atterberg 1 Point	13		64	27	16	11						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Stewior  
Reporting Specialist

for and on behalf of i2 Analytical Ltd

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4041

# SUMMARY REPORT

## DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

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



Environmental Science

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-2  
Date Sampled: 01/08 - 07/08/2023  
Date Received: 11/08/2023  
Date Tested: 21/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC %	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2779162	BH01	BH013.752	3.75	4.00	D	Grey sandy GRAVEL		0.5	Sample was quartered, oven dried at 106 °C			
2779167	BH02	BH028.405	8.40	Not Given	D	Brown gravelly clayey SAND		7.5	Sample was quartered, oven dried at 108.3 °C			
2779168	BH04	BH041.803	1.80	Not Given	D	Brownish grey GRAVEL		3.0	Sample was quartered, oven dried at 108.3 °C			
2779169	TP05	TP050.302	0.30	Not Given	D	Brown gravelly very sandy CLAY		13	Sample was quartered, oven dried at 108.3 °C			

Comments:

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

Signed:  
*Monika Senior*

Monika Senior  
Reporting Specialist

for and on behalf of i2 Analytical Ltd

Client: Soiltechnics Limited  
 Client Address: Cedar Barn, White Lodge,  
 Walgrave, Northampton,  
 NN6 9PY  
 Contact: Admin  
 Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
 Job Number: 23-50614-2  
 Date Sampled: 01/08/2023  
 Date Received: 11/08/2023  
 Date Tested: 18/08/2023  
 Sampled By: Not Given

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

**Test Results:**

Laboratory Reference: 2779170

Hole No.: TP08

Sample Reference: TP080.802

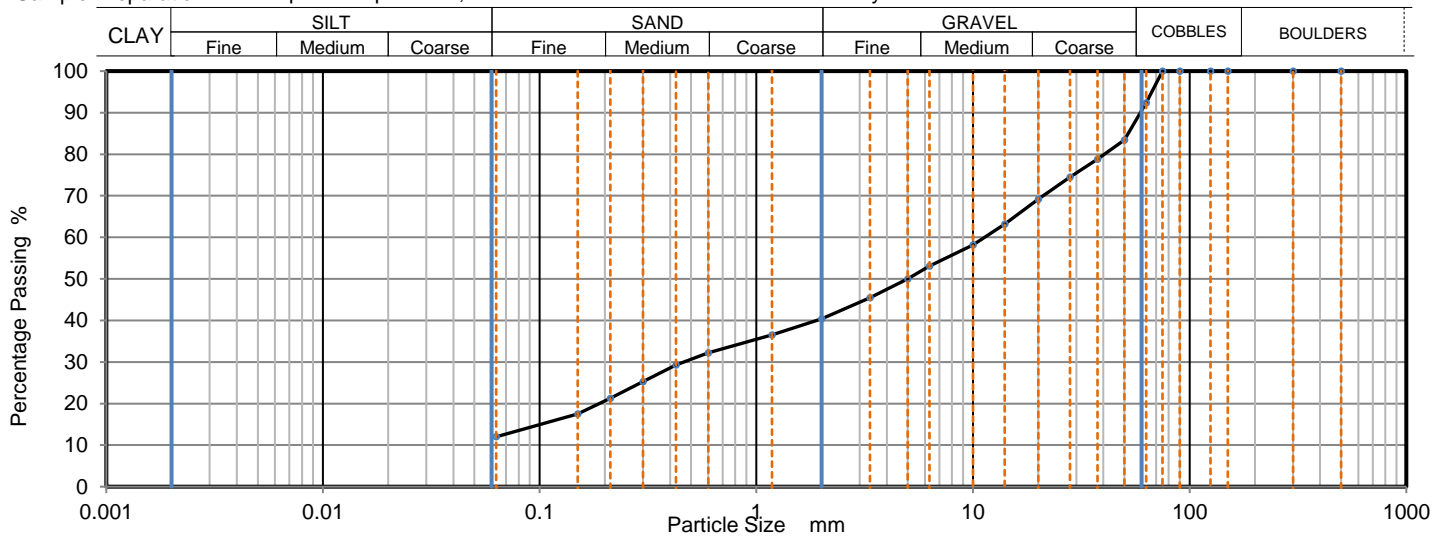
Sample Description: Brown sandy GRAVEL

Sample Preparation: Sample was quartered, oven dried at 108.0 °C and broken down by hand.

Depth Top [m]: 0.80

Depth Base [m]: Not Given

Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	92		
50	83		
37.5	79		
28	75		
20	69		
14	63		
10	58		
6.3	53		
5	50		
3.35	46		
2	40		
1.18	37		
0.6	32		
0.425	29		
0.3	25		
0.212	21		
0.15	18		
0.063	12		

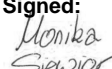
Sample Proportions	% dry mass
Very coarse	8
Gravel	52
Sand	28
Fines <0.063mm	12

Grading Analysis		
D100	mm	75
D60	mm	11.3
D30	mm	0.461
D10	mm	
Uniformity Coefficient		> 180
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:  


Monika Siewior  
 Reporting Specialist

for and on behalf of i2 Analytical Ltd

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**TEST CERTIFICATE**

**DETERMINATION OF PARTICLE SIZE DISTRIBUTION**

Tested in Accordance with: BS 1377-2: 1990

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

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

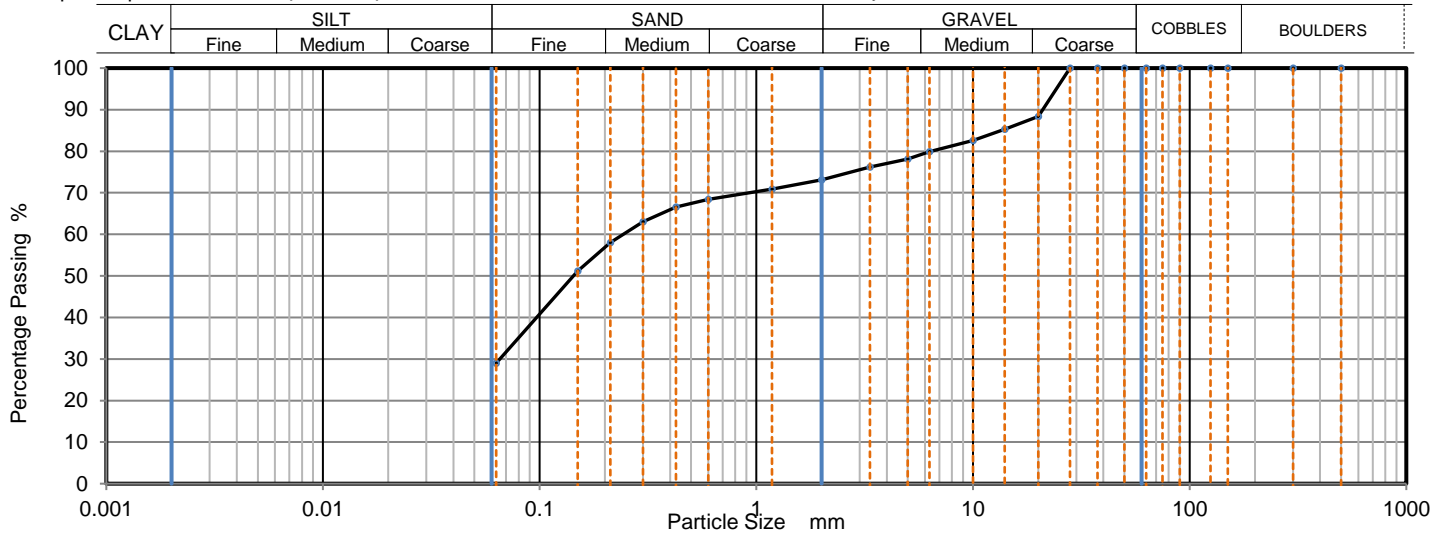
Client Reference: STV6119  
Job Number: 23-50614-2  
Date Sampled: 01/08/2023  
Date Received: 11/08/2023  
Date Tested: 18/08/2023  
Sampled By: Not Given

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

**Test Results:**

Laboratory Reference: 2779171  
Hole No.: TP08  
Sample Reference: TP081.704  
Sample Description: Brownish gravelly clayey SAND  
Sample Preparation: Sample was quartered, oven dried at 107.9 °C and broken down by hand.

Depth Top [m]: 1.70  
Depth Base [m]: Not Given  
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	85		
10	83		
6.3	80		
5	78		
3.35	76		
2	73		
1.18	71		
0.6	68		
0.425	67		
0.3	63		
0.212	58		
0.15	51		
0.063	30		

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	43
Fines <0.063mm	30

Grading Analysis		
D100	mm	28
D60	mm	0.243
D30	mm	0.0633
D10	mm	
Uniformity Coefficient		> 3.9
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

**Remarks:**

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

Signed:  
*Monika Siewior*

Monika Siewior  
Reporting Specialist

for and on behalf of i2 Analytical Ltd



4041



# SUMMARY REPORT

## DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

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



Environmental Science

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-2  
Date Sampled: 08/08/2023  
Date Received: 11/08/2023  
Date Tested: 29/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks # (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
2779165	BH01	BH0111.906	11.90	Not Given	B	Grey QUARTZITE	WC = 0.4%	1	D	U	YES	69.7	89.6	89.0	85.0	40.8	87.3	5.35	6.87
2779165	BH01	BH0111.906	11.90	Not Given	B	Grey QUARTZITE	WC = 0.4%	2	A	U	YES	-	89.8	66.0	58.0	34.2	81.4	5.15	6.42
2779166	BH01	BH0113.307	13.30	Not Given	B	Light grey QUARTZITE	WC = 0.2%*	1	D	U	YES	62.3	89.5	89.0	80.0	50.0	84.6	6.99	8.85
2779166	BH01	BH0113.307	13.30	Not Given	B	Light grey QUARTZITE	WC = 0.2%*	2	A	U	YES	-	89.6	70.0	64.0	50.0	85.4	6.85	8.72

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;  
Dimensions: Dps - Distance between platens ( platen separation ), Dps' - at failure ( see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;  
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 14/03/2023 - 14/03/2024

Comments: \*Test terminated at 50 kN load. Unable to determine maximum Point Load Strength – result reported at maximum achievable load.

Signed: *Monika Senior*  
Monika Senior  
Reporting Specialist

for and on behalf of i2 Analytical Ltd

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



# SUMMARY REPORT

## DETERMINATION OF UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Tested in Accordance with: ISRM, 2007, p153, part 1

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



Environmental Science

4041

Client: Soiltechnics Limited  
Client Address: Cedar Barn, White Lodge,  
Walgrave, Northampton,  
NN6 9PY  
Contact: Admin  
Site Address: Cefn Isaf, Merthyr Tydfill

Client Reference: STV6119  
Job Number: 23-50614-2  
Date Sampled: 08/08/2023  
Date Received: 11/08/2023  
Date Tested: 29/08 - 30/08/2023  
Sampled By: Not Given

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

### Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Specimen Dimensions (2)				Bulk density (2) Mg/m3	Water Content (1) %	Uniaxial Compression (3)			
		Reference	Depth Top	Depth Base	Type			Diameter	Length	H/D	Orientation of sample			Condition	Stress Rate Mpa/s	Mode of failure	UCS Mpa
			m	m													
2779163	BH01	BH018.604	8.60	Not Given	B	Grey QUARTZITE	Duration of test exceeded time specified in ISRM method, 2007, p153, part1. Sample is below recommended length to diameter ratio.	89.9	253.6	2.8	Vertical	2.54	0.4	as received	0.1574	MS + AC	173
2779164	BH01	BH0110.605	10.60	Not Given	B	Dark grey SILTSTONE		89.7	150.1	1.7	Vertical	2.57	0.6	as received	0.1584	MS + AC	72.7

Note: 1 - ISRM p87 test 1, water content at 105 ± 3 °C - not accredited, specimen as tested for UCS, 2 - ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density, 3 - ISRM p153 part 1, determination of Uniaxial Compressive Strength ( UCS ) of Rock Materials, above notes apply unless annotated otherwise in the remarks. Compaction machine: VJ Tech AUTOCON - VJT 51-3011; Mode of failure legend: S - Single shear, MS - multiple shear, AC - Axial cleavage, F - Fragmented

Comments: Replaces Analytical Report Number 23-39195, issue no 1; Additional results of Determination Of Uniaxial Compressive Strength Of Rock Materials

Signed:  
*Monika Senior*

Monika Senior  
Reporting Specialist

for and on behalf of i2 Analytical Ltd

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**Admin**

Soiltechnics Limited  
Cedar Barn  
White Lodge  
Walgrave  
Northampton  
NN6 9PY

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

**t:** 01923 225404

**f:** 01923 237404

**e:** reception@i2analytical.com

**e:** admin@soiltechnics.net

## **Analytical Report Number : 23-50618**

<b>Project / Site name:</b>	Cefn Isaf, Merthyr Tydfil	<b>Samples received on:</b>	11/08/2023
<b>Your job number:</b>	STV6119	<b>Samples instructed on/ Analysis started on:</b>	11/08/2023
<b>Your order number:</b>	POR016163	<b>Analysis completed by:</b>	22/08/2023
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	22/08/2023
<b>Samples Analysed:</b>	4 soil samples		

**Signed:** \_\_\_\_\_

Dominika Warjan  
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.

Analytical Report Number: 23-50618  
 Project / Site name: Cefn Isaf, Merthyr Tydfil  
 Your Order No: POR016163

Lab Sample Number				2779178	2779179	2779180	2779181
Sample Reference				BH01	BH02	BH04	TP05
Sample Number				BH013.752	BH028.405	BH041.803	TP050.302
Depth (m)				3.75-4.00	8.40	1.80	0.30
Date Sampled				07/08/2023	07/08/2023	07/08/2023	01/08/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	100	87	74	< 0.1
Moisture Content	%	0.01	NONE	0.29	2.6	9.9	9.4
Total mass of sample received	kg	0.001	NONE	0.4	0.3	0.3	0.4

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.6	8.8	8.4
Total Sulphate as SO <sub>4</sub>	%	0.005	MCERTS	0.01	0.01	-	-
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0196	0.0073	0.0089	0.052
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	19.6	7.3	8.9	52
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.8	1.1	0.9	3
Total Sulphur	%	0.005	MCERTS	0.006	0.005	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	< 2.0	6.9

#### Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	6.8
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	3.4

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



**Analytical Report Number : 23-50618**

**Project / Site name: Cefn Isaf, Merthyr Tydfil**

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2779178	BH01	BH013.752	3.75-4.00	Non Soil^^
2779179	BH02	BH028.405	8.4	Brown sand with stones.
2779180	BH04	BH041.803	1.8	Brown sand with stones.
2779181	TP05	TP050.302	0.3	Brown clay with gravel.

Analytical Report Number : 23-50618

Project / Site name: Cefn Isaf, Merthyr Tydfil

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
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
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 Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	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
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
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Sulphate, water soluble, in soil	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

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.

^^unaccredited sample matrix

## **Appendix I      Concrete Laboratory Test Results**

# Kiwa CMT



Soiltechnics Limited  
Cedar Barn  
White Lodge  
Walgrave  
Northants  
NN6 9PY

**Kiwa CMT**  
Unit 5 Prime Park Way  
Prime Enterprise Park  
Derby  
DE1 3QB

T +44 (0)1332 383333  
E uk.cmt.enquiries@kiwa.com

[www.kiwa.co.uk/cmt](http://www.kiwa.co.uk/cmt)

**Date:** 15<sup>th</sup> August 2023

**Lab Ref:** 70597

**Order Ref:** POR016142

**Originator:** Seb Crolla

**Site:** Cefn Isaf (STV6119)

**Samples:** 4No concrete core samples, nominally 100mmØ were delivered, by the client, to Kiwa CMT on the 9<sup>th</sup> August 2023. The core samples were individually referenced.

**Requirements:** Assess the 4No delivered concrete cores for density and compressive strength in accordance with BSEN12504-1:2019 and Depth of Carbonation in accordance with BS EN 14630:2006 (not UKAS accredited).

## Results:

Ref	In-situ Density (Kg/m <sup>3</sup> )	Core Strength (N/mm <sup>2</sup> )	Carbonation Depth (mm)
IN01	2460	60.1	<5mm
IN02	2400	89.5	<5mm
IN03	Unsuitable for compressive strength		<5mm
IN04	2400	47.6	<5mm

Detailed, individual, test certificates are appended.

Kiwa CMT

*I. Whitby*  
Supervisor  
Building Products



## CORE TEST REPORT - AS RECEIVED

**Client:** Soiltechnics  
Cedar Barn  
White Lodge  
Walgrave  
Northampton  
NN6 9PY

**Date:** 15/08/2023

**^ Site:** Cefn Isaf  
STV6119

<b>Laboratory Ref. No.</b>	70597.01	<b>Max Length As Received (mm)</b>	300.0								
<b>^ Client Reference</b>	IN01	<b>Min Length As Received (mm)</b>	285.0								
<b>^ Orientation</b>	Vertical	<b>Diameter (mm)</b>	94.0								
<b>Site Curing Condition</b>	Average	<b>In-Situ Density (kg/m3)</b>	2460								
<b>Max. nom. size of agg.</b>	20mm	<b>Excess Voidage (%)</b>	0.5								
<b>^ Date Drilled</b>	08/08/2023	<b>Length After Capping (mm)</b>	99.0								
<b>Visual inspection including abnormalities</b>	Normal	<b>Length Diameter Ratio</b>	1.05								
<b>Condition Of Storage</b>	Sealed Container	<b>Reinforcement</b>									
<b>^ Date Cast</b>	NK	<table border="1"> <thead> <tr> <th>Diameter <math>\phi</math></th> <th>d*</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> </tr> </tbody> </table>		Diameter $\phi$	d*	0	0	0	0	0	0
Diameter $\phi$	d*										
0	0										
0	0										
0	0										
<b>Date Tested</b>	15/08/2023	<b>* Distance of bar axis from nearest end</b>									
<b>Moisture condition at test</b>	As Received	<b>Load At Failure (kN)</b>	417.2								
		<b>Core Strength (N/mm<sup>2</sup>)</b>	60.1								

Validity of results over 60 N/mm<sup>2</sup> cannot be guaranteed with Sulphur Capped specimens

## Tested in accordance with BSEN 12504-1:2019

<b>Method of preparation</b>	Sulphur Capping
<b>Condition on receipt</b>	OK
<b>Failure type and observations</b>	Normal
<b>^ Mix details</b>	Not Known
<b>Deviation from standard</b>	None

## Identified information supplied by the client (^) can affect the validity of the result.

Results apply to the sample as received from the client.  
The results relate only to the items tested

Kiwa CMT

Gary Peach  
Department Manager  
Building Products







**CORE TEST REPORT - AS RECEIVED**

**Client:** Soiltechnics  
Cedar Barn  
White Lodge  
Walgrave  
Northampton  
NN6 9PY

**Date:** 15/08/2023

**^ Site:** Cefn Isaf  
STV6119

<b>Laboratory Ref. No.</b>	70597.02	<b>Max Length As Received (mm)</b>	310.0								
<b>^ Client Reference</b>	IN02	<b>Min Length As Received (mm)</b>	280.0								
<b>^ Orientation</b>	Vertical	<b>Diameter (mm)</b>	94.0								
<b>Site Curing Condition</b>	Average	<b>In-Situ Density (kg/m3)</b>	2400								
<b>Max. nom. size of agg.</b>	20mm	<b>Excess Voidage (%)</b>	0.5								
<b>^ Date Drilled</b>	08/08/2023	<b>Length After Capping (mm)</b>	97.0								
<b>Visual inspection including abnormalities</b>	Normal	<b>Length Diameter Ratio</b>	1.03								
<b>Condition Of Storage</b>	Sealed Container	<b>Reinforcement</b>									
<b>^ Date Cast</b>	NK	<table border="1"> <thead> <tr> <th>Diameter <math>\phi</math></th> <th>d*</th> </tr> </thead> <tbody> <tr> <td>13</td> <td>30</td> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> </tr> </tbody> </table>		Diameter $\phi$	d*	13	30	0	0	0	0
Diameter $\phi$	d*										
13	30										
0	0										
0	0										
<b>Date Tested</b>	15/08/2023	<b>* Distance of bar axis from nearest end</b>									
<b>Moisture condition at test</b>	As Received	<b>Load At Failure (kN)</b>	621.2								
		<b>Core Strength (N/mm<sup>2</sup>)</b>	89.5								

Validity of results over 60 N/mm2 cannot be guaranteed with Sulphur Capped specimens

**Tested in accordance with BSEN 12504-1:2019**

<b>Method of preparation</b>	Sulphur Capping
<b>Condition on receipt</b>	OK
<b>Failure type and observations</b>	Normal
<b>^ Mix details</b>	Not Known
<b>Deviation from standard</b>	None

**Identified information supplied by the client (^) can affect the validity of the result.**

Results apply to the sample as received from the client.  
The results relate only to the items tested

Kiwa CMT

Gary Peach  
Department Manager  
Building Products



## CORE TEST REPORT - AS RECEIVED

**Client:** Soiltechnics  
Cedar Barn  
White Lodge  
Walgrave  
Northampton  
NN6 9PY

**Date:** 15/08/2023

**^ Site:** Cefn Isaf  
STV6119

<b>Laboratory Ref. No.</b>	70597.04	<b>Max Length As Received (mm)</b>	235.0								
<b>^ Client Reference</b>	IN04	<b>Min Length As Received (mm)</b>	230.0								
<b>^ Orientation</b>	Vertical	<b>Diameter (mm)</b>	94.0								
<b>Site Curing Condition</b>	Average	<b>In-Situ Density (kg/m3)</b>	2400								
<b>Max. nom. size of agg.</b>	20mm	<b>Excess Voidage (%)</b>	1.0								
<b>^ Date Drilled</b>	08/08/2023	<b>Length After Capping (mm)</b>	98.0								
<b>Visual inspection including abnormalities</b>	Normal	<b>Length Diameter Ratio</b>	1.04								
<b>Condition Of Storage</b>	Sealed Container	<b>Reinforcement</b>									
<b>^ Date Cast</b>	NK	<table border="1"> <thead> <tr> <th>Diameter <math>\phi</math></th> <th>d*</th> </tr> </thead> <tbody> <tr> <td>13</td> <td>40</td> </tr> <tr> <td>10</td> <td>50</td> </tr> <tr> <td>0</td> <td>0</td> </tr> </tbody> </table>		Diameter $\phi$	d*	13	40	10	50	0	0
Diameter $\phi$	d*										
13	40										
10	50										
0	0										
<b>Date Tested</b>	15/08/2023	<b>* Distance of bar axis from nearest end</b>									
<b>Moisture condition at test</b>	As Received	<b>Load At Failure (kN)</b>	330.5								
		<b>Core Strength (N/mm<sup>2</sup>)</b>	47.6								

Tested in accordance with BSEN 12504-1:2019

<b>Method of preparation</b>	Sulphur Capping
<b>Condition on receipt</b>	OK
<b>Failure type and observations</b>	Normal
<b>^ Mix details</b>	Not Known
<b>Deviation from standard</b>	None

**Identified information supplied by the client (^) can affect the validity of the result.**

Results apply to the sample as received from the client.  
The results relate only to the items tested

Kiwa CMT



Gary Peach  
Department Manager  
Building Products

**Kiwa CMT**



**Kiwa CMT**



## **Appendix J      Geoenvironmental Laboratory Test Results**





# Amended Report

---

**Report No.:** 23-27358-2

**Initial Date of Issue:** 22-Aug-2023      **Date of Re-Issue:** 23-Aug-2023

**Re-Issue Details:** This report has been revised and directly supersedes 23-27358-1 in its entirety

**Client:** Soiltechnics Limited

**Client Address:** 1st Floor Unit 9 Westpoint Enterprise Park  
Clarence Avenue  
Trafford Park  
Manchester  
M17 1QS

**Contact(s):** Admin

**Project:** STV6119 Cefn Isaf Merthyr Tydfil

**Quotation No.:**      **Date Received:** 15-Aug-2023

**Order No.:** POR016162      **Date Instructed:** 15-Aug-2023

**No. of Samples:** 7

**Turnaround (Wkdays):** 5      **Results Due:** 21-Aug-2023

**Date Approved:** 22-Aug-2023

**Approved By:**



**Details:** Stuart Henderson, Technical Manager

---

## Results - Soil

**Project: STV6119 Cefn Isaf Merthyr Tydfil**

Client: Soiltechnics Limited		Chemtest Job No.:		23-27358	23-27358	23-27358	23-27358	23-27358	23-27358	23-27358	23-27358
Quotation No.:		Chemtest Sample ID.:		1688554	1688555	1688556	1688557	1688558	1688559	1688560	
Order No.: POR016162		Client Sample Ref.:		1	1	2	1	1	1	1	
		Client Sample ID.:		BH020.901	Bh041.001	BH042.252	TP0180.251	TP040.751	TP050.101	TP080.251	
		Sample Location:		BH02	BH04	BH04	TP01B	TP04	TP05	TP08	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.9	1.0	2.25	0.25	0.75	0.10	0.25	
		Date Sampled:		07-Aug-2023	07-Aug-2023	07-Aug-2023	03-Aug-2023	03-Aug-2023	01-Aug-2023	01-Aug-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	17	6.1	26	6.9	11	29	3.6
pH	U	2010		4.0	8.4	8.9	8.1	8.9		6.9	9.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.60	< 0.40		1.6	< 0.40
Cyanide (Complex)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	16	11	29	18		36	3.4
Beryllium	U	2455	mg/kg	0.5	0.7	< 0.5	1.3	0.5		0.9	< 0.5
Cadmium	U	2455	mg/kg	0.10	0.37	0.69	0.77	0.52		< 0.10	0.17
Chromium	U	2455	mg/kg	0.5	12	8.3	13	8.3		24	7.8
Copper	U	2455	mg/kg	0.50	42	11	40	21		27	5.3
Mercury	U	2455	mg/kg	0.05	0.45	0.05	0.38	0.14		0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	23	12	21	13		29	6.1
Lead	U	2455	mg/kg	0.50	120	92	97	200		42	27
Selenium	U	2455	mg/kg	0.25	0.91	0.52	1.0	0.51		0.71	0.25
Vanadium	U	2455	mg/kg	0.5	18	12	21	13		21	9.6
Zinc	U	2455	mg/kg	0.50	210	120	120	370		89	31
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50
LOI	U	2610	%	0.10	15	2.7	17	6.1		14	2.0
Organic Matter	U	2625	%	0.40	42	6.5	22	7.8		8.4	3.2
TPH >C6-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
TPH >C10-C21	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	130
TPH >C21-C40	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	310
Total TPH >C6-C40	U	2670	mg/kg	10	< 10	< 10	< 10	< 10		< 10	440
Naphthalene	U	2800	mg/kg	0.10	0.86	0.90	0.55	0.51		0.65	0.58
Acenaphthylene	N	2800	mg/kg	0.10	0.13	< 0.10	< 0.10	< 0.10		< 0.10	1.8
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35		< 0.10	22
Fluorene	U	2800	mg/kg	0.10	0.15	< 0.10	< 0.10	0.37		0.14	20
Phenanthrene	U	2800	mg/kg	0.10	1.3	0.38	0.83	2.4		0.39	130
Anthracene	U	2800	mg/kg	0.10	0.27	< 0.10	< 0.10	0.61		0.11	34
Fluoranthene	U	2800	mg/kg	0.10	2.1	0.51	1.3	3.8		0.72	220
Pyrene	U	2800	mg/kg	0.10	1.9	0.35	1.1	2.5		0.56	150
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.1	< 0.10	0.56	1.9		0.43	110
Chrysene	U	2800	mg/kg	0.10	1.5	< 0.10	0.68	2.0		0.40	130

## Results - Soil

**Project: STV6119 Cefn Isaf Merthyr Tydfil**

<b>Client: Soiltechnics Limited</b>		<b>Chemtest Job No.:</b>		23-27358	23-27358	23-27358	23-27358	23-27358	23-27358	23-27358	
Quotation No.:		<b>Chemtest Sample ID.:</b>		1688554	1688555	1688556	1688557	1688558	1688559	1688560	
Order No.: POR016162		Client Sample Ref.:		1	1	2	1	1	1	1	
		Client Sample ID.:		BH020.901	Bh041.001	BH042.252	TP0180.251	TP040.751	TP050.101	TP080.251	
		Sample Location:		BH02	BH04	BH04	TP01B	TP04	TP05	TP08	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.9	1.0	2.25	0.25	0.75	0.10	0.25	
		Date Sampled:		07-Aug-2023	07-Aug-2023	07-Aug-2023	03-Aug-2023	03-Aug-2023	01-Aug-2023	01-Aug-2023	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>							
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	2.3	< 0.10	0.97	2.8		0.67	160
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.45	< 0.10	0.15	0.84		0.21	52
Benzo[a]pyrene	U	2800	mg/kg	0.10	1.4	< 0.10	0.53	1.8		0.48	120
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	1.5	< 0.10	0.46	1.3		0.36	85
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.43	< 0.10	< 0.10	0.33		< 0.10	20
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	1.2	< 0.10	< 0.10	1.1		0.33	64
Total Of 16 PAH's	N	2800	mg/kg	2.0	17	2.1	7.1	23		5.5	1300
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		0.15	< 0.10

## Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

## **Report Information**

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I/S	Insufficient Sample
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N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

---

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.com](mailto:customerservices@chemtest.com)





# Final Report

**Report No.:** 23-27369-1

**Initial Date of Issue:** 24-Aug-2023

**Re-Issue Details:**

**Client** Soiltechnics Limited

**Client Address:** 1st Floor Unit 9 Westpoint Enterprise  
Park  
Clarence Avenue  
Trafford Park  
Manchester  
M17 1QS

**Contact(s):** Admin

**Project** STV6119 Cefn Isaf, Merthyr Tydfill

**Quotation No.:** **Date Received:** 15-Aug-2023

**Order No.:** POR16178 **Date Instructed:** 15-Aug-2023

**No. of Samples:** 1

**Turnaround (Wkdays):** 7 **Results Due:** 23-Aug-2023

**Date Approved:** 24-Aug-2023

**Approved By:**

**Details:** Stuart Henderson, Technical  
Manager

## Results - 2 Stage WAC

Project: STV6119 Cefn Isaf, Merthyr Tydfill

Chemtest Job No: 23-27369							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1688584							Limits			
Sample Ref: 1							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID: CS010.001										
Sample Location: CS01										
Top Depth(m): 0.00										
Bottom Depth(m): 0.00										
Sampling Date: 08-Aug-2023										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	M	%				1.2	3	5	6
Loss On Ignition	2610	M	%				2.2	--	--	10
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg				330	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg				260	100	--	--
pH	2010	M					8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0080	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1455	U	0.011	0.0035	0.022	0.043	0.5	2	25	
Barium	1455	U	0.031	0.10	0.063	0.93	20	100	300	
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5	
Chromium	1455	U	0.0012	< 0.0005	0.0024	0.0012	0.5	10	70	
Copper	1455	U	0.0013	0.0088	0.0027	0.0014	2	50	100	
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2	
Molybdenum	1455	U	0.0037	0.0012	0.0073	0.014	0.5	10	30	
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40	
Lead	1455	U	0.0075	0.0046	0.015	0.049	0.5	10	50	
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5	
Selenium	1455	U	< 0.0005	0.0006	< 0.0005	0.0050	0.1	0.5	7	
Zinc	1455	U	0.016	0.018	0.032	0.17	4	50	200	
Chloride	1220	U	< 1.0	24	< 10	220	800	15000	25000	
Fluoride	1220	U	0.17	0.16	< 1.0	1.6	10	150	500	
Sulphate	1220	U	13	17	26	170	1000	20000	50000	
Total Dissolved Solids	1020	N	80	360	160	3300	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	4.0	< 2.5	< 50	< 50	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.8

Leachate Test Information	
Leachant volume 1st extract/l	0.337
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.177

### Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

## Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

## **Report Information**

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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### **Sample Deviation Codes**

---

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E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

---

All soil samples will be retained for a period of 30 days from the date of receipt

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## **Appendix K     Contamination Assessment Screening**



**Chronic human health risk (soils)**

Scenario	
End user	Proposed site user
Receptor	Residential without homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspecified TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location							
				Depth (m)							
				BH02	BH04	BH04	TP01B	TP04	TP05	TP08	
				0.90	1.00	2.25	0.25	0.75	0.10	0.25	
				Date							
				07/08/23	07/08/23	07/08/23	03/08/23	03/08/23	01/08/23	01/08/23	
<b>Inorganics - Metals</b>											
Arsenic	C4SL	40	36	16	11	29	18		36	3.4	
Beryllium	S4UL	1.7	1.3	0.7	<0.5	1.3	0.5		0.9	<0.5	
Boron	S4UL	11000	1.6	<0.40	<0.40	0.6	<0.40		1.6	<0.40	
Cadmium	C4SL	150	0.77	0.37	0.69	0.77	0.52		<0.10	0.17	
Chromium (III)	S4UL	910	24	12	8.3	13	8.3		24	7.8	
Chromium (VI)	C4SL	21	<LoD	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Copper	S4UL	7100	42	42	11	40	21		27	5.3	
Cyanide - Free	ATK	34	<LoD	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Lead	C4SL	310	200	120	92	97	200		42	27	
Mercury	S4UL	56	0.45	0.45	0.05	0.38	0.14		0.05	<0.05	
Nickel	S4UL	180	29	23	12	21	13		29	6.1	
Selenium	S4UL	430	1	0.91	0.52	1	0.51		0.71	0.25	
Vanadium	S4UL	1200	21	18	12	21	13		21	9.6	
Zinc	S4UL	40000	370	210	120	120	370		89	31	
<b>Inorganics - Asbestos</b>											
Asbestos Type		N/A		-	-	-	-	-	-	-	
Asbestos Screen		N/A		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
<b>Inorganics - Soil Parameters</b>											
Organic matter		N/A		42	6.5	22	7.8		8.4	3.2	
<b>Organics - PAH &amp; Phenol</b>											
Acenaphthene	S4UL	3000	22	<0.10	<0.10	<0.10	0.35		<0.10	22	
Acenaphthylene	S4UL	2900	1.8	0.13	<0.10	<0.10	<0.10		<0.10	1.8	
Anthracene	S4UL	31000	34	0.27	<0.10	<0.10	0.61		0.11	34	
Benzo(a)anthracene	S4UL	11	110	1.1	<0.10	0.56	1.9		0.43	110	
Benzo(a)pyrene	C4SL	5.3	120	1.4	<0.10	0.53	1.8		0.48	120	
Benzo(b)fluoranthene	S4UL	3.9	160	2.3	<0.10	0.97	2.8		0.67	160	
Benzo(ghi)perylene	S4UL	360	64	1.2	<0.10	<0.10	1.1		0.33	64	
Benzo(k)fluoranthene	S4UL	110	52	0.45	<0.10	0.15	0.84		0.21	52	
Chrysene	S4UL	30	130	1.5	<0.10	0.68	2		0.4	130	
Dibenz(a,h)anthracene	S4UL	0.31	20	0.43	<0.10	<0.10	0.33		<0.10	20	
Fluoranthene	S4UL	1500	220	2.1	0.51	1.3	3.8		0.72	220	
Fluorene	S4UL	2800	20	0.15	<0.10	<0.10	0.37		0.14	20	
Indeno(1,2,3-cd)pyrene	S4UL	45	85	1.5	<0.10	0.46	1.3		0.36	85	
Naphthalene	S4UL	2.3	0.9	0.86	0.9	0.55	0.51		0.65	0.58	
Phenanthrene	S4UL	1300	130	1.3	0.38	0.83	2.4		0.39	130	
Phenol	S4UL	440	0.15	<0.10	<0.10	<0.10	<0.10		0.15	<0.10	
Pyrene	S4UL	3700	150	1.9	0.35	1.1	2.5		0.56	150	
<b>Organics - Banded TPH (unspecified)</b>											
EC >6-EC10 (unspecified)	S4UL	27	<LoD	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	
EC >10-EC21 (unspecified)	S4UL	130	130	<1.0	<1.0	<1.0	<1.0		<1.0	130	
EC >21-EC40 (unspecified)	S4UL	1900	310	<1.0	<1.0	<1.0	<1.0		<1.0	310	

**Chronic human health risk (soils)**

Scenario	
End user	Proposed site user
Receptor	Residential without homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value	Max value	Location	BH02	BH04	BH04	TP01B	TP04	TP05	TP08
				Depth (m)	0.90	1.00	2.25	0.25	0.75	0.10	0.25

**Chronic human health risk (soils)**

Scenario	
End user	Proposed site user
Receptor	Residential without homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value	Max value	Location	BH02	BH04	BH04	TP01B	TP04	TP05	TP08
				Depth (m)	0.90	1.00	2.25	0.25	0.75	0.10	0.25

### Acute human health risk (soils)

<b>Scenario</b>	Off-site public exposure
<b>Critical receptor</b>	Young female child (1 to 2 years old)
<b>Oral exposure</b>	N/A
<b>Demal exposure</b>	N/A
<b>Inhalation exposure</b>	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH02	BH04	BH04	TP01B	TP05	TP08
					Depth (m)	0.90	1.00	2.25	0.25	0.10	0.25
					Date	07/08/23	07/08/23	07/08/23	03/08/23	01/08/23	01/08/23
<b>Inorganics</b>											
Arsenic	AGAC	Inhalation	7,000,000	36		16	11	29	18	36	3.4
Cadmium	AGAC	Inhalation	1,800,000	0.77		0.37	0.69	0.77	0.52	< 0.10	0.17
Cyanide - Free	AGAC	Inhalation	380	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
<b>Organics</b>											
Benzene	AGAC	Inhalation	120								
Phenol	AGAC	**sat.**	**sat.**	0.15		< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10
Trichloroethene	AGAC	Inhalation	8,000								
Vinyl Chloride	AGAC	Inhalation	98								

### Acute human health risk (soils)

<b>Scenario</b>	Occupational exposure (construction worker)
<b>Critical receptor</b>	Adult female worker
<b>Oral exposure</b>	Ingestion of soil and dusts over a single working day
<b>Demal exposure</b>	Soil being left on the skin for several hours, assumed no PPE worn
<b>Inhalation exposure</b>	30 mins exposure - worker standing adjacent to active excavation (assumed no RPE)

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH02	BH04	BH04	TP01B	TP05	TP08
					Depth (m)	0.90	1.00	2.25	0.25	0.10	0.25
					Date	07/08/23	07/08/23	07/08/23	03/08/23	01/08/23	01/08/23
<b>Inorganics</b>											
Arsenic	AGAC	Oral	7,000	36		16	11	29	18	36	3.4
Cadmium	AGAC	Oral	12,000	0.77		0.37	0.69	0.77	0.52	< 0.10	0.17
Cyanide - Free	AGAC	Oral & Inhalation	1,400	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
<b>Organics</b>											
Benzene	AGAC	Inhalation	240								
Phenol	AGAC	**sat.**	**sat.**	0.15		< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10
Trichloroethene	AGAC	Inhalation	16,000								
Vinyl Chloride	AGAC	Inhalation	220								



## Phytotoxicity

<b>Scenario</b>	
<b>Land use</b>	Grassed lawns

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH02	BH04	BH04	CS01	TP01B	TP05	TP08
				Depth (m)	0.90	1.00	2.25	0.00 - 0.00	0.25	0.10	0.25
				Date	07/08/23	07/08/23	07/08/23	08/08/23	03/08/23	01/08/23	01/08/23
<b>Soil parameters</b>											
pH	BSI-u	8.5	9.3		8.4	8.9	8.1	8.7	8.9	6.9	9.3
pH	BSI-l	5.5	6.9		8.4	8.9	8.1	8.7	8.9	6.9	9.3
<b>Potentially toxic element</b>											
Arsenic	SSIA	50			16	11	29		18	36	3.4
Cadmium	SSIA	3	0.77		0.37	0.69	0.77		0.52	< 0.10	0.17
Chromium (III)	SSIA	600	24		12	8.3	13		8.3	24	7.8
Fluoride	SSIA	500									
Lead	SSIA	300	200		120	92	97		200	42	27
Mercury	SSIA	1.5	0.45		0.45	0.05	0.38		0.14	0.05	< 0.05
Molybdenum	SSIA	4									
Selenium	SSIA	5	1		0.91	0.52	1		0.51	0.71	0.25
<b>Potentially toxic element (pH 5.5 to &lt;6.0)</b>											
Copper	SSIA	170									
Nickel	SSIA	100									
Zinc	SSIA	200									
<b>Potentially toxic element (pH 6.0 to &lt;7.0)</b>											
Copper	SSIA	225	27							27	
Nickel	SSIA	125	29							29	
Zinc	SSIA	200	89							89	
<b>Potentially toxic element (pH &gt;7.0)</b>											
Copper	SSIA	330	42		42	11	40		21		5.3
Nickel	SSIA	180	23		23	12	21		13		6.1
Zinc	SSIA	300	370		210	120	120		370		31

## **Appendix L    Waste Characterisation Analysis**

## Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	CS01
				Depth (m)	0.00 - 0.00
				Date	08/08/23
<b>Parameters determined on the waste</b>					
Total organic carbon	3	5	6		1.2
Loss on ignition			10		2.2
BTEX	6				< 0.010
PCBs (7 congeners)	1				< 0.10
Mineral oil	500				330
PAH (17 congeners)	100				260
pH		6			8.7
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.008
<b>Limit values (mg kg<sup>-1</sup>) for compliance test using BN 12457-3 at L/S 10 l</b>					
Arsenic	0.5	2	25		0.043
Barium	20	100	300		0.93
Cadmium	0.04	1	5		< 0.00011
Chromium (III)	0.5	10	70		0.0012
Copper	2	50	100		0.0014
Mercury	0.01	0.2	2		< 0.00005
Molybdenum	0.5	10	30		0.014
Nickel	0.4	10	40		< 0.0005
Lead	0.5	10	50		0.049
Antimony	0.06	0.7	5		< 0.0005
Selenium	0.1	0.5	7		0.005
Zinc	4	50	200		0.17
Chloride	800	15,000	25,000		220
Fluoride	10	150	500		1.6
Sulphate	1,000	20,000	50,000		170
Total dissolved solids	4,000	60,000	100,000		3300
Phenol	1				< 0.50
Dissolved organic carbon	500	800	1000		< 50
<b>Classifications</b>					
<b>Waste classification</b>					<b>Non-hazardous</b>
<b>Landfill type</b>					Non-hazardous

### Key Notes:

- 1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.
- 2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.
- 3) In a hazardous waste, either the TOC or LOI must be used.

## Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	CS01
				Depth (m)	0.00 - 0.00
				Date	08/08/23
<b>Parameters determined on the waste</b>					
Total organic carbon	3	5	6		1.2
Loss on ignition			10		2.2
BTEX	6				< 0.010
PCBs (7 congeners)	1				< 0.10
Mineral oil	500				330
PAH (17 congeners)	100				260
pH		6			8.7
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.008
<b>Limit values (mg kg<sup>-1</sup>) for compliance test using BN 12457-3 at L/S 10 l</b>					
Arsenic	0.5	2	25		0.043
Barium	20	100	300		0.93
Cadmium	0.04	1	5		< 0.00011
Chromium (III)	0.5	10	70		0.0012
Copper	2	50	100		0.0014
Mercury	0.01	0.2	2		< 0.00005
Molybdenum	0.5	10	30		0.014
Nickel	0.4	10	40		< 0.0005
Lead	0.5	10	50		0.049
Antimony	0.06	0.7	5		< 0.0005
Selenium	0.1	0.5	7		0.005
Zinc	4	50	200		0.17
Chloride	800	15,000	25,000		220
Fluoride	10	150	500		1.6
Sulphate	1,000	20,000	50,000		170
Total dissolved solids	4,000	60,000	100,000		3300
Phenol	1				< 0.50
Dissolved organic carbon	500	800	1000		< 50
<b>Classifications</b>					
<b>Waste classification</b>					<b>Hazardous</b>
<b>Landfill type</b>					SNRHW

### Key Notes:

- 1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.
- 2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.
- 3) In a hazardous waste, either the TOC or LOI must be used.

## Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	
				Depth (m)	Date
				<b>Parameters determined on the waste</b>	
Total organic carbon	3	5	6		
Loss on ignition			10		
BTEX	6				
PCBs (7 congeners)	1				
Mineral oil	500				
PAH (17 congeners)	100				
pH		6			
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		
Acid neutralisation capacity (pH 4)		To be evaluated	To be evaluated		
<b>Limit values (mg kg<sup>-1</sup>) for compliance test using BN 12457-3 at L/S 10 l</b>					
Arsenic	0.5	2	25		
Barium	20	100	300		
Cadmium	0.04	1	5		
Chromium (III)	0.5	10	70		
Copper	2	50	100		
Mercury	0.01	0.2	2		
Molybdenum	0.5	10	30		
Nickel	0.4	10	40		
Lead	0.5	10	50		
Antimony	0.06	0.7	5		
Selenium	0.1	0.5	7		
Zinc	4	50	200		
Chloride	800	15,000	25,000		
Fluoride	10	150	500		
Sulphate	1,000	20,000	50,000		
Total dissolved solids	4,000	60,000	100,000		
Phenol	1				
Dissolved organic carbon	500	800	1000		
<b>Classifications</b>					
<b>Waste classification</b>					[drop-down]
<b>Landfill type</b>					pending

### Key Notes:

- 1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.
- 2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.
- 3) In a hazardous waste, either the TOC or LOI must be used.



## **Appendix M    Integral Geotechnique Ground Investigation Report**

**Merthyr Valleys Homes Limited**

**CEFN ISAF BLOCK REDEVELOPMENT, CEFN-  
COED-Y-CYMMER, MERTHYR TYDFIL**

**Site Investigation Report**

14067/GNS/22/SI

**CLIENT:** Merthyr Valleys Homes Limited

**PROJECT:** Cefn Isaf Block Redevelopment, Cefn-Coed-Y-Cymmer, Merthyr Tydfil

**TITLE:** Site Investigation Report

**JOB NO:** 14067

**DOCUMENT REF:** 14067/GNS/22/SI

Revision	Purpose Description	Originated	Reviewed	Authorised	Date
0	Final	GNS	HP	RB	Sept' 22

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## **1.0 INTRODUCTION**

### **1.1 GENERAL**

Merthyr Valleys Homes Limited are proposing to redevelop a site at the site of the former Cefn Isaf Block, Cefn-Coed-Y-Cymmer, Merthyr Tydfil for residential end-use.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake an intrusive 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 intrusive site investigation and gives recommendations for the design of foundations, floor slabs and other geotechnical and geoenvironmental aspects of the project.

This report (including all appendices to it and any subsequent addendums or correspondence) has been prepared for the sole benefit, use and information of Merthyr Valleys Homes Limited and no third party is entitled or permitted to rely on it. This report may not be used, reproduced or circulated (in whole or part) for any purpose without the written consent of Intégral Géotechnique (Wales) Limited. Intégral Géotechnique (Wales) Limited shall not be liable to any third party who does not have such express written permission to rely on the report for any losses they may suffer.

### **1.2 PROPOSED DEVELOPMENT**

The proposed development will comprise the demolition of the existing blocks of flats followed by the construction of a new scheme of flats, the layout of which has not been finalised. The development is likely to include an access road, car parking areas, areas of landscaping and possibly private garden areas.

### **1.3 SCOPE OF WORKS**

A previous desk study report (ref: 14067/LP/22/DS dated July 2022) was used to make an initial assessment of the site and to design an intrusive site investigation to be carried out by Intégral Géotechnique (Wales) Limited.

The intrusive site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations and BS10175:2011+A2:2017, the code of practice for investigation of potentially contaminated sites.

### 1.3 SCOPE OF WORKS (CONTINUED)

The site investigation included:

- An intrusive investigation carried out on the 15<sup>th</sup> August 2022 comprising the drilling of six windowless sample holes, two hand excavated trial pits and soil infiltration tests within the hand excavated trial pits
- Sampling of soil/fill for laboratory chemical testing
- Sampling of natural soils for geotechnical testing

### 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 NHBC as appropriate.

“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 site investigation was limited at the time due to vacant buildings, areas of hardstandings, services, tight access and steep slopes.

Further investigation of the buildings or beneath building floor slabs at the time of the site investigation was outside the scope of work of this report, but is planned for in subsequent post demolition supplemental investigation works.

## **2.0 THE SITE**

### **2.1 SITE LOCATION AND DESCRIPTION**

The site is located at Cefn Isaf Block within Cefn-Coed-y-Cymmer approximately 2km northwest of Merthyr Tydfil town centre at a National Grid Reference of 303260, 207680, see Figure 1.

The site is irregular in shape and occupies an area of approximately 0.3 hectares. The boundaries of the site are defined by Wern Road to the west, Pontycapel Road and an existing garage block to the north and undeveloped land and existing residential development to the south and east. A site plan is presented in Figure 2.

The site is situated on land that generally slopes down from Pontycapel Road to the north towards the river to the south from an approximate maximum elevation of 212m AOD to an approximate minimum elevation of 202m AOD.

Development plateaux have been created for the flats with earthworks to create level areas accessed via steps and supported by retaining walls.

The current blocks of flats are constructed in two blocks orientated east to west across the site. An access road and car parking area are located within the southern area of the site.

There are grassed areas in between the two blocks of flats accessed via steps from Wern Road to the west. Steps also access the southern block via Wern Road to the south.

On the grass and grass and vegetation covered embankment there are fragments of cement bound asbestos noted within some general made ground and on the site surface. The location of this identified asbestos is detailed on Figure 2.

### **2.2 SITE OPERATIONS**

The flats are still present within the site, but they are currently vacant.

### **2.3 SURROUNDING LAND USE**

The surrounding areas are mainly developed for residential use with an existing school located beyond Pontycapel Road to the northeast.

## **2.4 AVAILABLE SITE INVESTIGATION DATA**

Intégral Géotechnique (Wales) Limited have previously issued a desk study report reference 14067/LP/22/DS dated July 2022.

This report should be read in conjunction with the desk study report. Sections from the desk study report have been reproduced in this report for ease of reference.

## **2.5 CONSULTATIONS WITH REGULATORS**

No consultations with regulators have been undertaken at this stage.

### 3.0 SITE HISTORY

The recent history of the site has been traced with the aid of an Envirocheck Report, a copy of which was included in the original desk study report. A precis of the site history is provided below.

The earliest edition of the map dated 1875 indicated the northern area of the site to be developed with buildings. The southern area remained undeveloped. Development continued to the west of the site along the road which formed the northern boundary and beyond the road which formed the western boundary. The areas to the south and east of the site remained undeveloped. A school was located beyond the road to the northeast of the site. Taf Fawr flowed approximately 90m to the southwest of the site and the Merthyr Branch of the Brecon and Merthyr Railway ran over the river on a viaduct located approximately 190m to the west. Cefn Coed-y-Cymmer was well-established to the north and northeast of the site.

The 1900-1904 edition of the map indicated the site and the surrounding areas to have remained relatively unchanged. The road to the north was now known as Pont-y-Capel Road and the road to the west was now known as Wern Road. The viaduct to the west was known as Cefn Viaduct. The school to the northeast had expanded slightly by this time.

The 1919-1920 edition of the map indicated that the site had remained unchanged. Development, mainly residential, continued to the north and west of the site as Cefn Coed-y-Cymmer continued to expand. A sewage works including associated filter beds had been constructed adjacent to the river approximately 50m to the southeast of the site.

The edition of the map dated 1956-1980 indicated the buildings within the northern area of the site had been removed although some ruins remained within the northwest area. The southern area of the site remained undeveloped but was now crossed by a track on an approximately east to west orientation. Allotment gardens were indicated to the east of the site. Mounds of unknown deposited material were indicated approximately 10m to the southwest of the site.

The edition of the map dated 1963-1986 indicated the presence of a refuse tip across the northeast corner of the site with the rest of the site remaining unchanged. A row of buildings had been constructed along the road to the east of the site.



### **3.0 SITE HISTORY** (CONTINUED)

The site and the surrounding areas remained relatively unchanged until the edition of the map dated 1979-1990. By this time the site had been developed with blocks of flats known as Cefn Isaf with the southern area of the site forming an access and car parking area for the flats. The flats first appeared on the map dated 1988. The immediate surrounding areas remained relatively unchanged. The railway line on the viaduct located to the west of the site was now dismantled.

The site remained relatively unchanged in between the late 1980's, when the flats were constructed, and the present day. Residential development continued to the east of the site between 2006 and 2008. The original school building to the northeast had been demolished by 2013 and a new school constructed by 2021.

## **4.0 SITE ENVIRONMENTAL SETTING**

### **4.1 PHYSICAL SETTING**

The site is located within a mainly residential setting in Cefn-Coed-y-Cymmer.

The site is situated on land that generally slopes down from Pontycapel Road to the north towards the river to the south from an approximate maximum elevation of 212m AOD to an approximate minimum elevation of 202m AOD.

Development plateaux have been created for the flats with earthworks to create level areas accessed via steps and supported by retaining walls. The changes in level have been achieved with the use of embankments and retaining walls.

### **4.2 GEOLOGY**

The 1:50,000 and 1:10,560 scale (Sheet No. SO 00 NW) geological maps of the area indicate the majority of the site to be underlain by Bishopston Formation of the Carboniferous period. These rocks typically comprise mid to dark grey mudstones, commonly fossiliferous, with some beds of mid grey siltstone and beds of interbedded siltstone and mudstone. Also present are sporadic, minor pale grey quartzitic sandstones and rare thin coals. The northeast corner of the site is indicated to be underlain by Twrch Sandstone Formation also of the Carboniferous period. These rocks typically comprise quartz arenites and quartz conglomerates with minor mudstones.

A fault is indicated to cross the northeast corner of the site known as the Merthyr Church Fault, which downthrows to the southwest. Another unnamed fault crosses the northern area approximately perpendicular to the Merthyr Church Fault and downthrows to the north. The strata dip in the area are indicated to be shallow between 6° and 10° and in an approximately south easterly direction. There are no conjectural outcrops indicated within 1km of the site boundary.

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

A variable thickness of made ground is anticipated above the superficial deposits across the site associated with the development.

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

## 4.2 GEOLOGY (CONTINUED)

<b>Geological unit</b>	<b>Horizon</b>	<b>Description</b>
Recent	Made ground	Various materials
Quaternary	Devensian Till	Poorly sorted and variable clays, sands and gravel
Carboniferous	Bishopston Formation	Mid to dark grey mudstones, commonly fossiliferous, with some beds of mid grey siltstone and beds of interbedded siltstone and mudstone. Also present are sporadic, minor pale grey quartzitic sandstones and rare thin coals
	Twrch Sandstone Formation	Quartz arenites and quartz conglomerates with minor mudstones

## 4.3 RADON

Information with regard to Radon Protective Measures was provided within the Envirocheck Report and the BGS Radon GeoReport as presented in Appendices A and B respectively of the original desk study. The reports state that the site is located within an intermediate probability area, as 1% to 3% 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

The site is located within a coal mining reporting area and therefore a CON29M Coal Mining Report was obtained from the Coal Authority a copy of which was included in Appendix C of the original desk study report.

The Coal Authority states that *“the property is not within a surface area that could be affected by any past recorded underground coal mining.”*

As discussed previously there are no conjectural coal seam outcrops recorded within 1km of the site boundary.

The Coal Authority mining report confirms that *“there are “no recorded coal mine entries known to the Coal Authority within, or within 20 metres of, the boundary of the property.”*

#### 4.4 MINING (CONTINUED)

The Coal Authority states that *“it is not aware of any damage due to geological faults or other lines of weakness affected by coal mining.”*

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.”*

The Coal Authority has *“no record of a mine gas emission requiring action.”* 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.

The site is not located within a high-risk development area but based on the above guidelines a mine gas risk assessment should still be undertaken. The initial desk-based assessment of the site has been used in order to develop the level of mine gas risk within the site.

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.

The desk study shows that the site is not located within a high-risk development area. Shallow coal workings are not recorded and there are no potential shallow unrecorded workings beneath the site.

There are no mine entries located within 20m of the site boundary and with the Coal Authority interactive map indicating the nearest mine entries in excess of 500m away. It is therefore concluded that there are no viable pathways, via old shafts or adits, for any mine gas beneath, or within an influencing distance, of the site.

Two faults are indicated to cross the site. However, with no conjectural outcrops within 1km of the site boundary it is concluded that there are no viable pathways via fractured rock or fault zones.

#### 4.4 MINING (CONTINUED)

Based on the desk-based research, the potential risk from coal mine gas emissions at the development 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 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 true. The CL:AIRE document 'Good Practice for Risk Assessment for Coal Mine Gas Emissions dated October 2021' therefore classifies the site as being within a "Negligible Risk Zone" and states that mitigation is not required based on the proposed development of the site.

Based on the above information, the risk of mine gas migration to the proposed development is considered to be low, requiring no further consideration.

The Coal Authority Interactive map indicates that the site is not located within a high-risk development area. The professional opinion held by the Coal Authority at this time suggests *"evidence of, or potential for, coal mining related features have been identified. It is unlikely that these features will impact on the stability of the enquiry boundary."*

It is therefore concluded that there is not a risk of subsidence issues associated with the presence of shallow mining and therefore no further specific coal mining related investigation is required.

#### 4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK

The Envirocheck report provided in the original desk study recorded the nearest water feature to be located 83m to the southwest. The OS Water Network Lines map indicates this feature to be Taf Fawr. Taf Fechan is located 307m to the northeast, with both these features flowing into the River Taff located 621m to the southeast.

The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the bedrock beneath the 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 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 the made ground or within the more granular superficial deposits.

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

There are no effective discharge consents recorded within 250m of the site boundary. The nearest consent is recorded 283m to the west where a sewage discharge from a domestic property is received by Taf Fawr.

The Envirocheck Report states that there are no water abstractions recorded within 250m of the site boundary. The nearest abstraction was recorded 406m to the east where a surface water abstraction from Taf Fechan was used +for industrial/commercial/energy/public services.

Tables 2 and 3 present a summary of the hydrological features and key hydrogeological nature of the site.



**4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)**

<b>Table 2: Summary of Site Hydrology</b>					
Feature	Distance from site	Flow	Classification	Abstraction	Discharge
Taf Fawr	83m southwest	South easterly	Inland river	No	River Taff
Taf Fechan	307m northeast	South easterly	Inland river	Yes	River Taff
River Taff	621m southeast	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

<b>Table 3: Summary of Site Hydrogeology</b>				
Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
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
Bishopston Formation or Twrch Sandstone Formation	Secondary A Aquifer	Variable moderate permeability layers of interbedded siltstone and mudstone, quartzitic sandstones, rare thin coals and quartz conglomerates	No	None

The Groundwater Vulnerability map of the area indicates the secondary bedrock aquifer to have a medium 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 the site is not at a high-risk to surface water flooding (1 in 30-year flood extent)

#### **4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK** (CONTINUED)

The BGS Groundwater Flooding Susceptibility map indicates the site to have limited potential for groundwater flooding to occur.

#### **4.6 LANDFILL SITES**

The Envirocheck Report indicates that there are no BGS recorded, historical or local authority recorded landfill sites or any licensed waste management facilities located within 500m of the site boundary.

It should be noted that a refuse tip was indicated within the northeast corner of the site on the historical maps circa 1960's. There is no official record of this refuse tip within the Envirocheck Report and therefore there are no details provided and the extent is unknown. It is likely to have comprised materials tipped on the surface with no evidence of potentially infilled land stated within the Envirocheck Report. These materials would have been cleared prior to site development of the current flats and infrastructure, but residual materials could remain.

#### **4.7 POTENTIAL CONTAMINATION**

##### ***Previous Uses***

The various activities in the vicinity of the site which may have resulted in ground or water resource contamination on this site are listed below in Tables 4 and 5. A summary of the potential contaminants can be found in the tables.

**4.7 POTENTIAL CONTAMINATION (CONTINUED)**

<b>Table 4: Potential Contaminants</b>		
<b>Land Use: Residential development and undeveloped land from 1880's</b>		
<b>Material/Process</b>	<b>Contamination/Hazard</b>	<b>Evidence</b>
Undeveloped southern areas possibly utilised as agricultural land	No potential contaminants	Historical maps
Buildings constructed across the northern area likely to have been for residential use. Construction works would have disturbed the ground and may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Buildings subsequently demolished circa 1960's which would have caused further ground disturbance with potential residual building fabric remaining on site	Metals, semi metals, non-metals, PAH, asbestos and potential asbestos containing material (ACM) within and residual building fabric	Historical maps
Evidence of a refuse tip within the northeast area of the site by the 1960's. Likely to have comprised materials locally tipped on the surface of the site	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
<b>Land Use: Reprofiting works and construction of Cefn Isaf Flats during the 1980's</b>		
<b>Material/Process</b>	<b>Contamination/Hazard</b>	<b>Evidence</b>
Possible use of imported materials of unknown origin and earthworks associated with the construction of the flats which would have caused ground disturbance	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Construction of the flats may have included the use of asbestos containing materials (ACM) within the building fabric	Asbestos containing materials (ACM)	Anecdotal but representative of age of construction

**Existing Uses**

The residential flats which occupy the site are currently vacant. The existing site uses would not add any additional contamination concerns.

## 4.7 POTENTIAL CONTAMINATION (CONTINUED)

### *Adjacent Site Uses*

<b>Potential Contamination Source</b>	<b>Boundary</b>	<b>Associated Contaminants and Hazards</b>
Wern Road	Western	No Potential Contaminants
Undeveloped land and individual detached residential properties	Southern	No Potential Contaminants
Undeveloped land and residential properties with associated grounds	Eastern	No Potential Contaminants
Pontycapel Road and a row of garages	Northern	No Potential Contaminants

## 4.8 OTHER ENVIRONMENTAL ISSUES

The Envirocheck Report provided in the desk study report indicates that the Brecon Beacons, which is a fully designated National Park, is located 240m west of the site. No other environmentally sensitive land has been identified within 250m of the site boundary.

The Envirocheck Report provided in the desk study report indicates that there have been no pollution incidents to controlled waters recorded on site but two within 250m of the site boundary. The nearest incident was a Category 3-Minor Incident involving crude sewage recorded 119m to the southeast. Another minor incident was recorded 234m to the west involving mud/clay/soil due to a blocked sewer. No Category 2-Significant Incidents have been recorded within 500m of the site boundary.

There have been no substantiated pollution incidents registered on site or recorded within 250m of the site boundary. The nearest incident was recorded 288m to the west where contaminated water with suspended solids caused a significant impact on water and no impact on air or land.

There have been no prosecutions relating to controlled waters or to authorised processes recorded on site or within 1km of the site boundary.

There are two Contemporary Trade Directory Entries within 250m of the site boundary. A cemetery and crematorium are located 180m to the north and a garage is located 189m to the northeast.

**4.8 OTHER ENVIRONMENTAL ISSUES** (CONTINUED)

There is vegetation present within the site, and it is not known if any invasive plants are present. It may be prudent to undertake a full vegetation survey prior to development.

## 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<sup>soil</sup> 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 a residential end use. Therefore, the critical sensitive receptor from a human health perspective is an on-site residential receptor.

In accordance with S4UL/C4SL and CLEA guidance for a standard residential scenario, 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 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 a residential 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 Bishopston Formation and the Twrch Sandstone Formation.

By considering groundwater as the critical sensitive receptor for controlled waters, the groundwater/hydrogeological risk assessment will also be protective of any nearby surface water features.

## **5.5 POTENTIAL CONTAMINANT SOURCES**

As identified in the desk study, the northern area of the site was historically developed from the 1880's. There was also evidence of a refuse tip within the northeast area during the 1960's. Following demolition of these buildings the flats, that currently occupy the site, were constructed during the 1980's. There is evidence of earthworks within the site to create a level plateau for the construction of the flats.

The potential types of contaminants of concern are listed below:

## 5.5 POTENTIAL CONTAMINANT SOURCES (CONTINUED)

- Metals, semi-metals, and inorganics within the shallow made ground
- Polyaromatic hydrocarbons (PAH) within the shallow made ground
- Asbestos within the shallow made ground and the building fabric.

## 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 and/or soil attached to home-grown produce
- Ingestion of home-grown produce
- 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 6.

**5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL (CONTINUED)**

<b>Table 6: Preliminary Conceptual Exposure Model</b>				
Source		Receptor	Pathway	Potentially Active Pathway?
Origin	Contaminant			
Made Ground of unknown origin and historical land uses	Metals, semi-metals, non-metals, PAH, asbestos	Resident – human health	Dermal Contact with made ground/dust	✓
			Ingestion of soil and/or soil attached to home-grown produce	✓
			Ingestion of home-grown produce	✓
			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	✓	
Asbestos containing material (ACM) within the building fabric	Asbestos containing material (ACM)	Human health	Inhalation of dust/fibres	✓
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	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.

An investigation comprising the drilling of six windowless sample holes (WS1 to WS6), two hand excavated trial pits (HP1 and HP2) and soil infiltration tests in the trial pits was carried out on the 15<sup>th</sup> August 2022.

The windowless sample holes were located across the site and drilled to a maximum depth of 3.9m below existing ground level. The purpose of the windowless sample holes was to prove the shallow ground conditions and allow an assessment of the most appropriate foundation type for the proposed development. In situ strength testing (SPT/CPTs) was carried out in the windowless sample holes at 1.0m intervals and at the depth of refusal of the sampling equipment.

The hand excavated trial pits were excavated using hand tools to a depth of 1.0m below existing ground level. The soil infiltration tests were completed by adding clean water to each excavation and the fall in water level measured. Three cycles were completed at each trial pit location.

Representative soil samples were taken from the windowless sample holes for laboratory chemical and geotechnical testing (where sufficient sample was available) 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 windowless sample holes and hand excavated trial pits 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.



### 6.1 FIELDWORKS (CONTINUED)

The approximate locations of the windowless sample holes and hand excavated trial pits are shown on Figure 2, while their logs are presented in Appendices A and B. The results of the shallow soil infiltration tests are presented in Appendix C.

### 6.2 FIELD OBSERVATIONS

No visual or olfactory evidence of any contamination was observed during the drilling of the windowless sample holes or excavation of the trial pits.

Broken fragments of cement bound asbestos sheet was identified on the existing bank in the central area of the site. This location is provided on Figure 2.

### 6.3 LABORATORY CHEMICAL TESTING

Representative soil samples were taken from the windowless sample holes drilled across the site, stored at the appropriate temperature and dispatched to the 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)	Asbestos

The results of all the soil chemical testing is presented in Appendix D.

#### **6.4 LABORATORY GEOTECHNICAL TESTING**

Limited natural ground was retrieved in the windowless sample holes and consequently two natural soil samples obtained from the site were dispatched to the laboratories of Apex Testing Solutions (ATS) for analysis of pH and water-soluble sulphate and a single sample was issued for moisture content and atterberg limits.

The results of the geotechnical testing are provided in Appendix E.

The results indicate that the near surface natural soils comprised a reddish brown clayey, sandy gravel and are non-plastic and the location (WS1) and depth sampled (1.0m) below existing ground level.

## **7.0 GROUND CONDITIONS**

The site investigation has identified a significant mantle of made ground over superficial glacial till deposits. It is important to note that the natural soils were only recorded in WS1, WS3 and WS6, with limited penetration into these materials possible.

### **7.1 TOPSOIL**

Topsoil was recorded in WS4, WS5 and WS6 drilled in the existing grassed areas with recorded thicknesses of 0.4m, 0.4m and 0.05m. The topsoil generally comprised loose, brown, silty, slightly gravelly, organic rich sand. The gravel comprised fine to coarse, angular and subangular brick, ash, clinker and limestone.

### **7.2 MADE GROUND**

Made ground was recorded at each exploratory point and where proven extended to depths of between 0.5m and 3.7m below existing ground level.

Hardcore like materials were locally recorded beneath existing hard standing, with these materials comprising limestone and igneous rock gravel.

It is important to note that the full thickness of made ground was only proven in WS1, WS3 and WS6.

The made ground was variable in strength/density and predominantly granular materials of a heterogenous nature and characterised by the presence of anthropogenic materials including fine to coarse gravel of ash, clinker, vesicular slag, ceramic, and brick, with variable concentrations of sandstone and limestone.

Locally, cobbles and suspected boulders were present in the made ground. These coarser materials are likely to be the cause of the refusal of the windowless sampling equipment at many of the locations that could not penetrate the made ground.

### 7.3 SUPERFICIAL SOILS

Natural superficial soils were recorded beneath the made ground in WS1 (at 0.5m depth), WS3 (at 3.7m depth) and WS6 (at 1.8m depth).

Where recorded the natural superficial soils were granular and described as loose, becoming dense, orange brown, red brown, light brown and grey, clayey or slightly silty, sandy gravel or gravel and cobbles of subangular to rounded sandstone and occasional limestone.

Limited penetration was recorded with the windowless sampling equipment in these materials. Uncorrected N values suggest that these materials rapidly becoming dense. It should be noted that cobbles and potential boulders in the natural soils can artificially elevate N values.

### 7.4 GROUNDWATER

No groundwater was recorded during the drilling of the windowless sample holes or the excavation of the shallow hand excavated trial pits.

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.

### 7.5 SOIL INFILTRATION TESTS

Soil Infiltration tests were undertaken in HP1 and HP2 at 1.0m depth. These trial pits extended into the existing granular made ground and did not extend into the underlying natural soils/rocks.

Three rapid test cycles were completed in HP1. A design infiltration rate of  $2.0 \times 10^{-03}$  m/s recorded. Three rapid infiltration tests were also completed in HP2 which resulted in a design infiltration rate of  $4.5 \times 10^{-03}$  m/s

It should 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.

The percolation testing results are specific to the location and depths at which the tests were carried out.

## 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 residential 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<sup>soil</sup> for a residential with home grown produce end use have been adopted, where considered appropriate.

Since the results of the testing indicate total organic carbon content (TOC) in the range of 0.4% to 5.0%, therefore the results have been compared to the respective guidelines, where applicable, for 1% soil organic matter content.

The soil test results for made ground have been summarised and are shown in Appendix F.

#### 8.2.1 *Made Ground*

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

It is also important to note that fragments of suspected cement bound asbestos sheeting was identified at the site surface within the central area of the site.

Elevated concentrations of the PAH compounds benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(ah)anthracene were recorded in a sample of made ground at 0.5m depth in WS5. The recorded values of 8.2mg/kg, 5.3mg/kg, 6.9mg/kg and 1.0mg/kg exceed their respective S4UL screening criteria of 7.2mg/kg, 5.3mg/kg, 6.9mg/kg and 0.24mg/kg respectively.

## **8.2 SOIL CONTAMINATION** (CONTINUED)

### **8.2.2 *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 holes. At the time of writing this report no samples of natural ground had been tested. It is considered likely that concentrations of determinands 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.



### 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, groundwater and gas monitoring. Pathways identified as a relevant pollutant linkage require appropriate risk assessment or mitigation measures (see Section 10).

Table 7: Revised Conceptual Exposure Model						
Source		Receptor	Pathway	Preliminary Active Pathway? (see Sect. 5.7)	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Made Ground of unknown origin and historical land uses	Metals, semi-metals, non-metals, PAHs and asbestos	Resident – human health	Dermal Contact with made ground/dust	✓	✓	Elevated concentrations of PAH compounds identified within the made ground – risk assess. Observed asbestos product fragments at site surface within the central areas of the site.
			Ingestion of soil and/or soil attached to home-grown produce	✓	✓	
			Ingestion of home-grown produce	✓	✓	
			Inhalation of dust	✓	✓	
			Inhalation of vapours – indoor/outdoor	✓	X	
	Metals, semi-metals, inorganics and PAHs	Groundwater quality	Leaching from made ground	✓	✓	Contaminants in the made ground have the potential to leach to groundwater – risk assess

**9.0 REVISED CONCEPTUAL EXPOSURE MODEL (CONTINUED)**

<b>Table 7: Revised Conceptual Exposure Model</b>						
Source		Receptor	Pathway	Preliminary Active Pathway? (see Sect. 5.7)	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
	Metals, semi-metals, inorganics and PAHs	Surface water quality	Transportation within groundwater	✓	✓	Contaminants may be transported from groundwater to surface water receptors – risk assess.
Made Ground of unknown origin and natural ground	Metals, semi-metals, non-metals, PAHs, pH and Sulphates	Building Materials Durability	Direct contact	✓	✓	Building materials will be in contact with made 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 on site in the form of made ground – 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 secured from third party access.

### 10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

#### 10.3.2 Future Site Users

The contamination test results, and investigation observations show elevated concentration levels in the made ground (at shallow depth) of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(ah)anthracene.

It is important to note that fragments of cement bound asbestos containing sheet were also identified at the ground surface on the embankment within the central area of the site.

Given the elevated PAH concentrations within the made ground and the presence of cement bound asbestos sheet at the site surface, 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,
- Ingestion of soil attached to homegrown produce,
- Ingestion of homegrown produce,
- Inhalation of soil bourn dust.

Given the presence of ACMs at the site surface, it is considered that a potential risk to human health may exist via the following relevant pollutant linkages:

- Dermal contact and resultant inhalation,
- Inhalation of soil bourn dust.

The inhalation of vapours pathways (indoor and outdoor air) are not considered to be active since the contaminants of concern identified are not sufficiently volatile.

The general approach for assessing the potential risk to a receptor is by a combination of qualitative and quantitative risk assessment.

A quantitative risk assessment would involve selecting and deriving generic assessment criterion to compare low risk substances, based on the fate, transport and toxicological properties and the exposure scenario being considered.

### 10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

There are no published screening criteria values for asbestos, and neither are there any in preparation. As discussed in CIRIA Report C733 *Asbestos in Soil and Made Ground: a Guide to Understanding and Managing Risks*, agreement has yet to be reached in the UK on an appropriate toxicological criterion on which a screening value for asbestos could be based. It also states that 'based on current knowledge, it is believed that that a scientifically defensible UK GAC (generic acceptance criteria) for asbestos in soil cannot be developed or imported.'

It is therefore considered that a more qualitative assessment of the potential risk is appropriate, as asbestos is determined to be a non-threshold substance.

CIRIA Report C733 states that asbestos (asbestos containing materials and asbestos containing soils) only present a risk to health if airborne fibres are released into the atmosphere. The report goes on to state that the number of fibres released into the air from asbestos containing soils is likely to be influenced by a number of site-specific factors, as listed below.

- Characteristics of the asbestos (concentration, degree of heterogeneity, depth in relation to final ground level, volume/area, type, condition, extent of bonding, weathering, fraction of free fibres, shape of fibres);
- Characteristics of the soil (type, moisture content, surface vegetation, presence of hard standing)
- Weather (humidity, precipitation, temperature, ground freezing, wind speed and direction);
- Land use/soil disturbing activities (behaviour of receptors, distance between receptor and source, types of activity, duration/frequency of activity, dust mitigation measures).

The depth below ground level of the asbestos containing soils is imperative to the potential risk posed. CIRIA Report C733 states that in the absence of significant physical disturbance, exposure to airborne asbestos fibres from soil will be from friable materials or asbestos fibres present at, or very close to, the soil surface (the soil – air interface).

Materials that have been buried, or are below the soil surface, will pose a lower, or less immediate, risk as these materials are unable to release airborne fibres unless brought to the soil surface by physical activity/disturbance.

### **10.3 HUMAN HEALTH RISK ASSESSMENT** (CONTINUED)

It is considered that the remedial works required at the site should include reduction of any encountered asbestos containing materials (ACM) by hand picking in-situ by an asbestos awareness trained contractor. The ACM picked from the site and any soil matrix will require disposal to a licenced tip.

In order to break the identified potential exposure pathways between the made ground and the future site end users, it will be necessary to place a capping layer of a minimum thickness of 600mm of clean imported subsoil and topsoil, placed on top of a hi-vis geotextile separation/alert membrane in all gardens and areas of soft landscaping.

The thickness of this capping layer will have to be agreed with the regulators.

#### **10.3.3 Construction Workers**

The presence of elevated concentrations of PAHs in the made ground and asbestos containing materials at the site surface indicate a potential risk to construction workers. Appropriate measures are therefore recommended for works involving the made ground materials which are known to be present beneath the site.

During site preparation and construction works, the soils should be dampened down to minimise the potential for soils to dust and subsequent release of any asbestos fibres.

During exposure of soils, the exposed surface should be inspected by asbestos awareness trained contractors and the surface should be handpicked to remove any residual asbestos containing materials, if they are identified.

These works should be carried out under an appropriate risk assessment and managed in accordance with the Control of Asbestos Regulations 2012 (CAR 2012).

The handpicked asbestos containing materials should be disposed off-site at a suitable licensed facility as hazardous waste. These works should be carried out by appropriately licensed contractors.

All excavations should be regularly checked for safe atmospheres.



### 10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

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.

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.

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 copper, nickel and zinc in the shallow made ground materials, do not indicate the potential for adverse effects to vegetation. However, the physical nature of the existing made ground does not provide a suitable growing medium for vegetation. 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 will require the provision of a minimum 600mm thick capping layer of clean, inert subsoil and topsoil materials, placed on top of a hi-vis geotextile separation/alert membrane.

## 10.5 GROUNDWATER RISK ASSESSMENT

The results of the laboratory chemical testing carried out on the made ground materials has not identified any significantly elevated concentrations other than localised PAHs. The presence of PAHs dictates that all gardens and landscaped areas are capped with a minimum thickness of 600mm of clean imported topsoil and subsoil, placed on top of a hi-vis geotextile separation/alert membrane. Elsewhere, the site will comprise buildings and areas of hardstanding.

The potential for any rainfall that falls onto the soft finished areas to infiltrate the ground and migrate through the 600mm thick capping soils and geotextile membrane into the made ground and generate unacceptable concentrations of leachate is considered to be low.

It is therefore considered that the potential risk to controlled waters is low.

It is possible that the Local Authority and NRW may require groundwater to be sampled and analysed and a more detailed groundwater risk assessment completed for the site to confirm this assessment.

## 10.6 GROUND GAS RISK ASSESSMENT

No ground gas monitoring has been undertaken on site as part of this investigation.

Given the historical usage of the site, and the significant thickness of made ground identified, which contains inclusions of ash, clinker, slag and brick, there is the potential for ground gas generation from the existing made ground.

Consequently, at this stage the risks of made ground sourced ground gases affecting the proposed residential properties is considered to be moderate and ground gas precautionary measures may be required onsite. This will likely require the inclusion of a suitable gas protective membrane and underfloor venting.

It is therefore recommended that ground gas monitoring standpipes are installed on site (as part of the recommended future drilling works) and a programme of ground gas monitoring completed on site to form the basis of a detailed ground gas risk assessment.

## 10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

### 10.7.1 Concrete Classification

A summary of the laboratory chemical test results for the chemicals monohydric phenol, sulphur, total sulphate, water soluble sulphate, sulphide and pH, which may adversely affect the durability of building materials is presented in Appendix F.

#### **Made Ground**

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.

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 for water soluble sulphate within the made ground of 290mg/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 8.2 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.

#### **Natural Soils**

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 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 for water soluble sulphate within the natural soils of 29.5mg/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 7.8 has been determined. The Design Sulphate Class has been modified to give a site ACEC class of AC-1 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 PAHs) 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 made ground are likely to be classified as non-hazardous. The existing natural ground is likely to be classified as non-hazardous.

Any asbestos containing materials (ACMs) will be classified as 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.

## **10.8 WASTE DISPOSAL** (CONTINUED)

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.

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

The ground beneath the buildings has not been examined but on present evidence the existing floor slabs are in good condition and there is no evidence of any basements or past spills of potential contaminants. Some degree of made ground material should be expected beneath the existing floor slabs.

Given the age of the structure, the presence of asbestos within buildings fabric and around/within below ground structures as form work, ducting etc cannot be discounted.

## **11.0 ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS**

### **11.1 DETAILS OF PROPOSED DEVELOPMENT**

The proposed development will comprise the demolition of the existing blocks of flats followed by the construction of a new scheme of flats, the layout of which has not been finalised. The development is likely to include an access road, car parking areas, areas of landscaping and possibly private garden areas.

### **11.2 SITE PREPARATION**

It is recommended that a building material inventory and structural appraisal of the remaining structures are carried out to identify any hazardous materials or potentially unsafe conditions so that appropriate demolition strategies and waste management control can be both costed and implemented. All asbestos containing materials should be removed by an approved contractor from within the existing structure.

Prior to works commencing on site, any services, including any culverts, within the proposed development areas should be identified and either diverted or protected. Any diversion works should be carried out under the supervision of, and to the specification of appropriate Statutory Authorities. The resulting excavation should be backfilled with suitable granular fill material laid and compacted to Department of Transport (DTp) Specification for Earthworks.

The site should be inspected and the near surface asbestos containing materials disposed of off site to a suitably licensed facility.

A system should be established for identification and dealing with any, unforeseen contamination encountered during the site works (including identification of any potential asbestos containing materials or hydrocarbon contamination hotspots). Any contamination, or suspected contamination, should be reported to the site manager, so that appropriate action may be taken, following specialist advice if necessary.

Consideration should be given to protection of adjacent structures during demolition and construction phases to avoid undermining or damage.

Following the demolition of the existing buildings, all foundations, floor slabs, manholes, drainage runs, and other buried structures should be demolished and removed, if no longer required.



## 11.2 SITE PREPARATION (CONTINUED)

Any resulting demolition materials should be crushed to an acceptable size for re-use, typically <125mm maximum particle size. Any deep service chambers, if present should be excavated and obstructions removed.

Existing tarmac and any surface concrete should be planed off/broken out and the materials set aside for appropriate re-use.

The resultant voids from the demolition works should be brought back up to the required level with well compacted suitable granular materials, laid and compacted in layers and benched into the surrounding soils. Department of Transport (DTp) Type 1 sub-base or similar approved, could be used and should be compacted in layers, in accordance with DTp Specification for Highway Works.

All exposed formations/sub formations should be visually inspected for asbestos containing materials (ACMs), particularly within the footprint of the existing buildings and underneath hardstanding areas.

All materials to be disposed of offsite should be sent to a suitably licensed facility. Licenced tips may require additional waste classification and Waste Acceptance Criteria testing of materials to ensure compliance with their current licence agreements.

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:

- Protection/diversion of any active surface water drains that cross the site,
- Segregation of arising's from 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 fugitive dust emissions,
- Appropriate boundary air and dust monitoring, if required

Some surface water and groundwater management will be required in order to ensure the protection to the earthworks and materials. Allowances should be made for encountering springs or incidences of perched water within excavations.

## **11.2 SITE PREPARATION** (CONTINUED)

The exposed formations should be checked and any soft spots/areas should be removed and replaced with well compacted site won or imported granular fill material.

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.

Exposed formations should be protected from site traffic and inclement weather in order to preserve their integrity. Any soft spots/areas should be removed and replaced with well compacted site won or imported granular fill material.

Any required site preparatory earthworks should be properly designed, specified and supervised by a suitably qualified engineer. Allowances should be made for site supervision by a competent and suitably qualified Engineer, sampling, and field and laboratory testing.

## **11.3 FOUNDATIONS AND FLOOR SLABS**

The following recommendations assume that the site will be developed with two to three storey apartment blocks. If heavier structures are planned, a further review of the foundation recommendations given below will be required.

The made ground deposits encountered within the site area are variable in physical nature and in their present state of compaction, these materials are not deemed suitable load bearing materials for the proposed structures.

The made ground has only been fully penetrated within three of the windowless sample holes drilled on site and where the full thickness of made ground was proven there was very limited penetration into the natural soils and rocks. Thus no significant information is available with regards to the presence, depth and nature of the natural soils and/or rocks underlying the made ground. The following recommendations should therefore be considered preliminary and will require reviewing and verification in the future.

The chosen foundation should fully penetrate the made ground and extend into the natural competent granular soils or rocks beneath the made ground.

At this stage, it is recommended that piled foundations are adopted, and are taken down into suitably competent in-situ materials comprising either a suitable thickness of superficial soils (glacial till) or the underlying Bishopston Formation and Twrch Sandstone Formation strata at depth. Based on the information available to date, steel driven, bored or drilled piles could be used and taken down to appropriate sets.

### 11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

A precast concrete driven piled system would not be acceptable due to the proximity of adjoining residential structures and services and the vibrations generated during the piling process. In addition, the presence of obstructions (large cobbles and boulders) in the made ground would also preclude their use

The length of the proposed piles and the appropriate set or rock socket cannot be determined from the windowless samples undertaken to date. This should be determined by a specialist piling contractor and will be subject to undertaking further geotechnical site investigation comprising deep geotechnical boreholes.

The advice of a specialist piling contractor should be sought regarding the specific design and load bearing capacity of the piles. Under the selected intensity of loading, the total settlement of each pile should not exceed 10mm and any differential settlements between adjacent piles should be less than half this value. Any load contribution from the made ground and any soft alluvial deposits, if encountered, should be ignored in the pile design.

Based on the encountered ground conditions, a steel driven pile or bored/drilled pile system should be feasible. The choice of a steel driven, or bored/drilled pile will ultimately depend on the density of the superficial soils and their thickness, the presence of any large natural obstructions (boulders) and the requirement for a rock socket should an insufficient thickness of superficial materials be present to generate the required pile skin friction.

The piles should generate their safe working load from a combination of shaft skin friction and end bearing, and also potentially from a suitable rock socket into the Bishopston Formation and Twrch Sandstone Formation.

Allowances should be made for negative skin friction within any made ground or soft/loose in-situ soils if ground levels are to be raised.

In order to determine the most appropriate piling solution for the proposed development and to assist with the detailed design of the piled foundations, a specialist piling contractor should be consulted.

In addition, the piling contractor may request that additional deeper boreholes are drilled on site to provide detailed information for pile design.

Allowances should be made by the piling contractor for carrying out suitable pile testing and for potentially for encountering large cobbles/boulders within the natural granular soils.

### **11.3 FOUNDATIONS AND FLOOR SLABS** (CONTINUED)

The piling contractor should also allow for the potential presence of obstructions within the made ground deposits. Such obstructions should be removed by excavation plant, or it may be possible to reposition the piles to avoid the obstructions. This should be minimal after site clearance works.

Suspended ground floor slabs should be adopted across the site.

No radon protective measures are required to be incorporated within the floor slab.

At this stage, allowances should also be made for suitable ground gas protective measures, to be confirmed following completion of the recommended ground gas monitoring programme.

### **11.4 EXCAVATIONS AND FORMATIONS**

All excavations should be possible with normal soil excavating machinery. Allowances should be made for the use of pneumatic breaker attachments, or similar tools, or larger plant, should any buried obstructions be encountered.

Excavations to depths of typically 2.0 to 3.0m depth, based on the evidence of the windowless sample holes are unlikely to encounter significant groundwater inflows. Perched pockets of groundwater associated with buried foundations and other structures should, however, be allowed for.

Any groundwater inflows/seepages are likely to be slight, and these, together with any rainfall infiltrations, should be dealt with by conventional pumping techniques.

It is unlikely that excavations will intercept the groundwater table, which is likely to lie at depths typically in excess of 2.0m below existing ground level. Any water ingresses should be adequately controlled at all times to ensure stability and protection of the temporary and permanent works

Some pit side instability within the made ground deposits and poorly consolidated alluvial soils, if encountered, should be anticipated. The stability of trenches is likely to rapidly deteriorate over time, and excavations may require shoring to maintain an open excavation.

The sides of excavations deeper than 1m should be fully supported by trench boxes, or temporarily battered at gradients of typically 30°.

## 11.5 ACCESS ROADS AND CAR PARKING AREAS

Any existing foundations, slabs and other hard surfacing should be broken out beneath all highway, drive and car parking areas.

There are likely to be variations in the strength of the materials at the formation levels and therefore for the access road and car parking formations, a California Bearing Ratio (CBR) value of between 1% and 2% could be used for much of the site.

In-situ testing should be undertaken to confirm these initial assumptions. Materials should be considered frost susceptible.

After proof rolling the pavement formations, any 'soft spots/areas' should be removed and replaced with well compacted imported granular materials. Department of Transport (DTp) Type 1 sub-base, or similar approved, could be used and should be compacted in layers, in accordance with the DTp Specification for Highways Works.

It should be noted that the Local Highway Authority may insist that field CBR tests should be carried out to confirm the above recommendations. Allowances should therefore be made for carrying out such tests and any further works which the Local Authority may require as a result of these tests.

## 11.6 DRAINAGE

Indicative soil infiltration tests have been undertaken within HP1 and HP2. It should be noted, that owing to the thickness of made ground recorded on site and the limitations afforded to hand excavated pits, the tests were completed in the existing made ground deposits.

Discharging of stormwater into the existing made ground is not normal practice and can cause many potential issues, which include the following:

- Mobilisation of contaminants in the made ground due to concentrated discharges of water and the generation of contaminant leachate and consequently impact on groundwater and surface water systems;
- Washing out fines and voids creating settlement local to the soakaway;
- Potential for inducing significant slope instability in existing slopes owing to disturbance during construction and the action of water discharge from the soakaway.

## **11.6 DRAINAGE** (CONTINUED)

The underlying natural soils and rocks may be a suitable medium for the disposal of storm water via soakaways. It should be noted, however, that the soakaways could potentially drain down onto the existing groundwater table and therefore the volume of water into the soakaways and the depth at which soakaways will work will be constrained by the groundwater levels.

It is recommended that a number of BRE 365 compliant soil infiltration tests are undertaken in machine excavated trial pits once the existing structure has been demolished. These full-scale soil infiltration tests could be location and depth specific and used to design the sustainable drainage at the site. These soil infiltration tests should extend into the natural soils underlying the made ground.

Monitoring of groundwater levels on site and local to proposed soakaway locations should be undertaken prior to their final design.

## **11.7 RECOMMENDED FURTHER WORKS**

It is recommended that a number of BRE 365 compliant soil infiltration tests are undertaken in machine excavated trial pits once the existing structure has been demolished. These full-scale soil infiltration tests could be location and depth specific and used to design the sustainable drainage at the site. These soil infiltration tests should extend into the natural soils underlying the made ground.

It is recommended that a number of deeper shell and auger and or rotary boreholes are drilled on site in order to prove the thickness of the made ground, the nature of the underlying deposits and confirm an appropriate foundation solution for the proposed development.

These boreholes will also be required by a piling contractor to aid in the design of piled foundations.

Ground gas and groundwater monitoring standpipes should be installed in the boreholes.


Ground gas will need to be monitored over a minimum period of 3 months, to include one reading at low and/or falling barometric pressure. Any precautionary measures required for the new structure should be designed on the basis of this monitoring.


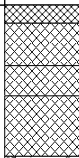
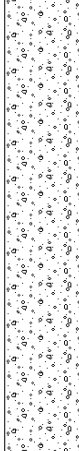
The groundwater level in the standpipes could be monitored at regular intervals.


## **APPENDIX A**


### **WINDOWLESS SAMPLE LOGS**





 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: <b>Cefn Isaf</b>	Project No.: <b>14067</b>	Borehole No.: <b>WS1</b> Sheet 1 of 1
	Location: <b>Merthyr Tydfil</b>	Client: <b>Merthyr Valleys Homes Ltd</b>	Coordinates:
Equipment: <b>Competitor Dart</b>	Diameter of Casing:	Level:	Scale <b>1:25</b>
Diameter of Boring: <b>101+87mm</b>	Depth of Casing:	Dates <b>15/08/2022 - 15/08/2022</b>	Logged By: <b>GNS</b>


Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	ES		0.06			Bituminous material (MADE GROUND).
					0.20			Compact dark grey and black slightly silty fine to coarse angular to subangular gravel of bitumen coated igneous rock (MADE GROUND).
					0.30			Compact light grey and beige slightly silty fine to coarse angular gravel of limestone (MADE GROUND).
					0.50			Loose dark grey and grey slightly silty fine to coarse angular gravel of limestone, ash, clinker and slag (MADE GROUND)
					0.50			Loose becoming dense orange brown and red brown slightly silty sandy GRAVEL with frequent cobbles of subrounded and subangular sandstone and siltstone. Gravel is fine to coarse rounded to subangular sandstone.
		1.00	D	N=3 (2,1/1,0,1,1)	2.00			
		1.00	C					
		2.00	C	50 (3,10/50 for 95mm)	2.00		End of Borehole at 2.00 m	


<b>Remarks:</b> 1. Refusal of sampling equipment at 2.0m depth.	<b>Key:</b> 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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	Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: <b>Cefn Isaf</b>	Project No.: <b>14067</b>	Borehole No.: <b>WS2</b> Sheet 1 of 1
	Location: <b>Merthyr Tydfil</b>	Client: <b>Merthyr Valleys Homes Ltd</b>	Coordinates:	Hole Type: <b>WLS</b>
Equipment: <b>Competitor Dart</b>	Diameter of Casing:	Level:	Scale: <b>1:25</b>	
Diameter of Boring: <b>101+87mm</b>	Depth of Casing:	Dates: <b>15/08/2022 - 15/08/2022</b>	Logged By: <b>GNS</b>	


Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.09		Dense grey CONCRETE (MADE GROUND).	
		0.30	ES				Compact brown slightly silty slightly gravelly sand with occasional cobbles of subrounded to angular concrete, sandstone, limestone and rare brick and ash (MADE GROUND).	
		1.00	C	N=50 (3,4/50 for 235mm)	1.00		Soft to firm brown silty sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded sandstone.	
		1.40	C	50 (25 for 40mm/50 for 20mm)	1.40		Dense brown clayey slightly gravelly sand with frequent cobbles of blocky limestone and rounded and subrounded sandstone. Gravel is fine to coarse rounded and subrounded sandstone and subangular limestone and fine ash (MADE GROUND).	
							End of Borehole at 1.40 m	



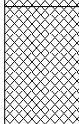
<b>Remarks:</b> 1. Refusal of sampling equipment at 1.4m depth.	<b>Key:</b> D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
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 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: <b>Cefn Isaf</b>	Project No.: <b>14067</b>	Borehole No.: <b>WS3</b> Sheet 1 of 1
	Location: <b>Merthyr Tydfil</b>	Client: <b>Merthyr Valleys Homes Ltd</b>	Coordinates:
Equipment: <b>Competitor Dart</b>	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: <b>101+87+76+66mm</b>	Depth of Casing:	Dates 15/08/2022 - 15/08/2022	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.12		Dense grey CONCRETE (MADE GROUND).	
		0.40	ES				Medium dense grey brown slightly silty gravelly sandy with frequent cobbles of subrounded and subangular brick, sandstone and limestone. Gravel is fine to coarse angular to subrounded sandstone, brick, ash, clinker and limestone (MADE GROUND).	
		1.00	C	N=21 (3,4/7,5,5,4)				
		2.00	C	N=12 (2,2/2,4,4,2)				
		3.00	C	N=4 (1,0/1,1,1,1)	3.00		Very loose to loose light brown, grey and dark brown slightly gravelly sand (MADE GROUND). - Soils noted as wet	
	3.80	D		3.70		Medium dense to dense light brown and grey slightly silty sandy GRAVEL with frequent cobbles of subangular to rounded sandstone and occasional limestone. Gravel is fine to coarse subangular to rounded sandstone and rarely limestone.		
	3.90	C	50 (10,14/50 for 85mm)	3.90		End of Borehole at 3.90 m		


<b>Remarks:</b> 1. Refusal of sampling equipment at 3.9m depth.	<b>Key:</b> 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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	Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: <b>Cefn Isaf</b>	Project No.: <b>14067</b>	Borehole No.: <b>WS4</b> Sheet 1 of 1
	Location: <b>Merthyr Tydfil</b>	Client: <b>Merthyr Valleys Homes Ltd</b>	Coordinates:	Hole Type: <b>WLS</b>
Equipment: <b>Competitor Dart</b>	Diameter of Casing:	Level:	Scale: <b>1:25</b>	
Diameter of Boring: <b>101mm</b>	Depth of Casing:	Dates: <b>15/08/2022 - 15/08/2022</b>	Logged By: <b>GNS</b>	


Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40		Grass onto loose brown slightly silty slightly gravelly sand. Gravel is fine to coarse angular limestone, ash and clinker (TOPSOIL).	
		0.65	ES		0.60		Dense grey and brown slightly sandy gravel and cobbles of angular limestone (MADE GROUND).	
		1.00	C	50 (10,14/50 for 85mm)	1.00		Loose to medium dense dark grey and black slightly silty sandy gravel. Gravel is fine to coarse angular and subangular ash, clinker, sandstone and limestone (MADE GROUND).	
							End of Borehole at 1.00 m	

<b>Remarks:</b> 1. Refusal of sampling equipment at 1.0m depth.	<b>Key:</b> 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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 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: <b>Cefn Isaf</b>	Project No.: <b>14067</b>	Borehole No.: <b>WS6</b> Sheet 1 of 1
	Location: <b>Merthyr Tydfil</b>	Client: <b>Merthyr Valleys Homes Ltd</b>	Coordinates:
Equipment: <b>Competitor Dart</b>	Diameter of Casing:	Level:	Scale: <b>1:25</b>
Diameter of Boring: <b>101+87mm</b>	Depth of Casing:	Dates: <b>15/08/2022 - 15/08/2022</b>	Logged By: <b>GNS</b>



Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Pattern]		0.05			0.05			Grass onto loose brown silty slightly gravelly organic rich sand. Gravel is fine and medium subrounded sandstone and rare ash and brick (TOPSOIL). Loose light brown silty sand (MADE GROUND). Loose brown and grey slightly silty slightly sandy slightly gravelly cobbles of rounded to subangular sandstone and conglomerate. Gravel is fine to coarse rounded sandstone (MADE GROUND). Loose dark grey and black silty slightly gravelly to gravelly sand. Gravel is fine to coarse angular and subangular ash, clinker, vesicular slag, brick, ceramic and rounded sandstone (MADE GROUND).
		0.10			0.10			
		0.50	ES		0.45			
		1.00	C	N=9 (1,2/3,2,2,2)				
		1.90	C	50 (9,11/50 for 160mm)	1.80 1.90		Dense orange brown and grey slightly clayey sandy GRAVEL and COBBLES of subrounded and subangular sandstone. End of Borehole at 1.90 m	


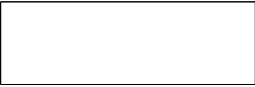

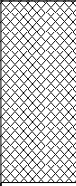

<b>Remarks:</b> 1. Refusal of sampling equipment at 1.9m depth.	<b>Key:</b> D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
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## **APPENDIX B**

### **HAND EXCAVATED TRIAL PIT LOGS**



 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			<b>Project Name:</b> <b>Cefn Isaf</b>			<b>Project No.:</b> <b>14067</b>		<b>Trial Pit No.:</b> <b>HP1</b> Sheet 1 of 1	
<b>Location:</b> Merthyr Tydfil			<b>Client:</b> Merthyr Valleys Homes Ltd			<b>Logged By:</b> GNS		<b>Scale:</b> 1:25	
<b>Equipment:</b> Hand Tools			<b>Coordinates:</b>			<b>Dimensions</b> 0.30m			
<b>Date Excavated:</b> 15/08/2022			<b>Level:</b>			<b>Depth:</b> 1.00m		0.30m	
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
						Grass onto loose brown slightly silty slightly gravelly sand. Gravel is fine to coarse angular limestone, ash and clinker (TOPSOIL).			
			0.40			Dense grey and brown slightly sandy gravel and cobbles of angular limestone (MADE GROUND).			
			0.60			Loose to medium dense dark grey and black slightly silty sandy gravel. Gravel is fine to coarse angular and subangular ash, clinker, sandstone and limestone (MADE GROUND).			
			1.00			End of Trialpit at 1.00 m <div style="text-align: right; margin-top: 100px;">1 2 3 4 5</div>			
<b>Remarks:</b> 1. Pit excavated by hand using hand tools to 1.0m depth. 2. Soil infiltration test undertaken in pit.			<b>Groundwater:</b> Dry			<b>Key:</b> D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			<b>Stability:</b> Stable in the short term						

		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		<b>Project Name:</b> <b>Cefn Isaf</b>		<b>Project No.:</b> <b>14067</b>		<b>Trial Pit No.:</b> <b>HP2</b> Sheet 1 of 1	
<b>Location:</b> Merthyr Tydfil		<b>Client:</b> Merthyr Valleys Homes Ltd		<b>Logged By:</b> GNS		<b>Scale:</b> 1:25			
<b>Equipment:</b> Hand tools		<b>Coordinates:</b>		<b>Dimensions:</b> 0.30m		Depth : 1.00m 0.30m			
<b>Date Excavated:</b> 15/08/2022		<b>Level:</b>		Depth : 1.00m 0.30m					
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
			0.40			Grass onto loose brown slightly silty slightly gravelly organic rich sand. Gravel is fine to coarse angular and subangular brick, ash, clinker and limestone (TOPSOIL).			
			1.00			Medium dense to dense brown, grey, beige and red brown slightly clayey slightly sandy gravel and cobbles of angular brick, concrete and limestone. Gravel is fine to coarse angular and subangular brick, ash, clinker, limestone and sandstone (MADE GROUND).			
						End of Trialpit at 1.00 m			
						1			
						2			
						3			
						4			
						5			
<b>Remarks:</b> 1. Pit excavated by hand using hand tools to 1.0m depth. 2. Soil infiltration test undertaken in pit.				<b>Groundwater:</b> Dry		<b>Key:</b> D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
				<b>Stability:</b> Stable in the short term					

## **APPENDIX C**

### **SOIL INFILTRATION TESTS**

# BRE365 SOIL INFILTRATION RATE TEST - HP1

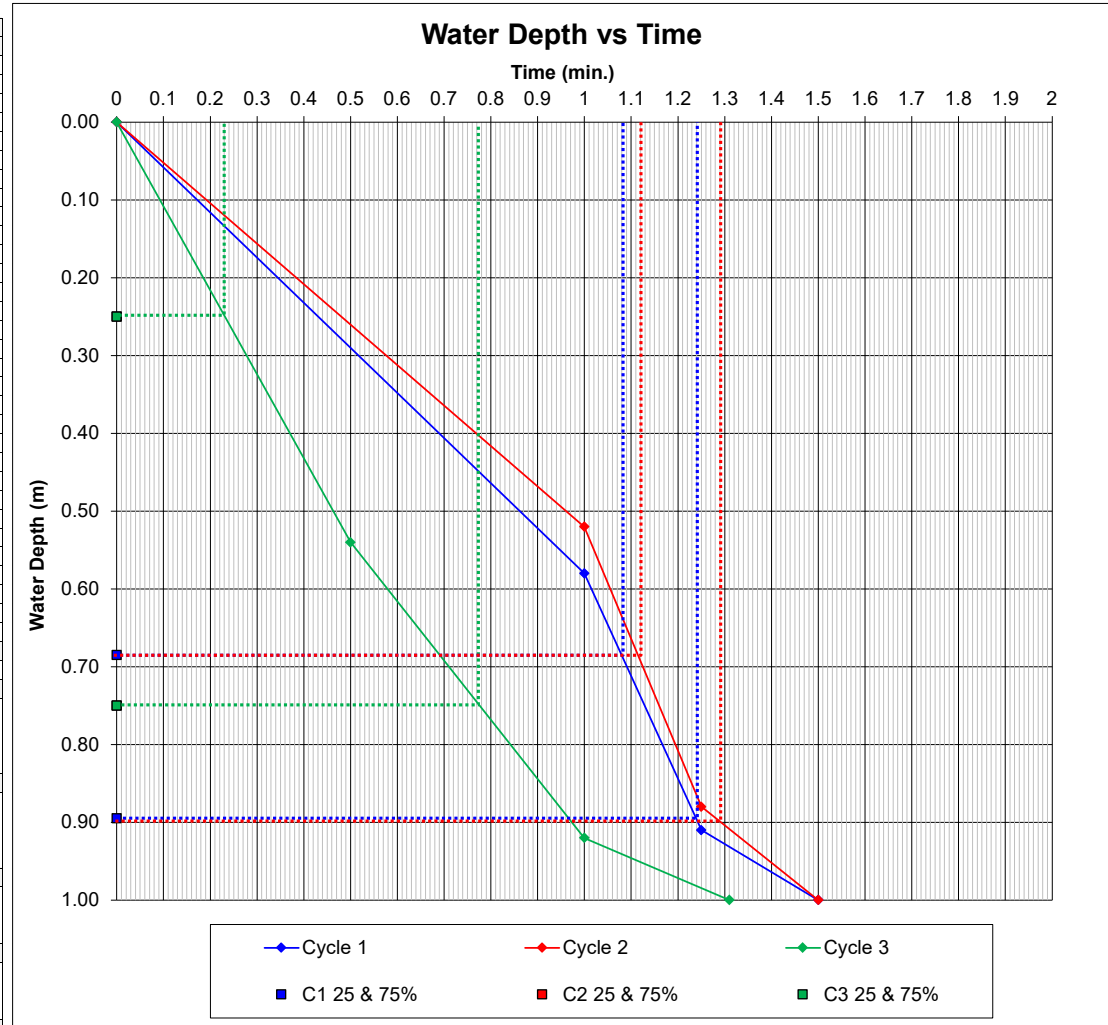
14067 Cefn Isaf, Merthyr Tydfil

Trial Pit Information	
Length (m)	0.30
Width (m)	0.30
Depth (m)	1.00
Groundwater	Dry
Weather Conditions	Sunny
Date	15.08.22

Remarks

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.00	0	0.00	0	0.00
1	0.58	1	0.52	0.5	0.54
1.25	0.91	1.25	0.88	1	0.92
1.5	1.00	1.5	1.00	1.31	1.00

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	1.00	1.00	1.00
<b>Water Depths (m)</b>			
Water depth at start of test	0.58	0.00	0.00
Water depth at end of test	1.00	1.00	1.00
Effective depth (measured)	0.42	1.00	1.00
% Effective storage depth	1.00	1.00	1.00
<b>Effective Storage Depths (m)</b>			
Effective storage depth (100%)	0.42	1.00	1.00
Effective storage depth (75%)	0.32	0.75	0.75
Effective storage depth (50%)	0.21	0.50	0.50
Effective storage depth (25%)	0.11	0.25	0.25
<b>Outflow Time (min)</b>			
Time for measured outflow	1.50	1.50	1.31
Time for 100% outflow	1.50	1.50	1.31
Time for 75-25% outflow	0.05	0.16	0.54
<b>Volume of Outflow (m<sup>3</sup>)</b>			
Over measured effective depth	0.04	0.09	0.09
Over 100% effective depth	0.04	0.09	0.09
From 75% - 25% effective depth	0.02	0.05	0.05
<b>Surface Area (m<sup>2</sup>)</b>			
For 100% effective storage	0.59	1.29	1.29
For 50% effective storage	0.34	0.69	0.69
Over measured depth	0.59	1.29	1.29
<b>Soil Infiltration Rate (m/s)</b>			
Over 100% effective depth	7.1E-04	7.8E-04	8.9E-04
Over measured depth	7.1E-04	7.8E-04	8.9E-04
Over 75% - 25% effective depth	1.8E-02	6.8E-03	2.0E-03



Design Soil Infiltration Rate: 2.0E-03 m/s



## **APPENDIX D**

### **LABORATORY CHEMICAL TEST RESULTS (SOILS)**



**Gary Shawley**  
Integral Geotechnique  
Integral House  
7 Beddau Way  
Castlegate Business Park  
CF83 2AX

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i2 Analytical Ltd.  
7 Woodshots Meadow,  
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**e:** reception@i2analytical.com

## **Analytical Report Number : 22-78759**

<b>Project / Site name:</b>	MERTHYR TYOFIL	<b>Samples received on:</b>	19/08/2022
<b>Your job number:</b>	14067	<b>Samples instructed on/ Analysis started on:</b>	19/08/2022
<b>Your order number:</b>	14067 UNI	<b>Analysis completed by:</b>	29/08/2022
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	29/08/2022
<b>Samples Analysed:</b>	6 soil samples		

*Martyna Langer*

**Signed:**

Martyna Langer  
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.



Analytical Report Number: 22-78759  
 Project / Site name: MERTHYR TYOFIL  
 Your Order No: 14067 UNI

Lab Sample Number				2393276	2393277	2393278	2393279	2393280
Sample Reference				WS1	WS2	WS3	WS4	WS5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.40	0.65	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	3.6	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	3	7.1	8.5	8.5	6.5
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5	0.5

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	JSW	JSW	JSW	JSW	JSW

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.2	9	8.4	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO <sub>4</sub>	mg/kg	50	MCERTS	210	200	750	590	1400
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.01	0.067	0.29	0.0067	0.013
Sulphide	mg/kg	1	MCERTS	93	18	4.2	3.8	2.2
Total Sulphur	mg/kg	50	MCERTS	440	250	380	410	670
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.6	0.9	5	1.5
Loss on Ignition @ 450oC	%	0.2	MCERTS	1.1	2.1	3.7	20.8	4.6

#### Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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#### Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.35	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.1
Phenanthrene	mg/kg	0.05	MCERTS	1.4	< 0.05	< 0.05	1	8.9
Anthracene	mg/kg	0.05	MCERTS	0.35	< 0.05	< 0.05	< 0.05	2.2
Fluoranthene	mg/kg	0.05	MCERTS	2.3	< 0.05	< 0.05	0.3	12
Pyrene	mg/kg	0.05	MCERTS	1.7	< 0.05	< 0.05	0.23	7.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.7	< 0.05	< 0.05	0.23	8.2
Chrysene	mg/kg	0.05	MCERTS	1.4	< 0.05	< 0.05	0.63	6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.6	< 0.05	< 0.05	< 0.05	6.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.72	< 0.05	< 0.05	< 0.05	2.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	5.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.5	< 0.05	< 0.05	< 0.05	2.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.56	< 0.05	< 0.05	< 0.05	2.8

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	13.3	< 0.80	< 0.80	2.78	68.6
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Analytical Report Number: 22-78759  
 Project / Site name: MERTHYR TYOFIL  
 Your Order No: 14067 UNI

<b>Lab Sample Number</b>				2393276	2393277	2393278	2393279	2393280
<b>Sample Reference</b>				WS1	WS2	WS3	WS4	WS5
<b>Sample Number</b>				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
<b>Depth (m)</b>				0.40	0.30	0.40	0.65	0.50
<b>Date Sampled</b>				Deviating	Deviating	Deviating	Deviating	Deviating
<b>Time Taken</b>				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Limit of detection</b>	<b>Accreditation Status</b>					

**Heavy Metals / Metalloids**

	mg/kg	1	MCERTS	6.9	7.5	9.1	21	13
Arsenic (aqua regia extractable)	mg/kg	0.06	MCERTS	0.14	0.4	0.48	1	0.7
Beryllium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.7	0.4	< 0.2
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	2.1
Cadmium (aqua regia extractable)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (hexavalent)	mg/kg	1	MCERTS	6.8	8.7	12	12	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.5	13	16	40	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	38	26	28	46	120
Lead (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.5	< 0.3
Mercury (aqua regia extractable)	mg/kg	1	MCERTS	9.6	13	14	24	21
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	8.6	12	18	21	20
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	34	48	53	58	160
Zinc (aqua regia extractable)	mg/kg							

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-78759  
 Project / Site name: MERTHYR TYOFIL  
 Your Order No: 14067 UNI

<b>Lab Sample Number</b>				2393281
<b>Sample Reference</b>				WS6
<b>Sample Number</b>				None Supplied
<b>Depth (m)</b>				0.50
<b>Date Sampled</b>				Deviating
<b>Time Taken</b>				None Supplied
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Limit of detection</b>	<b>Accreditation Status</b>	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.001	NONE	0.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	JSW

#### General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO <sub>4</sub>	mg/kg	50	MCERTS	700
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.028
Sulphide	mg/kg	1	MCERTS	2.1
Total Sulphur	mg/kg	50	MCERTS	480
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.4
Loss on Ignition @ 450oC	%	0.2	MCERTS	22.8

#### Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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#### Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.62
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.34
Pyrene	mg/kg	0.05	MCERTS	0.33
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.53
Chrysene	mg/kg	0.05	MCERTS	0.53
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.58
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.27
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.36
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.56
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Analytical Report Number: 22-78759  
Project / Site name: MERTHYR TYOFIL  
Your Order No: 14067 UNI

<b>Lab Sample Number</b>				2393281
<b>Sample Reference</b>				WS6
<b>Sample Number</b>				None Supplied
<b>Depth (m)</b>				0.50
<b>Date Sampled</b>				Deviating
<b>Time Taken</b>				None Supplied
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Limit of detection</b>	<b>Accreditation Status</b>	
<b>Heavy Metals / Metalloids</b>				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	56

U/S = Unsuitable Sample I/S = Insufficient Sample

**Analytical Report Number : 22-78759**  
**Project / Site name: MERTHYR TYOFIL**

\* 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 *
2393276	WS1	None Supplied	0.4	Grey clay and sand with gravel and stones.
2393277	WS2	None Supplied	0.3	Brown sandy clay with gravel.
2393278	WS3	None Supplied	0.4	Brown sandy clay with gravel.
2393279	WS4	None Supplied	0.65	Brown loam and sand with gravel and clinker
2393280	WS5	None Supplied	0.5	Brown loam and clay with gravel.
2393281	WS6	None Supplied	0.5	Brown loam and sand with gravel and vegetation.

**Analytical Report Number : 22-78759**  
**Project / Site name: MERTHYR TYOFIL**

**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 (skalár)	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



**Analytical Report Number : 22-78759**  
**Project / Site name: MERTHYR TYOFIL**

**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
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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 : 22-78759**  
**Project / Site name: MERTHYR TYOFIL**

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
WS1	None Supplied	S	2393276	a	None Supplied	None Supplied	None Supplied
WS2	None Supplied	S	2393277	a	None Supplied	None Supplied	None Supplied
WS3	None Supplied	S	2393278	a	None Supplied	None Supplied	None Supplied
WS4	None Supplied	S	2393279	a	None Supplied	None Supplied	None Supplied
WS5	None Supplied	S	2393280	a	None Supplied	None Supplied	None Supplied
WS6	None Supplied	S	2393281	a	None Supplied	None Supplied	None Supplied

## **APPENDIX E**

### **LABORATORY GEOTECHNICAL TEST RESULTS**



## Results Summary

Apex Testing Solutions Limited

Sturmi Way  
Village Farm Industrial Estate  
Pyle  
Bridgend  
CF33 6BZ

Telephone: 01656 746762

E-mail: [andrew.grogan@apex-drilling.com](mailto:andrew.grogan@apex-drilling.com)  
[laura.davis@apex-drilling.com](mailto:laura.davis@apex-drilling.com)

<u>Reporting Details</u>		<u>Key Information</u>	
<b>Company Name:</b>	Integral Geotechnique	<b>Site Name:</b>	Merthyr
<b>Address:</b>	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX	<b>Job Number:</b>	D22415
<b>Contact Name:</b>	<b>Gary</b>	<b>Date Received:</b>	01/09/2022
<b>Contact Number:</b>		<b>Job Coordinator:</b>	A. Grogan

Item No.	Tests Undertaken	Number of Tests
1	pH & sulphate (pH/SO4)*	2
2	Atterburg Limits (4 point) - BS1377-2: 1990	1
3	Moisture Content - BS1377 -2: 1990	1

**Results Issued: 13/09/2022**

### Comments

Results herein relate only to samples received in the laboratory and where not sampled by Apex Testing Solutions personnel relate to the samples as received.

Where tests are UKAS accredited any Opinion and/or Interpretation expressed herein are outside the scope of the UKAS Accreditation. The reports shall not be reproduced in full without the written approval of the laboratory.

Please contact the job coordinator should any further information be required.



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):** 220906-31  
**Your Reference:** D22415  
**Location:** Merthyr  
**Report No:** 660940  
**Order Number:** ATS1712

We received 2 samples on Tuesday September 06, 2022 and 2 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

Validated

SDG: 220906-31  
Client Ref.: D22415

Report Number: 660940  
Location: Merthyr

Superseded Report:

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26831867	WS1		1.00 - 1.10	02/09/2022
26831872	WS3		3.80 - 3.90	02/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 220906-31  
**Client Ref.:** D22415

**Report Number:** 660940  
**Location:** Merthyr

**Superseded Report:**

<b>Results Legend</b>  <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: yellow; width: 15px; height: 15px; margin-right: 5px;"></div> <span>Test</span> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: red; color: white; width: 15px; height: 15px; margin-right: 5px;"></div> <span>No Determination Possible</span> </div>  <p>Sample Types -</p> <ul style="list-style-type: none"> <li>S - Soil/Solid</li> <li>UNS - Unspecified Solid</li> <li>GW - Ground Water</li> <li>SW - Surface Water</li> <li>LE - Land Leachate</li> <li>PL - Prepared Leachate</li> <li>PR - Process Water</li> <li>SA - Saline Water</li> <li>TE - Trade Effluent</li> <li>TS - Treated Sewage</li> <li>US - Untreated Sewage</li> <li>RE - Recreational Water</li> <li>DW - Drinking Water Non-regulatory</li> <li>UNL - Unspecified Liquid</li> <li>SL - Sludge</li> <li>G - Gas</li> <li>OTH - Other</li> </ul>	<b>Lab Sample No(s)</b>	26831867	26831872		
	<b>Customer Sample Reference</b>	W/S1	W/S3		
	<b>AGS Reference</b>				
	<b>Depth (m)</b>	1.00 - 1.10	3.80 - 3.90		
	<b>Container</b>	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)		
	<b>Sample Type</b>	S	S		
Anions by Kone (soil)	All	NDPs: 0 Tests: 2	X	X	
pH	All	NDPs: 0 Tests: 2	X	X	
Sample description	All	NDPs: 0 Tests: 2	X	X	



# CERTIFICATE OF ANALYSIS

Validated

SDG: 220906-31  
Client Ref.: D22415

Report Number: 660940  
Location: Merthyr

Superseded Report:

## Sample Descriptions

### Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26831867	WS1	1.00 - 1.10	Light Brown	Sandy Silt Loam	Stones	Vegetation
26831872	WS3	3.80 - 3.90	Dark Brown	Loamy Sand	Stones	Vegetation

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 occurring 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.







# CERTIFICATE OF ANALYSIS

Validated

SDG: 220906-31  
Client Ref.: D22415

Report Number: 660940  
Location: Merthyr

Superseded Report:

## 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

Validated

SDG: 220906-31  
Client Ref.: D22415

Report Number: 660940  
Location: Merthyr

Superseded Report:

## Test Completion Dates

<b>Lab Sample No(s)</b>	26831867	26831872
<b>Customer Sample Ref.</b>	WS1	WS3
<b>AGS Ref.</b>		
<b>Depth</b>	1.00 - 1.10	3.80 - 3.90
<b>Type</b>	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	12-Sep-2022	12-Sep-2022
pH	08-Sep-2022	08-Sep-2022
Sample description	07-Sep-2022	07-Sep-2022



# CERTIFICATE OF ANALYSIS

SDG: 220906-31  
Client Ref: D22415

Report Number: 660940  
Location: Merthyr

Superseded Report:

## Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) 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 and 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**

<b>Project No:</b> D22415 <b>Project Name:</b> Cefn Isaf, Merthyr <b>ATS Sample No:</b> 29277	<b>Client:</b> Integral Geotechnique <b>Address:</b> 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
-----------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------

<b>Site Ref / Hole ID:</b> WS1 <b>Sample No:</b> <b>Sampling Certificate Received:</b> No  <b>Location in Works:</b> N/A <b>Date Sampled:</b> Unknown <b>Sampled By:</b> Client <b>Date Received:</b> 01 September 2022	<b>Depth (m):</b> 1.00 <b>Sample Type:</b> Disturbed <b>Material Description:</b> Reddish Brown clayey sandy GRAVEL  <b>Material Source:</b> Site Gen <b>Material Supplier:</b> Site Gen <b>Specification:</b> BS1377 <b>Date Tested:</b> 05 September 2022
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**Test Results**

Moisture Content (%)	12.8
----------------------	------

**Remarks:**

**TEST REPORT**  
**LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX**

**BS 1377:Part 2:1990. Clause 4.3/5.3/5.4**

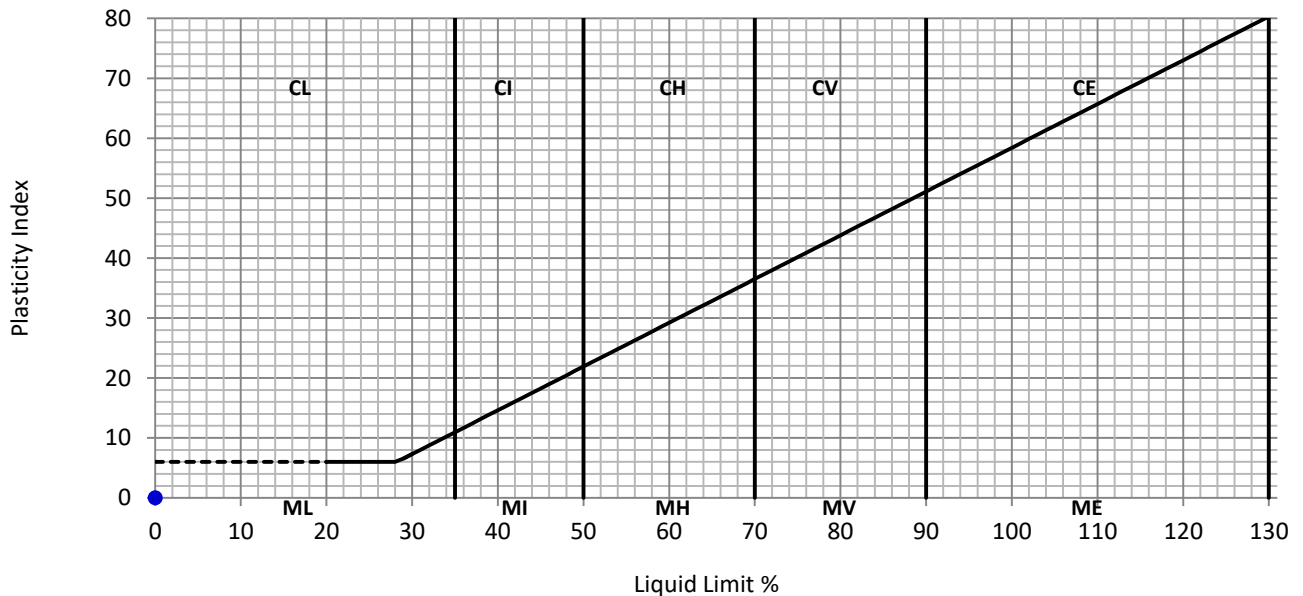
<b>Project No:</b>	D22415	<b>Client:</b>	Integral Geotechnique
<b>Project Name:</b>	Cefn Isaf, Merthyr	<b>Address:</b>	7 Beddau Way
<b>ATS Sample No:</b>	29277		Castlegate Business Park
			Caerphilly
			CF83 2AX

<b>Site Ref / Hole ID:</b>	WS1	<b>Depth (m):</b>	1.00
<b>Sample No:</b>		<b>Sample Type:</b>	Disturbed
<b>Sampling Certificate Received:</b>	No	<b>Material Description:</b>	Reddish Brown clayey sandy GRAVEL
<b>Location in Works:</b>	N/A	<b>Material Source:</b>	Site Gen
<b>Date Sampled:</b>	Unknown	<b>Material Supplier:</b>	Site Gen
<b>Sampled By:</b>	Client	<b>Specification:</b>	BS1377
<b>Date Received:</b>	01 September 2022	<b>Date Tested:</b>	05 September 2022

**Test Results**

Liquid Limit	0	%
Plastic Limit	0	%
Plasticity Index	0	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	70 %



**Remarks:** Sample is non-plastic

<b>QA Ref.</b>	 <b>Apex Testing Solutions</b> Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	 7771	<b>Approver</b>	<b>Date</b>	<b>Fig.</b>
BS1377 - 2 Rev. 3.0			<i>G Llewellyn</i>	06/09/2022	
			G Llewellyn, Senior Technician		

## **APPENDIX F**

### **SUMMARY OF CHEMICAL RESULTS – MADE GROUND**



## SUMMARY OF LABORATORY SOIL TEST RESULTS

### METALS AND SEMI-METALS

Job No.: 14067  
 Site: Cefn Isaf, Merthyr Tydfil  
 Soil Type: Made Ground  
 Soil Organic Matter: 1%

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	WS1	0.40	6.9	< 0.2	0.14	< 0.2	6.8	< 1.8	6.5	38	< 0.3	9.6	< 1.0	8.6	34
2	WS2	0.30	7.5	0.5	0.4	< 0.2	8.7	< 1.8	13	26	< 0.3	13	< 1.0	12	48
3	WS3	0.40	9.1	0.7	0.48	< 0.2	12	< 1.8	16	28	< 0.3	14	< 1.0	18	53
4	WS4	0.65	21	0.4	1	< 0.2	12	< 1.8	40	46	0.5	24	< 1.0	21	58
5	WS5	0.50	13	< 0.2	0.7	2.1	21	< 1.8	33	120	< 0.3	21	< 1.0	20	160
6	WS6	0.50	22	0.6	1.1	< 0.2	12	< 1.8	44	120	0.7	27	< 1.0	24	56
Screening Criteria Value			37.0	290.0	1.7	11.0	-	6.0	2400.0	200.0	1.2	130.0	250.0	410.0	3700.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

**SUMMARY OF LABORATORY SOIL TEST RESULTS**

**INORGANIC CHEMICALS & OTHERS**

Job No.: 14067  
 Site: Cefn Isaf, Merthyr Tydfil  
 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	WS1	0.40	< 1.0	1.10	3.00	< 1.0	8.40	0.01	210.00	93.00	440.00	0.40	0.69	Not-detected	#N/A
2	WS2	0.30	< 1.0	2.10	7.10	< 1.0	8.20	0.07	200.00	18.00	250.00	0.60	1.03	Not-detected	#N/A
3	WS3	0.40	< 1.0	3.70	8.50	< 1.0	9.00	0.29	750.00	4.20	380.00	0.90	1.55	Not-detected	#N/A
4	WS4	0.65	< 1.0	20.80	8.50	< 1.0	8.40	0.01	590.00	3.80	410.00	5.00	8.60	Not-detected	#N/A
5	WS5	0.50	< 1.0	4.60	6.50	< 1.0	8.40	0.01	1400.00	2.20	670.00	1.50	2.58	Not-detected	#N/A
6	WS6	0.50	< 1.0	22.80	18.00	< 1.0	8.60	0.03	700.00	2.10	480.00	4.40	7.57	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	120.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

**SUMMARY OF LABORATORY SOIL TEST RESULTS**

**POLYAROMATIC HYDROCARBONS (PAH)**

Job No.: 14067  
 Site: Cefn Isaf, Merthyr Tydfil  
 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	WS1	0.40	< 0.05	< 0.05	0.35	1.7	1.1	1.6	0.56	0.72	1.4	< 0.05	2.3	< 0.05	0.5	< 0.05	1.4	1.7
2	WS2	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
3	WS3	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
4	WS4	0.65	< 0.05	< 0.05	< 0.05	0.23	< 0.05	< 0.05	< 0.05	< 0.05	0.63	< 0.05	0.3	< 0.05	< 0.05	0.35	1	0.23
5	WS5	0.50	1	< 0.05	2.2	8.2	5.3	6.9	2.8	2.9	6	1	12	1.1	2.8	< 0.05	8.9	7.8
6	WS6	0.50	< 0.05	< 0.05	< 0.05	0.53	0.36	0.58	< 0.05	0.27	0.53	< 0.05	0.34	< 0.05	< 0.05	< 0.05	0.62	0.33
Screening Criteria Value			210.0	170.0	2400.0	7.2	2.2	2.6	320.0	77.0	15.0	0.24	280.0	170.0	27.0	2.3	95.0	620.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

## FIGURES



NORTH



FIGURE 1: SITE LOCATION

Cefn Isaf Block, Cefn-Coed-Y-Cymmer

**Intégral**  
Géotechnique

Intégral House  
7 Beddau Way  
Castlegate Business Park  
Caerphilly  
CF83 2AX  
Tel: 029 2080 7991  
Fax: 029 2086 2176



## **Appendix N     Consultants Coal Mining Report**





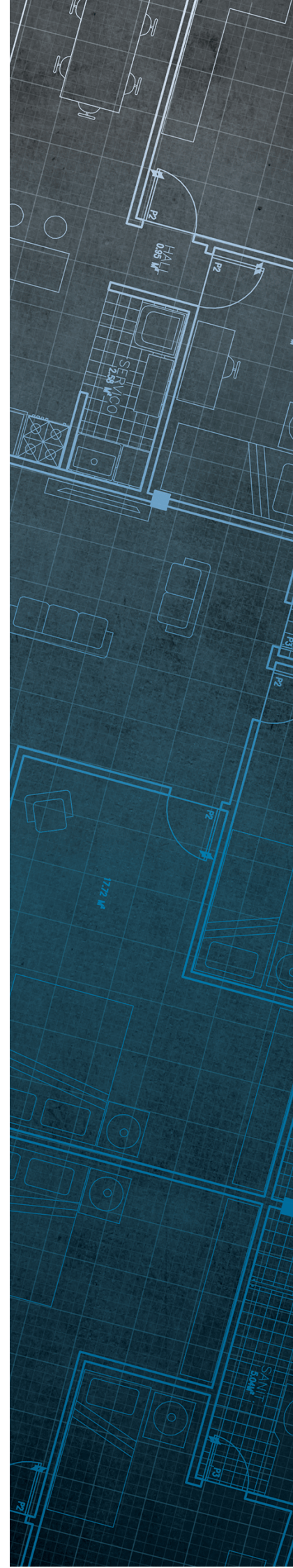
The Coal  
Authority

# Consultants Coal Mining Report

1  
Cefn Isaf Flats  
Wern Road  
Cefn Coed  
Merthyr Tydfil  
Merthyr Tydfil  
CF48 2RH

Date of enquiry: 13 July 2023  
Date enquiry received: 13 July 2023  
Issue date: 13 July 2023

Our reference: 51003366801001  
Your reference:



# 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

Soiltechnics Limited

## Enquiry address

1  
Cefn Isaf Flats  
Wern Road  
Cefn Coed  
Merthyr Tydfil  
Merthyr Tydfil  
CF48 2RH


## How to contact us

0345 762 6848 (UK)  
+44 (0)1623 637 000 (International)

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

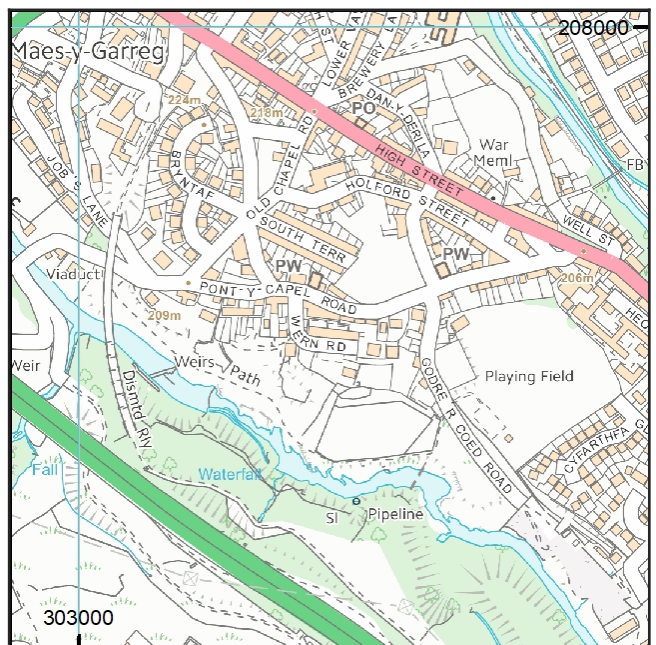
[www.groundstability.com](http://www.groundstability.com)

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## **Past underground mining**

No past mining recorded.

## **Probable unrecorded shallow workings**

None.

## **Spine roadways at shallow depth**

No spine roadway recorded at shallow depth.

## **Mine entries**

None recorded within 100 metres of the enquiry boundary.

## **Abandoned mine plan catalogue numbers**

None available.

## **Outcrops**

No outcrops recorded.

## **Geological faults, fissures and breaklines**

No faults, fissures or breaklines recorded.

## **Opencast mines**

None recorded within 500 metres of the enquiry boundary.

## **Coal Authority managed tips**

None recorded within 500 metres of the enquiry boundary.

## 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

None recorded within 50 metres of the enquiry boundary.

### 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.

## 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.

## Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

### 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.



## 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](mailto: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.



### **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.

### **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.

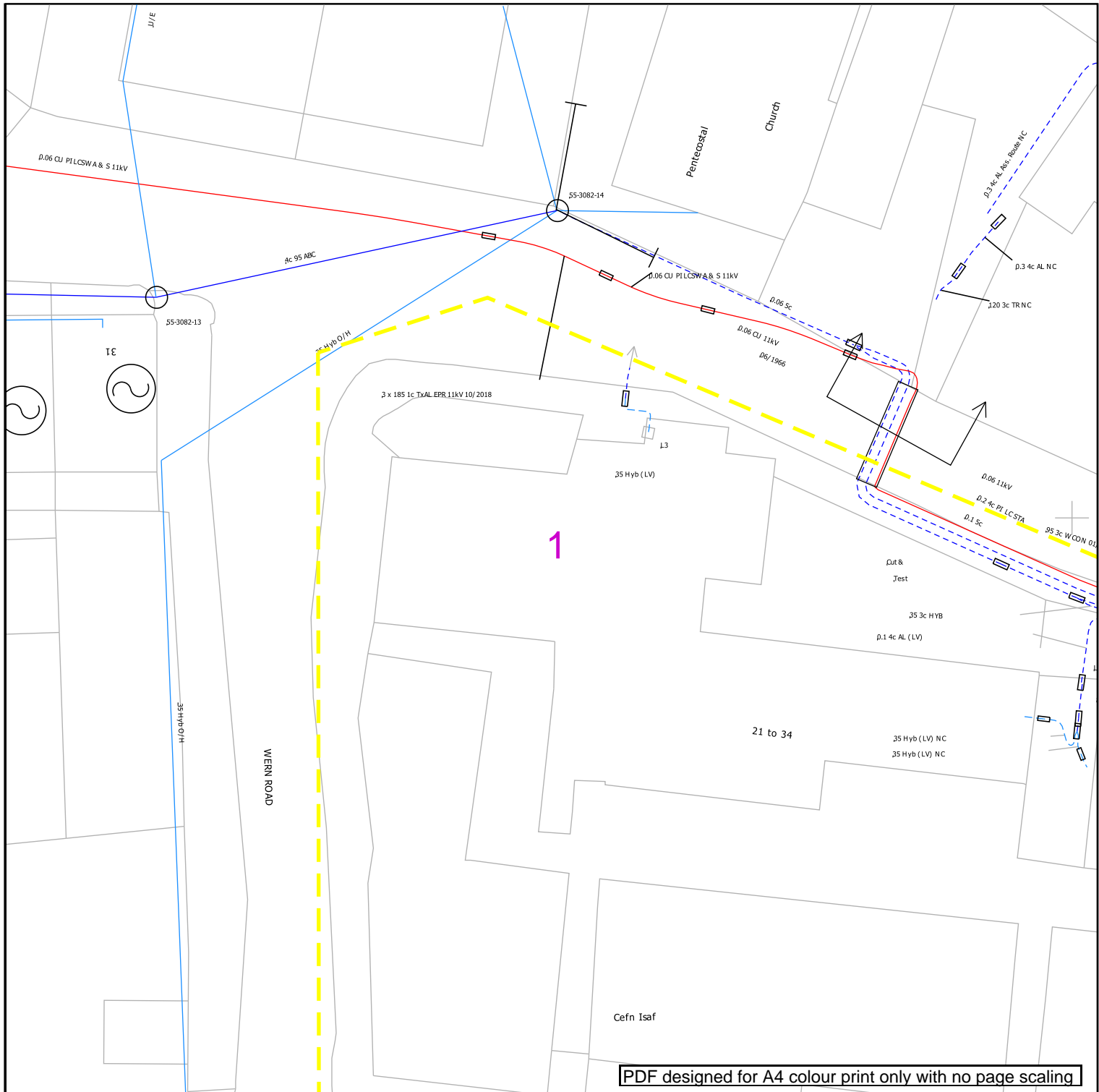




## **Appendix O    Utility Service Plans**







PDF designed for A4 colour print only with no page scaling

**nationalgrid** Electricity Distribution

**Contact Us**

**Mapping Enquiries:**  
All areas 0121 623 9780

**General Enquiries:**  
All areas 0800 096 3080

Date Requested: 13/07/2023  
Job Reference: 30156469  
Site Location: 303268 207682  
Requested by: Miss Lauren Wenham  
Your Scheme/Reference: STV6119

Scale: 1:250 (When plotted at A4)

0 25 m

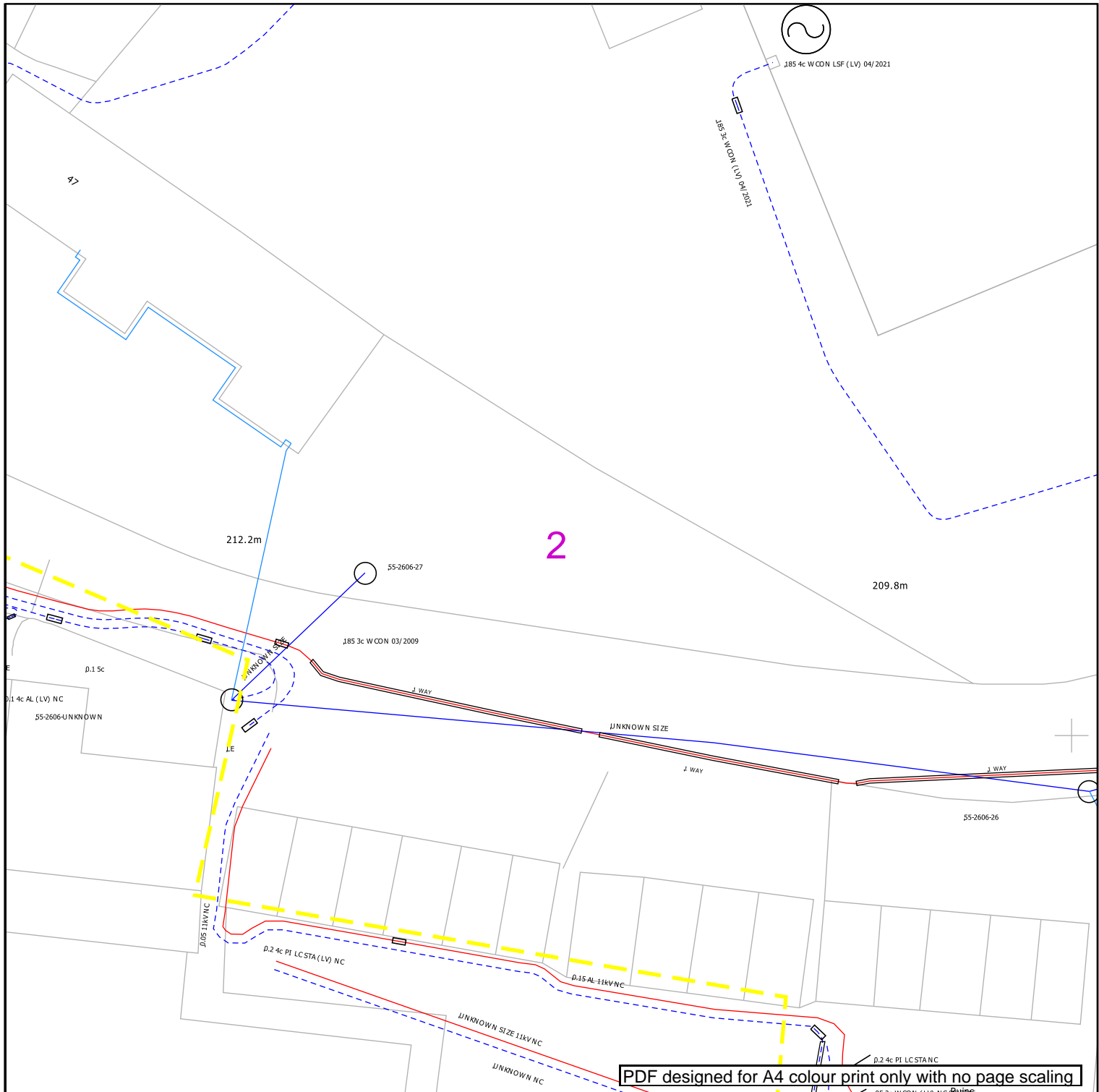
<b>Link Box</b> ●	<b>Overhead Line</b> ○ PL ○ Service ○ LV ○ HV (11kV) ○ HV (33kV) ○ HV (66kV) ○ HV (132kV)	<b>Underground Cable</b> - - - PL - - - Service - - - LV - - - HV (11kV) - - - HV (33kV) - - - HV (66kV) - - - HV (132kV)	<b>National Grid Telecoms</b> - - - PME Earth Underground Earth	<b>Pilot Cables</b> ○ Pole Mounted Transformer □ Ground Mounted Transformer
----------------------	----------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------	-----------------------------------------------------------------------------------

**IMPORTANT NOTICES**

- This information is given as a guide only and its accuracy cannot be guaranteed. Services or recent additions to the network may not be shown.
- Cables, overhead lines & substations owned by other electricity network owners or private companies may be present and may not be shown.
- You should always verify exact locations of cables using a cable locator and by careful use of hand tools in accordance with HSE guidance note HSG47.
- When working within 10m of any overhead electric line you should follow the requirements of HSE Guidance Note GS6.
- For further advice on working near our electricity cables or lines, call our General Enquiries number.
- Advice should be sought from the National Grid Electricity Distribution General Enquiries team for any work that is to take place in proximity to 132kV underground cables and 132kV overhead lines.

**Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA: 0800 6783 105**

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All areas 0121 623 9780

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Date Requested: 13/07/2023  
Job Reference: 30156469  
Site Location: 303268 207682  
Requested by: Miss Lauren Wenham  
Your Scheme/Reference: STV6119

Scale: 1:250 (When plotted at A4)

0	25 m			
<b>Link Box</b>	<b>Overhead Line</b>	<b>Underground Cable</b>	<b>National Grid Telecoms</b>	<b>Pilot Cables</b>
●	○ PL ○ Service ○ LV ○ HV (11kV) ○ HV (33kV) ○ HV (66kV) ○ HV (132kV)	---	---	---
<b>Site Location</b>			⏏ <b>PME Earth</b>	⊙ <b>Pole Mounted Transformer</b>
<b>Line/Area</b>			⏏ <b>Underground Earth</b>	□ <b>Ground Mounted Transformer</b>

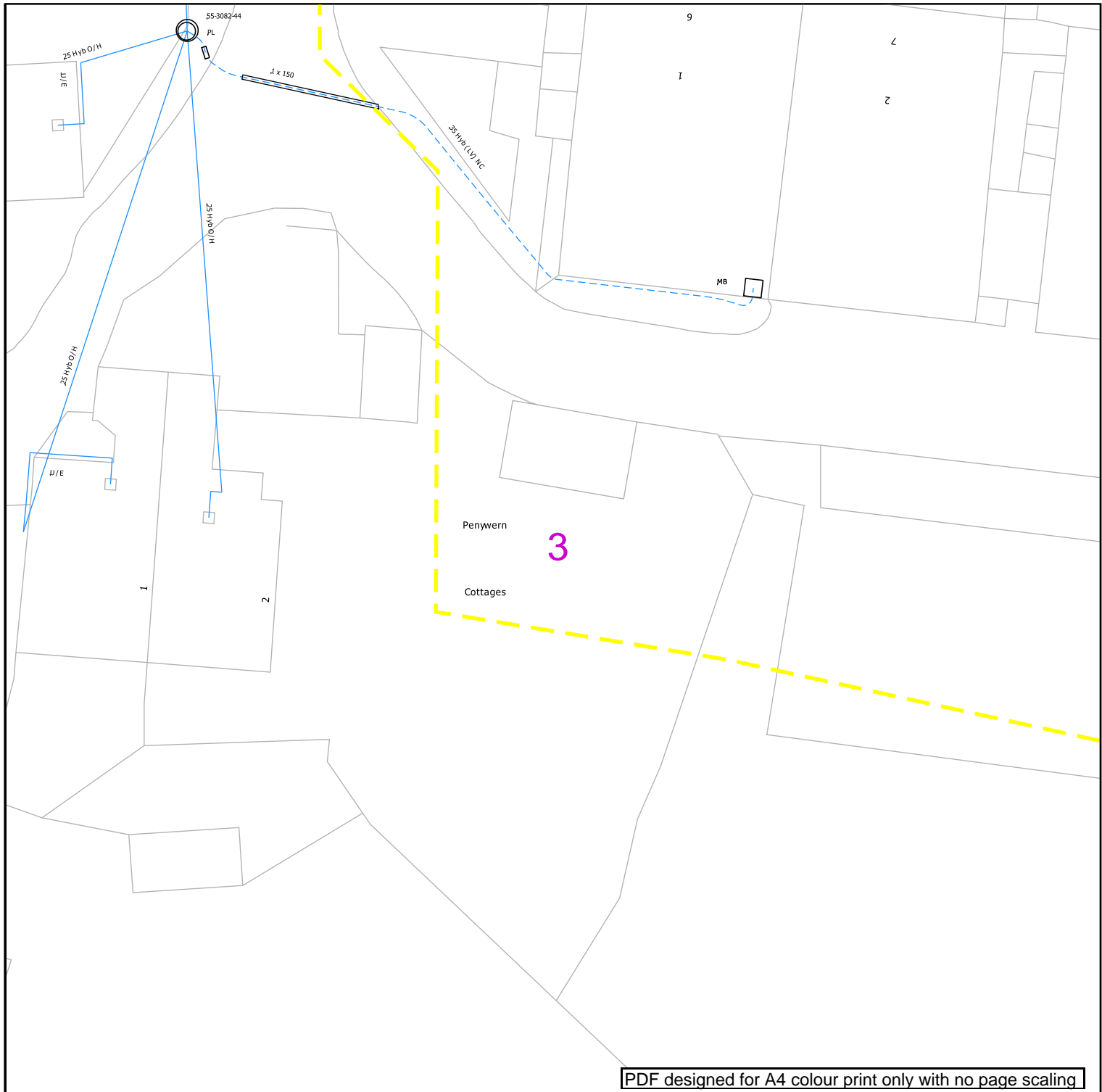
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**Contact Us**

**Mapping Enquiries:**  
All areas 0121 623 9780

**General Enquiries:**  
All areas 0800 096 3080

Date Requested: 13/07/2023  
Job Reference: 30156469  
Site Location: 303268 207682  
Requested by: Miss Lauren Wenham  
Your Scheme/Reference: STV6119

Scale: 1:250 (When plotted at A4)

0 25 m

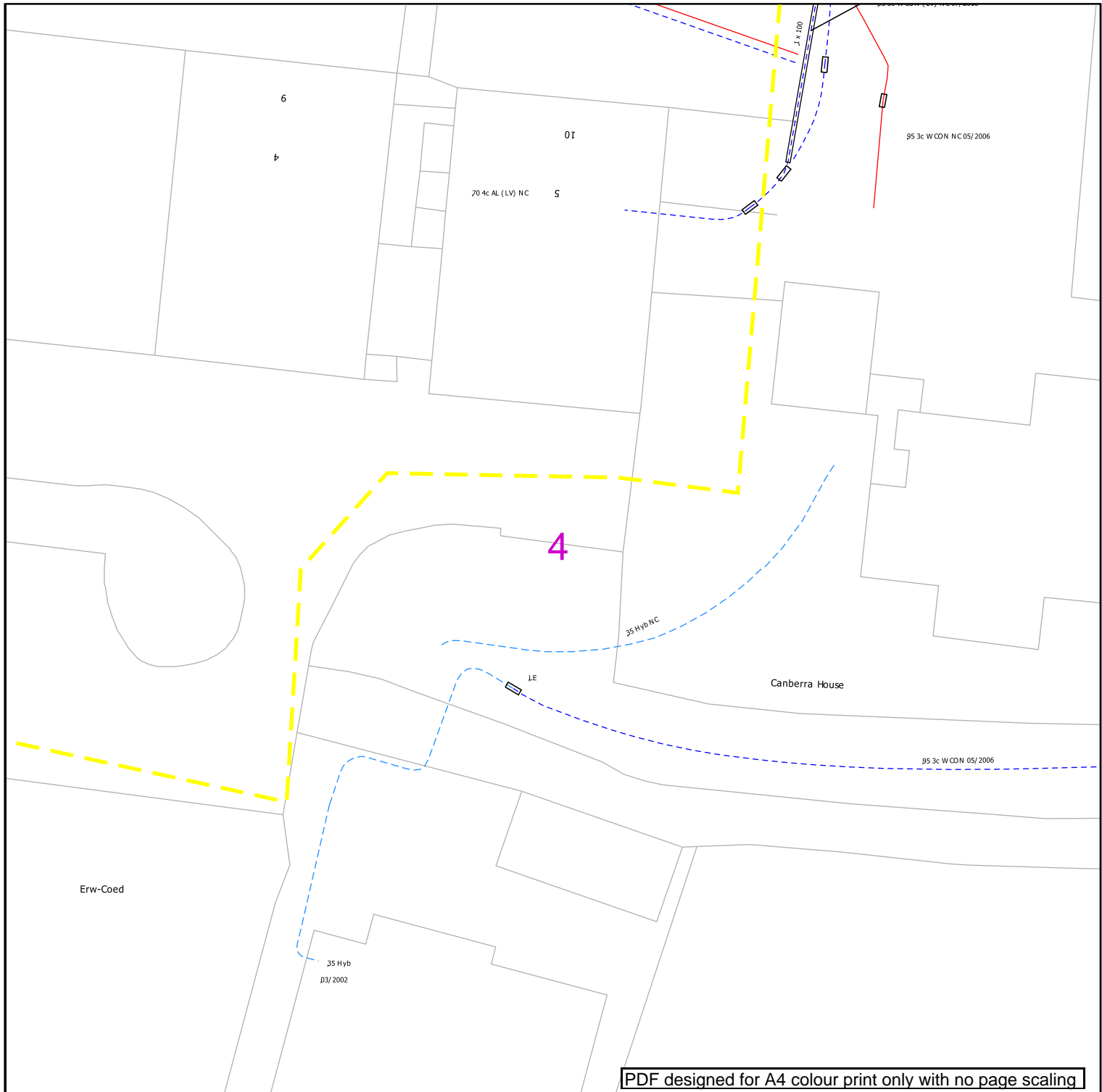
<b>Link Box</b> ●	<b>Overhead Line</b> ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	<b>Underground Cable</b> - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	<b>National Grid Telecoms</b> <b>PME Earth</b> <b>Underground Earth</b>	<b>Pilot Cables</b> <b>Pole Mounted Transformer</b> <b>Ground Mounted Transformer</b>
----------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------

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**nationalgrid** Electricity Distribution

**Contact Us**

**Mapping Enquiries:**  
All areas 0121 623 9780

**General Enquiries:**  
All areas 0800 096 3080

Date Requested: 13/07/2023  
Job Reference: 30156469  
Site Location: 303268 207682  
Requested by: Miss Lauren Wenham  
Your Scheme/Reference: STV6119

Scale: 1:250 (When plotted at A4)

0 25 m

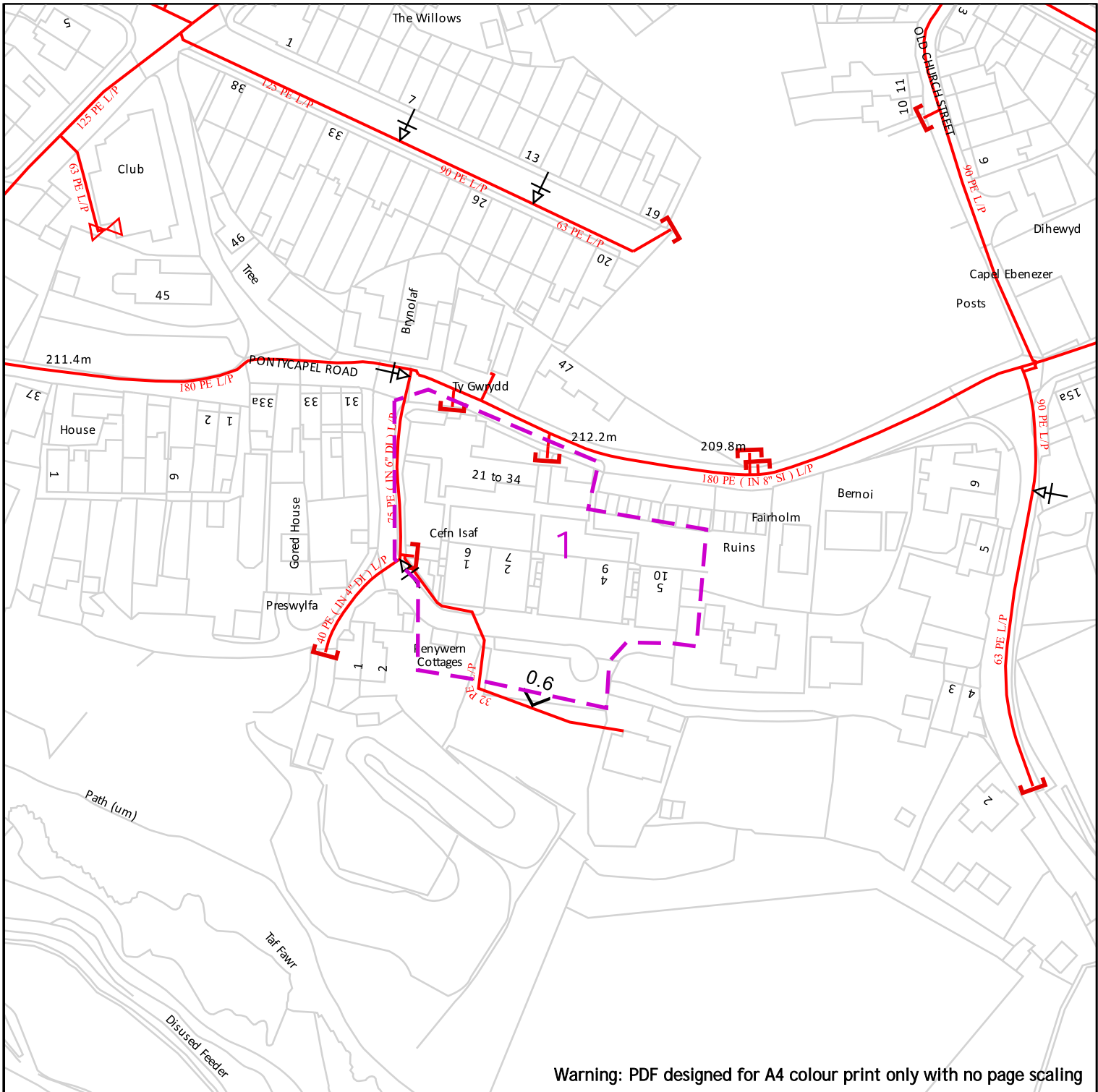
<b>Link Box</b> ●	<b>Overhead Line</b> ○ ○ PL ○ ○ Service ○ ○ LV ○ ○ HV (11kV) ○ ○ HV (33kV) ○ ○ HV (66kV) ⊠ HV (132kV)	<b>Underground Cable</b> - - - - - - - - - - - - - - - - - - - - - - - - -	<b>National Grid Telecoms</b> - - - - - -E- - - - -	<b>Pilot Cables</b> ○ Pole Mounted Transformer □ Ground Mounted Transformer
<b>Site Location Line/Area</b> - - - - -			<b>PME Earth</b>	
			<b>Underground Earth</b>	

**IMPORTANT NOTICES**

- This information is given as a guide only and its accuracy cannot be guaranteed. Services or recent additions to the network may not be shown.
- Cables, overhead lines & substations owned by other electricity network owners or private companies may be present and may not be shown.
- You should always verify exact locations of cables using a cable locator and by careful use of hand tools in accordance with HSE guidance note HSG47.
- When working within 10m of any overhead electric line you should follow the requirements of HSE Guidance Note GS6.
- For further advice on working near our electricity cables or lines, call our General Enquiries number.
- Advice should be sought from the National Grid Electricity Distribution General Enquiries team for any work that is to take place in proximity to 132kV underground cables and 132kV overhead lines.

**Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA: 0800 6783 105**

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**Wales & West Utilities**

**Contact Us**  
**Mapping Enquiries:**  
 All areas 02920 278 912  
**General Enquiries:**  
 All areas 0800 912 2999

Date Requested: 13/07/2023  
 Job Reference: 30156469  
 Site Location: 303268 207682  
 Requested by: Miss Lauren Wenham  
 Your Scheme/Reference: STV6119

Scale: 1:1250 (When plotted at A4)

100m

<b>Dig Sites</b>	Area: 	Line: 	
	Low Pressure (LP) 21mbar – 75mbar		Change of Diameter
	Medium Pressure (MP) 350mbar – 2bar		End Cap
	Intermediate Pressure (IP) 2bar – 7bar		Depth of cover
	High Pressure (HP) >7bar		Line/Fire Valve
			Governor Station

**IMPORTANT NOTICES**

- This information is given as a guide only and its accuracy cannot be guaranteed
- The plan only shows those pipes owned by Wales & West Utilities (WUU) as its role as a licensed Gas Transporter
- Service pipes, valves, syphons, stub connections etc. may not be shown but their presence should be anticipated
- You must use safe digging practices in accordance with HS(G)47 to establish the actual position of mains, services and other apparatus before any mechanical excavation is used
- It is your responsibility to ensure this information is provided to all persons working near our plant
- If in doubt call the WUU dig team on 02920 27891

**Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA**  
**0800 111 999**

**Smell gas?**  
 Call the Gas Emergency Service on  
**0800 111 999.**

**Dial before you dig**

 **dial**  
 Call **029 2027 8912**  
 before you start work.

 **Investigate**  
 Before you dig, make sure  
 you know what's below.

 **Go ahead**  
 Done your research?  
 Now you can dig safely.

**We need 10 days' notice**

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Dŵr Cymru  
Welsh Water

Cefn Isaf, Merthyr Tydfil CF48 2RE



**LEGEND**

- |  |                         |                                                  |                       |
|--|-------------------------|--------------------------------------------------|-----------------------|
|  | Sluice valve            |                                                  | Stop tap              |
|  | Pressure reducing valve |                                                  | Water Treatment Works |
|  | Meter                   |                                                  | Water Pumping Station |
|  | Bulk meter              |                                                  | Existing main         |
|  | Hydrant                 |                                                  | Non-operational main  |
|  | Cap end                 |                                                  | Raw Water             |
|  | Air valve               | NB: Water main symbol colour indicates the type. |                       |
|  |                         |                                                  | Trunk                 |
|  |                         |                                                  | Distribution          |
|  |                         |                                                  | Raw Water             |

**Notes:**

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

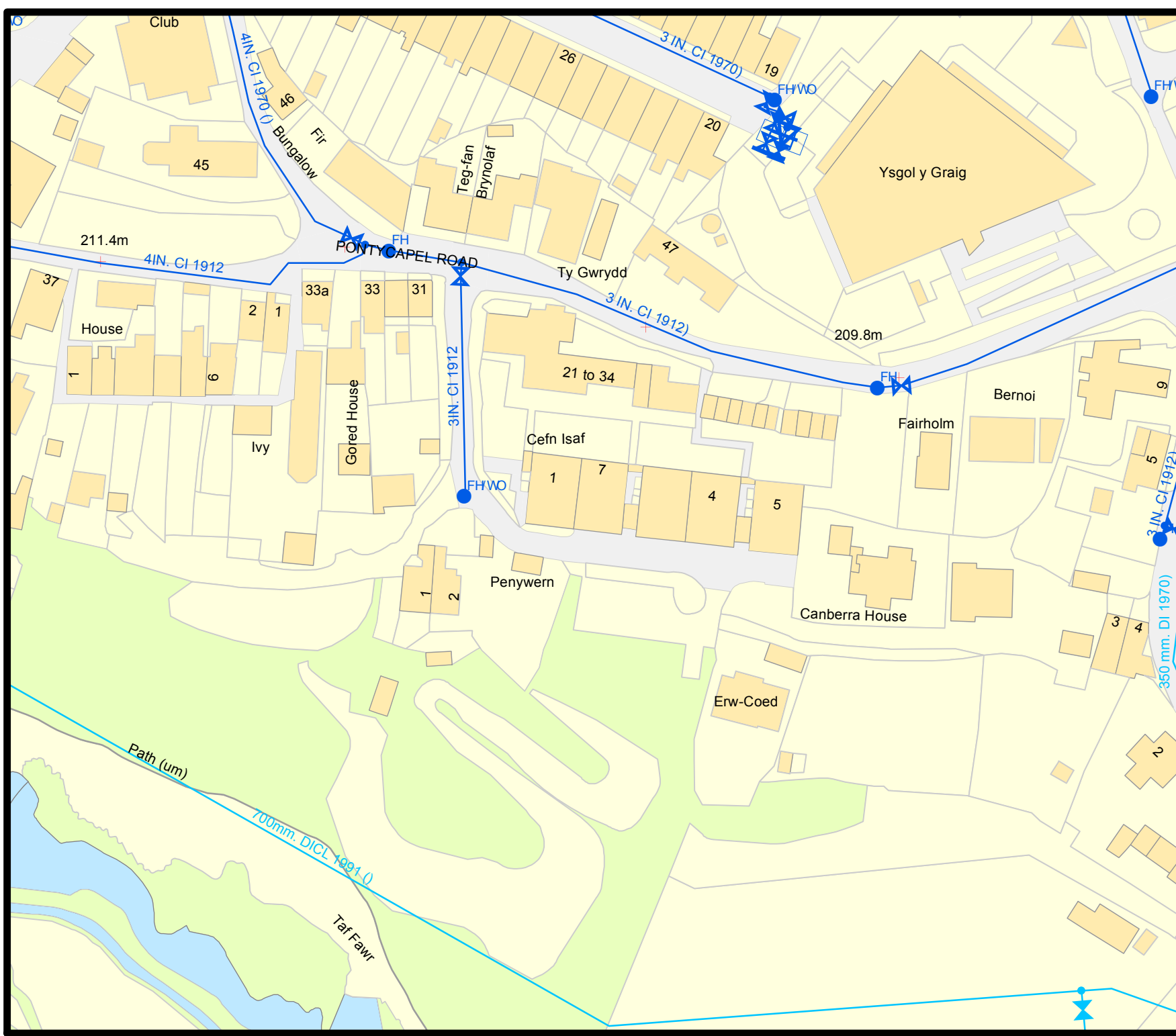
Dŵr Cymru Cŵr/Welsh Water (the Company) agrees this information as to the position of its underground apparatus by way of general guidance only and on the understanding that it is based on the best information available and is not warranty as to its correctness in relation to the event of excavations or other works made in the vicinity of the company's apparatus. The error of locating apparatus before carrying out any excavations are entirely on you. The information which is supplied by the Company is done so in accordance with statutory requirements of sections 104 and 109 of the Water Industry Act 1989 which is based upon the best information available and is not a guarantee, but without prejudice to the generality of the above, it should be noted that the records that are available to the Company may not disclose the existence of water mains, service pipes, sewer, latent drains or disposal pipes and any other buried apparatus laid before 1 September 1950, or if they do, the direction of their location and their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provisions of the New Roads and Street Works Act 1991 and the Company's liability is compressed for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

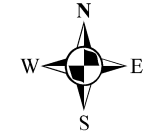
**EXACT LOCATIONS OF ALL APPARATUS  
TO BE DETERMINED ON SITE.**

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Map Ref: 303257,207669  
Map scale: 1:1000  
Printed by: Zara Howells  
Printed on: 19 Jul 2023



Cefn Isaf, Merthyr Tydfil CF48 2RE



**LEGEND (Representative of most common features)**

- Waste networks:**
- Foul chamber
  - Surface water chamber
  - Combined chamber
  - Combined sewer overflow
  - Special purpose chamber
  - Treatment works
  - △ Pumping station
  - NB: Sewer symbol colour indicates the type:  
RED - Combined  
GREEN - Surface Water  
BROWN - Foul  
Purple - Former S24 sewers (for indicative purposes only)
  - Outfall
  - LH Lamphole
  - Storm Overflow
  - Rising main
  - Gravity sewer
  - Private sewer
  - S 104 Private sewer subject to Sect. 104 adoption agreement
  - Private Sewer Transfer
  - Lateral Drain
  - Inspection Chamber

**Notes:**

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

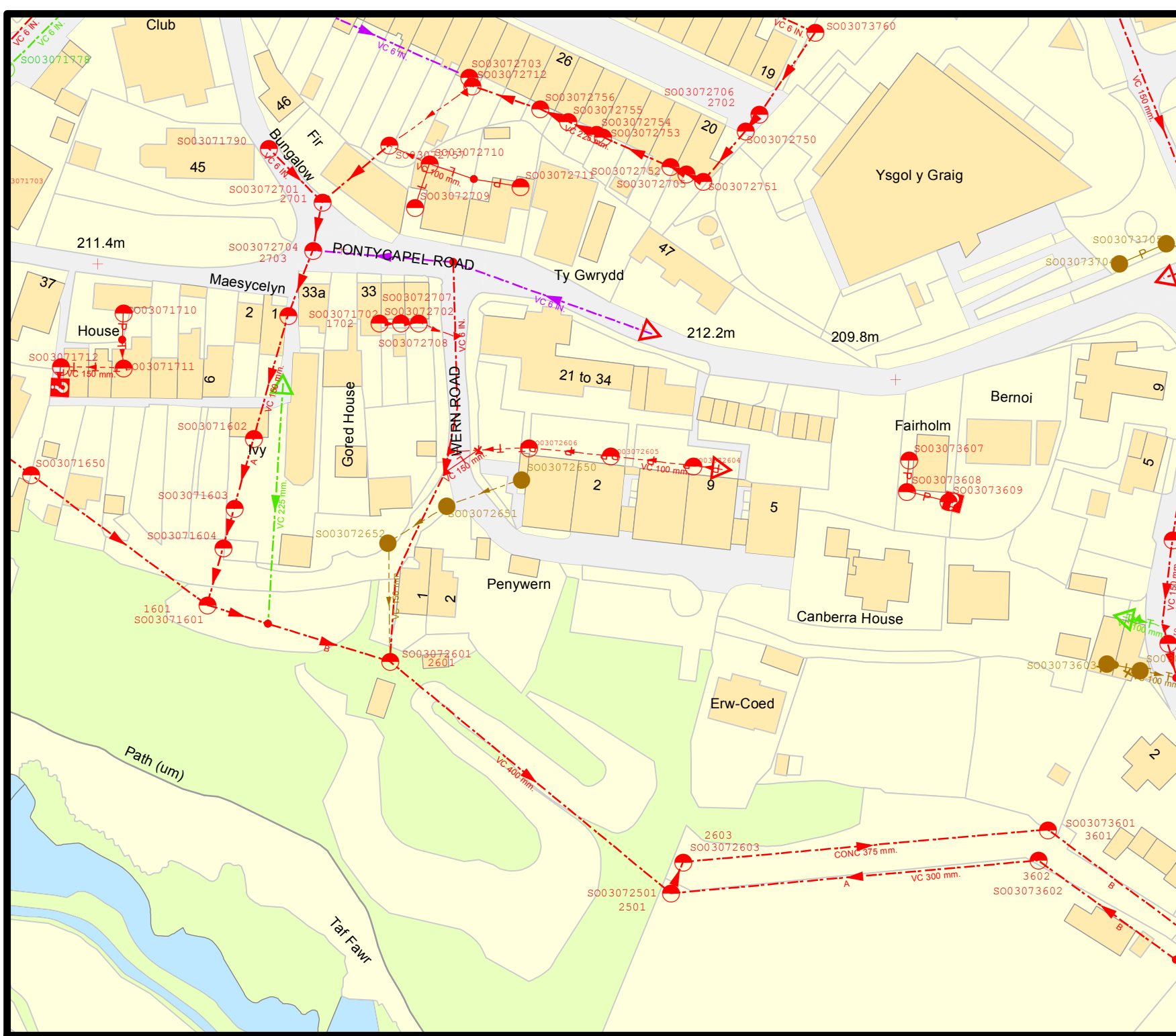
Dŵr Cymru Cŵr (Geogedy) (the Company) agrees this information as to the position of its underground apparatus by way of general guidance only and on the understanding that it is based on the best information available and is not warranted as to its correctness in reliance upon in the event of excavations or other works made in the vicinity of the company's apparatus. The error of locating apparatus before carrying out any excavations are entirely on you. The information which is supplied by the Company is done so in accordance with statutory requirements of sections 103 and 109 of the Water Industry Act 1989 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of water mains, service pipes, lateral drains or disposal main and other central apparatus laid before 1 September 1950, or if they do, the direction of their course and their position and depth may not be accurate. It must be appreciated that the furnishing of this information is entirely without prejudice to the provisions of the New Roads and Street Works Act 1991 and the Company's Agreements to be completed for any works to be approved.

Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.**


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Map Ref: 303258,207670  
Map scale: 1:1000  
Printed by: Zara Howells  
Printed on: 19 Jul 2023





Enquirer			
Name	Miss Lauren Wenham	Phone	01604 781877
Company	Soiltechnics Ltd	Mobile	Not Supplied
Address	Cedar Barn Cedar Barn White Lodge Walgrave Northamptonshire NN6 9PY		
Email	admin@soiltechnics.net		

Enquiry Details		Site Map
Enquiry type	Planned Works	 <p>Please note that the above map only displays the location of the proposed work site and will not display any of the Members' pipes and cables. It is imperative that this area accurately reflects the proposed work site.</p>
Work category	Development Projects	
Work type	Piling	
Work type buffer*	150 metres	
Start date	14/07/2023	
End date	14/07/2023	
Scheme/Reference	STV6119	
Search location	XY= 303257, 207669	
Confirmed location	303268 207682	
Site size	3392 metres square	
Site Contact Name	Rosie Dean - Soiltechnics Limited	
Site Phone No.	01604781877	
Description of Works	Rotary boreholes and mechanically excavated trial pits	
<p>* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.</p>		

### Affected LSBUD members (LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)

Asset Owner	Phone/Email	Emergency Only	Status
National Gas Transmission	08009707000	0800111999	Await response
National Grid Electricity Distribution	08000963080	08006783105	Await response
Wales and West Utilities	02920278912	0800111999	Await response

#### Status explanation

**Await Response** means that the asset owner will contact you. This is typically by sending the plan response but they may ask for further information before being able to do so, particularly if any payments or authorisations are required.

**Email Additional Info** means that the asset owner needs further information about your works to assess your enquiry before providing a response. Please provide any details you have available including plans, method statements etc. if available.

**Important notices**

It is very important that you correctly understand what the service does and the procedures in order for you to work safely. Please refer to the LSBUD Support Page ([www.lsbud.co.uk/lineasearchbeforeudig-support](http://www.lsbud.co.uk/lineasearchbeforeudig-support)) for further guidance.

This information includes how to provide additional information to the LSBUD Members who request it to provide a response to your enquiry.

**Validity and search criteria.** The results of this enquiry are based on the confirmed information you entered and are valid only as at the date and time of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig (LSBUD) accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.

**Terms and Conditions.** Please note that this enquiry is subject always to our standard terms and conditions available at [www.lsbud.co.uk](http://www.lsbud.co.uk) ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

**List of not affected LSBUD members  
 (LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)**

Angus Energy	AWE Pipeline	B & D Energy Limited
Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)	Box Broadband
BP Exploration Operating Company Limited	BPA	Cadent Gas
Cambridgeshire County Council Climate Change and Energy Services	Carrington Gas Pipeline	CATS Pipeline c/o Wood Group PSN
Cemex	Centrica Storage Ltd	CNG Services Ltd
Concept Solutions People Ltd	ConocoPhillips (UK) Teesside Operator Ltd	D.S.Smith
Diamond Transmission Corporation	DIO (MOD Abandoned Pipelines)	DIO (MOD Live Pipelines)
E.ON UK CHP Limited	EDF Energy Renewables Ltd	EirGrid
Eleclink Limited	Electricity North West Limited	Energy Assets Networks
ENI & Himor c/o Penspen Ltd	EnQuest NNS Limited	EP Langage Limited
ESP Utilities Group	ESSAR	Esso Petroleum Company Limited
euNetworks Fiber UK Ltd	EXA Infrastructure	Exolum Pipeline System
Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited	Gamma
Gas Networks Ireland (UK)	Gateshead Energy Company	Gigaclear Ltd
Harbour Energy	Heathrow Airport LTD	Humbly Grove Energy
IGas Energy	INEOS FPS Pipelines	INEOS Manufacturing (Scotland and TSEP)
INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited	Intergen (Coryton Energy or Spalding Energy)
Jurassic Fibre Ltd	Kensa Utilities	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Moray East Offshore Windfarm
MUA Group Limited	National Grid Electricity Transmission	Neos Networks
Northern Gas Networks Limited	Northumbrian Water Group	NPower CHP Pipelines
NTT Global Data Centers EMEA UK Ltd	NYnet Ltd	Ogi
Oikos Storage Limited	Ørsted	Palm Paper Ltd
Perenco UK Limited (Purbeck Southampton Pipeline)	Petroineos	Phillips 66
Portsmouth Water	Premier Transmission Ltd (SNIP)	Redundant Pipelines - LPDA
RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)	RWEnpower (Little Barford and South Haven)	SABIC UK Petrochemicals
SAS Utility Services Ltd	Scottish and Southern Electricity Networks	Scottish Power Generation
Seabank Power Ltd	SES Water	SGN
Shell	Shell NOP	SP Energy Networks
Squire Energy Networks	SSE Generation Ltd	SSE Transmission
SSE Utility Solutions Limited	Storengy	Tata Communications (c/o JSM Construction Ltd)



Total Colnbrook Pipelines	Total Finaline Pipelines	Transmission Capital
UK Power Networks	Uniper UK Ltd	University of Cambridge Granta Backbone Network
Vattenfall	Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd
Voneus Limited	VPI Power Limited	West of Duddon Sands Transmission Ltd
Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd	

#### Non-LSBUD members (Asset owners not registered on LSBUD)

(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.)

Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
BT	<a href="https://www.swns.bt.com/pls/mbe/welcome.home">https://www.swns.bt.com/pls/mbe/welcome.home</a>	08000232023	Not Notified
CityFibre	<a href="mailto:asset.team@cityfibre.com">asset.team@cityfibre.com</a>	033 3150 7282	Not Notified
Colt	<a href="mailto:plantenquiries@catelecomuk.com">plantenquiries@catelecomuk.com</a>	01227768427	Not Notified
Dwr Cymru Welsh Water	<a href="https://contact.dwrcymru.com/en">https://contact.dwrcymru.com/en</a>	0800 917 2652	Not Notified
Equans	<a href="mailto:nrswa.uk@equans.com">nrswa.uk@equans.com</a>	0800 130 3600	Not Notified
GTC	<a href="https://pe.gtc-uk.co.uk/PlantEnqMembership">https://pe.gtc-uk.co.uk/PlantEnqMembership</a>	01359240363	Not Notified
Lumen Technologies	<a href="mailto:plantenquiries@ocugroup.com">plantenquiries@ocugroup.com</a>	02087314613	Not Notified
Merthyr Tydfil County Borough Council	<a href="mailto:streetworks@merthyr.gov.uk">streetworks@merthyr.gov.uk</a>	01685725096	Not Notified
Mobile Broadband Network Limited	<a href="mailto:mbnl.plant.enquiries@turntown.com">mbnl.plant.enquiries@turntown.com</a>	01212 621 100	Not Notified
Sota	<a href="mailto:sota.plantenquiries@ocugroup.com">sota.plantenquiries@ocugroup.com</a>		Not Notified
Utility assets Ltd	<a href="mailto:assetrecords@utilityassets.co.uk">assetrecords@utilityassets.co.uk</a>		Not Notified
Verizon Business	<a href="mailto:osp-team@uk.verizonbusiness.com">osp-team@uk.verizonbusiness.com</a>	01293611736	Not Notified
Virgin Media	<a href="http://www.digdat.co.uk">http://www.digdat.co.uk</a>	08708883116	Not Notified
Vodafone	<a href="mailto:osm.enquiries@atkinsglobal.com">osm.enquiries@atkinsglobal.com</a>	01454662881	Not Notified

#### Disclaimer

Please refer to LSBUD's Terms of Use for full terms of use available at [www.lsbud.co.uk](http://www.lsbud.co.uk)

The results of this Enquiry are personal to the Enquirer and shall not be shared with or relied upon by any other party. The asset information on which the Enquiry results are based has been provided by LSBUD Members, therefore LSBUD will provide no guarantee that such information is accurate or reliable nor does it monitor such asset information for accuracy and reliability going forward. There may also be asset owners which do not participate in the enquiry service operated by LSBUD, including but not exclusively those set out above. Therefore, LSBUD cannot make any representation or give any guarantee or warranty as to the completeness of the information contained in the enquiry results or accept any responsibility for the accuracy of the mapping images used. LSBUD and its employees, agents and consultants accept no liability (save that nothing in this Enquiry Confirmation excludes or limits our liability for death or personal injury arising from our negligence, or our fraud or fraudulent misrepresentation, or any other liability that cannot be excluded or limited by English law) arising in respect thereof or in any other way for errors or omissions including responsibility to any person by reason of negligence.

Our Ref: 30156469      STV6119

Thursday, 13 July 2023

Lauren Wenham  
Cedar Barn Cedar Barn White Lodge  
Walgrave  
Northamptonshire  
NN6 9PY

**National Gas Emergency Number:  
0800 111 999\***

\*Available 24 hours, 7 days/week.  
Calls may be recorded and monitored.  
[www.nationalgas.com](http://www.nationalgas.com)

Asset Protection  
National Gas Transmission  
National Grid House  
Warwick  
CV34 6DA  
Email: [box.assetprotection@nationalgas.com](mailto:box.assetprotection@nationalgas.com)  
Tel: 0800 970 7000

### **National Gas Transmission– No Assets Affected Letter**

Dear Sir/ Madam,

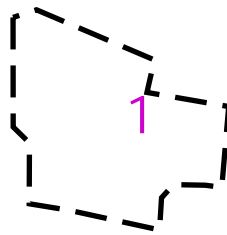
An assessment has been carried out with respect to National Gas Transmission plc's apparatus and the proposed work location. Based on the location entered into the system for assessment the area has been found to not affect any of National Gas Transmission plc's apparatus.

If you have any questions or suspect for any reason that the above may be incorrect, please don't hesitate to contact us at [box.assetprotection@nationalgas.com](mailto:box.assetprotection@nationalgas.com), or call us on 0800 970 7000.

Please note this response and any attached map(s) are valid for 28 days

Yours sincerely,

**Asset Protection Team**



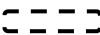
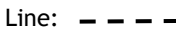
Warning: PDF designed for A4 colour print only with no page scaling



National Gas Transmission  
National Grid House  
Warwick Technology Park  
Gallows Hill  
Warwick  
CV34 6DA

box.assetprotection@nationalgas.com

100m

Dig Sites      Area:       Line: 

 NHP Mains

Date Requested: 13/07/2023  
Job Reference: 30156469  
Site Location: 303268 207682  
Requested by: Miss Lauren Wenham  
Your Scheme/Reference: STV6119

**IMPORTANT NOTICES**

This plan shows those pipes owned by National Gas Transmission PLC in its role as a licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc., are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Gas Transmission PLC or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

**National Gas Transmission Emergency Number: 0800 111 999**

Available 24 hours, 7 days/week. Calls may be recorded and monitored

Scale: 1:2500 (When plotted at A4)

# ENQUIRY SUMMARY

## Received Date

13/07/2023 10:59

## Work Start Date

14/07/2023

## Your Reference

STV6119

## Location

Centre Point: 303268 207682

X Extent:

Y Extent:

Postcode: CF482RH

## Map Options

Paper Size: A4

Orientation: PORTRAIT

Scale: 1:2500

Real World Extents: 71m x 73m

## Enquirer Details

Organisation Name: Soiltechnics Ltd

Contact Name: Lauren Wenham

Email Address: admin@soiltechnics.net

Telephone: 01604 781877/Not Supplied

Address: Cedar Barn Cedar Barn White Lodge, Walgrave, Northamptonshire, NN6 9PY

## Enquiry Type

Planned Works

## Activity Type

Development Projects

## Work Types

Piling

## Notes/Works Description (if supplied)

Rotary boreholes and mechanically excavated trial pits

## Site Contact Name (if supplied)

Rosie Dean - Soiltechnics Limited

## Site Contact Number (if supplied)

01604781877

**Company Address**

Wales and West Utilities Ltd,  
Wales and West House,  
Spooner Close, Celtic,  
Springs, Coedkernew,  
Newport, NP10 8FZ

Our Ref: 30156469      STV6119

Thursday, 13 July 2023

Lauren Wenham  
Cedar Barn Cedar Barn White Lodge  
Walgrave  
Northamptonshire  
NN6 9PY

Dear Lauren Wenham

Thank you for contacting us regarding Wales & West Utilities equipment at the above site.

I enclose an extract from our mains records of the area covered by your proposals together with a comprehensive list of General Conditions for your guidance. This information is given as a general guide and its accuracy cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc., are not shown but their presence should be anticipated.

No liability of any kind whatsoever is accepted by Wales and West Utilities (WWU), its agents or servants for any error or omission. Please note that all WWU equipment on site should be assumed to be LIVE until proven otherwise.

Safe digging practices, in accordance with HS(G)47, Avoiding Danger from underground services must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. Safe working procedures should be defined and practiced.

**WWU reserves its position completely to enforce the terms of any existing easement against the landowner, even if this results in any planning permission granted not being able to be fully implemented.**

**You must not build over any of our plant or enclose our apparatus.**

**Wales & West Utilities have no planning objections to these proposals, although it should be noted that Wales & West's apparatus is held pursuant to easements and it has other private law rights in relation to the use of the land in the vicinity of its apparatus. Wales & West's private law land rights are not material planning considerations and therefore no comment is made in relation to those rights and they have no impact on whether or not planning permission should be granted, or whether, if permission is granted, it can lawfully be implemented. It should also be noted that Wales & West's apparatus may be at risk during construction works and should the planning application be approved, then we require the promoter of these works to contact us directly to discuss our requirements in detail. Should diversion works be required these will be fully chargeable.**

Where diversions to WWU apparatus are needed to allow change to occur on site, the cost of these alterations may be charged to the persons responsible for the works.

If you have requested a new connection the WWU connections team will where necessary prepare detailed proposals and provide a quotation for any necessary alterations and/or development of our equipment on the site.

If you require advice in connection with your proposals please contact the relevant number below.

Yours sincerely,

**Company Address**

Wales and West Utilities Ltd,  
Wales and West House,  
Spooner Close, Celtic,  
Springs, Coedkernew,  
Newport, NP10 8FZ

WWU Dig Team

**Gas Emergency Number:**

In an emergency call 0800 111 999, 24 hours a day.

**Mapping Enquiries:**

If you have an enquiry relating to this letter or the attached map plan, please contact us using the following information:

Telephone 02920 278912  
Email dig@wwutilities.co.uk

**General Enquiries:**

If you have a general enquiry, please call us on the following number

All areas 0800 912 29 99

**LinesearchbeforeUdig:**

If you have an enquiry relating to the use of the LinesearchbeforeUdig website please contact LinesearchbeforeUdig using the following information:

Telephone 0845 437 7365  
Email enquiries@linesearchbeforeudig.co.uk  
Website www.linesearchbeforeudig.co.uk

## **Appendix P    Envirocheck Report**



## Envirocheck<sup>®</sup> Report:

### Datasheet

#### Order Details:

**Order Number:**

314168170\_1\_1

**Customer Reference:**

STV6119

**National Grid Reference:**

303270, 207680

**Slice:**

A

**Site Area (Ha):**

0.32

**Search Buffer (m):**

1000

#### Site Details:

Cefn Isaf, Merthyr Tydfil

#### Client Details:

Ms S Ltd

Soiltechnics Limited

Cedar Barn

White Lodge

Walgrave

Northampton

NN6 9PY

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	44
Hazardous Substances	-
Geological	46
Industrial Land Use	56
Sensitive Land Use	64
Data Currency	66
Data Suppliers	72
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#### 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

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Agency &amp; Hydrological</b>					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 3		1	3	10
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 7				1
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7		Yes		
Pollution Incidents to Controlled Waters	pg 7		2	6	10
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 10		1	1	1
River Quality Biology Sampling Points	pg 11				1
River Quality Chemistry Sampling Points	pg 12		4	4	
Substantiated Pollution Incident Register	pg 19			2	2
Water Abstractions	pg 20			1	1
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 20	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 20	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 20	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 21		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 21		Yes	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 21		22	40	140

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Waste</b>					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 44				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 44	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 44				1
Potentially Infilled Land (Non-Water)	pg 44				10
Potentially Infilled Land (Water)	pg 45				4
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
<b>Hazardous Substances</b>					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Geological</b>					
BGS 1:625,000 Solid Geology	pg 46	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 46	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 51				10
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 53	Yes	n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities	pg 53		1	1	4
Non Coal Mining Areas of Great Britain	pg 54	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 54	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 54	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 54	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 55	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 55	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
<b>Industrial Land Use</b>					
Contemporary Trade Directory Entries	pg 56		2	5	14
Fuel Station Entries					
Points of Interest - Commercial Services	pg 57		2	3	3
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 58			1	8
Points of Interest - Public Infrastructure	pg 59		8	8	24
Points of Interest - Recreational and Environmental	pg 62		2	3	7
Gas Pipelines					
Underground Electrical Cables					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Sensitive Land Use</b>					
Ancient Woodland	pg 64			5	9
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 65			1	
Marine Nature Reserves					
National Nature Reserves					
National Parks	pg 65		1		
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 65			1	
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (SW)	0	1	303265 207679
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	0	1	303250 207700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	33	1	303200 207679
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (S)	43	1	303265 207600
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	89	1	303150 207650
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (S)	97	1	303250 207550
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	110	1	303200 207550
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SE (SE)	116	1	303350 207550
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	141	1	303150 207550
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (S)	145	1	303300 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (S)	146	1	303250 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	155	1	303100 207600
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	179	1	303150 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	184	1	303050 207700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	189	1	303050 207750
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (S)	196	1	303250 207450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (W)	200	1	303050 207600
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (S)	205	1	303350 207450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	212	1	303100 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	217	1	303450 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (SW)	222	1	303150 207450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	238	1	303000 207750



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	256	1	303450 207450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	258	1	303500 207850
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	261	1	303450 207900
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	274	1	303550 207800
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	283	1	302950 207679
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	288	1	303500 207450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	293	1	303500 207900
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	298	1	302950 207800
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (S)	302	1	303200 207350
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (NE)	304	1	303450 207950
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (E)	306	1	303600 207750
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	317	1	302950 207850
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (S)	317	1	303400 207350
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (NE)	325	1	303400 208000
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	326	1	303500 207400
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	334	1	302900 207700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	337	1	302900 207750
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	349	1	303650 207700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (N)	353	1	303350 208050
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	359	1	303550 207400
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (NW)	362	1	302900 207850
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	366	1	303500 207350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	370	1	303400 208050
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	399	1	303700 207679
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A18SE (N)	401	1	303350 208100
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (SW)	423	1	302850 207500
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NE (SE)	436	1	303550 207300
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	450	1	303500 207250
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	450	1	303350 208150
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	456	1	302800 207850
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	459	1	303150 207200
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (NW)	474	1	302800 207900
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A17SE (NW)	476	1	302900 208050
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	477	1	303550 207250
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (W)	490	1	302750 207600
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	499	1	303350 208200
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (SW)	500	1	302850 207350
1	<b>Discharge Consents</b> Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works - Water Company Location: Cefn Coed Stw Authority: Natural Resources Wales Catchment Area: River Taff Reference: Ag0008001 Permit Version: 1 Effective Date: 30th January 1985 Issued Date: 30th January 1985 Revocation Date: 26th April 1991 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Not Supplied Receiving Water: Taff Fawr <b>Status: Consent expired</b> Positional Accuracy: Located by supplier to within 10m	A13SE (S)	105	2	303300 207540

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	<p><b>Discharge Consents</b></p> <p>Operator: Mrs Beverly Ann Davies  Property Type: Domestic Property (Single)  Location: 38 Pontycapel Road Cefn Coed, 38 Pontycapel Road, Cefn Coedydfil, Merthyr Tydfil, Mid Glamorgan, Cf48 2py  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: An0321301  Permit Version: 1  Effective Date: 18th July 2002  Issued Date: 18th July 2002  Revocation Date: Not Supplied  Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Afon Taf Fawr  <b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b>  Positional Accuracy: Located by supplier to within 10m</p>	A13NW (W)	283	2	302954 207747
3	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: High St Cso, Cefn Coed, Cefn Coed High Street, Merthyr Tydfil, Cf48 2pg  Authority: Natural Resources Wales  Catchment Area: TAF FECHAN - SOURCE TO CONF AFON TAF FAWR  Reference: Bb3895ce  Permit Version: 1  Effective Date: 13th November 2020  Issued Date: 13th November 2020  Revocation Date: Not Supplied  Discharge Type: Not Supplied  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Taf Fechan  <b>Status:</b> <b>Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A14SW (E)	425	2	303721 207614
3	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: High St Cso, Cefn Coed, Cefn Coed High Street, Merthyr Tydfil, Cf48 2pg  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: Bb3895ce  Permit Version: Not Supplied  Effective Date: 13th November 2020  Issued Date: 13th November 2020  Revocation Date: Not Supplied  Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Taf Fechan  <b>Status:</b> <b>Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A14SW (E)	425	2	303721 207614
4	<p><b>Discharge Consents</b></p> <p>Operator: Fcc Construcccion S A, Uk Branch Office  Property Type: Civil Engineering  Location: A465 Section 5 And 6 Dowlaid Top To Hirwaun X 3 Locations, Orbit Business Centre, Rhydyccar Business Park, Merthyr Tydfil, Cf48 1dl  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: Cb3594ff  Permit Version: Not Supplied  Effective Date: 14th June 2022  Issued Date: 14th June 2022  Revocation Date: Not Supplied  Discharge Type: Trade Discharges - Site Drainage  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Taf Fechan And Taf Fawr  <b>Status:</b> <b>Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A12NE (W)	544	2	302693 207757

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	<p><b>Discharge Consents</b></p> <p>Operator: Fcc Construcion S A, Uk Branch Office  Property Type: Civil Engineering  Location: A465 Section 5 And 6 Dowlaid Top To Hirwaun X 3 Locations, Orbit Business Centre, Rhydyar Business Park, Merthyr Tydfil, Cf48 1dl  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: Cb3594ff  Permit Version: Not Supplied  Effective Date: 14th June 2022  Issued Date: 14th June 2022  Revocation Date: Not Supplied  Discharge Type: Trade Discharges - Site Drainage  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Taf Fechan And Taf Fawr  <b>Status: Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SW (NE)	750	2	303697 208322
6	<p><b>Discharge Consents</b></p> <p>Operator: Thorn Lighting Ltd  Property Type: Undefined Or Other  Location: Merthyr Tydfil - Thorn Lightin  Authority: Natural Resources Wales  Catchment Area: River Taff  Reference: Ae2023201  Permit Version: 1  Effective Date: 10th March 1964  Issued Date: 10th March 1964  Revocation Date: 8th November 1985  Discharge Type: Unspecified  Discharge: Not Supplied  Environment:  Receiving Water: Taff River Tributary  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A9SW (SE)	776	2	303630 206950
7	<p><b>Discharge Consents</b></p> <p>Operator: M A Sandbach  Property Type: Lagoons  Location: Former Brickworks Site Heolgerrig, Merthyr Tydfil, Wales, Cf48 1tw  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: An0352002  Permit Version: 1  Effective Date: 18th February 2004  Issued Date: 18th February 2004  Revocation Date: 7th March 2007  Discharge Type: Miscellaneous Discharges - Surface Water  Discharge: Freshwater Stream/River  Environment:  Receiving Water: The Swnasea Road Culvert  <b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8SW (S)	844	2	303192 206804
7	<p><b>Discharge Consents</b></p> <p>Operator: M A Sandbach  Property Type: Lagoons  Location: Former Brickworks Site Heolgerrig, Merthyr Tydfil, Wales, Cf48 1tw  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: An0352002  Permit Version: 1  Effective Date: 18th February 2004  Issued Date: 18th February 2004  Revocation Date: 7th March 2007  Discharge Type: Miscellaneous Discharges - Surface Water  Discharge: Freshwater Stream/River  Environment:  Receiving Water: The Swnasea Road Culvert  <b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8SW (S)	844	2	303192 206804

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: Merthyr - Swansea Road  Authority: Natural Resources Wales  Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON  Reference: AE2025308  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: Freshwater Stream/River  Environment:  Receiving Water: Gellideg Stream Then Taff  <b>Status: Surrendered</b>  Positional Accuracy: Located by supplier to within 100m</p>	A8SE (S)	884	2	303320 206760
8	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: Merthyr - Swansea Road  Authority: Natural Resources Wales  Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON  Reference: Ae2025308  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: Freshwater Stream/River  Environment:  Receiving Water: Gellideg Stream Then Taff  <b>Status: Surrendered</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8SE (S)	884	2	303320 206760
9	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: Gellideg Tai Mawr Rd Cso, Merthyr Tydfil, 38 Heol Parc Maen, Swansea Rd, Merthyr Tydfil, Cf48 1lf  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: An0027701  Permit Version: Not Supplied  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: Freshwater Stream/River  Environment:  Receiving Water: River Taff  <b>Status: Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8SE (S)	888	2	303490 206780
9	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: M'Tydfil-Tai Mawr Lane Sso  Authority: Natural Resources Wales  Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON  Reference: AN0027701  Permit Version: 1  Effective Date: 9th November 1988  Issued Date: 9th November 1988  Revocation Date: Not Supplied  Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company  Discharge: Freshwater Stream/River  Environment:  Receiving Water: River Taff  <b>Status: Effective</b>  Positional Accuracy: Located by supplier to within 100m</p>	A8SE (S)	888	2	303490 206780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	<p><b>Discharge Consents</b></p> <p>Operator: Dwr Cymru Cyfyngedig  Property Type: Sewerage Network - Sewers - Water Company  Location: M'Tydfil-Tai Mawr Lane Sso  Authority: Natural Resources Wales  Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON  Reference: An0027701  Permit Version: 1  Effective Date: 9th November 1988  Issued Date: 9th November 1988  Revocation Date: Not Supplied  Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company  Discharge: Freshwater Stream/River  Environment:  Receiving Water: River Taff  <b>Status: Effective</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8SE (S)	888	2	303490 206780
10	<p><b>Local Authority Pollution Prevention and Controls</b></p> <p>Name: Beacons Products  Location: E.F.I. Industrial Estate  Authority: Merthyr Tydfil County Borough Council, Environmental Health Department  Permit Reference: Not Supplied  Dated: Not Supplied  Process Type: Local Authority Pollution Prevention and Control  Description: PG6/32 Adhesive coating  <b>Status: Application exempt from APC</b>  Positional Accuracy: Manually positioned to the address or location</p>	A9NW (SE)	701	3	303835 207204
	<p><b>Nearest Surface Water Feature</b></p>	A13SW (SW)	82	-	303214 207575
11	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Water Company Sewage: Sewerage  Location: 300 Down Stream Of, Cefncoed  Authority: Environment Agency, Welsh Region  Pollutant: Crude Sewage  Note: Weather  Incident Date: 7th December 1995  Incident Reference: 27031  Catchment Area: Not Given  Receiving Water: Not Given  Cause of Incident: Leachate  Incident Severity: Category 3 - Minor Incident  Positional Accuracy: Located by supplier to within 100m</p>	A13SE (SE)	116	4	303400 207600
12	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given  Location: Old Cefn Coed Stw  Authority: Environment Agency, Welsh Region  Pollutant: Mud/Clay/Soil  Note: Blocked Sewer  Incident Date: 14th February 1996  Incident Reference: 27373  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</p>	A13NW (W)	234	4	303000 207700
13	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Water Company Sewage: Sewerage  Location: 150 Metres Up Stream Of, Gwynnes Arms  Authority: Environment Agency, Welsh Region  Pollutant: Chemicals - Other Organic  Note: Blocked Sewer  Incident Date: 9th November 1995  Incident Reference: 26683  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</p>	A13NE (E)	320	4	303600 207800



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Road            Location: River Taff Fawr            Authority: Environment Agency, Welsh Region            Pollutant: Light Oil            Note: Not Supplied            Incident Date: 20th April 1995            Incident Reference: 23457            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</p>	A12NE (W)	340	4	302905 207795
14	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Road            Location: Cefn Coed            Authority: Environment Agency, Welsh Region            Pollutant: Chemicals - Paints / Dyes            Note: Not Supplied            Incident Date: 20th April 1995            Incident Reference: 23457            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</p>	A12NE (W)	345	4	302900 207795
14	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Cefn Coed            Authority: Environment Agency, Welsh Region            Pollutant: Crude Sewage            Note: Not Supplied            Incident Date: 5th December 1995            Incident Reference: 26992            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</p>	A12NE (W)	346	4	302900 207800
15	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Confluence Of, Tabernacle Road            Authority: Environment Agency, Welsh Region            Pollutant: Unknown            Note: Not Supplied            Incident Date: 24th August 1996            Incident Reference: 29792            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</p>	A14SW (E)	478	4	303750 207500
16	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Water Company Sewage: Sewerage            Location: The Well Str, Area Of Cefn Coed            Authority: Environment Agency, Welsh Region            Pollutant: Unknown            Note: Blocked Sewer            Incident Date: 29th August 1995            Incident Reference: 25641            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</p>	A14NW (E)	499	4	303800 207700
17	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Farmers Pool, Cefn Coed            Authority: Environment Agency, Welsh Region            Pollutant: Unknown            Note: Not Supplied            Incident Date: 15th March 1991            Incident Reference: 137            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</p>	A9NW (SE)	607	4	303750 207250



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Between Cefn, Coed Fishing, Tackle Shop Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 22nd August 1995 Incident Reference: 25685 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	A14NW (E)	609	4	303900 207795
18	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Between Cefn, Coed Fishing, Tackle Shop Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 22nd August 1995 Incident Reference: 25685 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	A14NW (E)	610	4	303900 207800
19	<b>Pollution Incidents to Controlled Waters</b> Property Type: Road Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Deliberate Act Incident Date: 21st April 1995 Incident Reference: 23691 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	A8SW (S)	695	4	303000 207000
20	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Agricultural: Silage Liquor Note: Natural Causes Incident Date: 6th May 1995 Incident Reference: 24175 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Natural Causes Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	787	4	304000 207300
21	<b>Pollution Incidents to Controlled Waters</b> Property Type: Not Given Location: TREFECHAN Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Accidental Spillage/Leakage Incident Date: 27th June 1996 Incident Reference: 28985 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Effluent Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	822	4	303500 208495
21	<b>Pollution Incidents to Controlled Waters</b> Property Type: Water Company Sewage: Sewerage Location: TREFECHAN Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Accidental Spillage/Leakage Incident Date: 27th June 1996 Incident Reference: 28985 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Effluent Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	827	4	303500 208500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Road            Location: Merthyr-A470, Roadscheme, Earth Moving            Authority: Environment Agency, Welsh Region            Pollutant: Mud/Clay/Soil            Note: Accidental Spillage/Leakage            Incident Date: 20th February 1995            Incident Reference: 22815            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Runoff            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A8SE (S)	871	4	303500 206800
23	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Cefn Cemetry, MERTHYR TYDFIL            Authority: Environment Agency, Welsh Region            Pollutant: Sewage - Treated Effluent            Note: Not Supplied            Incident Date: 28th March 1992            Incident Reference: 3473            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</p>	A17NE (NW)	974	4	302600 208450
24	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Cyfartha Industrial, Estate New Factory            Authority: Environment Agency, Welsh Region            Pollutant: Crude Sewage            Note: Not Supplied            Incident Date: 13th August 1991            Incident Reference: 1208            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</p>	A9SE (SE)	998	4	303950 206900
	<p><b>River Quality</b></p> <p>Name: Taff Fawr            GQA Grade: River Quality A            Reach: Conf.Taff Fechan-Pant Sychbant            Estimated Distance (km): 3.9            Flow Rate: Flow less than 2.5 cumecs            Flow Type: River            Year: 2000</p>	A13SW (S)	89	4	303222 207564
	<p><b>River Quality</b></p> <p>Name: Taf Fechan            GQA Grade: River Quality A            Reach: Conf.Taff - Conf.Cwm-Moel            Estimated Distance (km): 3.1            Flow Rate: Flow less than 1.25 cumecs            Flow Type: River            Year: 2000</p>	A14SW (E)	432	4	303730 207629
	<p><b>River Quality</b></p> <p>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</p>	A9NW (SE)	545	4	303693 207280

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	<p><b>River Quality Biology Sampling Points</b></p> <p>Name: Taff                      Reach: Confluence Nant Morlais To Confluence Taff Fechan                      Estimated Distance: 1.40                      Positional Accuracy: Located by supplier to within 100m                      Year: 1990                      GQA Grade: River Quality Biology GQA Grade B - Good                      Year: 1995                      GQA Grade: River Quality Biology GQA Grade B - Good                      Year: 2000                      GQA Grade: River Quality Biology GQA Grade A - Very Good                      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 B - Good                      Year: 2005                      GQA Grade: River Quality Biology GQA Grade B - Good                      Year: 2006                      GQA Grade: River Quality Biology GQA Grade B - Good                      Year: 2007                      GQA Grade: River Quality Biology GQA Grade A - Very Good                      Year: 2008                      GQA Grade: River Quality Biology GQA Grade A - Very Good                      Year: 2009                      GQA Grade: River Quality Biology GQA Grade A - Very Good</p>	A9NW (SE)	607	4	303700 207200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taff Fawr                      Reach: Confluence Taff Fechan To Pant Sychbant                      Estimated Distance: 3.90                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A13SE (SE)	144	4	303360 207523

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taff Fawr                      Reach: Pant Sychbant To Llwynon Reservoir Outlet                      Estimated Distance: 1.70                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A13SE (SE)	144	4	303360 207523

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taff Fawr                      Reach: Llwynon Reservoir Outlet To Confluence Nant Ddu                      Estimated Distance: 3.50                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: Not Supplied                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A13SE (SE)	144	4	303360 207523

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taff Fawr                      Reach: Confluence Nant Ddu To Upstream Cantref Water Treatment Works                      Estimated Distance: 1.10                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: Not Supplied                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade B - Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A13SE (SE)	144	4	303360 207523



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taf Fechan                      Reach: Confluence River Taff To Confluence Cwm-Moel                      Estimated Distance: 3.10                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A14SW (E)	442	4	303736 207595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taf Fechan                      Reach: Confluence Cwm-Moel To 1.3km Below Overflow                      Estimated Distance: 2.60                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: Not Supplied                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A14SW (E)	442	4	303736 207595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taf Fechan                      Reach: 1.3km Below Reservoir Outfall To Outlet Pontsticill Reservoir                      Estimated Distance: 1.60                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A14SW (E)	442	4	303736 207595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	<p><b>River Quality Chemistry Sampling Points</b></p> <p>Name: Taf Fechan                      Reach: Pontsticill Reservoir Out To Lwr Neuadd Reservoir Out                      Estimated Distance: 7.10                      Objective: Not Supplied                      Positional Accuracy: Located by supplier to within 10m                      Year: 1990                      GQA Grade: Not Supplied                      Compliance: Not Supplied                      Year: 1993                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1994                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1995                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1996                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1997                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1998                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 1999                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2000                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2001                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2002                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2003                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2004                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2005                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2006                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2007                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2008                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied                      Year: 2009                      GQA Grade: River Quality Chemistry GQA Grade A - Very Good                      Compliance: Not Supplied</p>	A14SW (E)	442	4	303736 207595
28	<p><b>Substantiated Pollution Incident Register</b></p> <p>Authority: Natural Resources Wales                      Incident Date: 30th September 2021                      Incident Reference: 2108151                      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: Contaminated Water: Suspended Solids</p>	A13NW (W)	288	2	302948 207735
29	<p><b>Substantiated Pollution Incident Register</b></p> <p>Authority: Natural Resources Wales                      Incident Date: 24th June 2021                      Incident Reference: 2105444                      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: Pollutant Not Identified: Not Identified</p>	A14NW (E)	330	2	303617 207780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	<b>Substantiated Pollution Incident Register</b> Authority: Natural Resources Wales Incident Date: 7th December 2021 Incident Reference: 2109834 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	A12NE (NW)	530	2	302769 207964
31	<b>Substantiated Pollution Incident Register</b> Authority: Natural Resources Wales Incident Date: 15th February 2018 Incident Reference: 1800852 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	A9NW (SE)	820	2	303882 207080
32	<b>Water Abstractions</b> 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	A14SW (E)	404	4	303704 207663
33	<b>Water Abstractions</b> Operator: Merthyr Tydfil County Borough Council Licence Number: Wa/057/0021/0011 Permit Version: Not Supplied Location: Cyfarthfa Leat, Cyfarthfa Castle Museum, Cyfarthfa Park, Merthyr Tydfil, Cf47 8re Authority: Natural Resources Wales Abstraction: Industrial/Commercial/Energy/Public Services: Transfer between sources Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	718	2	303483 208391
	<b>Groundwater Vulnerability Map</b> Combined Classification: Secondary Bedrock Aquifer - Medium Vulnerability Combined Vulnerability: Medium 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: High	A13NW (SW)	0	2	303265 207679
	<b>Bedrock Aquifer Designations</b> Aquifer Designation: Secondary Aquifer - A	A13NW (SW)	0	2	303265 207679
	<b>Superficial Aquifer Designations</b> Aquifer Designation: Secondary Aquifer - Undifferentiated	A13NW (SW)	0	2	303265 207679

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Extreme Flooding from Rivers or Sea without Defences</b> Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SW)	67	2	303200 207605
	<b>Extreme Flooding from Rivers or Sea without Defences</b> Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SW (W)	125	2	303113 207645
	<b>Extreme Flooding from Rivers or Sea without Defences</b> Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13SW (W)	125	2	303115 207640
	<b>Extreme Flooding from Rivers or Sea without Defences</b> Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13NW (W)	228	2	303007 207723
	<b>Flooding from Rivers or Sea without Defences</b> Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SW)	68	2	303215 207590
	<b>Areas Benefiting from Flood Defences</b> None				
	<b>Flood Water Storage Areas</b> None				
	<b>Flood Defences</b> None				
34	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 59.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	96	5	303179 207583
35	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 7.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (SW)	98	5	303179 207583
36	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 34.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	98	5	303179 207583
37	<b>OS Water Network Lines</b> Watercourse Form: Transfer Watercourse Length: 104.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (SW)	105	5	303178 207572
38	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 31.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (SW)	105	5	303162 207591

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 23.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	109	5	303152 207601
40	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (S)	110	5	303270 207534
41	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 51.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (S)	111	5	303220 207541
42	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 8.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (S)	111	5	303220 207541
43	<b>OS Water Network Lines</b> 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	A13SE (S)	112	5	303268 207533
44	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 61.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (S)	120	5	303216 207533
45	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (SW)	124	5	303137 207596
46	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 13.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (SW)	124	5	303135 207600
47	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 151.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	125	5	303131 207607



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
48	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 122.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (S)	128	5	303263 207517
49	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 60.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	163	5	303379 207514
50	<b>OS Water Network Lines</b> 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	A13SE (SE)	163	5	303379 207514
51	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (S)	172	5	303197 207485
52	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 163.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	213	5	303401 207468
53	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 20.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	213	5	303401 207468
54	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 97.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13NW (W)	227	5	303006 207687
55	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 320.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13NW (W)	227	5	303006 207687
56	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 59.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	282	5	302969 207582

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 124.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	282	5	303054 207446
58	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 37.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	283	5	302961 207605
59	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 48.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	286	5	302980 207548
60	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 55.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	299	5	303421 207380
61	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 577.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13NE (NE)	303	5	303561 207842
62	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 63.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	308	5	302954 207549
63	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 17.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	312	5	302942 207570
64	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 17.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A13SW (W)	312	5	302940 207575
65	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 4.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	312	5	302942 207570

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
66	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 735.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13NE (NE)	317	5	303554 207877
67	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 64.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	328	5	302927 207564
68	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 7.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	340	5	302935 207518
69	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 84.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	343	5	303625 207799
70	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 32.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	344	5	303640 207743
71	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 18.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (SW)	347	5	302930 207511
72	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 201.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	353	5	302888 207608
73	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 67.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	353	5	302888 207608
74	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 277.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	354	5	303455 207335

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 46.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	354	5	303455 207335
76	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 59.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	355	5	303534 207389
77	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 541.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (SW)	358	5	302926 207494
78	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 5.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	358	5	303527 207381
79	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 280.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (SE)	359	5	303524 207376
80	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 68.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	363	5	303662 207719
81	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 43.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	363	5	303662 207719
82	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 1.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	374	5	303669 207753
83	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	375	5	303670 207752

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
84	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	375	5	303670 207754
85	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 130.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	391	5	302843 207659
86	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 250.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	402	5	303702 207663
87	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 22.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	402	5	303702 207663
88	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 20.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (S)	410	5	303365 207243
89	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 12.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	420	5	303721 207675
90	<b>OS Water Network Lines</b> 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	A14SW (E)	427	5	303728 207664
91	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 163.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	427	5	303728 207664
92	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 60.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	462	5	303759 207626

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
93	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 146.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NE (NW)	481	5	302805 207928
94	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 29.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NE (NW)	481	5	302805 207928
95	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 68.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NE (W)	497	5	302737 207706
96	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 72.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	503	5	303794 207576
97	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 23.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A12SE (W)	509	5	302751 207518
98	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 22.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	509	5	302751 207518
99	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 153.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	521	5	302745 207498
100	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 61.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A14SW (SE)	521	5	303764 207421
101	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 56.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (SE)	523	5	303768 207425

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
102	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 159.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18SE (N)	535	5	303370 208233
103	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 6.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18SE (N)	535	5	303370 208233
104	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 179.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NE (W)	542	5	302695 207760
105	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 76.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (SE)	560	5	303782 207373
106	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 1.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	574	5	303863 207551
107	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	575	5	303864 207551
108	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	575	5	303864 207551
109	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 17.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	576	5	303876 207732
110	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 112.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	577	5	303865 207550



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
111	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 160.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SW (E)	578	5	303875 207617
112	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	594	5	303893 207734
113	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 20.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	597	5	303896 207735
114	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 95.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	610	5	303661 207165
115	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 41.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A9NW (SE)	613	5	303795 207296
116	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 109.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	614	5	303716 207206
117	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 44.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	615	5	303804 207306
118	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 4.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	617	5	303916 207738
119	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 67.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	618	5	303711 207195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
120	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 48.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (S)	618	5	303425 207043
121	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 60.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A17SE (NW)	620	5	302701 208027
122	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 19.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	621	5	303920 207739
123	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 165.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	628	5	303920 207795
124	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 4.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (E)	640	5	303939 207740
125	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 23.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NE (E)	644	5	303943 207742
126	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 46.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NE (E)	644	5	303943 207742
127	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 424.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A17SE (NW)	650	5	302709 208093
128	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 9.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	665	5	303429 206995

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
129	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 237.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	667	5	302597 207479
130	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 158.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SE (W)	667	5	302597 207479
131	<b>OS Water Network Lines</b> 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: 2	A14NE (E)	668	5	303966 207742
132	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 26.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NE (E)	668	5	303966 207742
133	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 17.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	674	5	303431 206986
134	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 146.1 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	681	5	303957 207485
135	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 175.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	683	5	303265 208395
136	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 47.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	684	5	303391 206968
137	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 3.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	685	5	303451 208366

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
138	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 176.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	685	5	303451 208366
139	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 86.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	686	5	303228 208399
140	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 202.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	686	5	303753 207143
141	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 79.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	688	5	303450 208370
142	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 108.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	691	5	303433 206969
143	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 38.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NW (W)	701	5	302551 207865
144	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 22.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NW (W)	701	5	302551 207865
145	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 89.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A14SE (E)	725	5	304025 207653
146	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 22.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	737	5	303401 208433

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
147	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 13.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	750	5	303166 208459
148	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 63.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	752	5	303387 208451
149	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 117.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	757	5	303590 206953
150	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 85.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	762	5	303159 208471
151	<b>OS Water Network Lines</b> 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	A7SE (SW)	762	5	302921 206961
152	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 76.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	762	5	303159 208471
153	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 269.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	763	5	302928 206956
154	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 41.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	764	5	302928 206956
155	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 238.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	782	5	302464 207541

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
156	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 56.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	782	5	302464 207541
157	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 51.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	788	5	303341 208495
158	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 51.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	798	5	302895 206934
159	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 85.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	799	5	303467 206867
160	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 15.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	800	5	304046 207372
161	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 5.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	812	5	304060 207376
162	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 109.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A14SE (E)	813	5	304114 207654
163	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 383.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	814	5	303299 208525
164	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 26.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	814	5	304064 207380

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
165	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 28.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	817	5	302438 207495
166	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 42.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	821	5	304079 207402
167	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	827	5	303589 208466
168	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 19.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NE (N)	827	5	303589 208466
169	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 128.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	829	5	302433 207466
170	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 36.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	833	5	304102 207437
171	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 56.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (S)	833	5	303160 206819
172	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (S)	834	5	303154 206819
173	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 317.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (S)	836	5	303152 206817



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
174	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 8.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19NW (NE)	839	5	303607 208471
175	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 402.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fechan Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19NW (NE)	839	5	303607 208471
176	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 240.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	844	5	303175 208554
177	<b>OS Water Network Lines</b> 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	A14SE (E)	847	5	304123 207466
178	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 145.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	847	5	304123 207466
179	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 193.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (S)	848	5	303203 206799
180	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 186.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	852	5	303650 206875
181	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 261.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	852	5	303650 206875
182	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 41.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	857	5	302464 207303

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
183	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 57.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	857	5	302464 207303
184	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 12.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	863	5	302484 207250
185	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 47.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	873	5	303395 206778
186	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 8.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	875	5	303893 207013
187	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 14.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	875	5	303893 207013
188	<b>OS Water Network Lines</b> 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	A9NW (SE)	877	5	303886 207005
189	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 53.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	881	5	303901 207014
190	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 27.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	883	5	303484 206784
191	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 12.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	884	5	303456 206777

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
192	<b>OS Water Network Lines</b> 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	A8SE (S)	885	5	303446 206774
193	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 17.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A8SE (S)	887	5	303439 206771
194	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 64.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A14SE (E)	889	5	304188 207620
195	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	889	5	303455 206772
196	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 112.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	889	5	303898 206999
197	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 5.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	891	5	303795 206916
198	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 9.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	892	5	303456 206769
199	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	893	5	302439 207273
200	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	894	5	304191 207599

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
201	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 4.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A14SE (E)	894	5	304191 207599
202	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 13.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	894	5	304191 207599
203	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 10.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	894	5	303466 206769
204	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 13.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	897	5	302436 207269
205	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 4.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	897	5	304192 207584
206	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 13.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	899	5	304195 207587
207	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 19.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	900	5	304196 207599
208	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 349.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (S)	903	5	303469 206760
209	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	906	5	304204 207608

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
210	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 1.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	906	5	304204 207608
211	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 70.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	907	5	302431 207257
212	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 51.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14SE (E)	912	5	304208 207588
213	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 118.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NE (SE)	920	5	303954 207011
214	<b>OS Water Network Lines</b> 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	A14SE (E)	923	5	304223 207650
215	<b>OS Water Network Lines</b> 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	A12SW (W)	938	5	302343 207384
216	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 100.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	938	5	302343 207384
217	<b>OS Water Network Lines</b> 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	A14SE (E)	950	5	304247 207607
218	<b>OS Water Network Lines</b> 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	A14SE (E)	951	5	304246 207576

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
219	<b>OS Water Network Lines</b> 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	A14SE (E)	953	5	304243 207533
220	<b>OS Water Network Lines</b> 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	A14SE (E)	963	5	304264 207643
221	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 70.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (SW)	972	5	302367 207238
222	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 27.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SE (NE)	976	5	304045 208317
223	<b>OS Water Network Lines</b> 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	A14SE (E)	977	5	304264 207514
224	<b>OS Water Network Lines</b> 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	A14SE (E)	978	5	304271 207556
225	<b>OS Water Network Lines</b> Watercourse Form: Lake Watercourse Length: 3.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SE (NE)	980	5	304029 208342
226	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 207.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A17NW (NW)	980	5	302513 208375
227	<b>OS Water Network Lines</b> 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	A14SE (E)	980	5	304268 207510

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
228	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 462.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	980	5	303910 206890
229	<b>OS Water Network Lines</b> 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	A14SE (E)	988	5	304278 207526
230	<b>OS Water Network Lines</b> 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	A14SE (E)	990	5	304280 207523
231	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19NE (NE)	994	5	304029 208362
232	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 160.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Taf Fawr Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A17NW (NW)	995	5	302519 208404
233	<b>OS Water Network Lines</b> 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	A15SW (E)	998	5	304289 207537
234	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 9.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Ffrwd Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	999	5	302244 207537
235	<b>OS Water Network Lines</b> Watercourse Form: Inland river Watercourse Length: 2.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	999	5	302244 207537



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
236	<b>Historical Landfill Sites</b> Licence Holder: Not Supplied Location: Cefn Coed Name: Fairview TCE Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14082 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste: Deposited Waste included Industrial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6925/0010 BGS Ref: Not Supplied Other Ref: Not Supplied	A17SE (NW)	558	2	302818 208083
	<b>Local Authority Landfill Coverage</b> Name: Merthyr Tydfil County Borough Council - Has supplied landfill data		0	3	303265 207679
237	<b>Local Authority Recorded Landfill Sites</b> Location: Fairview Toe, Cefn Coed Reference: 121 Authority: Merthyr Tydfil County Borough Council, Environmental Health Department <b>Last Reported Status: Closed</b> Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Applicable	A17SE (NW)	617	3	302800 208150
238	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18SW (N)	608	-	303262 208320
239	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A17SE (NW)	641	-	302792 208175
240	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	701	-	303140 208407
241	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A7SE (SW)	762	-	302929 206958
242	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	795	-	303128 208500
243	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A7NE (SW)	807	-	302668 207090
244	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	864	-	303264 208576
245	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A17NE (NW)	889	-	302792 208483
246	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NE (N)	897	-	303347 208603
247	<b>Potentially Infilled Land (Non-Water)</b> Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A7SW (SW)	967	-	302585 206948

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
248	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A14NW (NE)	569	-	303816 207929
249	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A14NW (E)	668	-	303916 207945
250	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1921	A8SE (S)	936	-	303503 206734
251	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1905	A7SW (SW)	987	-	302589 206916

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS 1:625,000 Solid Geology</b> Description: Millstone Grit Group [See Also Migr]	A13NW (SW)	0	1	303265 207679
	<b>BGS Estimated Soil Chemistry</b> 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	A13NW (N)	0	1	303262 207692
	<b>BGS Estimated Soil Chemistry</b> 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	A13NW (SW)	0	1	303265 207679
	<b>BGS Estimated Soil Chemistry</b> 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	A13SW (SW)	68	1	303191 207613
	<b>BGS Estimated Soil Chemistry</b> 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	A13SW (SW)	121	1	303186 207546
	<b>BGS Estimated Soil Chemistry</b> 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	A13SE (S)	131	1	303329 207522
	<b>BGS Estimated Soil Chemistry</b> 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	A13SE (SE)	200	1	303394 207479

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NE (NE)	284	1	303549 207824
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13SW (SW)	287	1	303118 207394
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NW (N)	287	1	303265 208000
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NE (NE)	304	1	303524 207892
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NW (NW)	350	1	302946 207909
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 40 - 60 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NW (NW)	379	1	302977 207989

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A18SW (N)	434	1	303161 208141
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14SW (E)	451	1	303744 207588
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 40 - 60 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A18SE (N)	467	1	303324 208172
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12NE (W)	473	1	302782 207849
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8NW (S)	482	1	303132 207181
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 25 - 35 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14SW (E)	582	1	303879 207605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12SE (W)	590	1	302653 207577
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A17SE (NW)	641	1	302755 208137
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12SW (W)	741	1	302513 207509
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 40 - 60 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A17SE (NW)	807	1	302634 208250
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NW (SW)	817	1	302526 207270
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NW (SW)	820	1	302552 207220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12SW (W)	821	1	302419 207575
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 35 - 45 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A19SE (NE)	909	1	304112 208097
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9SW (SE)	909	1	303884 206960
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14SE (E)	931	1	304208 207456
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14SE (E)	931	1	304189 207384
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 45 - 60 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 40 - 60 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A19NW (NE)	954	1	303867 208453



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9SE (SE)	970	1	303943 206931
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic 15 - 25 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9SW (SE)	989	1	303916 206883
252	<b>BGS Recorded Mineral Sites</b> Site Name: Cynros Quarry Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125601 Type: Opencast <b>Status: Ceased</b> Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Dowlais Limestone Formation Commodity: Limestone Positional Accuracy: Located by supplier to within 10m	A18SE (N)	524	1	303441 208199
253	<b>BGS Recorded Mineral Sites</b> Site Name: Cefn Hotel Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125593 Type: Opencast <b>Status: Ceased</b> Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Twrch Sandstone Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A18SW (N)	607	1	303265 208319
254	<b>BGS Recorded Mineral Sites</b> Site Name: Carn-Gwilym-Goch Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125586 Type: Opencast <b>Status: Ceased</b> Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Twrch Sandstone Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A18NW (N)	717	1	303170 208427
254	<b>BGS Recorded Mineral Sites</b> Site Name: Cefn Hotel Gravel Pit Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125585 Type: Opencast <b>Status: Ceased</b> Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Twrch Sandstone Formation Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A18NW (N)	745	1	303155 208453

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
255	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Carn-Gwilym-Goch                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125554                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Penderyn Oolite Member                      Commodity: Limestone                      Positional Accuracy: Located by supplier to within 10m</p>	A17SE (NW)	737	1	302748 208265
256	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Carn-Gwilym-Goch                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125599                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Twrch Sandstone Formation                      Commodity: Sandstone                      Positional Accuracy: Located by supplier to within 10m</p>	A18NE (N)	854	1	303380 208555
257	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Carn-Gwilym-Goch                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125583                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Twrch Sandstone Formation                      Commodity: Sandstone                      Positional Accuracy: Located by supplier to within 10m</p>	A18NW (N)	873	1	303106 208576
258	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Vaynor House                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125596                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Twrch Sandstone Formation                      Commodity: Sandstone                      Positional Accuracy: Located by supplier to within 10m</p>	A18NE (N)	897	1	303338 208604
259	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Cefn Hotel                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125556                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Oxwich Head Limestone Formation                      Commodity: Limestone                      Positional Accuracy: Located by supplier to within 10m</p>	A17NE (NW)	906	1	302770 208489
260	<p><b>BGS Recorded Mineral Sites</b></p> <p>Site Name: Carn-Gwilym-Goch                      Location: Cefn-Coed-Y-Cymmer, Merthyr Tydfil, Mid Glamorgan                      Source: British Geological Survey, National Geoscience Information Service                      Reference: 125551                      Type: Opencast                      Status: <b>Ceased</b>                      Operator: Unknown Operator                      Operator Location: Not Supplied                      Periodic Type: Carboniferous                      Geology: Penderyn Oolite Member                      Commodity: Limestone                      Positional Accuracy: Located by supplier to within 10m</p>	A17NE (NW)	951	1	302645 208457

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Measured Urban Soil Chemistry</b> No data available				
	<b>BGS Urban Soil Chemistry Averages</b> No data available				
	<b>Coal Mining Affected Areas</b> 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.	A13NW (SW)	0	6	303265 207679
	<b>Natural Cavities</b> Easting: 303050 Northing: 207750 Distance: 189 Quadrant Reference: A13 Quadrant Reference: NW Bearing Ref: W Cavity Type: Spring Outlet Cave x 3 Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A13NW (W)	189	7	303050 207750
	<b>Natural Cavities</b> Easting: 303265 Northing: 208000 Distance: 287 Quadrant Reference: A13 Quadrant Reference: NW Bearing Ref: N 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: Glacial sand Detail:	A13NW (N)	287	7	303265 208000
	<b>Natural Cavities</b> Easting: 302700 Northing: 208100 Distance: 661 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: Vadose Cave Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A17SE (NW)	661	7	302700 208100
	<b>Natural Cavities</b> Easting: 303650 Northing: 208330 Distance: 732 Quadrant Reference: A19 Quadrant Reference: SW Bearing Ref: NE Cavity Type: Vadose Cave Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A19SW (NE)	732	7	303650 208330
	<b>Natural Cavities</b> Easting: 303620 Northing: 208450 Distance: 825 Quadrant Reference: A19 Quadrant Reference: NW Bearing Ref: NE Cavity Type: Vadose Cave Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A19NW (NE)	825	7	303620 208450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Natural Cavities</b> Easting: 303600 Northing: 208500 Distance: 863 Quadrant Reference: A18 Quadrant Reference: NE Bearing Ref: N Cavity Type: Vadose Cave Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A18NE (N)	863	7	303600 208500
	<b>Non Coal Mining Areas of Great Britain</b> Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Collapsible Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Collapsible Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	200	1	303394 207479
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	179	1	303371 207488
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	200	1	303394 207479
	<b>Potential for Ground Dissolution Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	1	303266 207672
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	63	1	303271 207580
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	67	1	303177 207642
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	170	1	303067 207733
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	215	1	303427 207859
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	240	1	303356 207415
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	68	1	303191 207613
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	200	1	303394 207479

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	68	1	303191 207613
	<b>Radon Potential - Radon Affected Areas</b> Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679
	<b>Radon Potential - Radon Protection Measures</b> Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NW (SW)	0	1	303265 207679

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
261	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Beacons Park Natural Burial Ground            Location: 141, High Street, Cefn Coed, Merthyr Tydfil, CF48 2PL            Classification: Cemeteries &amp; Crematoria            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A13NE (N)	180	-	303321 207876
262	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Central Garage            Location: 156, High Street, Cefn Coed, Merthyr Tydfil, CF48 2PH            Classification: Garage Services            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A13NE (NE)	185	-	303412 207834
263	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Woodlands Garage            Location: Triangle, Cefn Coed, Merthyr Tydfil, Mid Glamorgan, CF48 2PT            Classification: Car Body Repairs            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A13NW (NW)	260	-	303111 207940
264	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Recover U            Location: 20, Cyfarthfa Gardens, Cefn Coed, Merthyr Tydfil, Mid Glamorgan, CF48 2SE            Classification: Car Breakdown &amp; Recovery Services            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A13SE (SE)	349	-	303599 207477
264	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: T M Few &amp; Sons            Location: Maesgwynne Industrial Estate, Cefn Coed, Merthyr Tydfil, CF48 2SD            Classification: Car Body Repairs            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A13SE (SE)	350	-	303571 207437
265	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Top 2 Bottom Cleaning            Location: 93, Lakeside Gardens, Merthyr Tydfil, Mid Glamorgan, CF48 1EW            Classification: Commercial Cleaning Services            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (NE)	420	-	303520 208043
266	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Stephen Patrick Hall            Location: 45, Lakeside Gardens, MERTHYR TYDFIL, Mid Glamorgan, CF48 1EN            Classification: Safety Glazing            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A14NW (E)	480	-	303747 207864
267	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: B R Motors            Location: Aartal Bungalow, Brecon Road, Merthyr Tydfil, CF47 8RB            Classification: Garage Services            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	672	-	303858 207283
267	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Cambria Granite Ltd            Location: Unit 8-9, E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB            Classification: Kitchen Furniture Manufacturers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	685	-	303844 207242
267	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: D Rees            Location: Unit 12, E F I Industrial Estate, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8RB            Classification: Joinery Manufacturers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	685	-	303845 207243
268	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Ex Pro Hydraulic Solutions Ltd            Location: Unit 6a E F I Industrial Estate, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8RB            Classification: Hydraulic Engineers            Status: <b>Active</b>            Positional Accuracy: Manually positioned to an adjacent address or location</p>	A9NW (SE)	689	-	303803 207187

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
268	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Functional Foam Location: Unit 10 E F I Industrial Estate, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8RB Classification: Foam Products - Rubber &amp; Plastics <b>Status: Inactive</b> Positional Accuracy: Manually positioned within the geographical locality</p>	A9NW (SE)	699	-	303835 207208
268	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: I J F Engineering Services Location: Unit 5, E F I Industrial Estate, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8RB Classification: Engineers - General <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	704	-	303815 207177
268	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Auto Dor Location: Unit 3c, E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB Classification: Gate Manufacturers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	705	-	303834 207198
268	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: D P Haulage Location: Unit 2, E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB Classification: Road Haulage Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	724	-	303848 207185
269	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Academy Surrounds Location: 23, Heol Nantgau, Merthyr Tydfil, Mid Glamorgan, CF48 1EY Classification: Fireplaces &amp; Mantelpieces <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A8SW (S)	742	-	303072 206927
270	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Oriel Blinds Location: 46, Swansea Road, Merthyr Tydfil, Mid Glamorgan, CF48 1HS Classification: Blinds, Awnings &amp; Canopies <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A7NE (SW)	786	-	302731 207058
271	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Tasco Metal Services Location: Pen yr Enfys, Swansea Road, Clwydyfagwyr, Merthyr Tydfil, Mid Glamorgan, CF48 1HR Classification: Scrap Metal Merchants <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A7SE (SW)	916	-	302652 206955
272	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: First Choice Blinds Location: Swansea Rd, Merthyr Tydfil, Mid Glamorgan, CF48 1NY Classification: Blinds, Awnings &amp; Canopies <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location</p>	A7NW (SW)	926	-	302500 207108
273	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Merton Wire Ltd Location: Unit 11, Cyfarthfa Industrial Estate, Merthyr Tydfil, Mid Glamorgan, CF47 8PE Classification: Wire Products - Manufacturers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address</p>	A9SW (SE)	956	-	303938 206946
273	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Alrod Ltd Location: Unit 11-12, Cyfarthfa Industrial Estate, Merthyr Tydfil, Mid Glamorgan, CF47 8PE Classification: Aluminium Fabricators <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address</p>	A9SW (SE)	956	-	303938 206946
274	<p><b>Points of Interest - Commercial Services</b></p> <p>Name: Central Garage Location: 156 High Street, Cefn Coed, Merthyr Tydfil, CF48 2PH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location</p>	A13NE (NE)	185	8	303412 207834



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
274	<b>Points of Interest - Commercial Services</b> Name: Central Garage Location: 156 High Street, Cefn Coed, Merthyr Tydfil, CF48 2PH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (NE)	186	8	303413 207834
275	<b>Points of Interest - Commercial Services</b> Name: Woodlands Garage Location: Triangle, Cefn Coed, Merthyr Tydfil, CF48 2PT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	261	8	303114 207943
276	<b>Points of Interest - Commercial Services</b> Name: T M Few Location: Maesgwynne Industrial Estate, Cefn Coed, Merthyr Tydfil, CF48 2SD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SE (SE)	350	8	303572 207438
276	<b>Points of Interest - Commercial Services</b> Name: T M Few & Sons Location: Maesgwynne Industrial Estate, Cefn Coed, Merthyr Tydfil, CF48 2SD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SE (SE)	350	8	303571 207437
277	<b>Points of Interest - Commercial Services</b> Name: D P Haulage Location: 3b Efi Industrial Estate, Merthyr Tydfil, CF47 8RB Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A9NW (SE)	705	8	303834 207198
277	<b>Points of Interest - Commercial Services</b> Name: Merthyr Reclamation Location: E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A9NW (SE)	707	8	303834 207194
277	<b>Points of Interest - Commercial Services</b> Name: D P Haulage Location: Unit 2 E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A9NW (SE)	724	8	303848 207186
278	<b>Points of Interest - Manufacturing and Production</b> Name: Vale of Neath Stone Supplies Ltd Location: 97 Lakeside Gardens, Merthyr Tydfil, CF48 1EW Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A18SE (NE)	394	8	303481 208037
279	<b>Points of Interest - Manufacturing and Production</b> Name: Tank Location: CF48 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	599	8	302706 207992
280	<b>Points of Interest - Manufacturing and Production</b> Name: Factory Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	677	8	303833 207240
280	<b>Points of Interest - Manufacturing and Production</b> Name: Factory Location: CF47 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A9NW (SE)	682	8	303840 207242
280	<b>Points of Interest - Manufacturing and Production</b> Name: Merthyr Marble & Granite Ltd Location: Unit 8-9 E F I Industrial Estate, Brecon Road, Merthyr Tydfil, CF47 8RB Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A9NW (SE)	685	8	303845 207243

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
280	<b>Points of Interest - Manufacturing and Production</b> Name: Cambria Granite Ltd Location: Unit 8 to 9, Efi Industrial Estate, Merthyr Tydfil, CF47 8RB Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A9NW (SE)	685	8	303844 207242
280	<b>Points of Interest - Manufacturing and Production</b> Name: E F I Industrial Estate Location: CF47 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	696	8	303836 207214
280	<b>Points of Interest - Manufacturing and Production</b> Name: E F I Industrial Estate Location: CF47 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	712	8	303855 207212
281	<b>Points of Interest - Manufacturing and Production</b> Name: Tank Location: CF48 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	884	8	303834 206953
282	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (SW)	118	8	303136 207612
282	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (SW)	121	8	303133 207611
282	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	157	8	303084 207632
282	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	160	8	303081 207630
283	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	139	8	303199 207846
284	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SE (S)	149	8	303282 207494
284	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SE (S)	149	8	303286 207495
285	<b>Points of Interest - Public Infrastructure</b> Name: Beacons Park Natural Burial Ground Location: 141 High Street, Cefn Coed, Merthyr Tydfil, CF48 2PL Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to address or location	A13NE (N)	179	8	303321 207876

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
286	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	282	8	302960 207612
286	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (W)	285	8	302957 207611
287	<b>Points of Interest - Public Infrastructure</b> Name: Refuse Tip Location: CF48 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	336	8	303529 207412
287	<b>Points of Interest - Public Infrastructure</b> Name: Refuse Tip Location: CF48 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	339	8	303535 207413
288	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	416	8	303717 207684
288	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	417	8	303718 207680
288	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	421	8	303722 207684
289	<b>Points of Interest - Public Infrastructure</b> Name: Outfall Location: CF48 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	473	8	303742 207492
290	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (SE)	554	8	303775 207373
290	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A14SW (SE)	556	8	303778 207375
291	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NE (W)	636	8	302635 207923
291	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	665	8	302633 207994

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
291	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NW (NW)	700	8	302590 207985
292	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	719	8	303468 208397
292	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	720	8	303486 208392
292	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	722	8	303472 208398
292	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	724	8	303491 208394
293	<b>Points of Interest - Public Infrastructure</b> Name: Sluice Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	720	8	303907 207272
294	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17SW (NW)	767	8	302540 208037
295	<b>Points of Interest - Public Infrastructure</b> Name: Chapel of Rest Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	806	8	302693 207067
296	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17SW (NW)	842	8	302556 208209
296	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17SW (NW)	842	8	302556 208209
297	<b>Points of Interest - Public Infrastructure</b> Name: Refuse Tip (Disused) Location: CF48 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	897	8	303167 206754
298	<b>Points of Interest - Public Infrastructure</b> Name: Tip (Disused) Location: CF48 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A7NW (SW)	912	8	302558 207056

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
298	<b>Points of Interest - Public Infrastructure</b> Name: Refuse Tip (Disused) Location: CF48 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A7SW (SW)	979	8	302525 206992
299	<b>Points of Interest - Public Infrastructure</b> Name: Outfall Location: CF48 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	940	8	303899 206933
299	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	992	8	303915 206878
299	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9SW (SE)	997	8	303915 206872
300	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17NE (NW)	948	8	302615 208429
300	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17NE (NW)	948	8	302615 208429
301	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF48 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	955	8	303766 208520
302	<b>Points of Interest - Public Infrastructure</b> Name: Cemetery Location: CF48 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17SW (NW)	961	8	302442 208254
303	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Well Street, CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	246	8	303432 207894
303	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	250	8	303438 207895
303	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	261	8	303453 207898
304	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Heads Of The Valleys Road, CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	421	8	303360 208118

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
304	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18SE (N)	425	8	303370 208119
305	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NE (S)	572	8	303404 207085
305	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Tai Mawr Road, CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NE (S)	573	8	303404 207084
306	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NW (S)	577	8	303076 207098
306	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NW (S)	586	8	303107 207080
307	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Honeysuckle Close, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A19SE (E)	905	8	304140 208025
308	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Nr Brecon Road, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A9NE (SE)	909	8	304065 207167
308	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	911	8	304068 207168

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
309	<b>Ancient Woodland</b> Name: Not Supplied Reference: 12366 Area(m <sup>2</sup> ): 3155.77 Type: Ancient and Semi-Natural Woodland	A13NE (NE)	295	2	303494 207909
310	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21421 Area(m <sup>2</sup> ): 22937.99 Type: Restored Ancient Woodland Site	A13NE (NE)	308	2	303540 207880
311	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21420 Area(m <sup>2</sup> ): 20552.54 Type: Restored Ancient Woodland Site	A14NW (NE)	454	2	303692 207916
312	<b>Ancient Woodland</b> Name: Not Supplied Reference: 12367 Area(m <sup>2</sup> ): 6654.54 Type: Ancient and Semi-Natural Woodland	A12NE (NW)	461	2	302830 207933
313	<b>Ancient Woodland</b> Name: Not Supplied Reference: 12368 Area(m <sup>2</sup> ): 13362.63 Type: Ancient and Semi-Natural Woodland	A12NE (NW)	471	2	302812 207917
314	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21422 Area(m <sup>2</sup> ): 3978.79 Type: Restored Ancient Woodland Site	A18SE (NE)	567	2	303504 208219
315	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21419 Area(m <sup>2</sup> ): 137845.17 Type: Restored Ancient Woodland Site	A14NW (E)	575	2	303876 207716
316	<b>Ancient Woodland</b> Name: Not Supplied Reference: 14081 Area(m <sup>2</sup> ): 8661.31 Type: Ancient and Semi-Natural Woodland	A18NE (N)	744	2	303495 208414
317	<b>Ancient Woodland</b> Name: Not Supplied Reference: 12370 Area(m <sup>2</sup> ): 21007.18 Type: Ancient and Semi-Natural Woodland	A17SE (NW)	786	2	302638 208223
318	<b>Ancient Woodland</b> Name: Not Supplied Reference: 8887 Area(m <sup>2</sup> ): 2726.91 Type: Ancient and Semi-Natural Woodland	A18NE (N)	824	2	303578 208468
319	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21424 Area(m <sup>2</sup> ): 21052.12 Type: Restored Ancient Woodland Site	A17SE (NW)	836	2	302637 208296
320	<b>Ancient Woodland</b> Name: Not Supplied Reference: 10350 Area(m <sup>2</sup> ): 101775.28 Type: Restored Ancient Woodland Site	A19NW (NE)	867	2	303624 208494
321	<b>Ancient Woodland</b> Name: Not Supplied Reference: 50254 Area(m <sup>2</sup> ): 42308.85 Type: Ancient Woodland Site of Unknown Category	A19NW (NE)	878	2	303763 208431
322	<b>Ancient Woodland</b> Name: Not Supplied Reference: 21423 Area(m <sup>2</sup> ): 7658.12 Type: Restored Ancient Woodland Site	A19SE (NE)	933	2	304015 208287



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
323	<p><b>Local Nature Reserves</b></p> <p>Name: Cwm Taf Fechan Woodlands                      Multiple Area: N                      Area (m2): 413248.27                      Source: Merthyr Tydfil County Borough Council                      Designation Date: 31st December 1975</p>	A13NE (NE)	300	9	303529 207883
324	<p><b>National Parks</b></p> <p>Name: Brecon Beacons                      Multiple Area: N                      Area (m2): 1349543930.88                      Source: Natural Resources Wales  <b>Status: Fully Designated - designated as a National Park</b>                      Designation Date: 31st December 1955</p>	A13NW (W)	239	2	302994 207684
325	<p><b>Sites of Special Scientific Interest</b></p> <p>Name: Cwm Taf Fechan Woodlands                      Multiple Areas: Y                      Total Area (m2): 641319.9                      Source: Natural Resources Wales                      Reference: 40433wmc                      Designation Details: Biological                      Designation Date: 1st January 1972                      Date Type: Notified</p>	A13NE (NE)	300	2	303529 207883

Agency & Hydrological	Version	Update Cycle
<b>Contaminated Land Register Entries and Notices</b> Natural Resources Wales Powys County Council - Public Protection Department Rhondda Cynon Taff County Borough Council - Environmental Services Caerphilly County Borough Council - Environmental Health Department Merthyr Tydfil County Borough Council - Environmental Health Department	June 2020 October 2017 October 2017 September 2017 September 2017	Annually Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Discharge Consents</b> Environment Agency - Welsh Region Natural Resources Wales	August 2014 May 2023	Quarterly Quarterly
<b>Enforcement and Prohibition Notices</b> Environment Agency - Welsh Region	March 2013	
<b>Integrated Pollution Controls</b> Environment Agency - Welsh Region	January 2009	
<b>Integrated Pollution Prevention And Control</b> Environment Agency - Welsh Region Natural Resources Wales	January 2021 May 2023	Quarterly Quarterly
<b>Local Authority Integrated Pollution Prevention And Control</b> Powys County Council - Public Protection Department Caerphilly County Borough Council - Environmental Health Department Rhondda Cynon Taff County Borough Council - Public Health and Protection Division Merthyr Tydfil County Borough Council - Environmental Health Department	May 2014 September 2014 September 2014 September 2016	Variable Variable Variable Variable
<b>Local Authority Pollution Prevention and Controls</b> Powys County Council - Public Protection Department Rhondda Cynon Taff County Borough Council - Public Health and Protection Division Caerphilly County Borough Council - Environmental Health Department Merthyr Tydfil County Borough Council - Environmental Health Department	May 2014 September 2014 September 2014 September 2016	Annual Rolling Update Annual Rolling Update Not Applicable Annual Rolling Update
<b>Local Authority Pollution Prevention and Control Enforcements</b> Powys County Council - Public Protection Department Caerphilly County Borough Council - Environmental Health Department Rhondda Cynon Taff County Borough Council - Public Health and Protection Division Merthyr Tydfil County Borough Council - Environmental Health Department	May 2014 September 2014 September 2014 September 2016	Variable Variable Variable Variable
<b>Nearest Surface Water Feature</b> Ordnance Survey	May 2023	
<b>Pollution Incidents to Controlled Waters</b> Environment Agency - Welsh Region	December 1998	
<b>Prosecutions Relating to Authorised Processes</b> Environment Agency - Welsh Region Natural Resources Wales	July 2015 July 2015	
<b>Prosecutions Relating to Controlled Waters</b> Environment Agency - Welsh Region Natural Resources Wales	March 2013 March 2013	
<b>Registered Radioactive Substances</b> Natural Resources Wales Environment Agency - Welsh Region	January 2015 June 2016	As notified
<b>River Quality</b> Environment Agency - Head Office	November 2001	Not Applicable
<b>River Quality Biology Sampling Points</b> Environment Agency - Head Office	April 2012	
<b>River Quality Chemistry Sampling Points</b> Environment Agency - Head Office	April 2012	
<b>Substantiated Pollution Incident Register</b> Natural Resources Wales Environment Agency Wales - South East Area	April 2023 January 2021	Quarterly Quarterly

Agency & Hydrological	Version	Update Cycle
<b>Water Abstractions</b> Environment Agency - Welsh Region Natural Resources Wales	April 2023 June 2023	Quarterly Quarterly
<b>Water Industry Act Referrals</b> Environment Agency - Welsh Region Natural Resources Wales	October 2017 October 2022	
<b>Groundwater Vulnerability Map</b> Natural Resources Wales	June 2018	As notified
<b>Bedrock Aquifer Designations</b> Natural Resources Wales	January 2018	Annually
<b>Superficial Aquifer Designations</b> Natural Resources Wales	January 2018	Annually
<b>Source Protection Zones</b> Natural Resources Wales	July 2022	Annual Rolling Update
<b>Extreme Flooding from Rivers or Sea without Defences</b> Natural Resources Wales	September 2020	
<b>Flooding from Rivers or Sea without Defences</b> Natural Resources Wales	September 2020	
<b>Areas Benefiting from Flood Defences</b> Natural Resources Wales	November 2019	Quarterly
<b>Flood Water Storage Areas</b> Natural Resources Wales	August 2019	Quarterly
<b>Flood Defences</b> Natural Resources Wales	November 2019	Quarterly
<b>OS Water Network Lines</b> Ordnance Survey	April 2023	Quarterly
<b>Surface Water 1 in 30 year Flood Extent</b> Natural Resources Wales	May 2018	Annually
<b>Surface Water 1 in 100 year Flood Extent</b> Natural Resources Wales	May 2018	Annually
<b>Surface Water 1 in 1000 year Flood Extent</b> Natural Resources Wales	May 2018	Annually
<b>Surface Water Suitability</b> Natural Resources Wales	February 2016	Annually
<b>BGS Groundwater Flooding Susceptibility</b> British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
<b>BGS Recorded Landfill Sites</b> British Geological Survey - National Geoscience Information Service	November 2002	As notified
<b>Historical Landfill Sites</b> Natural Resources Wales	March 2023	As notified
<b>Integrated Pollution Control Registered Waste Sites</b> Environment Agency - Welsh Region	January 2009	Not Applicable
<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Environment Agency Wales - South East Area Natural Resources Wales	January 2023 October 2021	Quarterly Quarterly
<b>Licensed Waste Management Facilities (Locations)</b> Environment Agency Wales - South East Area Natural Resources Wales	July 2021 May 2023	Quarterly Quarterly
<b>Local Authority Landfill Coverage</b> Caerphilly County Borough Council - Environmental Health Department Merthyr Tydfil County Borough Council - Environmental Health Department Powys County Council Rhondda Cynon Taff County Borough Council	February 2003 February 2003 February 2003 February 2003	Not Applicable Not Applicable Not Applicable Not Applicable
<b>Local Authority Recorded Landfill Sites</b> Caerphilly County Borough Council - Environmental Health Department Merthyr Tydfil County Borough Council - Environmental Health Department Powys County Council Rhondda Cynon Taff County Borough Council	October 2018 October 2018 October 2018 October 2018	
<b>Potentially Infilled Land (Non-Water)</b> Landmark Information Group Limited	December 1999	
<b>Potentially Infilled Land (Water)</b> Landmark Information Group Limited	December 1999	
<b>Registered Landfill Sites</b> Environment Agency Wales - South East Area	March 2006	Not Applicable
<b>Registered Waste Transfer Sites</b> Environment Agency Wales - South East Area	April 2018	
<b>Registered Waste Treatment or Disposal Sites</b> Environment Agency Wales - South East Area	June 2015	
Hazardous Substances	Version	Update Cycle
<b>Control of Major Accident Hazards Sites (COMAH)</b> Health and Safety Executive	March 2023	Bi-Annually
<b>Explosive Sites</b> Health and Safety Executive	March 2017	
<b>Notification of Installations Handling Hazardous Substances (NIHHS)</b> Health and Safety Executive	August 2001	
<b>Planning Hazardous Substance Enforcements</b> Brecon Beacons National Park Rhondda Cynon Taff County Borough Council - Planning Department Caerphilly County Borough Council - Planning Department Merthyr Tydfil County Borough Council - Planning Department Powys County Council - Planning Department	August 2008 February 2016 January 2023 January 2023 May 2023	Annual Rolling Update Variable Variable Variable Variable
<b>Planning Hazardous Substance Consents</b> Brecon Beacons National Park Powys County Council - Planning Department Rhondda Cynon Taff County Borough Council - Planning Department Caerphilly County Borough Council - Planning Department Merthyr Tydfil County Borough Council - Planning Department	August 2008 February 2016 February 2016 January 2023 January 2023	Annual Rolling Update Variable Variable Variable Variable








Geological	Version	Update Cycle
<b>BGS 1:625,000 Solid Geology</b> British Geological Survey - National Geoscience Information Service	January 2009	As notified
<b>BGS Estimated Soil Chemistry</b> British Geological Survey - National Geoscience Information Service	December 2015	As notified
<b>BGS Recorded Mineral Sites</b> British Geological Survey - National Geoscience Information Service	June 2023	Bi-Annually
<b>CBSCB Compensation District</b> Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
<b>Coal Mining Affected Areas</b> The Coal Authority - Property Searches	February 2023	Annual Rolling Update
<b>Mining Instability</b> Ove Arup & Partners	June 1998	Not Applicable
<b>Non Coal Mining Areas of Great Britain</b> British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
<b>Potential for Collapsible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	April 2020	As notified
<b>Potential for Compressible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2019	As notified
<b>Potential for Ground Dissolution Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2019	As notified
<b>Potential for Landslide Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2019	As notified
<b>Potential for Running Sand Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2019	As notified
<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2019	As notified
<b>Radon Potential - Radon Affected Areas</b> British Geological Survey - National Geoscience Information Service	September 2022	Annually
<b>Radon Potential - Radon Protection Measures</b> British Geological Survey - National Geoscience Information Service	September 2022	Annually

<b>Industrial Land Use</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Contemporary Trade Directory Entries</b> Thomson Directories	April 2023	Quarterly
<b>Fuel Station Entries</b> Catalist Ltd - Experian	June 2023	Quarterly
<b>Gas Pipelines</b> National Grid	October 2021	Bi-Annually
<b>Points of Interest - Commercial Services</b> PointX	June 2023	Quarterly
<b>Points of Interest - Education and Health</b> PointX	June 2023	Quarterly
<b>Points of Interest - Manufacturing and Production</b> PointX	June 2023	Quarterly
<b>Points of Interest - Public Infrastructure</b> PointX	June 2023	Quarterly
<b>Points of Interest - Recreational and Environmental</b> PointX	June 2023	Quarterly
<b>Underground Electrical Cables</b> National Grid	February 2023	Bi-Annually

Sensitive Land Use	Version	Update Cycle
<b>Ancient Woodland</b> Natural Resources Wales	April 2023	Bi-Annually
<b>Areas of Adopted Green Belt</b> Brecon Beacons National Park Caerphilly County Borough Council Merthyr Tydfil County Borough Council Powys County Council Rhondda Cynon Taff County Borough Council	July 2022 July 2022 July 2022 July 2022 July 2022	Quarterly Quarterly Quarterly Quarterly Quarterly
<b>Areas of Unadopted Green Belt</b> Brecon Beacons National Park Caerphilly County Borough Council Merthyr Tydfil County Borough Council Powys County Council Rhondda Cynon Taff County Borough Council	July 2022 July 2022 July 2022 July 2022 July 2022	Quarterly Quarterly Quarterly Quarterly Quarterly
<b>Areas of Outstanding Natural Beauty</b> Natural Resources Wales	April 2023	Bi-Annually
<b>Environmentally Sensitive Areas</b> The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
<b>Forest Parks</b> Forestry Commission	May 2023	Not Applicable
<b>Local Nature Reserves</b> Caerphilly County Borough Council Merthyr Tydfil County Borough Council Powys County Council Rhondda Cynon Taff County Borough Council	March 2023 March 2023 March 2023 March 2023	Bi-Annually Bi-Annually Bi-Annually Bi-Annually
<b>Marine Nature Reserves</b> Natural Resources Wales	April 2023	Bi-Annually
<b>National Nature Reserves</b> Natural Resources Wales	February 2023	Bi-Annually
<b>National Parks</b> Natural Resources Wales	February 2018	Annually
<b>Nitrate Vulnerable Zones</b> The National Assembly for Wales - GI Services (Department of Planning & Countryside) Natural Resources Wales	April 2016 March 2023	Bi-Annually
<b>Ramsar Sites</b> Natural Resources Wales	March 2023	Bi-Annually
<b>Sites of Special Scientific Interest</b> Natural Resources Wales	March 2023	Bi-Annually
<b>Special Areas of Conservation</b> Natural Resources Wales	April 2023	Bi-Annually
<b>Special Protection Areas</b> Natural Resources Wales	April 2023	Bi-Annually



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	 <b>British Geological Survey</b> <small>NATURAL ENVIRONMENT RESEARCH COUNCIL</small>
Centre for Ecology and Hydrology	 <b>Centre for Ecology &amp; Hydrology</b> <small>NATURAL ENVIRONMENT RESEARCH COUNCIL</small>
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Contact	Name and Address	Contact Details
1	<b>British Geological Survey - Enquiry Service</b> 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	<b>Natural Resources Wales</b> Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
3	<b>Merthyr Tydfil County Borough Council - Environmental Health Department</b> Civic Centre, Castle Street, Merthyr Tydfil, Mid Glamorgan, CF47 8AN	Telephone: 01685 725000 Fax: 01685 725024 Website: www.merthyr.gov.uk
4	<b>Environment Agency - National Customer Contact Centre (NCCC)</b> PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
5	<b>Ordnance Survey</b> Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	<b>The Coal Authority - Property Searches</b> 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	<b>Stantec UK Ltd</b> Caversham Bridge House, Waterman Place, Reading, RG1 8DN	Telephone: 0118 950 0761 Email: pba.reading@stantec.com Website: www.stantec.com
8	<b>PointX</b> 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	<b>Merthyr Tydfil County Borough Council</b> Civic Centre, Castle Street, Merthyr Tydfil, Mid Glamorgan, CF47 8AN	Telephone: 01685 725000 Fax: 01685 722146 Website: www.merthyr.gov.uk
-	<b>Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards</b> Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	<b>Landmark Information Group Limited</b> 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.

## 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:



Envirocheck reports are compiled from 136 different sources of data.

## Client Details

Ms S Ltd, Soiltechnics Limited, Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY

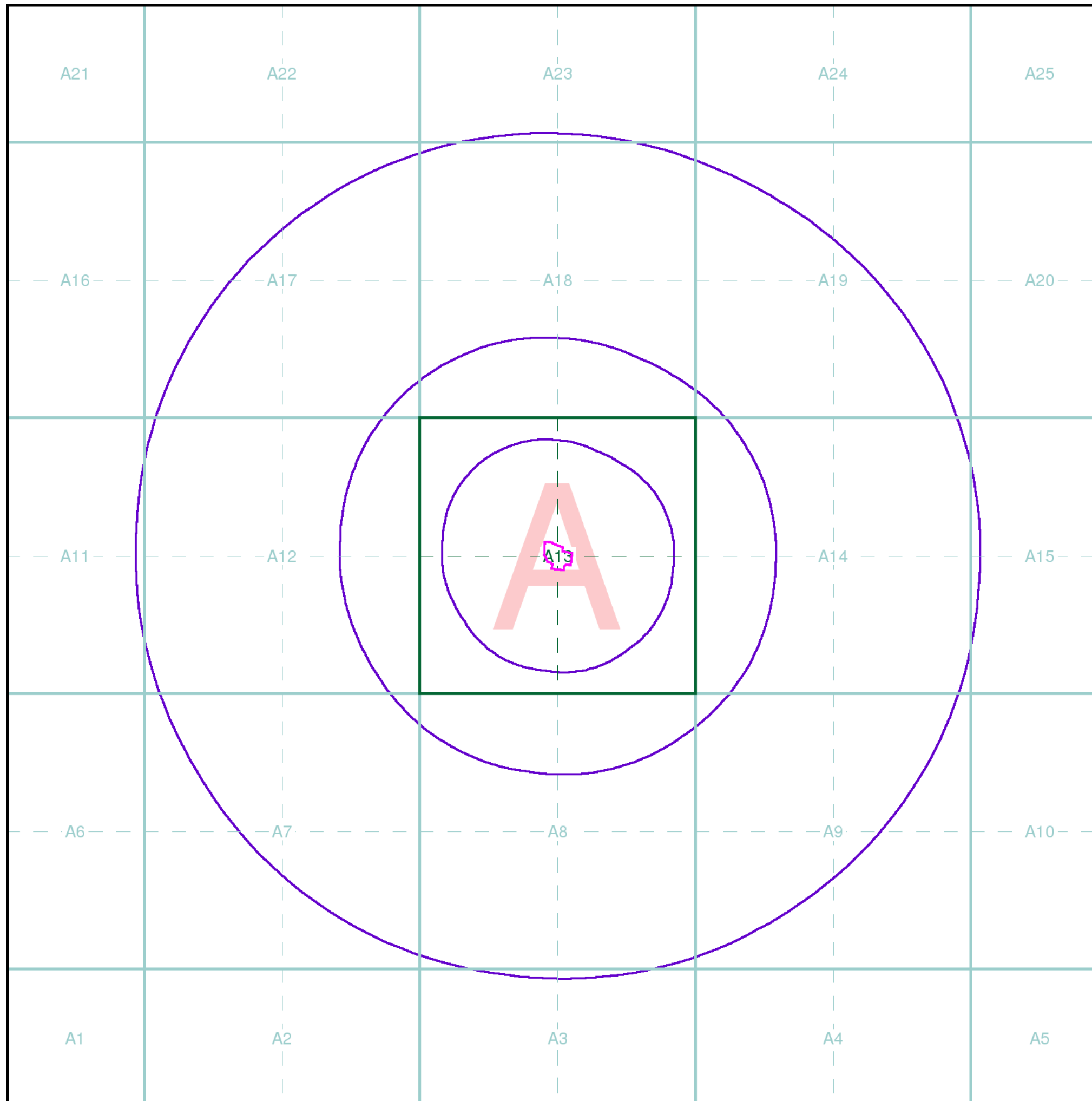
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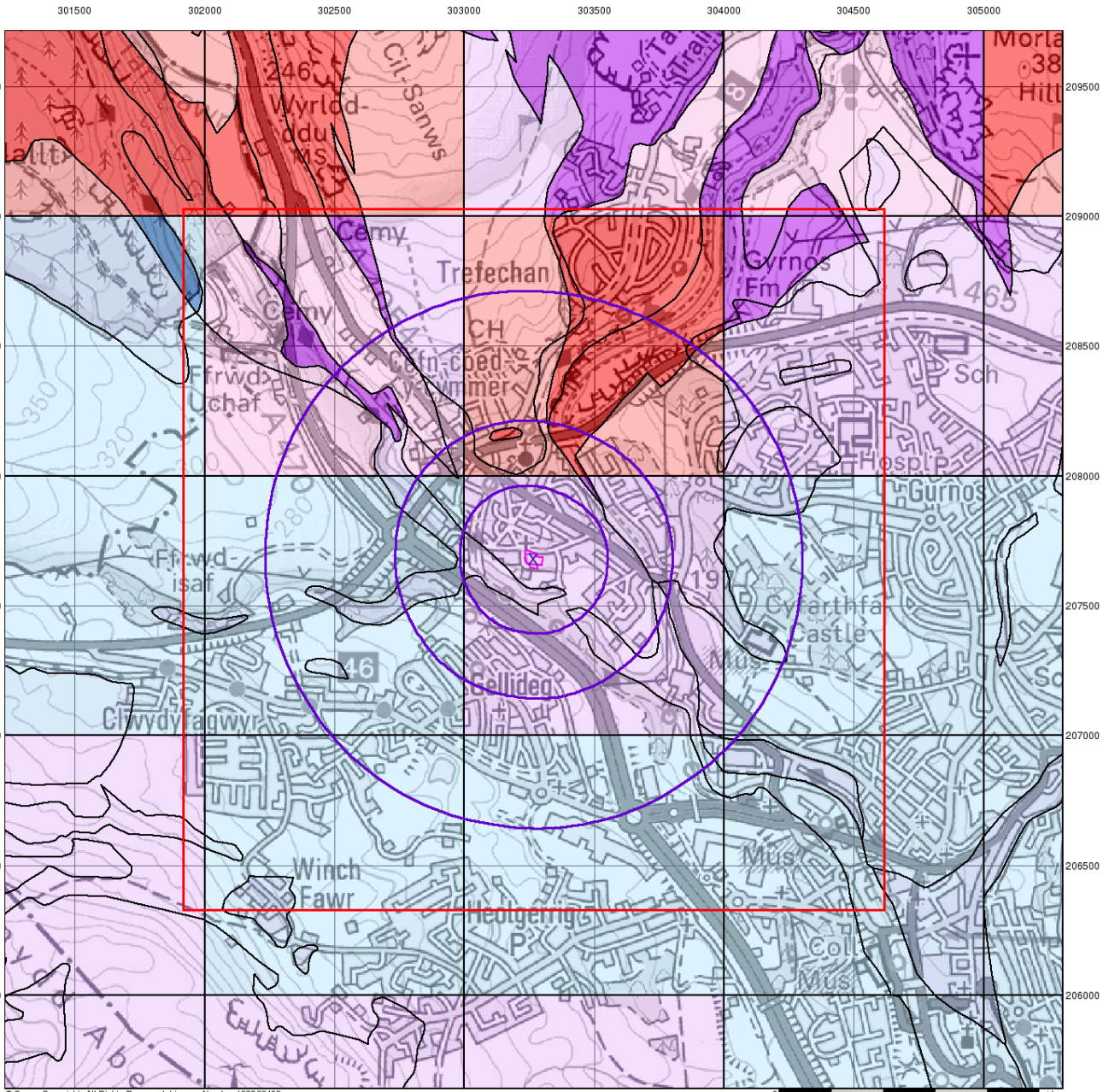
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

## Site Details

Cefn Isaf, Merthyr Tydfil

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<http://www.landmarkinfo.co.uk/Terms/Show/515>





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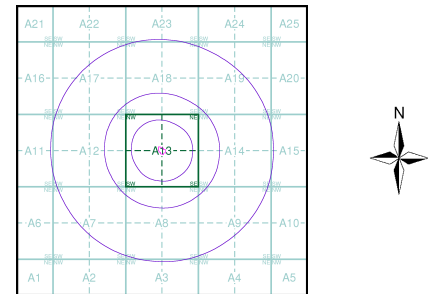
0 1 km

## Groundwater Vulnerability

- General**
- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point
  - Slice
  - Map ID

- Agency and Hydrological**
- | Bedrock Aquifers                                                                                                                                                                                                                                                                                                                     | Superficial Aquifers                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>High Vulnerability, Principal Aquifer</li> <li>High Vulnerability, Secondary Aquifer</li> <li>Medium Vulnerability, Principal Aquifer</li> <li>Medium Vulnerability, Secondary Aquifer</li> <li>Low Vulnerability, Principal Aquifer</li> <li>Low Vulnerability, Secondary Aquifer</li> </ul> | <ul style="list-style-type: none"> <li>High Vulnerability, Principal Aquifer</li> <li>High Vulnerability, Secondary Aquifer</li> <li>Medium Vulnerability, Principal Aquifer</li> <li>Medium Vulnerability, Secondary Aquifer</li> <li>Low Vulnerability, Principal Aquifer</li> <li>Low Vulnerability, Secondary Aquifer</li> </ul> |
- Unproductive Aquifer
  - Soluble Rock

### Site Sensitivity Context Map - Slice A



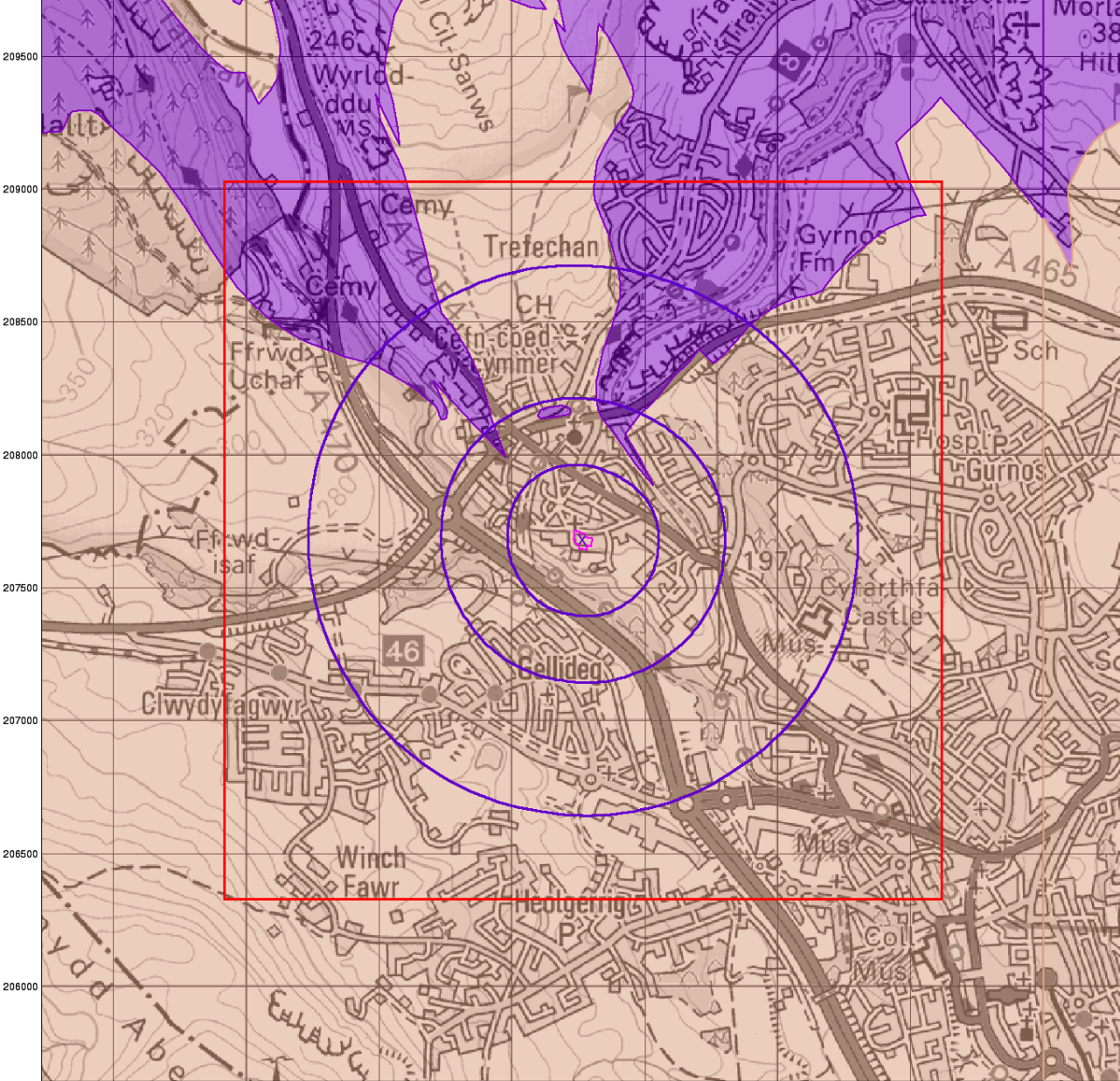
**Order Details**

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

**Site Details**  
 Cefn Isaf, Merthyr Tydfil



301500 302000 302500 303000 303500 304000 304500 305000



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0 1 km

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## Bedrock Aquifer Designation

### General

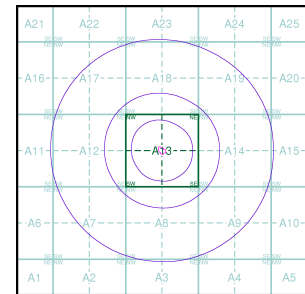
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

### 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



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

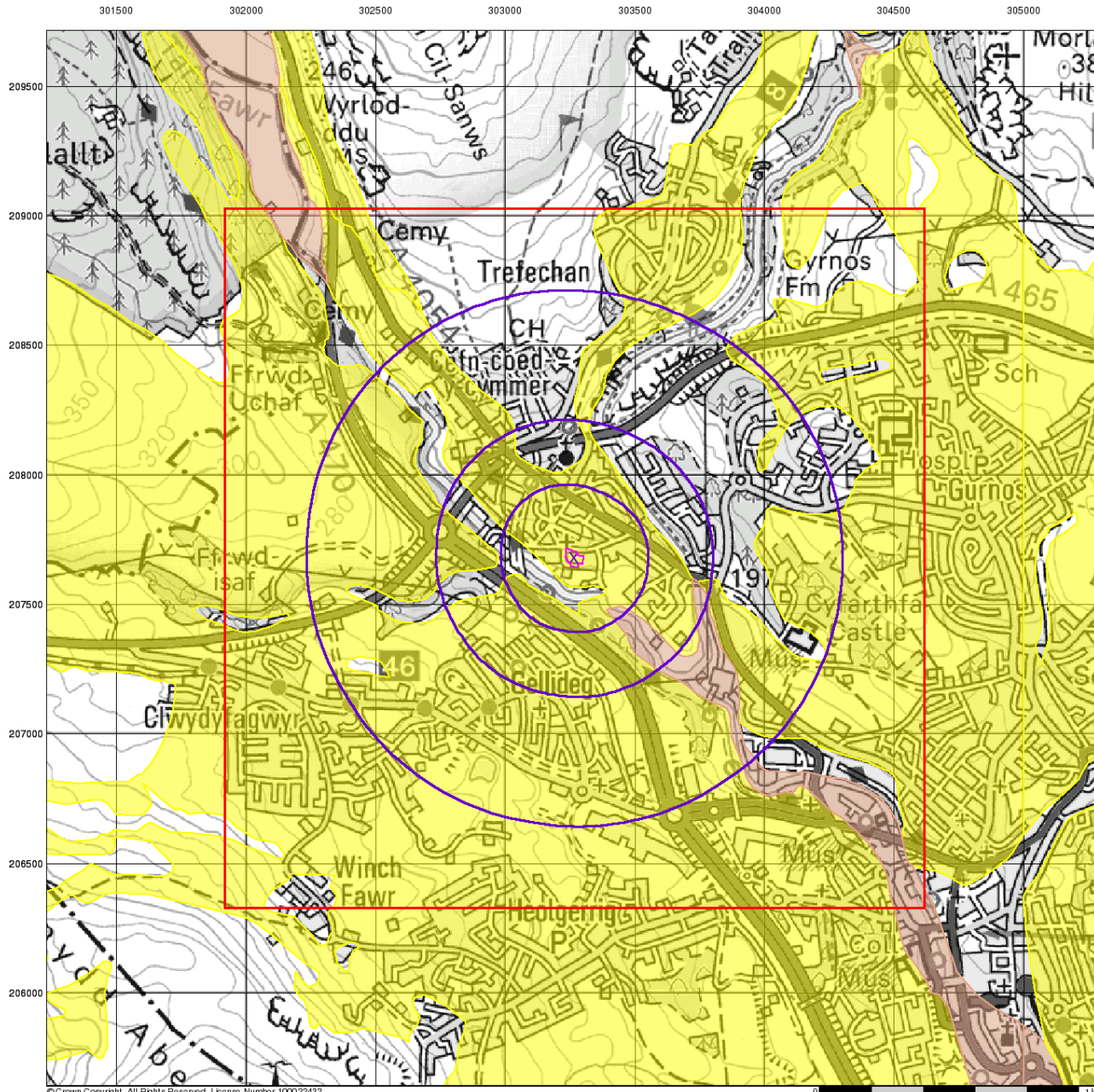
### Site Details

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0 1 km

## Superficial Aquifer Designation

### General

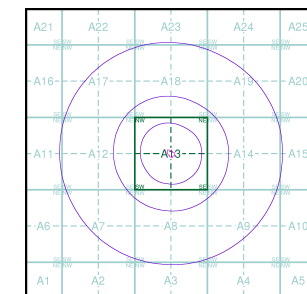
- ◇ Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

### 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



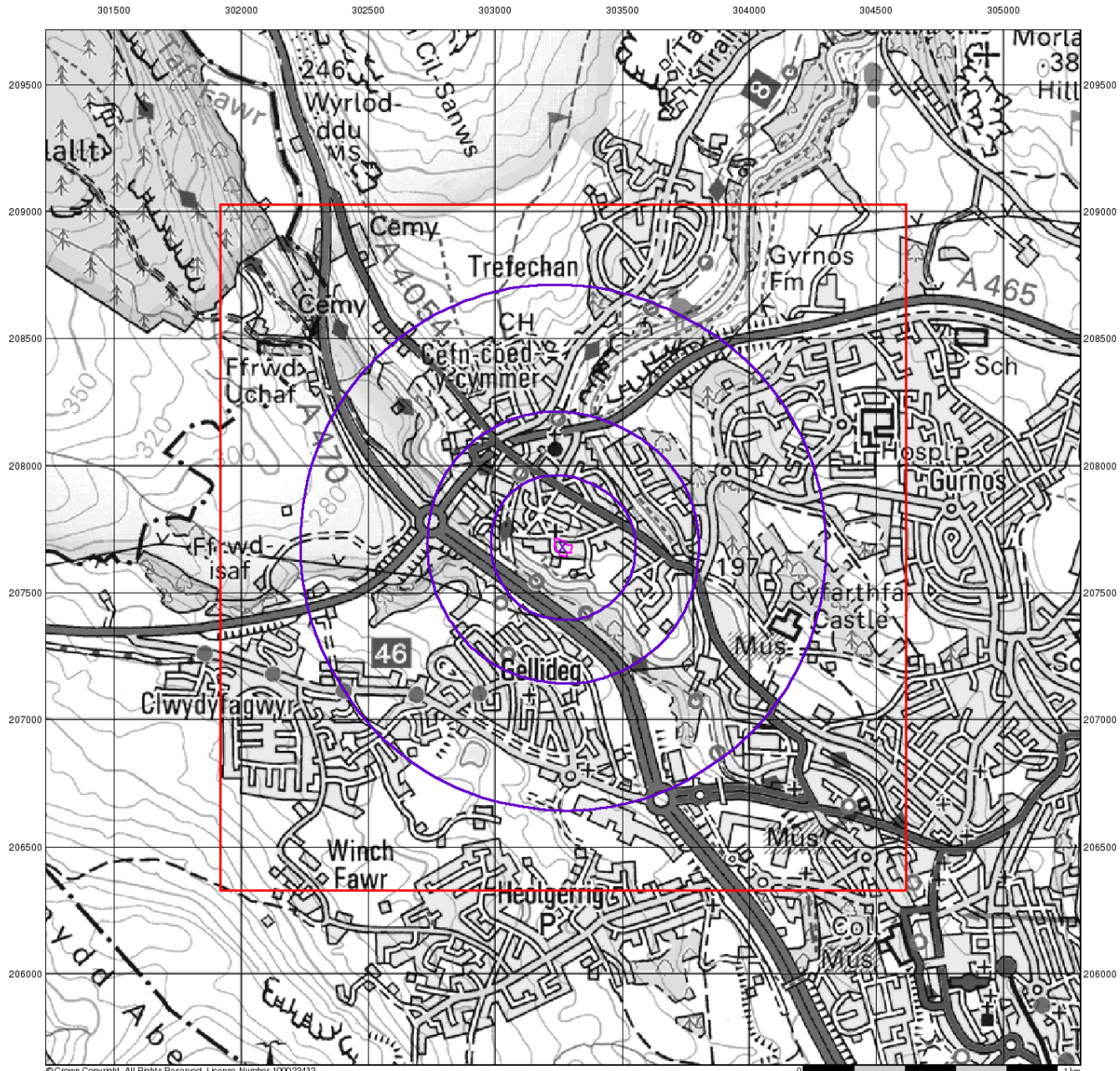
### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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## Source Protection Zones

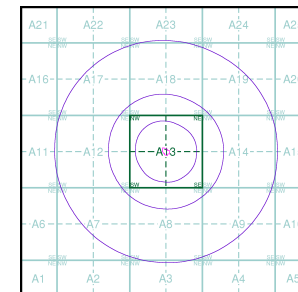
### General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B 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



### Order Details

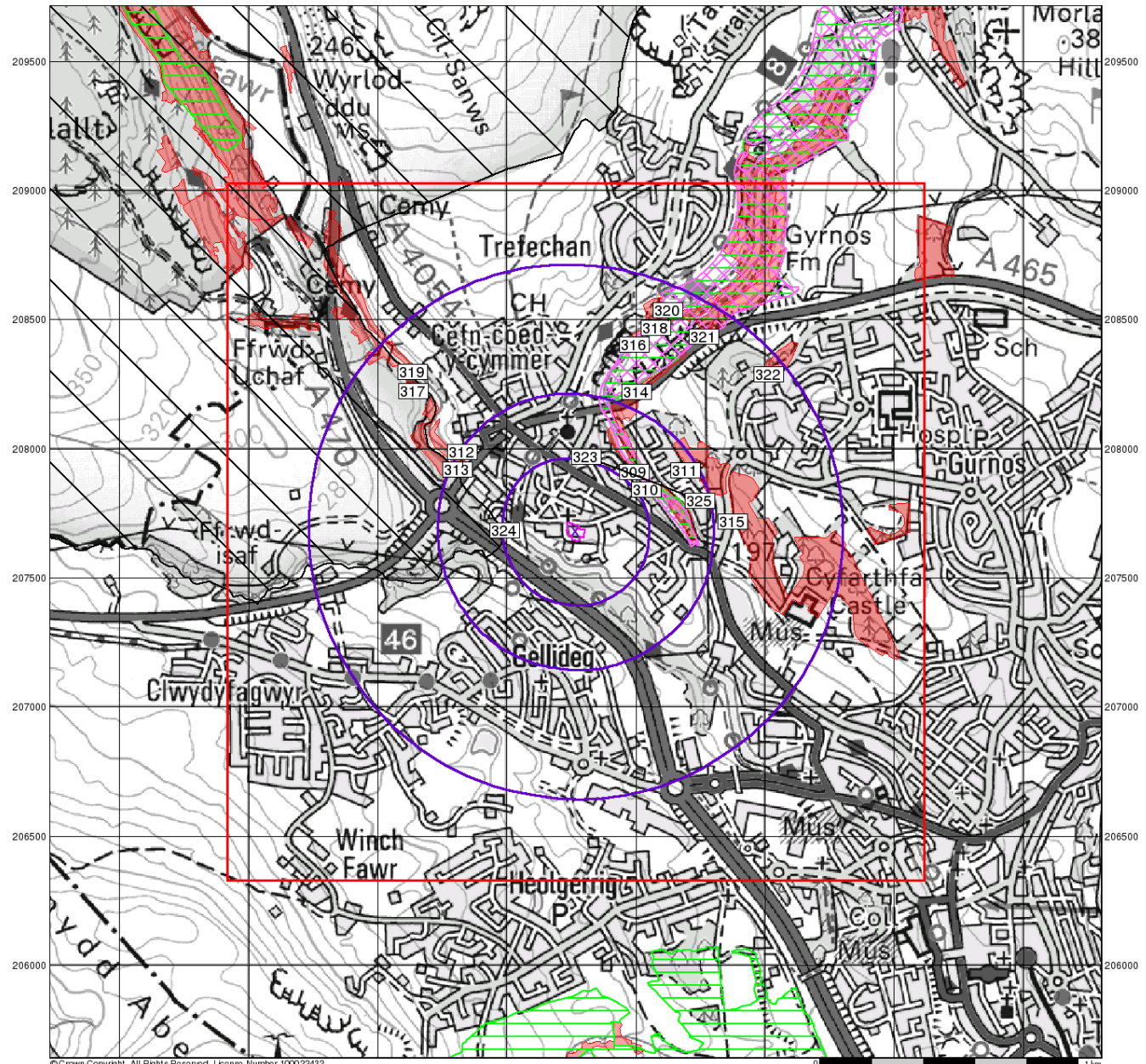
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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## Sensitive Land Uses

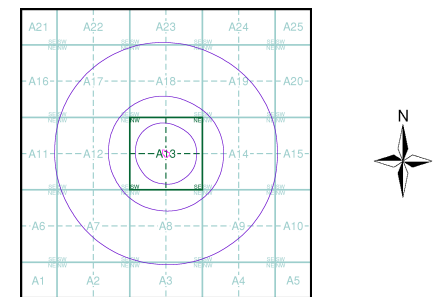
### General

-  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



### Order Details

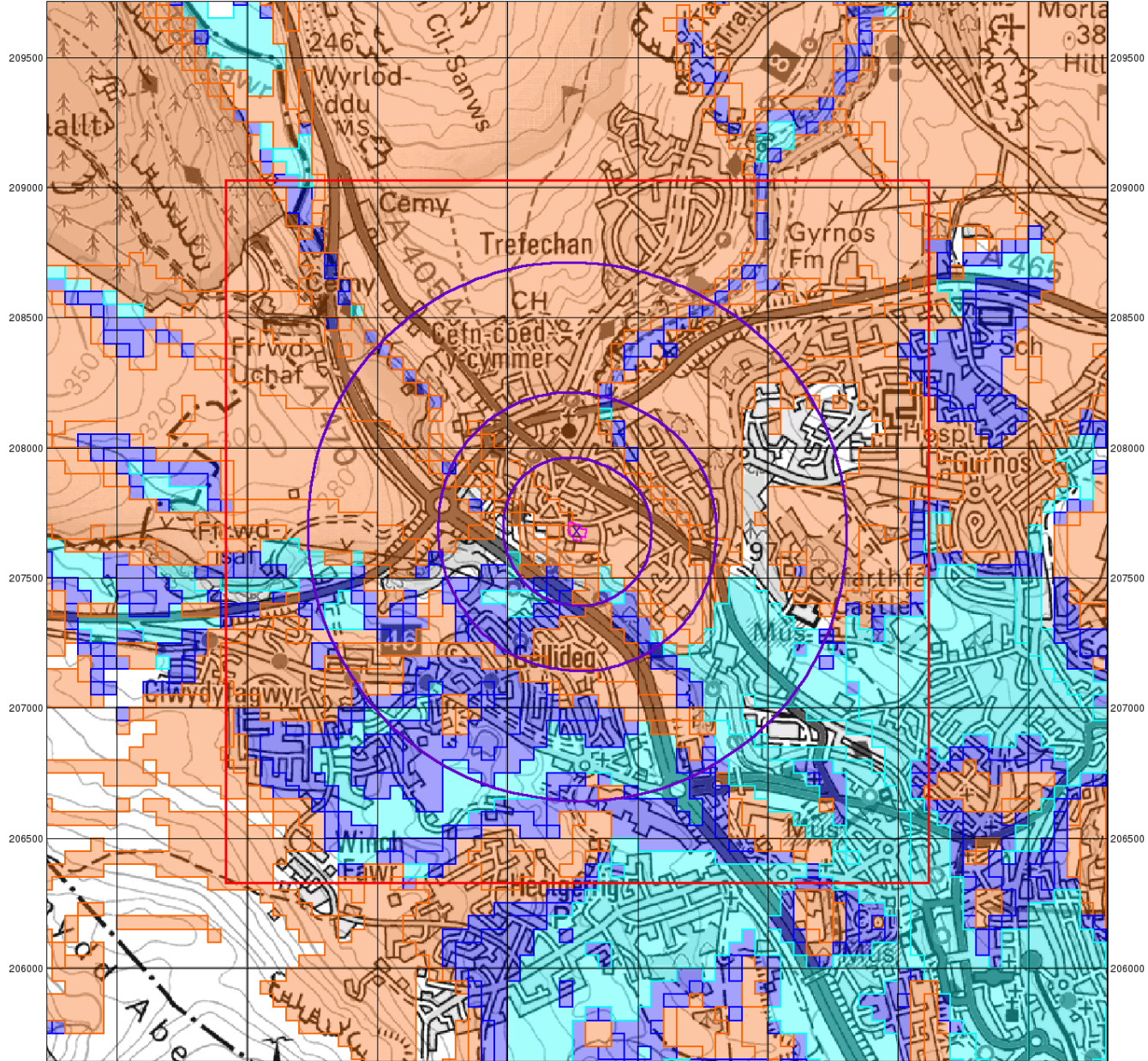
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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## BGS Flood GFS Data

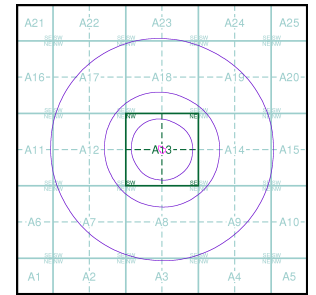
### General

- 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



## Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

## Site Details



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



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## 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
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	RTDU	River Terrace Deposits (Undifferentiated)	Sand and Gravel	Not Supplied - Quaternary

### 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
	BISHM	Bishopston Mudstone Formation	Sandstone	Not Supplied - Namurian
	TWR	Twrch Sandstone Formation	Sandstone and Conglomerate, Interbedded	Not Supplied - Namurian
	OHL	Oxwich Head Limestone Formation	Limestone	Not Supplied - Viséan

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	PDO	Penderyn Oolite Member	Limestone, Ooidal	Not Supplied - Viséan
	DWL	Dowlais Limestone Formation	Limestone	Not Supplied - Viséan
	LLY	Llanelly Formation	Limestone and [Subequal/Subordinate] Argillaceous Rocks, Interbedded	Not Supplied - Viséan
	ABO	Abercriban Oolite Subgroup	Limestone, Ooidal	Not Supplied - Tournaisian
	ABO	Abercriban Oolite Subgroup	Limestone, Ooidal	Not Supplied - Tournaisian
	CCM	Cwmynisoy Mudstone Formation	Mudstone	Not Supplied - Tournaisian
	CCL	Castell Coch Limestone Formation	Limestone	Not Supplied - Tournaisian
	GRG	Grey Grits Formation	Sandstone	Not Supplied - Famennian
		Faults		
		Rock Segments		

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### Geology 1:50,000 Maps

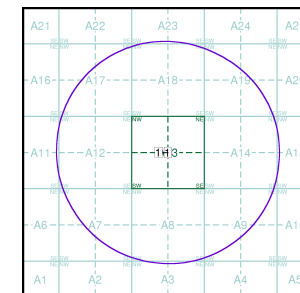
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published 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:	314168170_1_1
Customer Reference:	STV6119
National Grid Reference:	303270, 207680
Site:	A
Site Area (Ha):	0.32
Search Buffer (m):	1000

### Site Details:

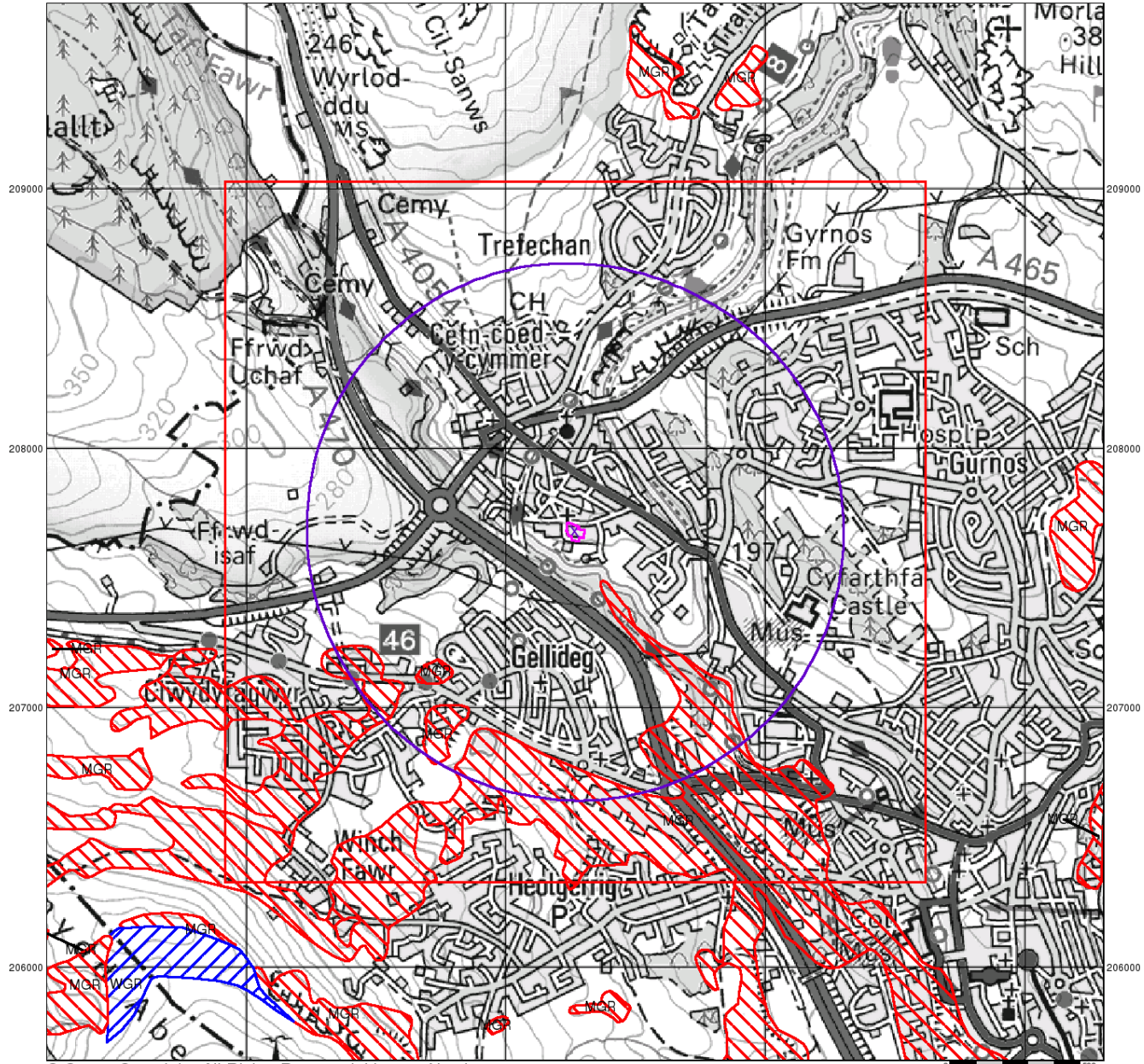
Cefn Isaf, Merthyr Tydfil

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302000 303000 304000 305000



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## Artificial Ground and Landslip

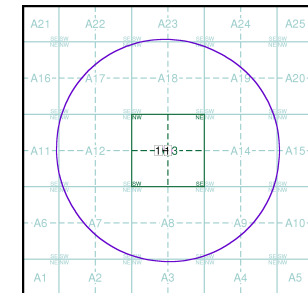
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions 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



### Order Details:

Order Number: 314168170\_1\_1  
 Customer Reference: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

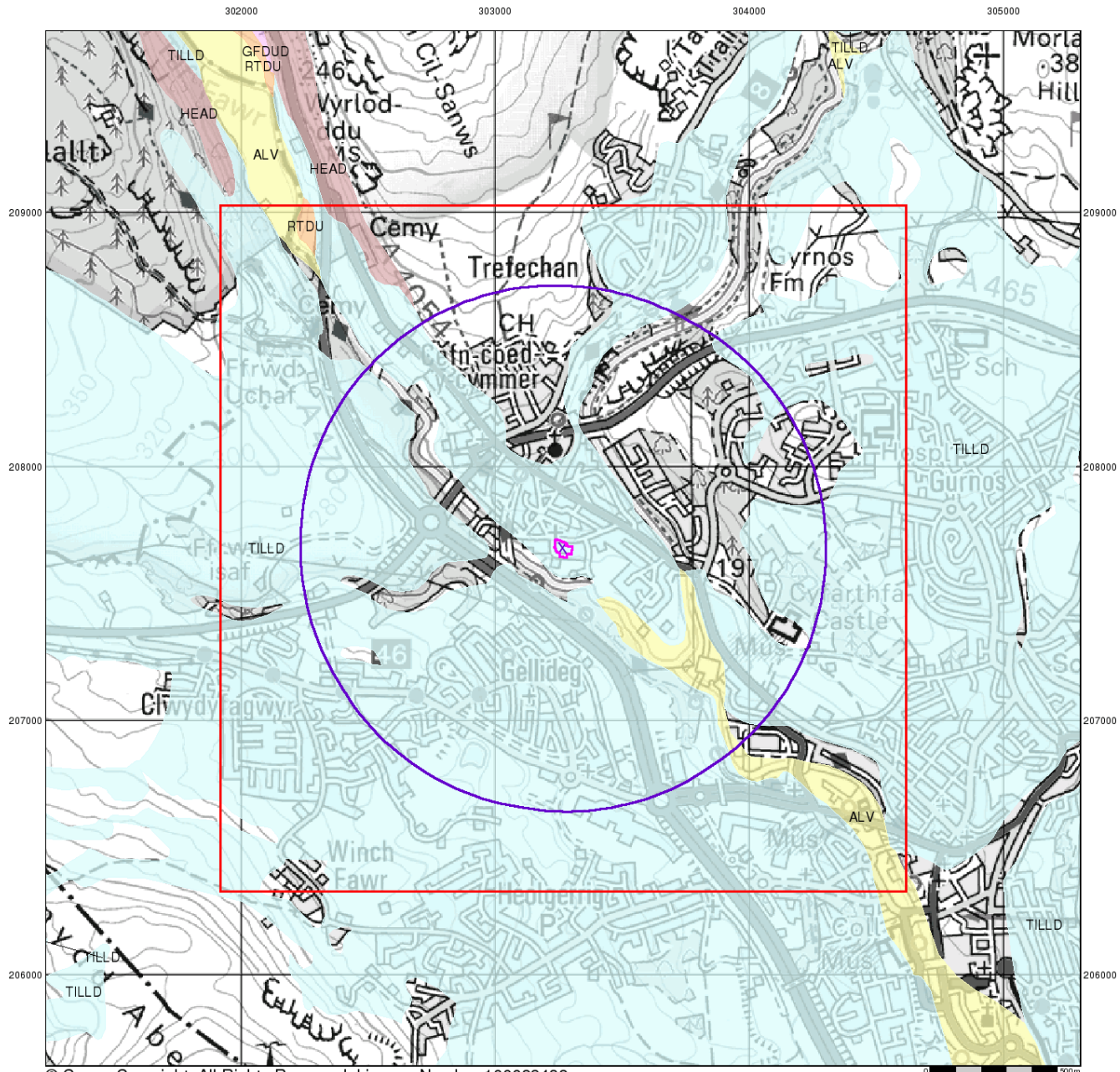
### Site Details:

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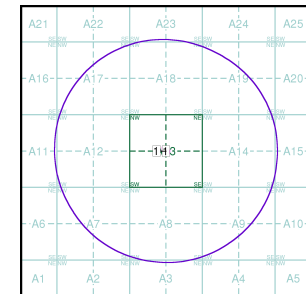
## Superficial Geology

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



### Order Details:

Order Number: 314168170\_1\_1  
 Customer Reference: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

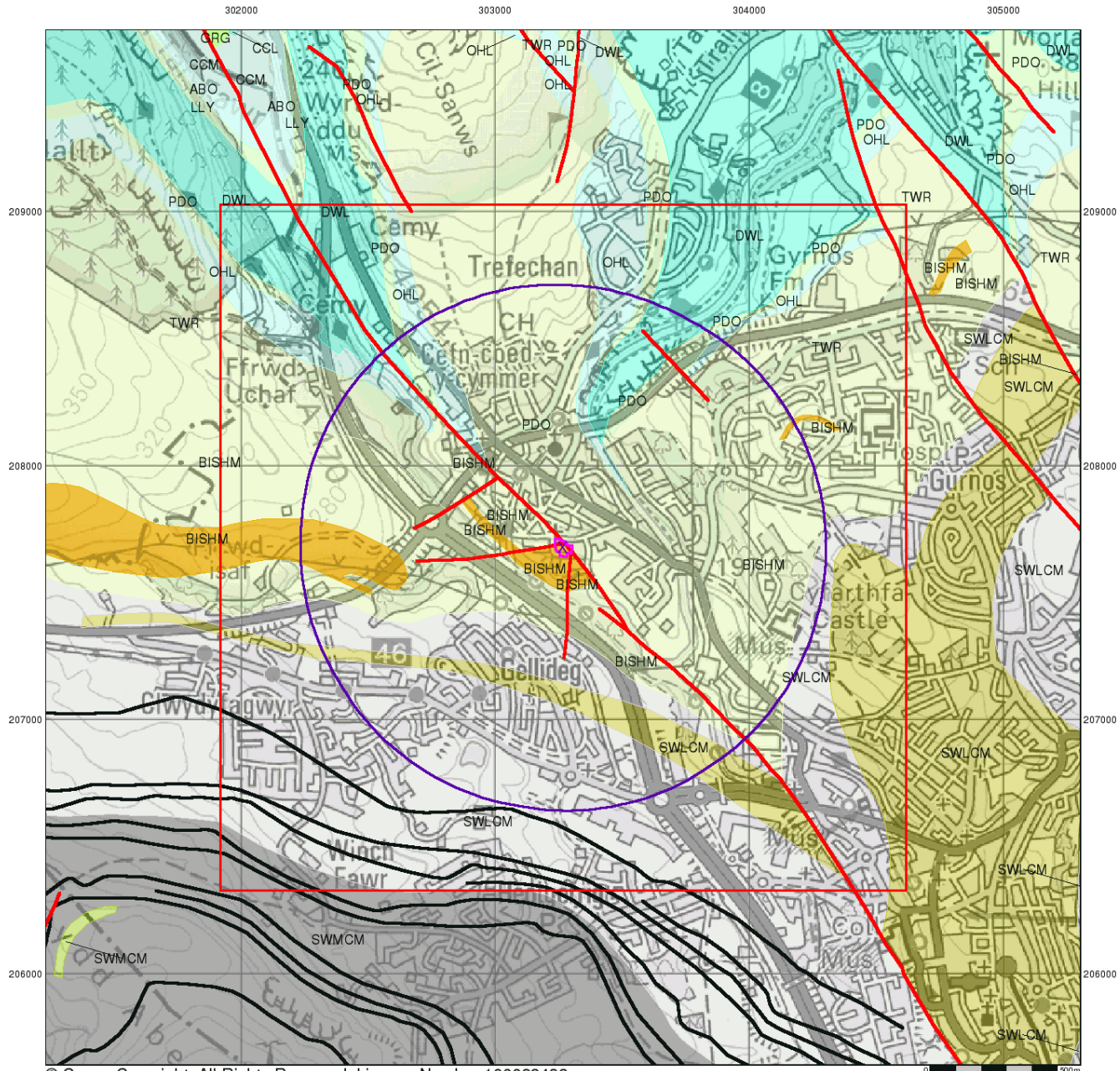
### Site Details:

Cefn Isaf, Merthyr Tydfil

**Landmark**  
 INFORMATION GROUP

Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk





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# soiltechnics

environmental • geotechnical • building fabric

## Bedrock and Faults

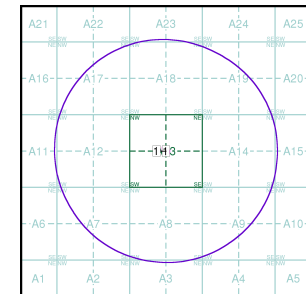
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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



## Order Details:

Order Number: 314168170\_1\_1  
 Customer Reference: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

## Site Details:

Cefn Isaf, Merthyr Tydfil

**Landmark**  
 INFORMATION GROUP

Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk







# 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
- Minor Roads
- 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
- Glasshouse
- Sloping Masonry
- Pylon
- Electricity Transmission Line
- Pole
- Cutting
- Embankment
- Standard Gauge Multiple Track
- 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
- Ch Church
- CH Club House
- F E Sta Fire Engine Station
- FB Foot Bridge
- Fn Fountain
- GP Guide Post
- MP Mile Post
- MS Mile Stone
- Pol Sta Police Station
- PO Post Office
- PC Public Convenience
- PH Public House
- SB Signal Box
- Spr Spring
- TCB Telephone Call Box
- TCP Telephone Call Post
- W Well

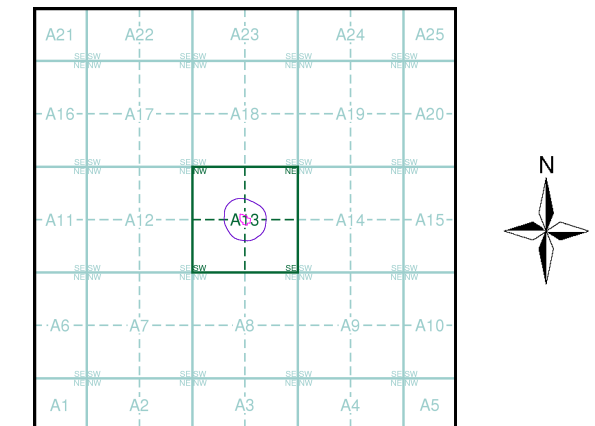
## 1:10,000 Raster Mapping

- Gravel Pit
- Rock
- Boulders
- Shingle
- Sand
- Slopes
- Refuse tip or slag heap
- Rock (scattered)
- Boulders (scattered)
- Mud
- Sand Pit
- Top of cliff
- General detail
- Overhead detail
- Multi-track railway
- County boundary (England only)
- District, Unitary, Metropolitan, London Borough boundary
- Underground detail
- Narrow gauge railway
- Single track railway
- Civil, parish or community boundary
- Constituency boundary
- Area of wooded vegetation
- Non-coniferous trees
- Coniferous trees
- Positioned tree
- Coppice or Osiers
- Heath
- Marsh, Salt Marsh or Reeds
- Flow arrows
- MHW(S) Mean high water (springs)
- MLW(S) Mean low water (springs)
- Electricity transmission line (with poles)
- Telephone line (where shown)
- Bench mark (where shown)
- Point feature (e.g. Guide Post or Mile Stone)
- Site of (antiquity)
- General Building
- Important Building

### Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1883 - 1885	2
Brecknockshire	1:10,560	1884 - 1885	3
Monmouthshire	1:10,560	1884	4
Glamorganshire	1:10,560	1901	5
Brecknockshire	1:10,560	1905	6
Brecknockshire	1:10,560	1921 - 1922	7
Brecknockshire	1:10,560	1938 - 1952	8
Historical Aerial Photography	1:10,560	1945	9
Brecknockshire	1:10,560	1951 - 1952	10
Ordnance Survey Plan	1:10,000	1965	11
Ordnance Survey Plan	1:10,000	1979	12
Ordnance Survey Plan	1:10,000	1992	13
10K Raster Mapping	1:10,000	1999	14
10K Raster Mapping	1:10,000	2006	15
VectorMap Local	1:10,000	2023	16

### Historical Map - Slice A



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



## Glamorganshire

Published 1883 - 1885

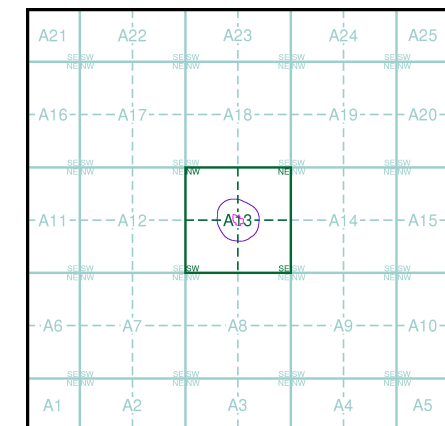
Source map scale - 1:10,560

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)

00500 1883 1:10,560		01200 1885 1:10,560
01100 1885 1:10,560		

### Historical Map - Slice A

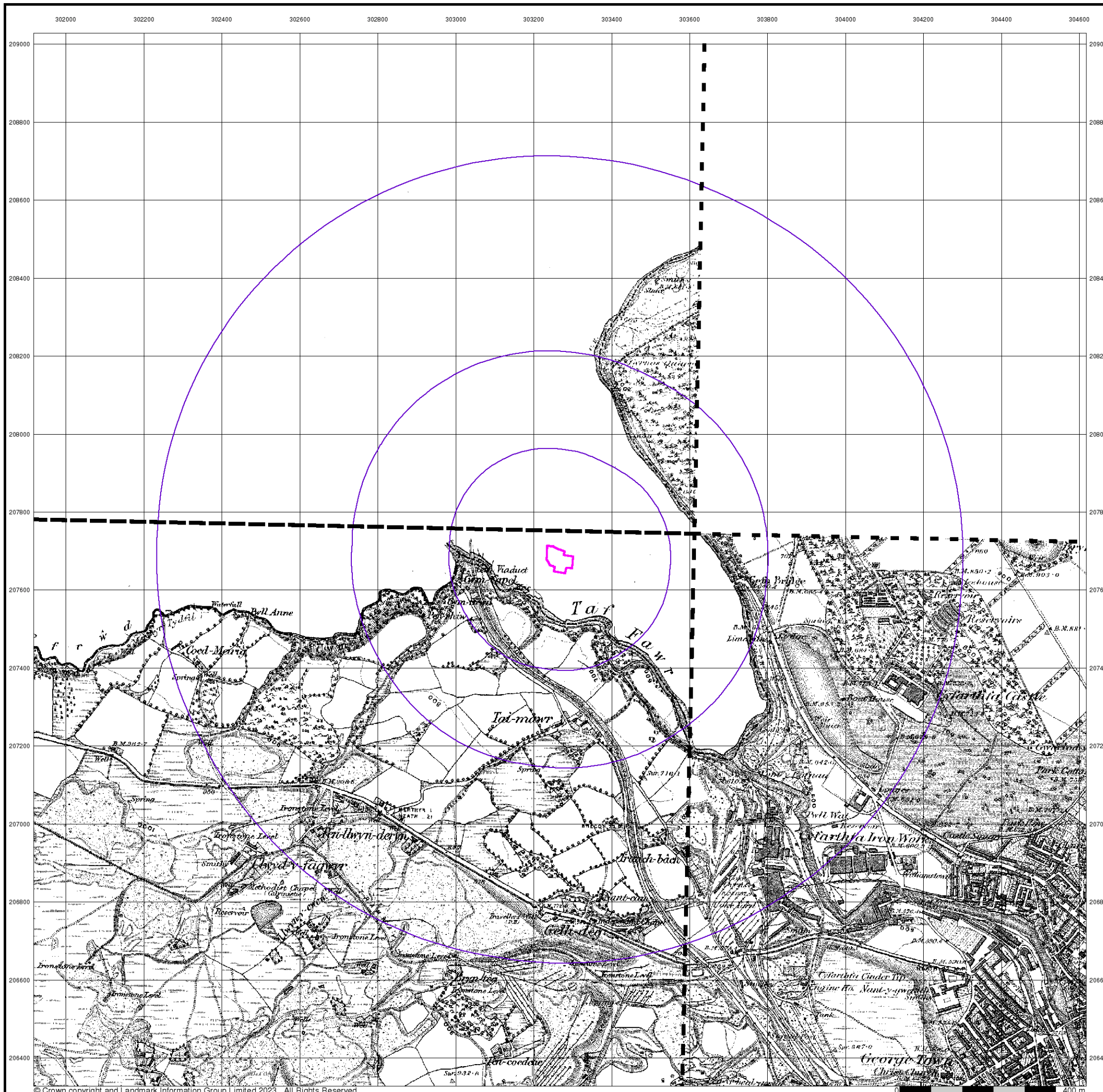


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Brecknockshire

Published 1884 - 1885

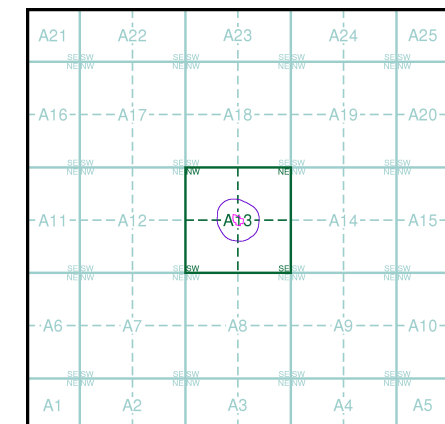
Source map scale - 1:10,560

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)

045SE 1884 1:10,560	046SW 1885 1:10,560
050NE 1884 1:10,560	051NW 1884 1:10,560

### Historical Map - Slice A

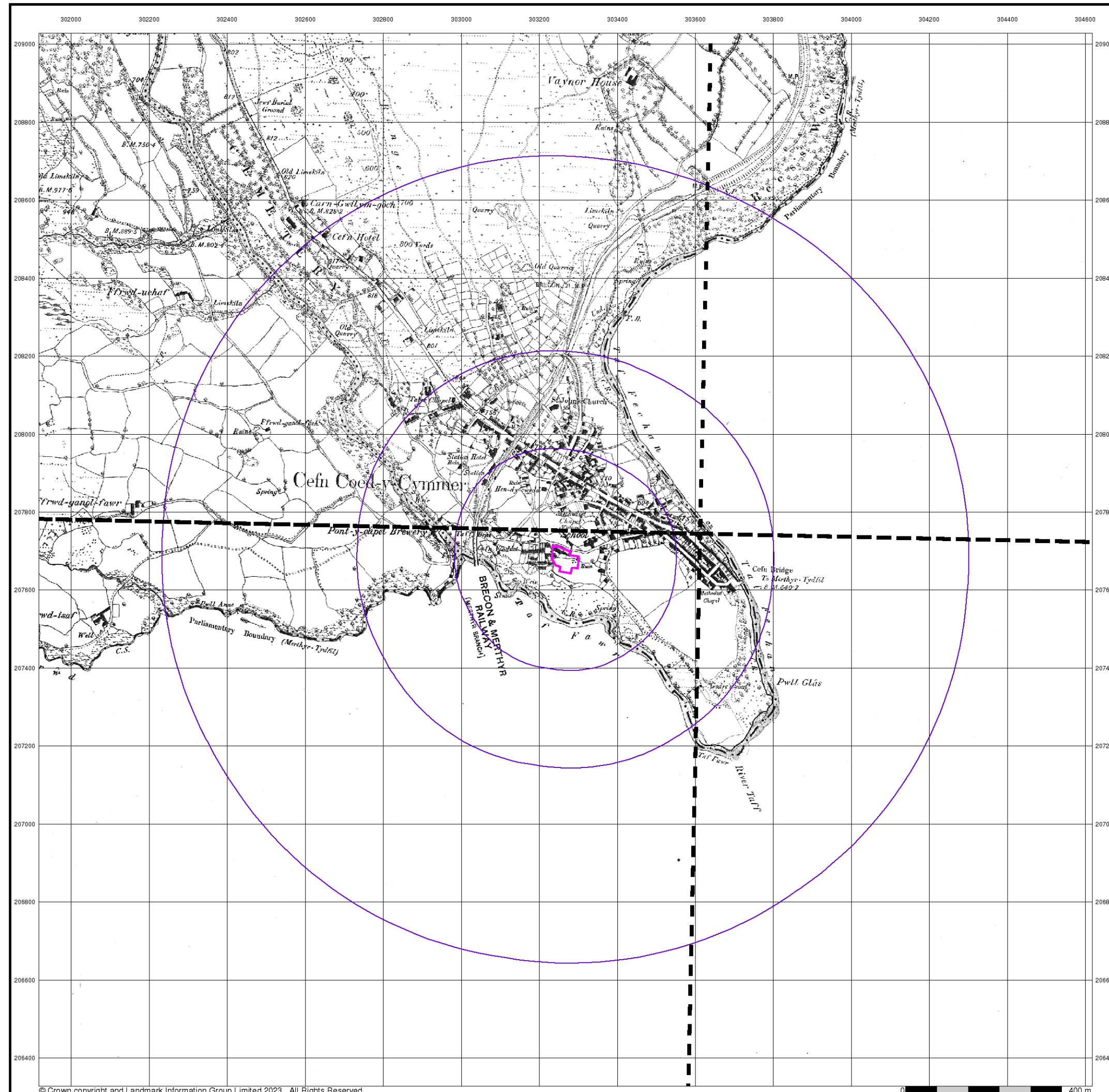


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



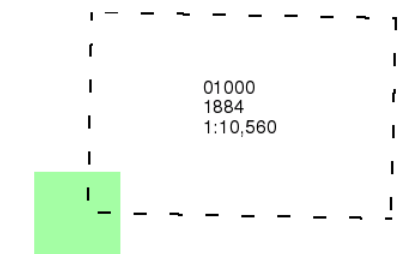
## Monmouthshire

Published 1884

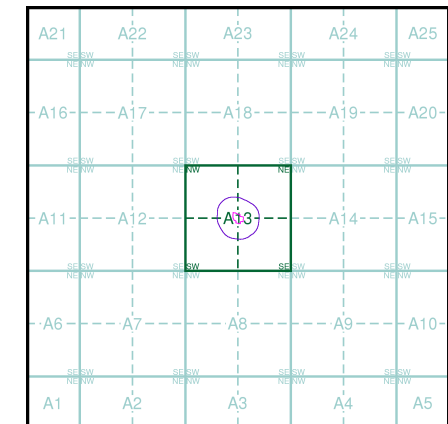
Source map scale - 1:10,560

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

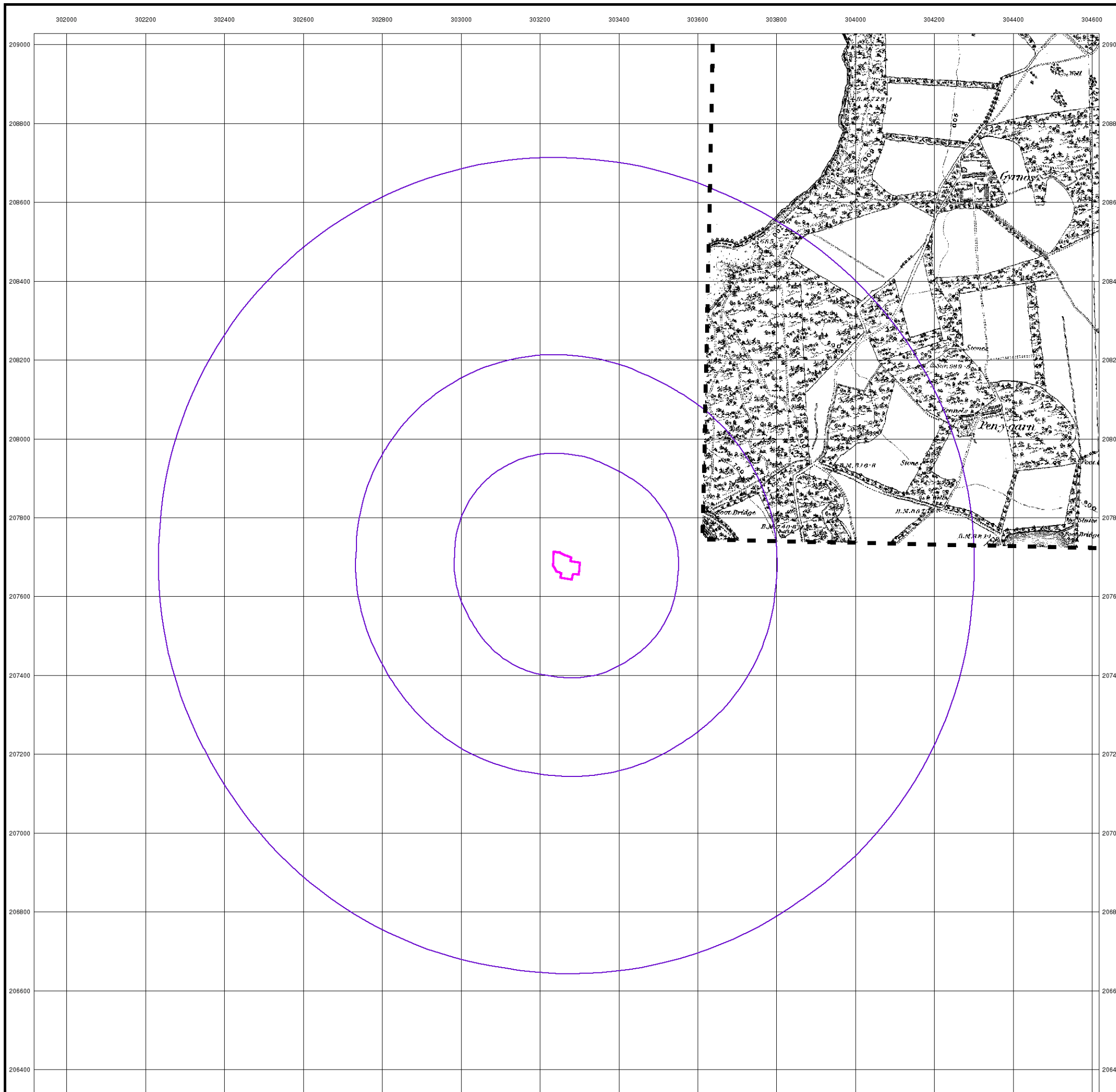


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Glamorganshire

Published 1901

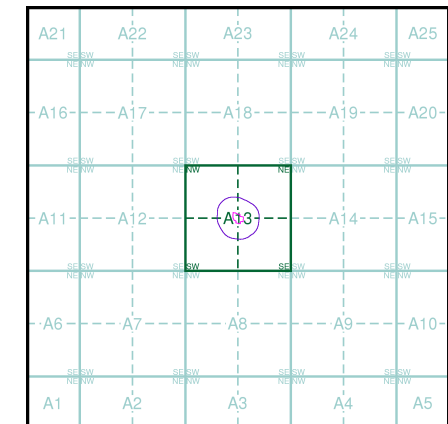
Source map scale - 1:10,560

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)

005SE 1901 1:10,560	006SW 1901 1:10,560
011NE 1901 1:10,560	012NW 1901 1:10,560

### Historical Map - Slice A

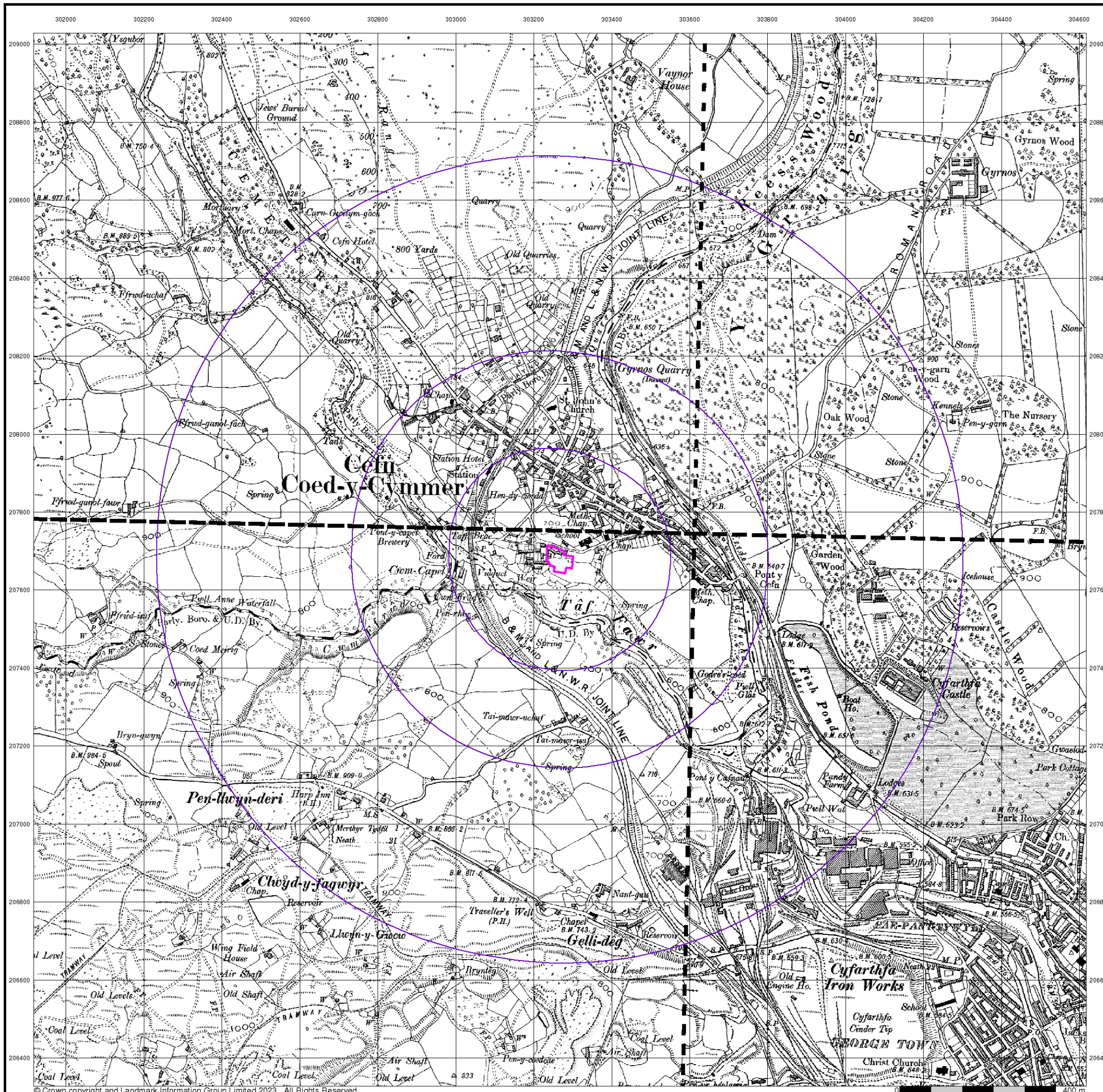


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Brecknockshire

Published 1905

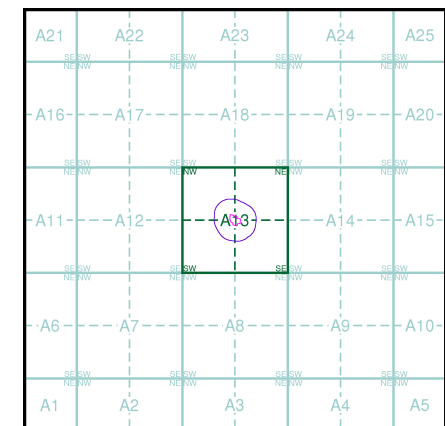
Source map scale - 1:10,560

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)

045SE 1905 1:10,560	046SW 1905 1:10,560
050NE 1905 1:10,560	051NW 1905 1:10,560

### Historical Map - Slice A

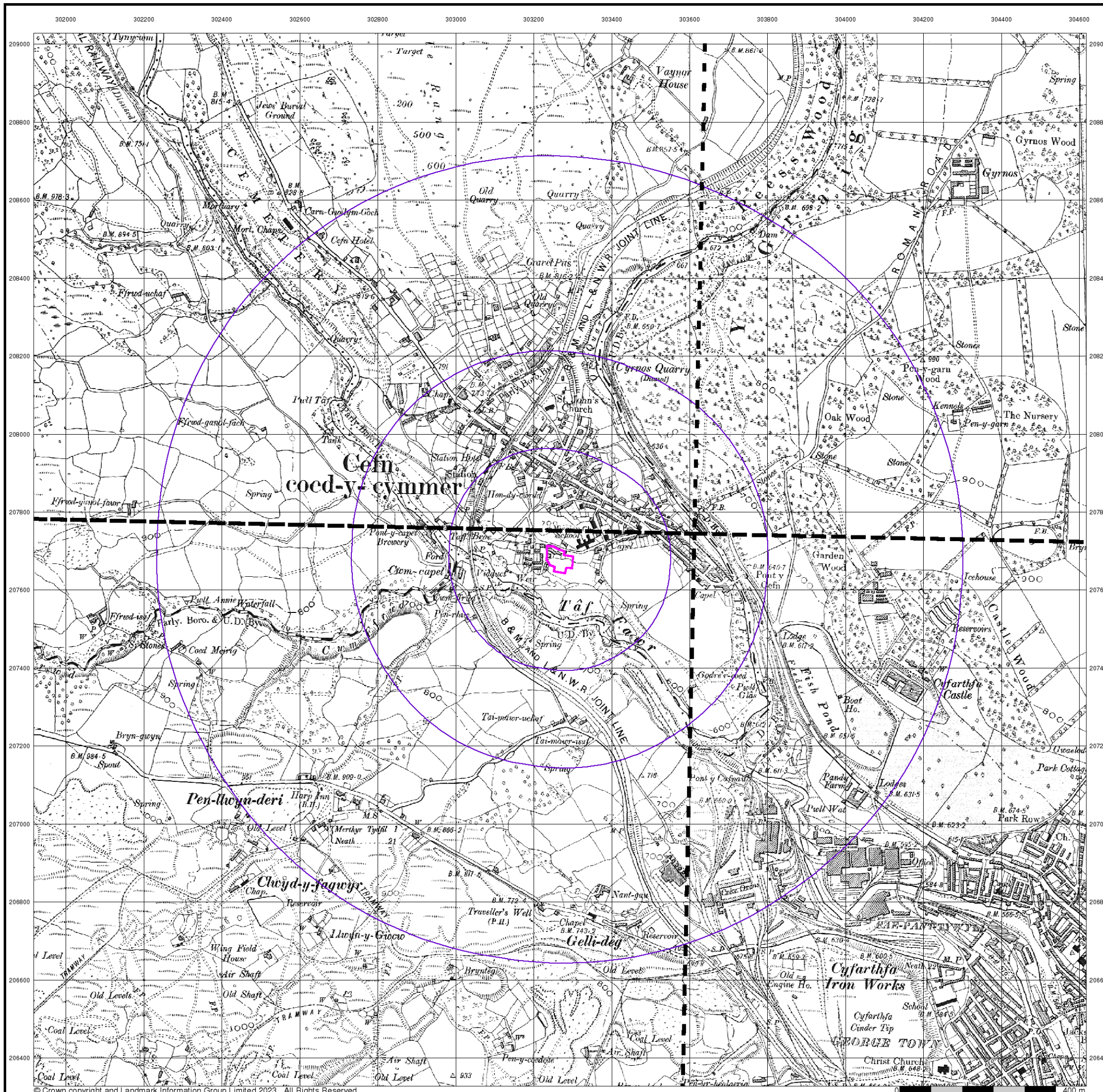


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Brecknockshire

Published 1921 - 1922

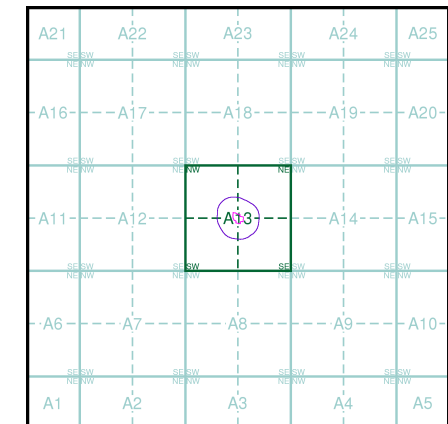
Source map scale - 1:10,560

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)

04500	1922	1:10,560	046SW	1922	1:10,560
050NE	1921	1:10,560	051NW	1922	1:10,560

### Historical Map - Slice A

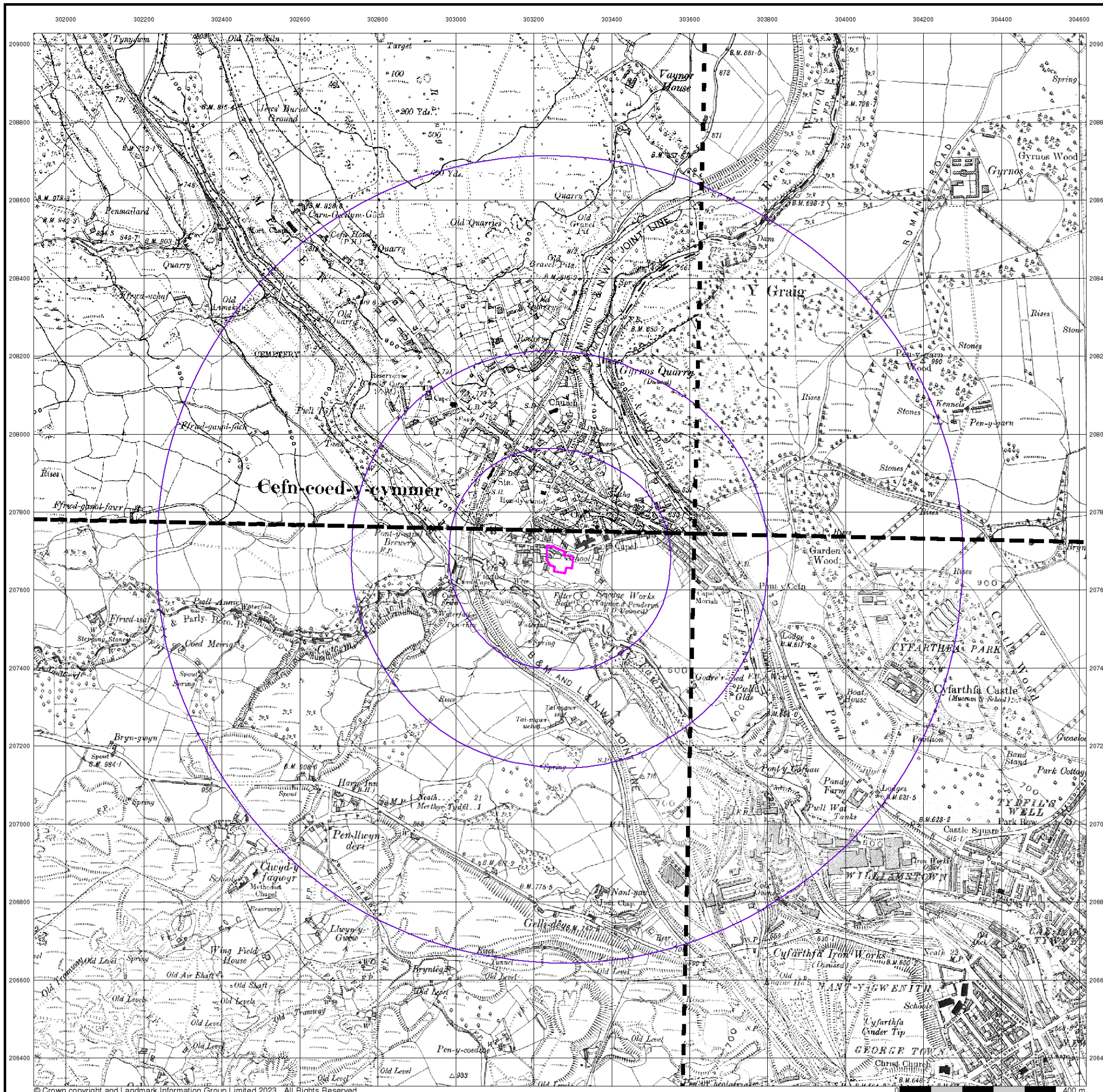


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Brecknockshire

Published 1938 - 1952

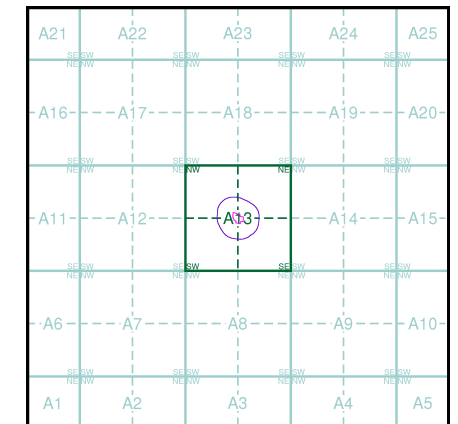
Source map scale - 1:10,560

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)

04500	046SW
1952	1951
1:10,560	1:10,560
050NE	051NW
1951	1938
1:10,560	1:10,560

### Historical Map - Slice A

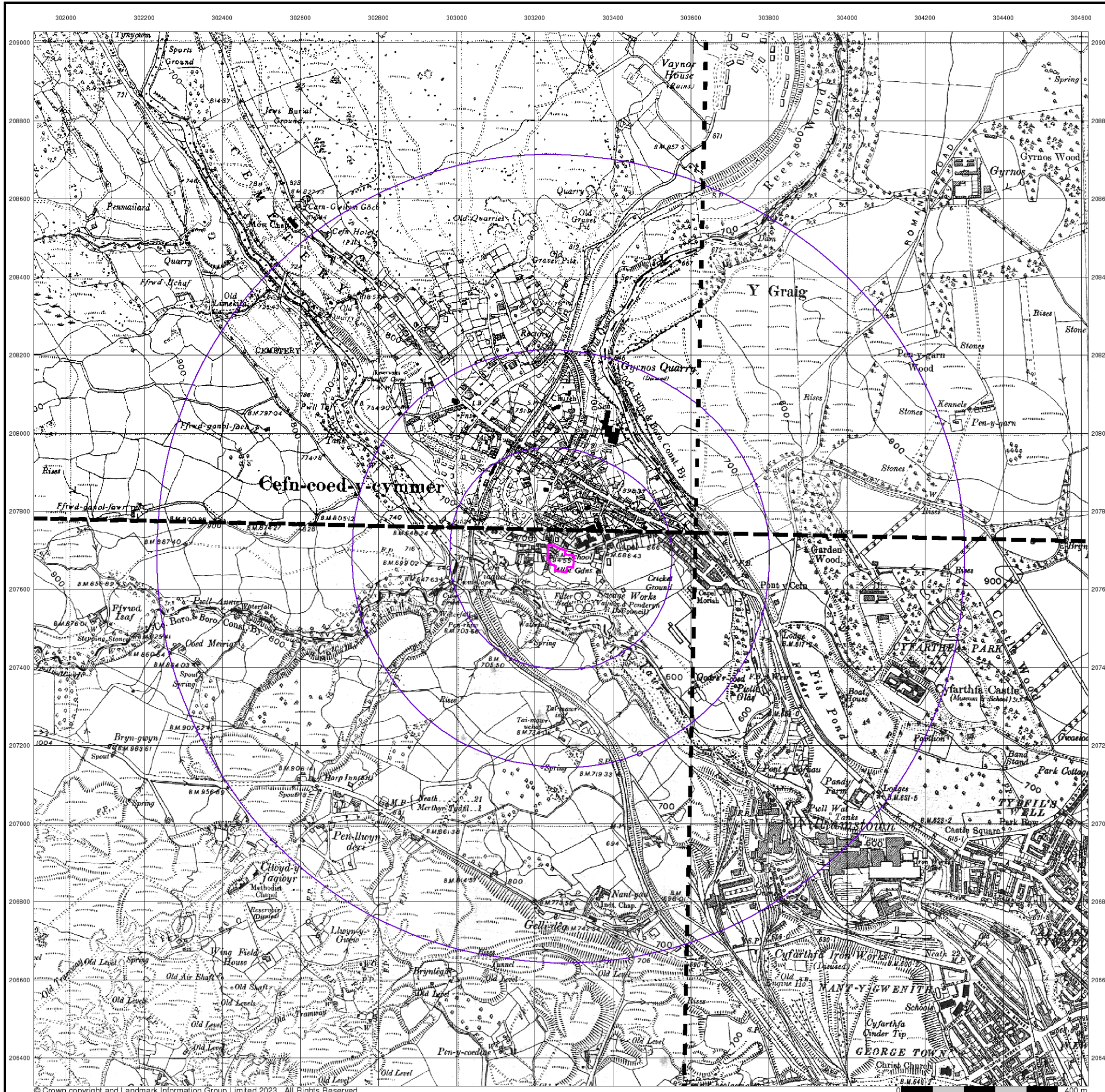


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Historical Aerial Photography

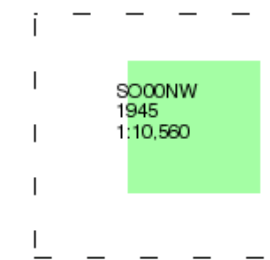
Published 1945

Source map scale - 1:10,560

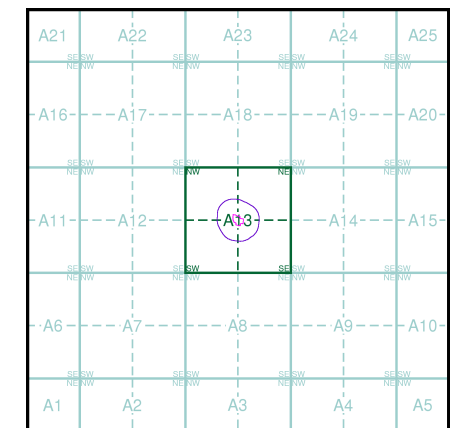
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 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



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





## Brecknockshire

Published 1951 - 1952

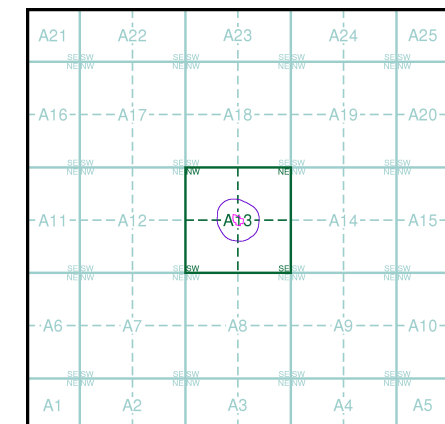
Source map scale - 1:10,560

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)

04500	1952	1:10,560
051NW	1951	1:10,560

### Historical Map - Slice A

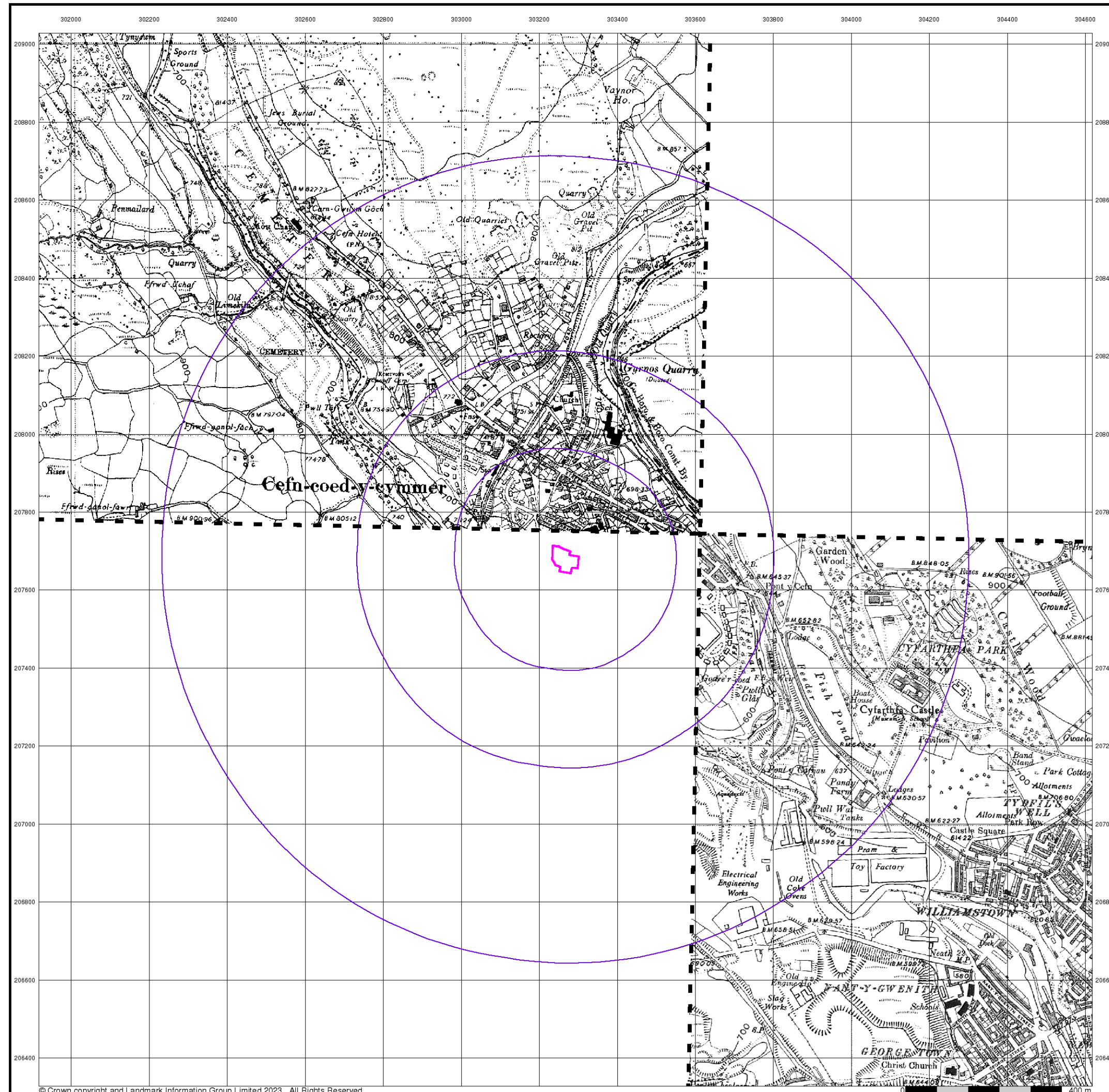


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





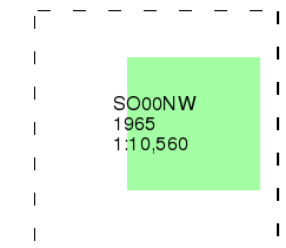
## Ordnance Survey Plan

Published 1965

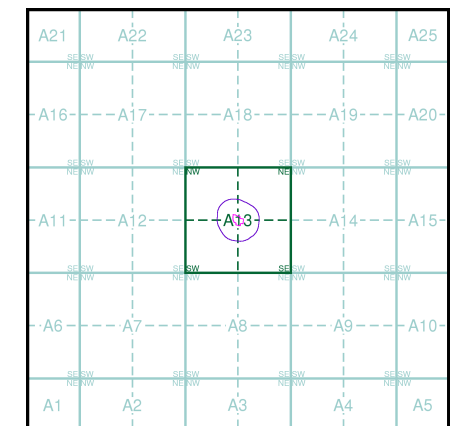
Source map scale - 1:10,000

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

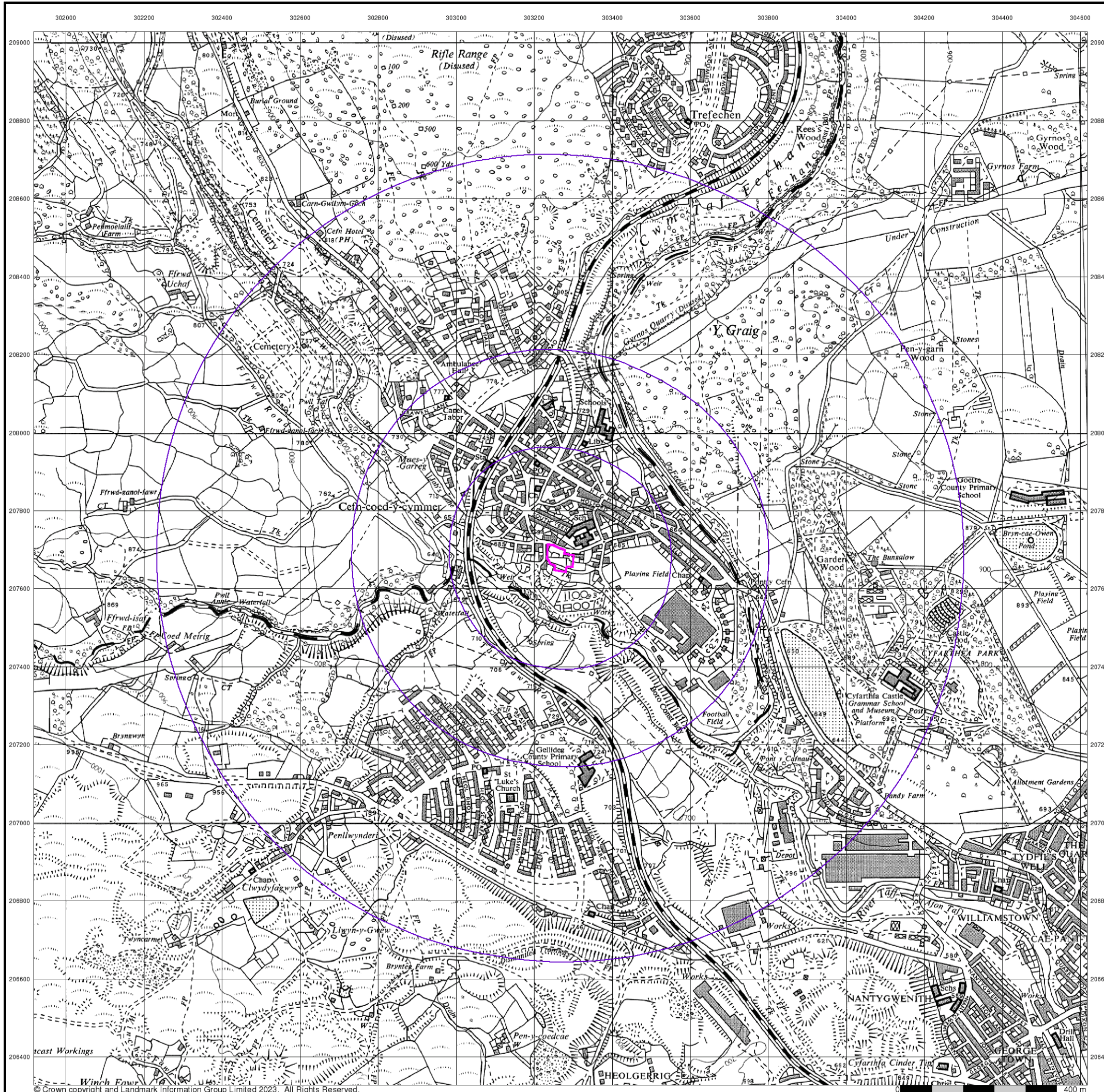


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





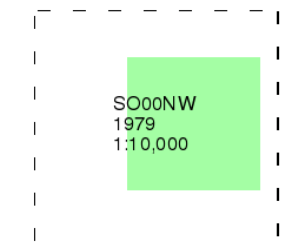
## Ordnance Survey Plan

Published 1979

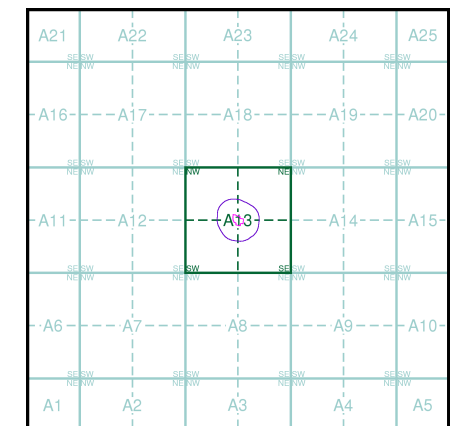
Source map scale - 1:10,000

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

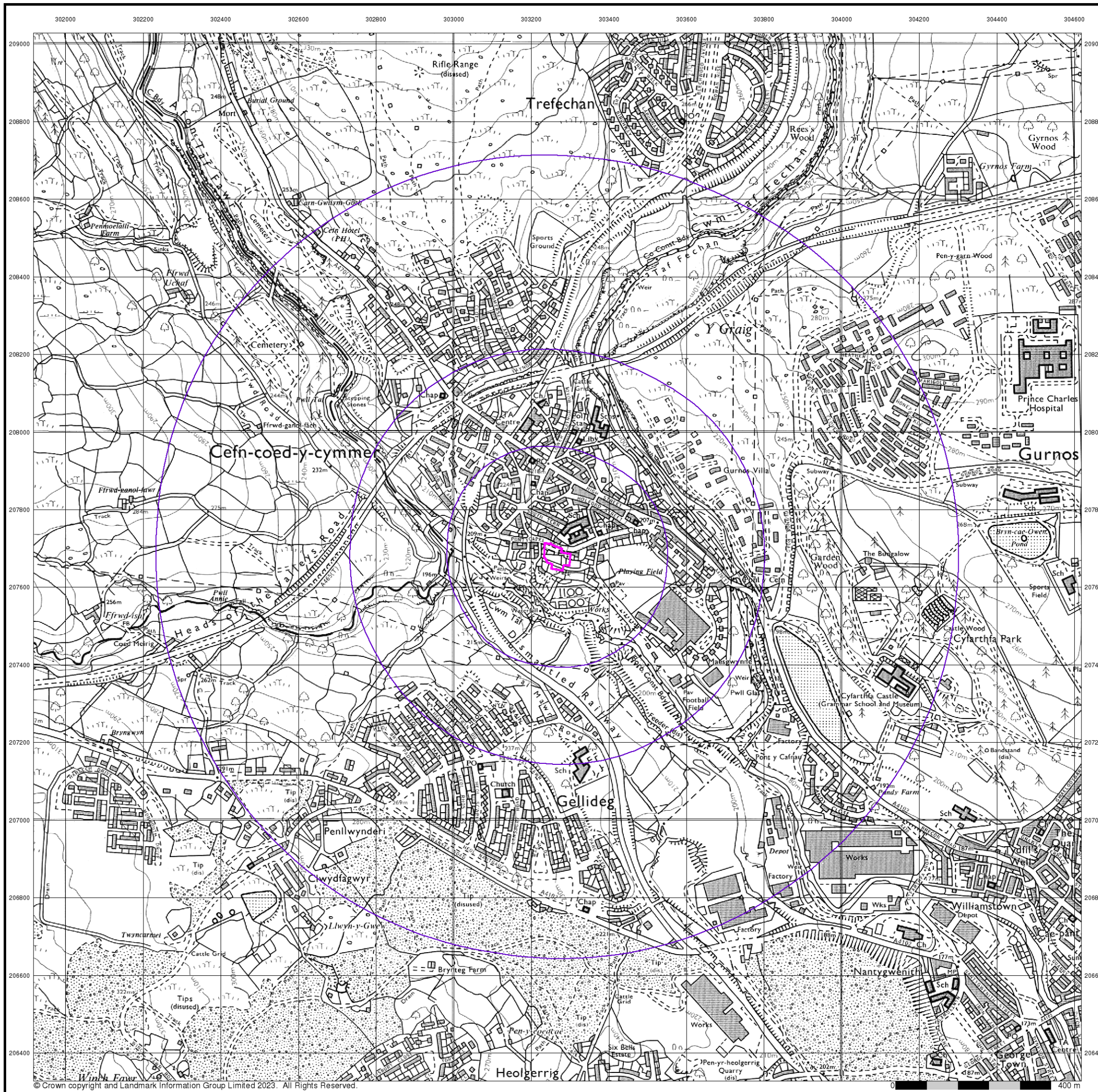


### Order Details

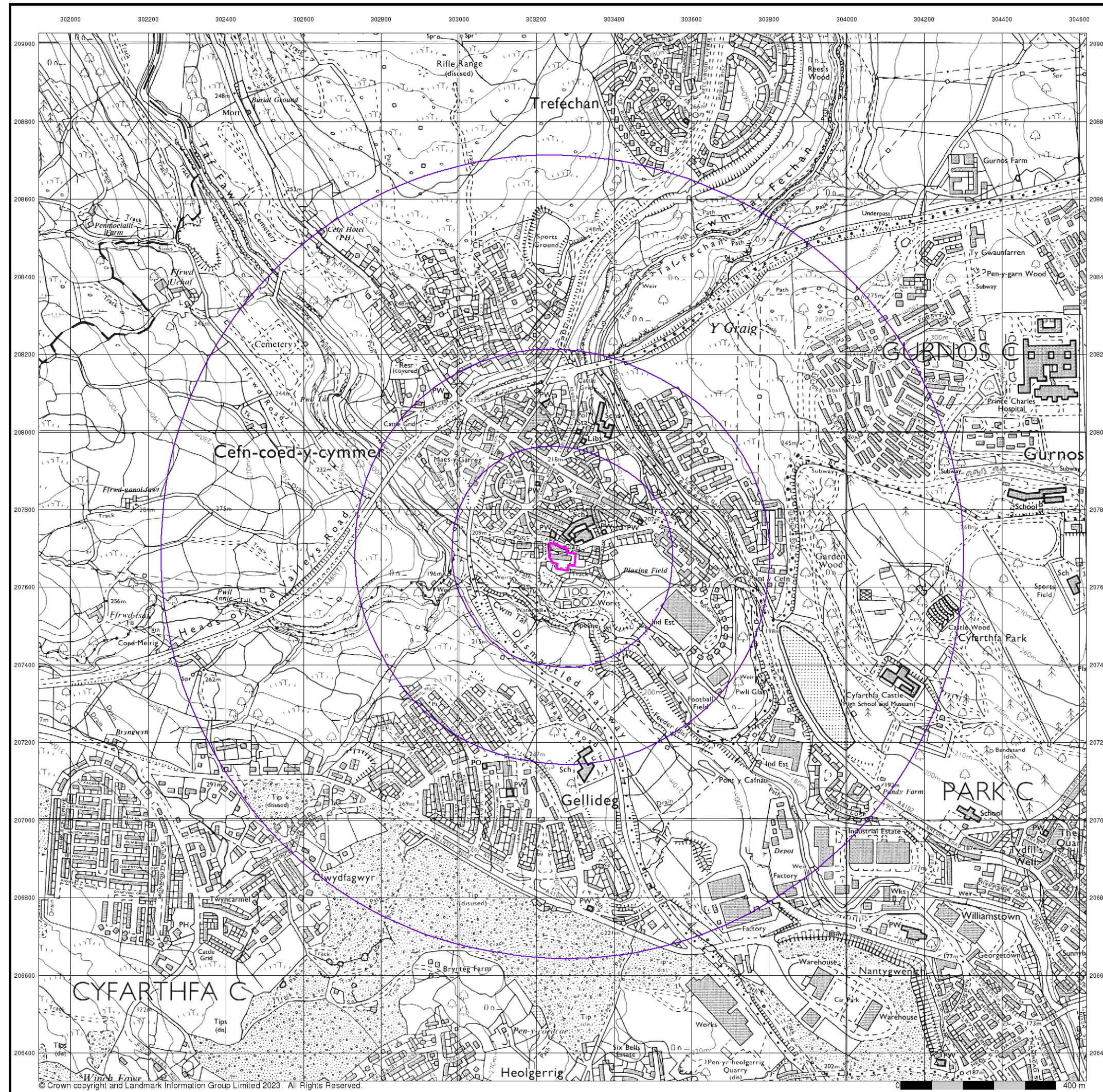
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



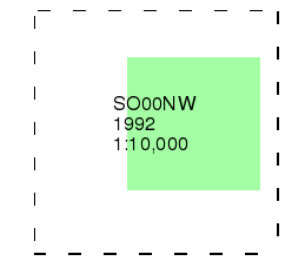




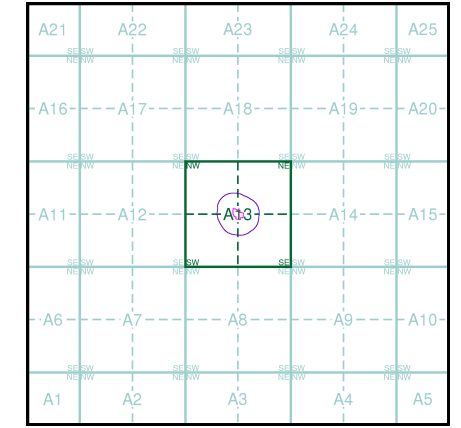
## Ordnance Survey Plan Published 1992 Source map scale - 1:10,000

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.

### Map Name(s) and Date(s)



### Historical Map - Slice A



**Order Details**  
 Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

**Site Details**  
 Cefn Isaf, Merthyr Tydfil



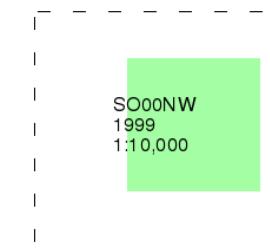
## 10k Raster Mapping

Published 1999

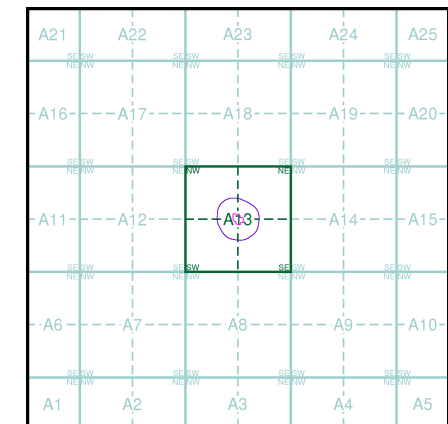
Source map scale - 1:10,000

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

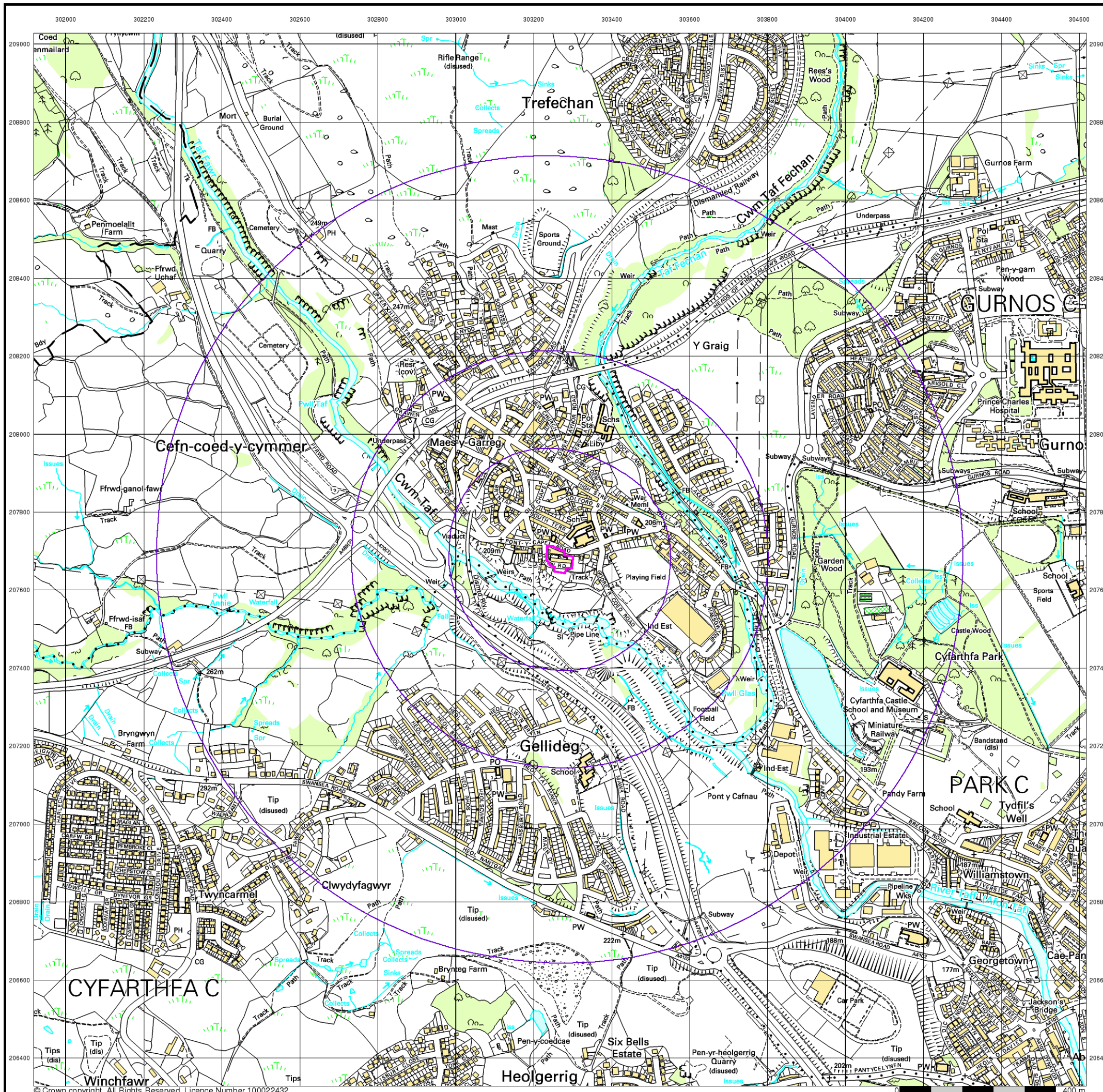


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



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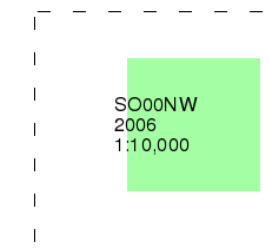
## 10k Raster Mapping

Published 2006

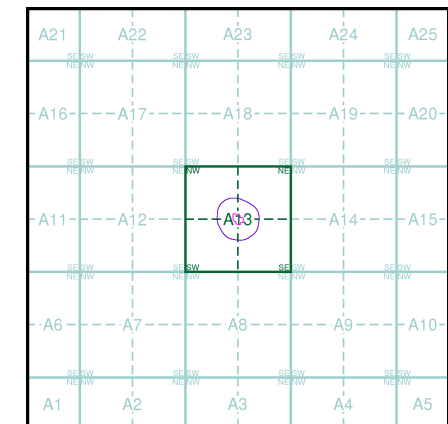
Source map scale - 1:10,000

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.

### Map Name(s) and Date(s)



### Historical Map - Slice A

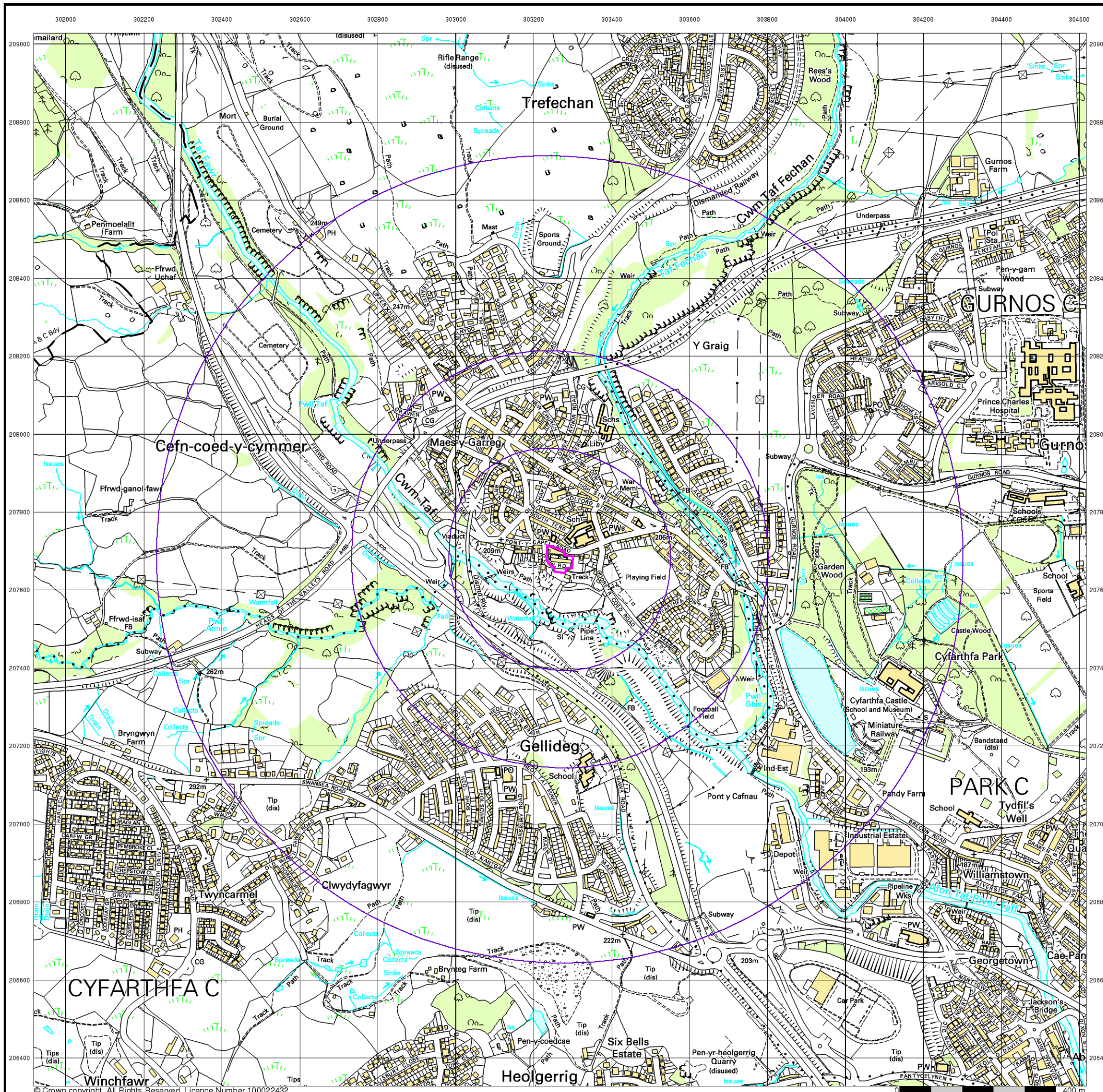


### Order Details

Order Number: 314168170\_1\_1  
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 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



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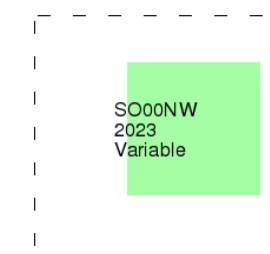
## VectorMap Local

Published 2023

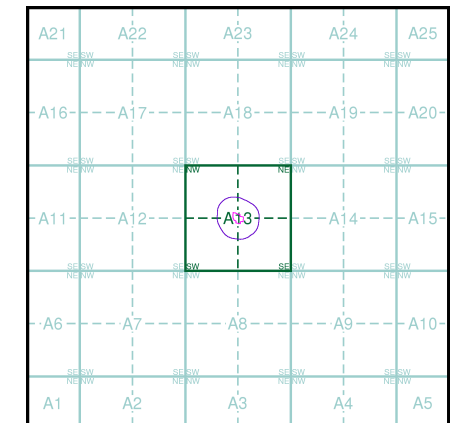
Source map scale - 1:10,000

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

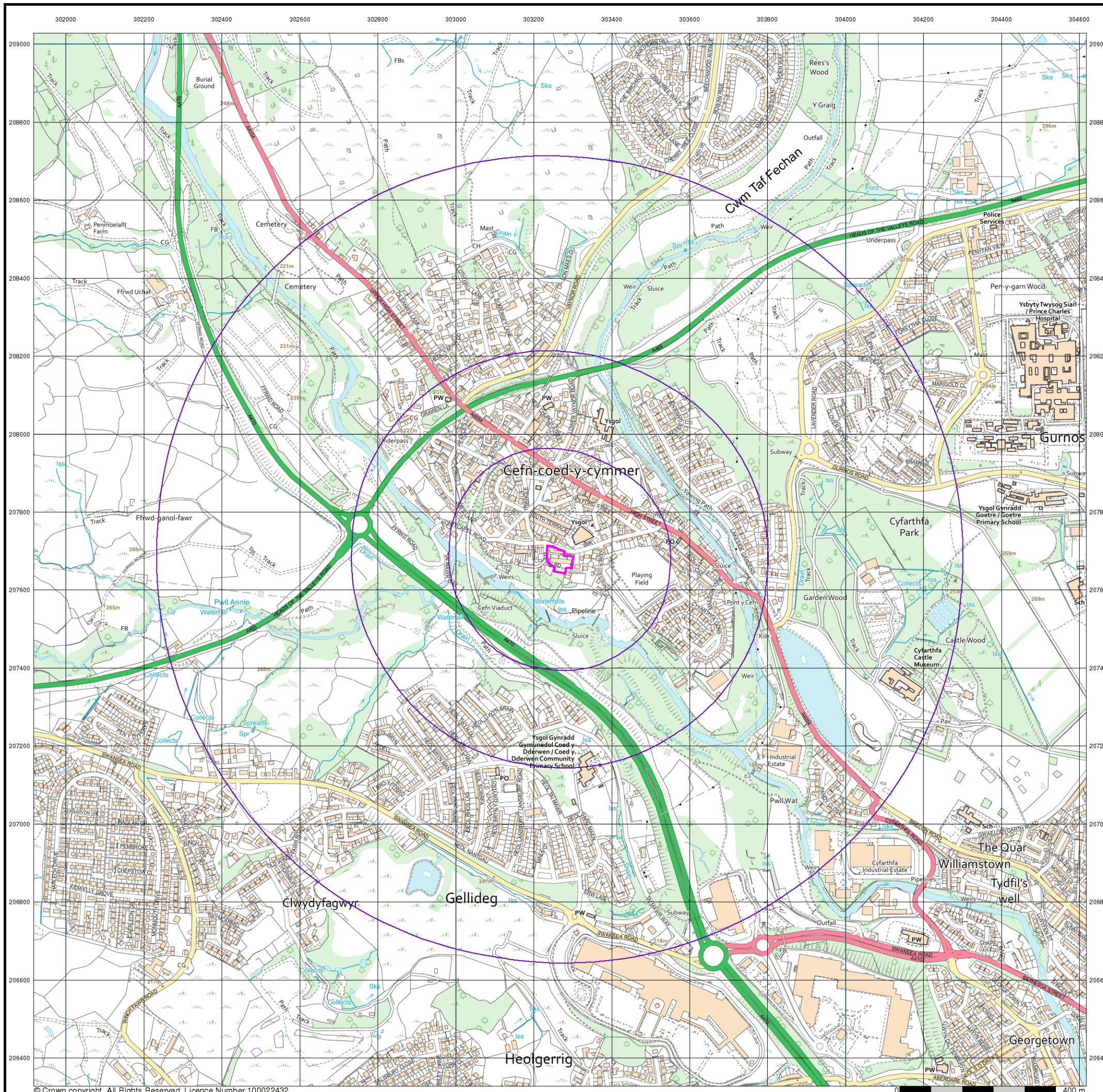


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil





# 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**   **Altitude at Trig. Station**  
**B.M. 325.9**   **Bench Mark**   **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**  
**County Borough Boundary (England)**  
**County Burgh Boundary (Scotland)**  
**Co. Boro. Bdy.**  
**Co. Burgh Bdy.**  
**BP BS** 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   **SL** 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**  
**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  
**EI 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

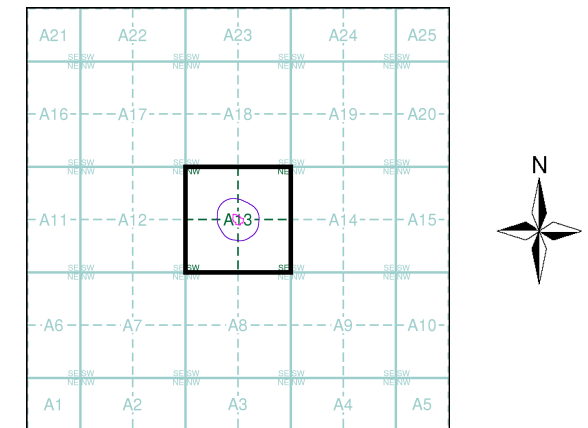
## Large-Scale National Grid Data 1:2,500 and 1:1,250

**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**  
**B.M. 231.60m** 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  
**EI Gen Sta** Electricity Generating Station   **Sewage Ppg Sta** Sewage Pumping Station  
**EI P** Electricity Pole, Pillar   **SB, S Br** Signal Box or Bridge  
**EI 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 Governor   **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

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1875	2
Brecknockshire	1:2,500	1885	3
Glamorganshire	1:2,500	1900 - 1904	4
Brecknockshire	1:2,500	1904	5
Brecknockshire	1:2,500	1919 - 1920	6
Ordnance Survey Plan	1:1,250	1956 - 1980	7
Ordnance Survey Plan	1:1,250	1963 - 1986	8
Additional SIMs	1:1,250	1963 - 1990	9
Ordnance Survey Plan	1:2,500	1964	10
Supply of Unpublished Survey Information	1:2,500	1973	11
Additional SIMs	1:1,250	1979 - 1990	12
Ordnance Survey Plan	1:1,250	1987	13
Additional SIMs	1:1,250	1988	14
Additional SIMs	1:2,500	1990	15
Additional SIMs	1:1,250	1990	16
Large-Scale National Grid Data	1:1,250	1993	17
Historical Aerial Photography	1:2,500	2001	18

## Historical Map - Segment A13



## Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

## Site Details

Cefn Isaf, Merthyr Tydfil

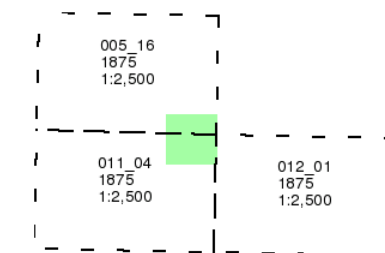
## Glamorganshire

Published 1875

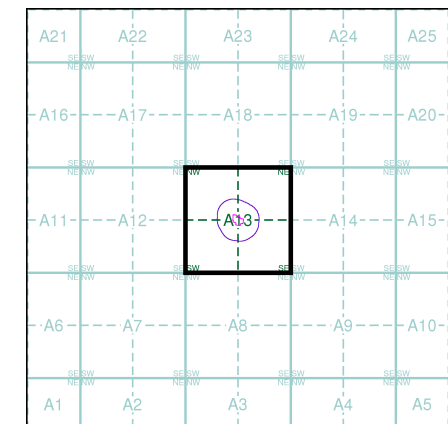
Source map scale - 1:2,500

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

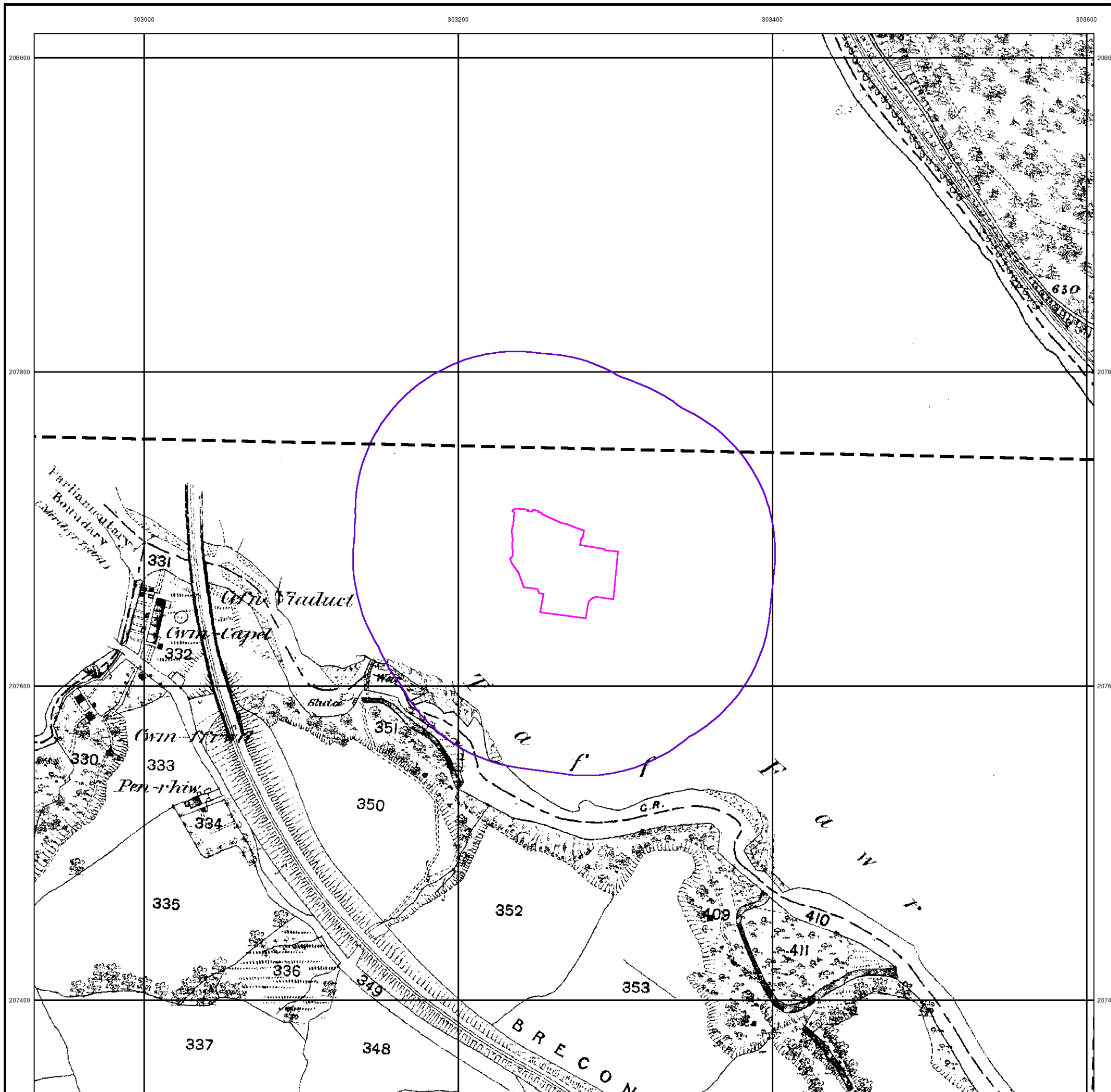


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Order Number: 314168170\_1\_1  
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 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil





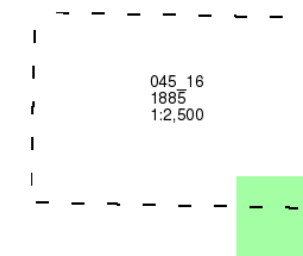
## Brecknockshire

Published 1885

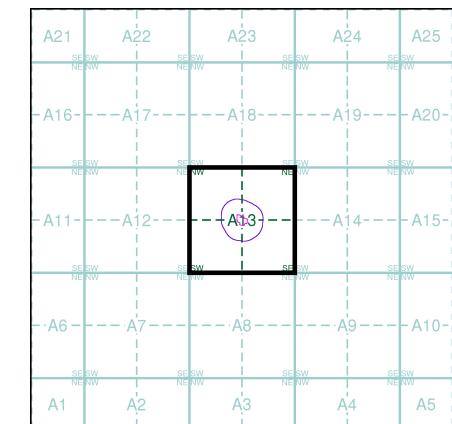
Source map scale - 1:2,500

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

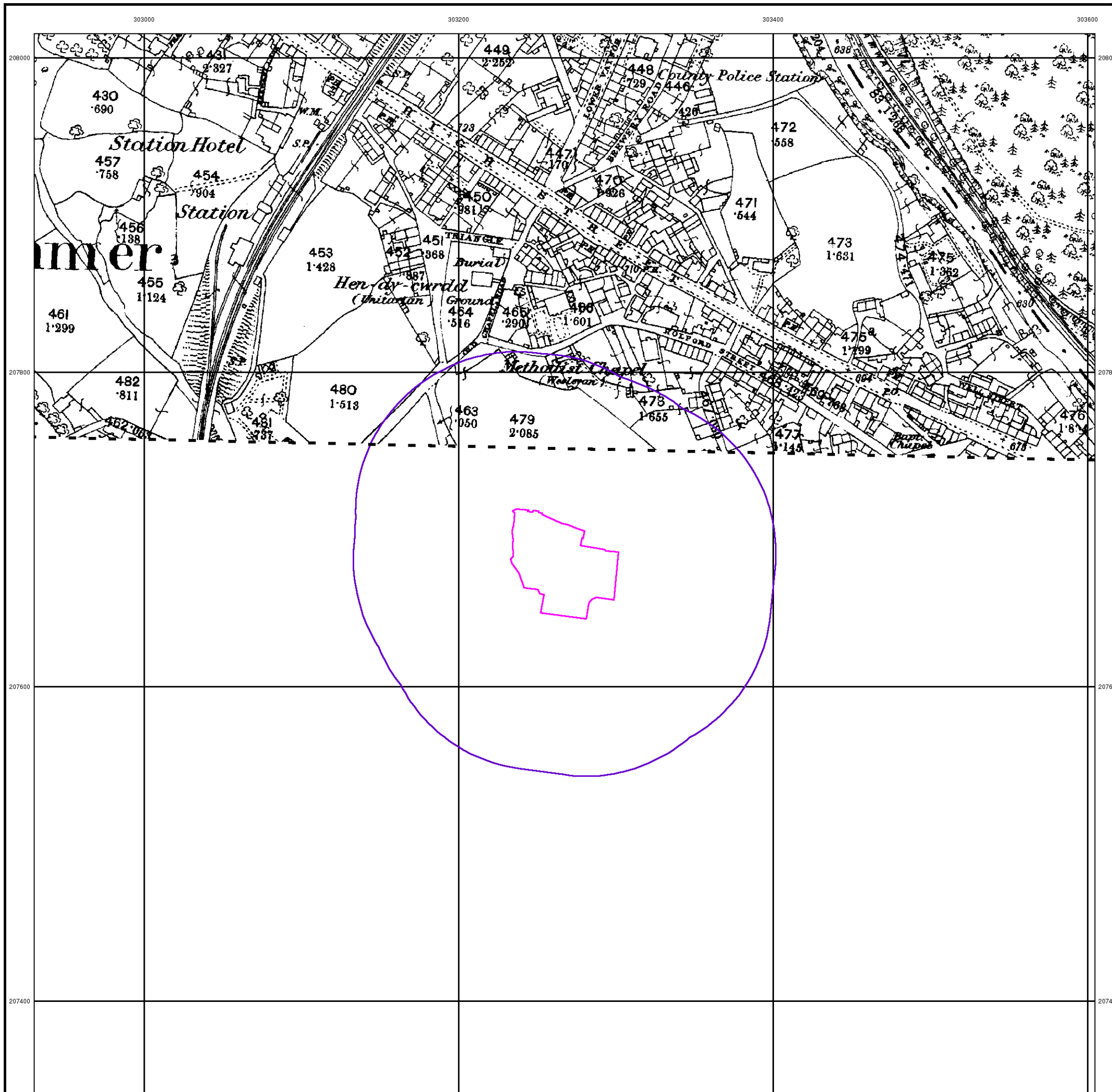


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Order Number: 314168170\_1\_1  
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 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil



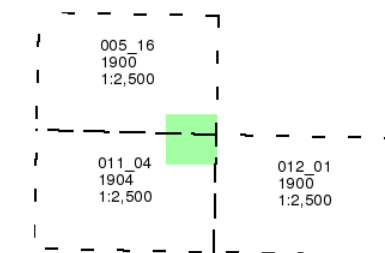
## Glamorganshire

Published 1900 - 1904

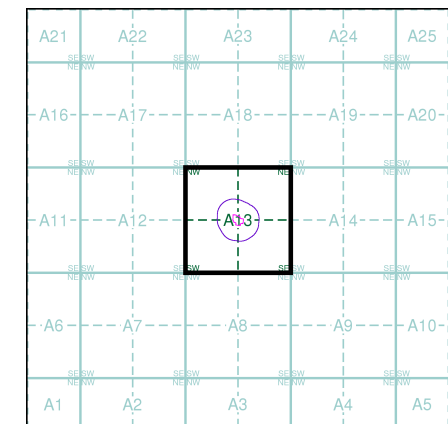
Source map scale - 1:2,500

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

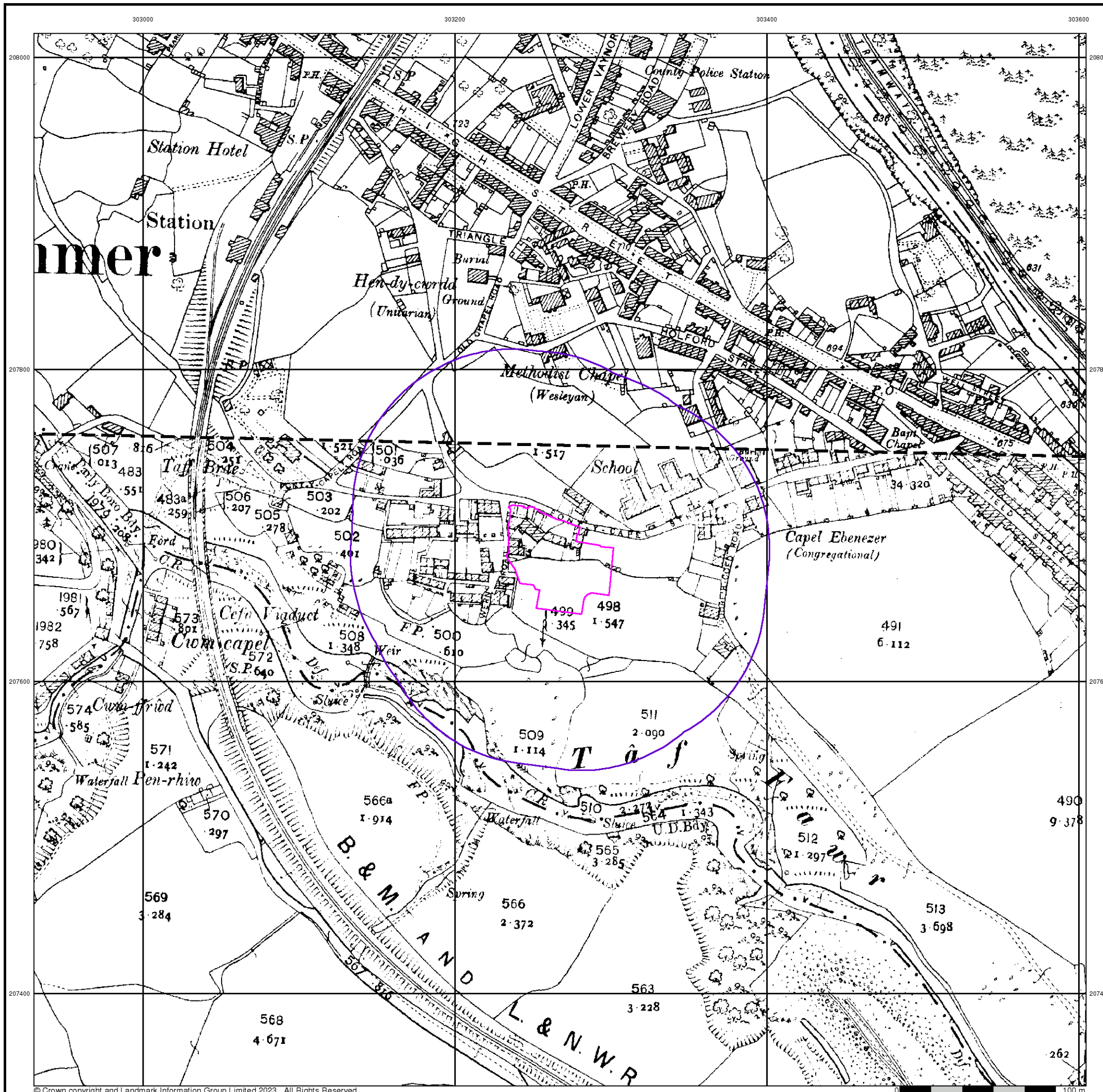


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 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil





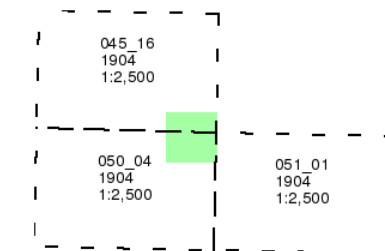
## Brecknockshire

Published 1904

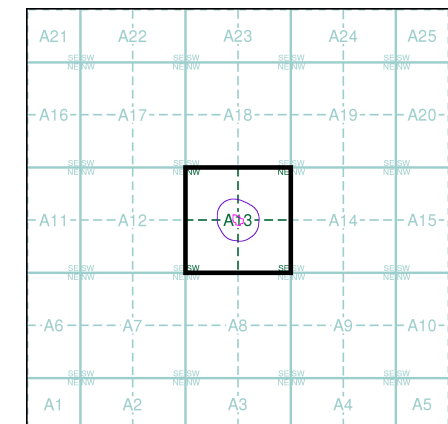
Source map scale - 1:2,500

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

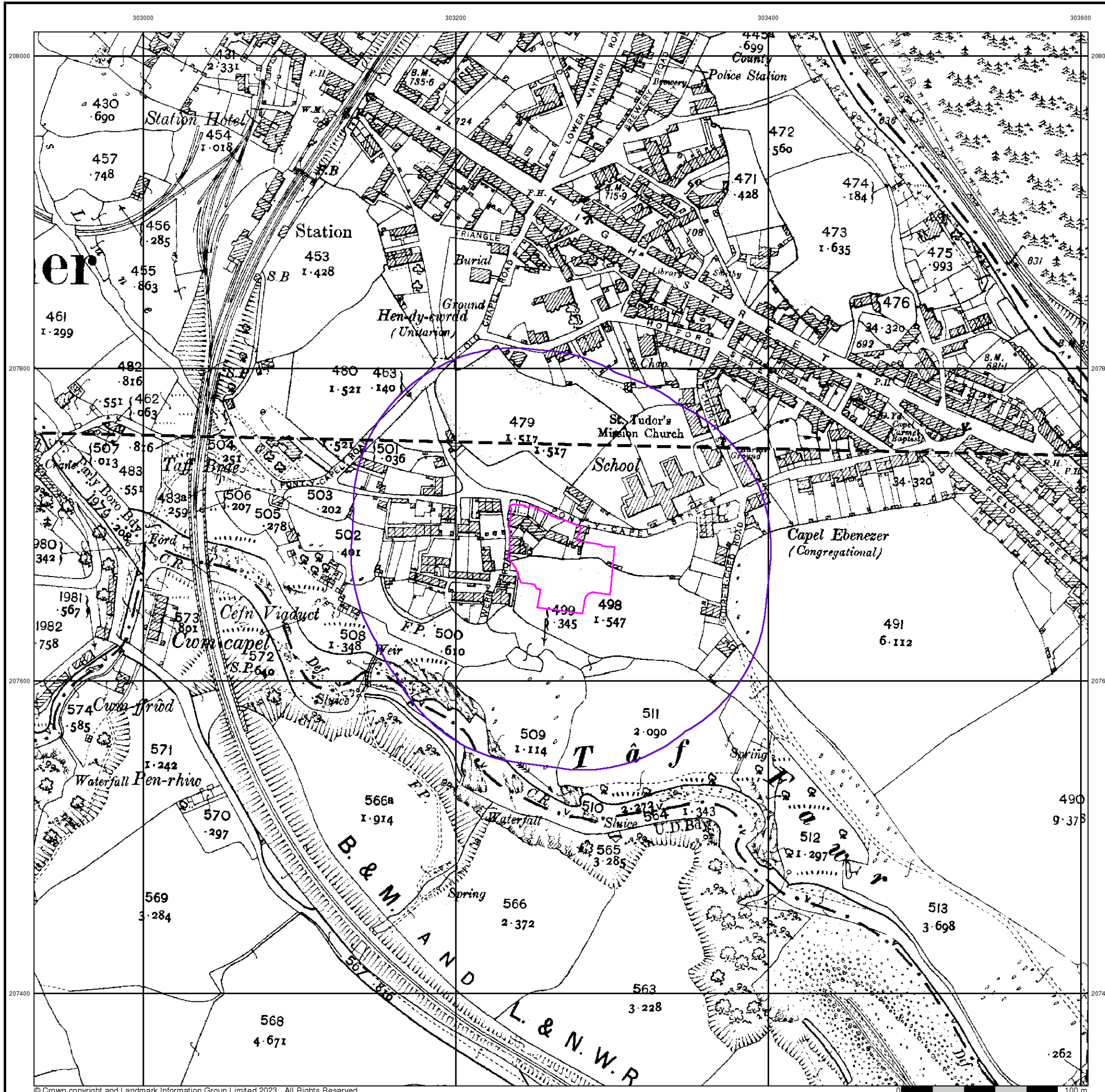


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil





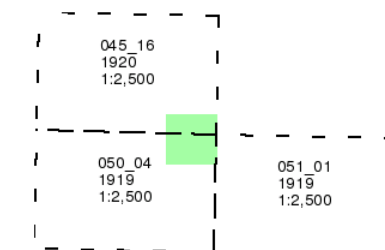
## Brecknockshire

Published 1919 - 1920

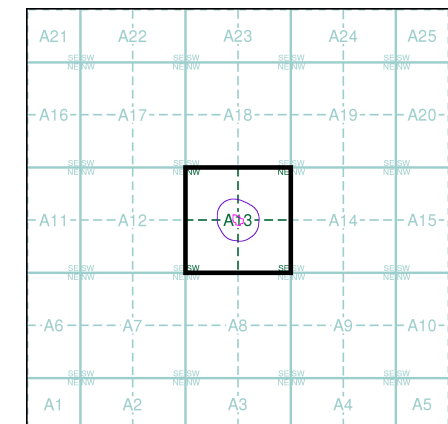
Source map scale - 1:2,500

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

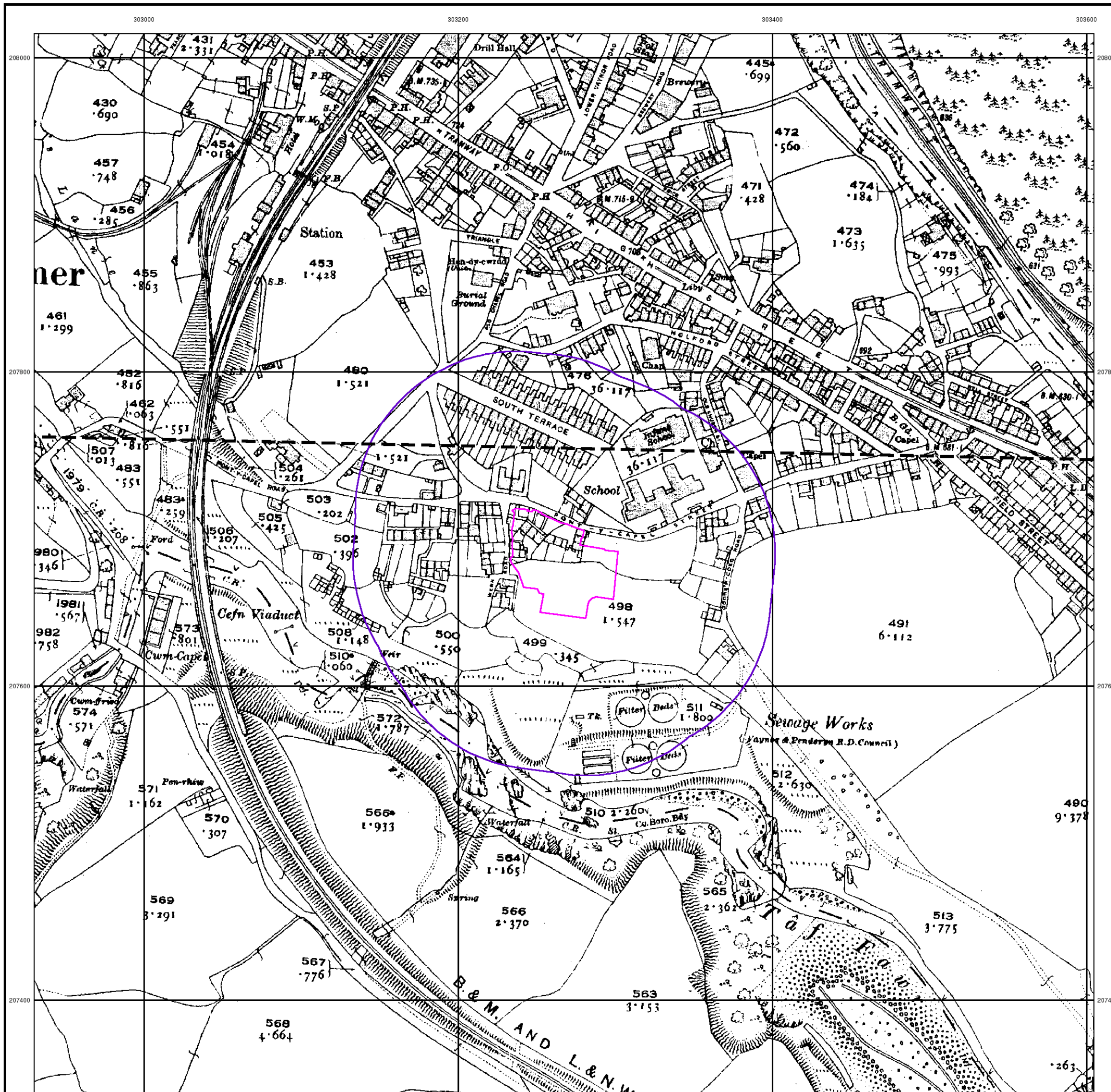


### Order Details

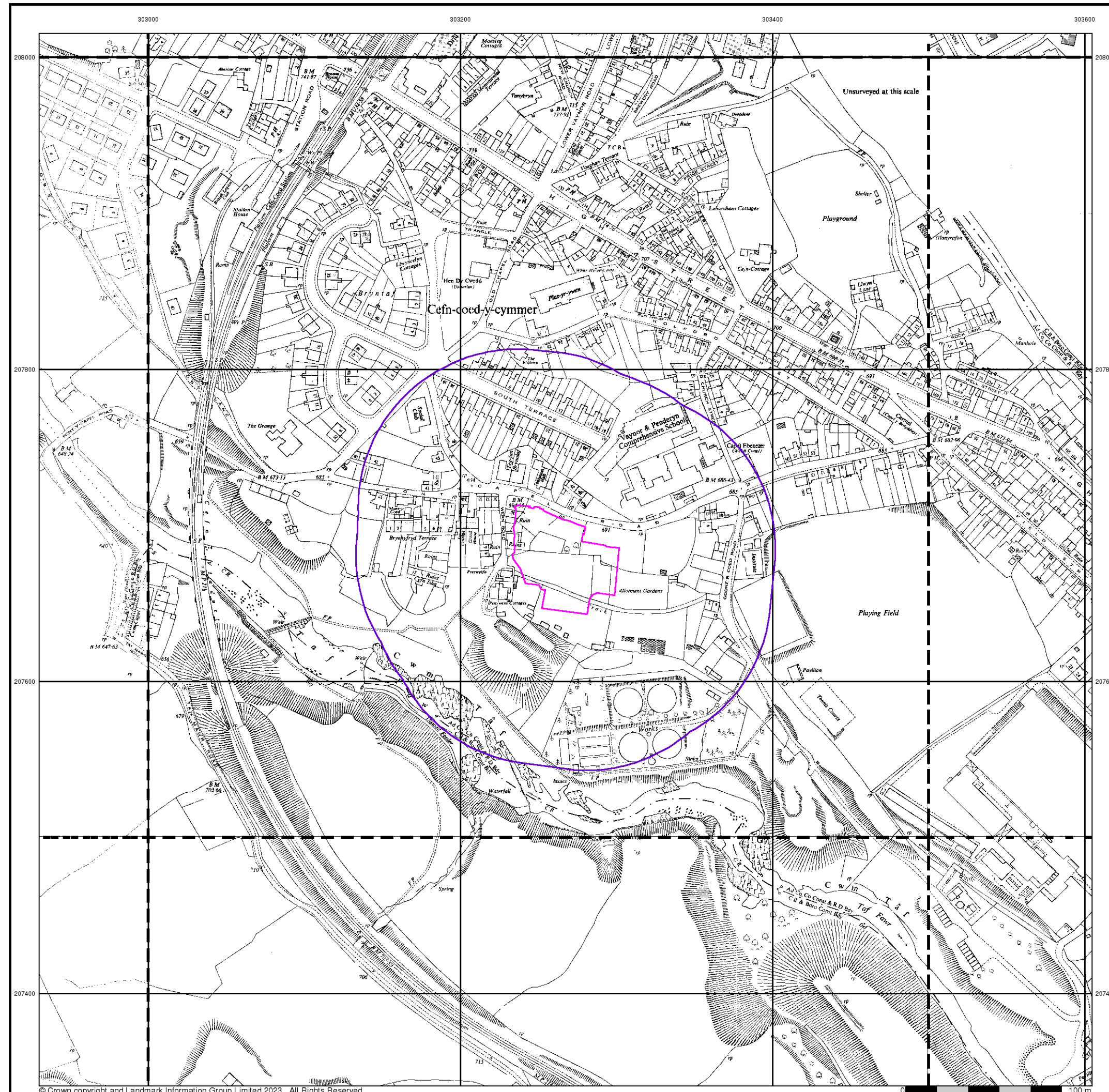
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil







## Ordnance Survey Plan

Published 1956 - 1980

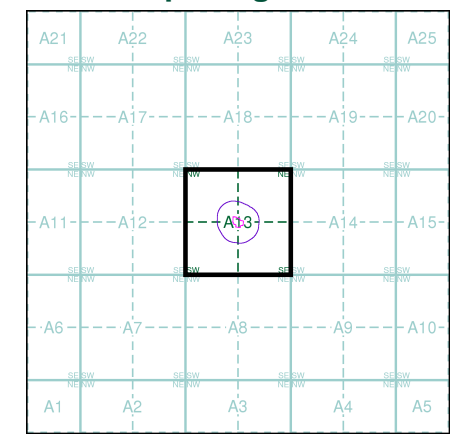
Source map scale - 1:1,250

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)

SO0208SE	SO0308SW	SO0308SE
1961	1961	1980
1:1,250	1:1,250	1:1,250
SO0207NE	SO0307NW	SO0307NE
1956	1958	1958
1:1,250	1:1,250	1:1,250
SO0207SE	SO0307SW	SO0307SE
1956	1958	1958
1:1,250	1:1,250	1:1,250

### Historical Map - Segment A13



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil



## Ordnance Survey Plan

Published 1963 - 1986

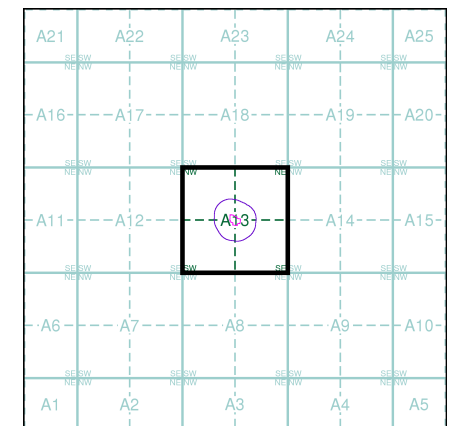
Source map scale - 1:1,250

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)

SO0208SE	SO0308SW	
1986	1977	
1:1,250	1:1,250	
SO0207NE	SO0307NW	SO0307NE
1977	1963	1963
1:1,250	1:1,250	1:1,250
SO0207SE	SO0307SW	SO0307SE
1984	1963	1963
1:1,250	1:1,250	1:1,250

### Historical Map - Segment A13

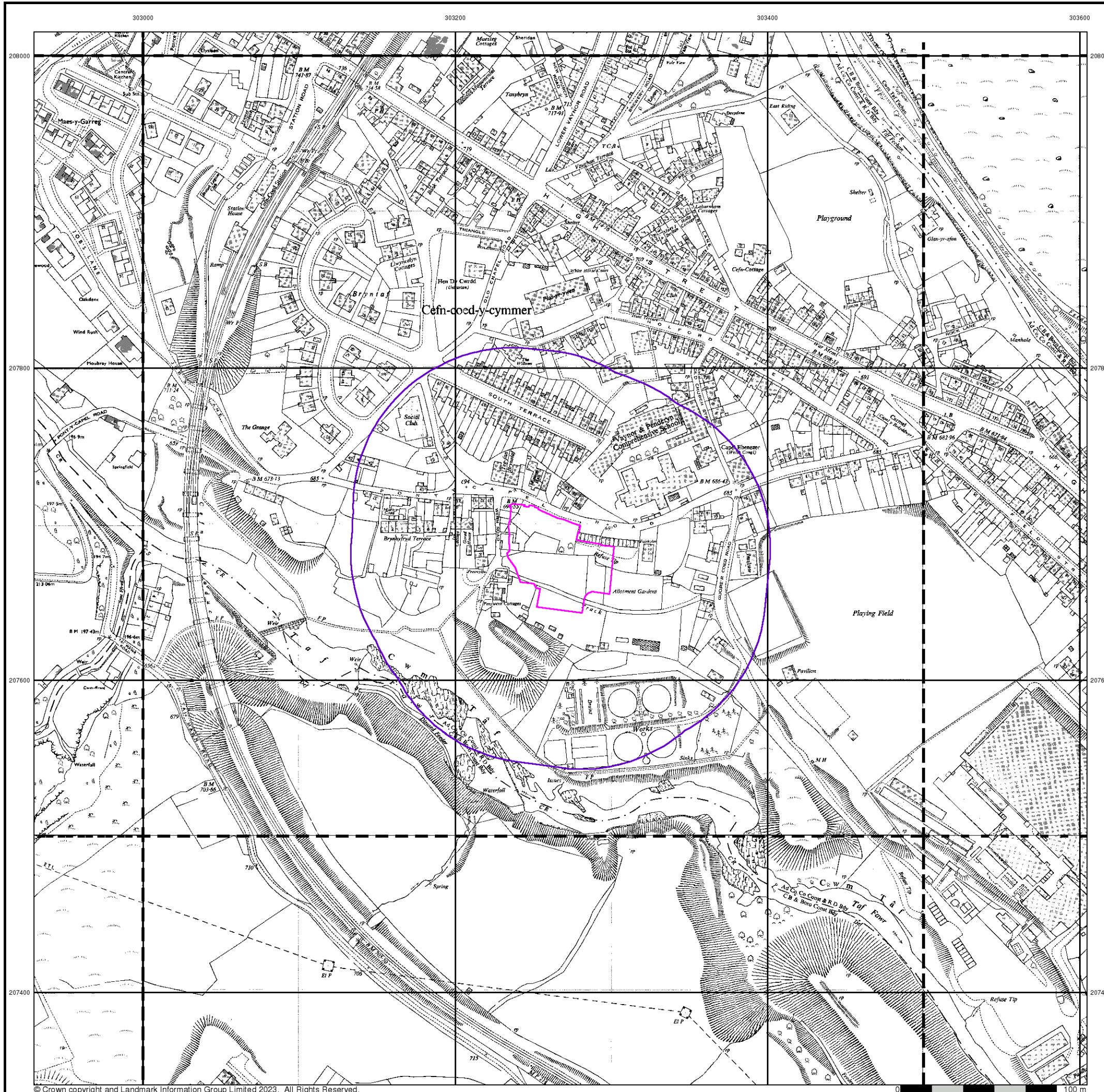


### Order Details

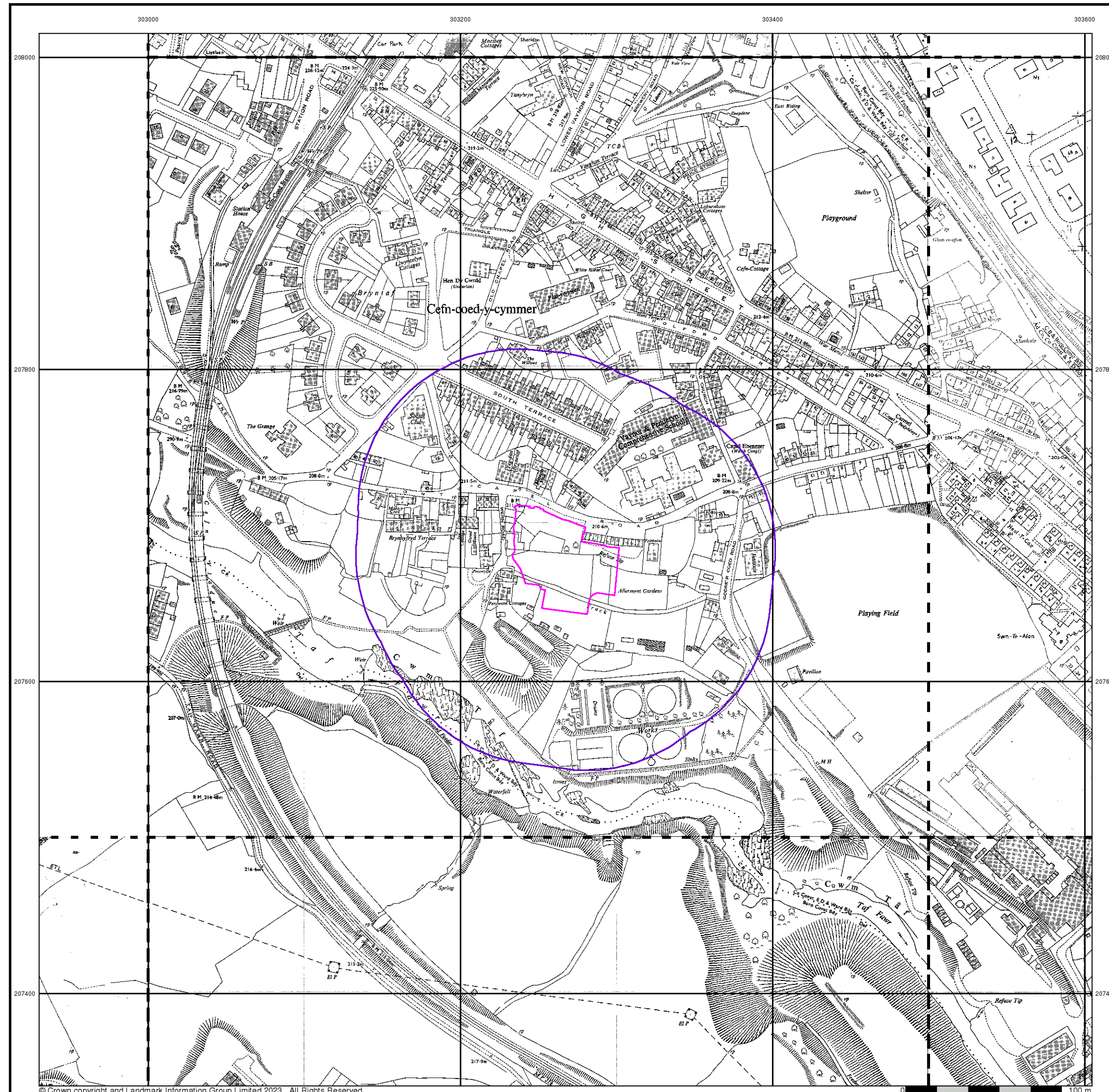
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil







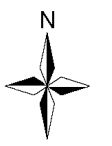
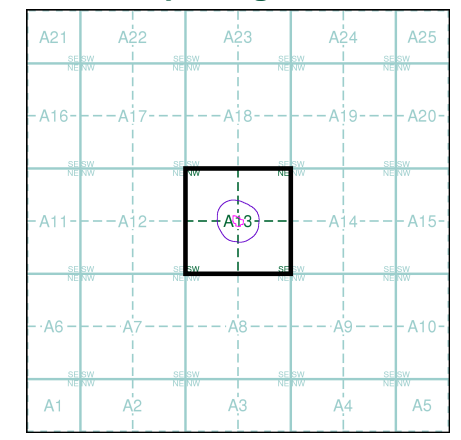
**Additional SIMs**  
**Published 1963 - 1990**  
**Source map scale - 1:1,250**

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)**

SO0308SW	1990	1:1,250
SO0307NW	1963	1:1,250
SO0307NE	1977	1:1,250
SO0207SE	1982	1:1,250
SO0307SW	1963	1:1,250
SO0307SE	1963	1:1,250

**Historical Map - Segment A13**



**Order Details**  
 Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

**Site Details**  
 Cefn Isaf, Merthyr Tydfil



## Ordnance Survey Plan

Published 1964

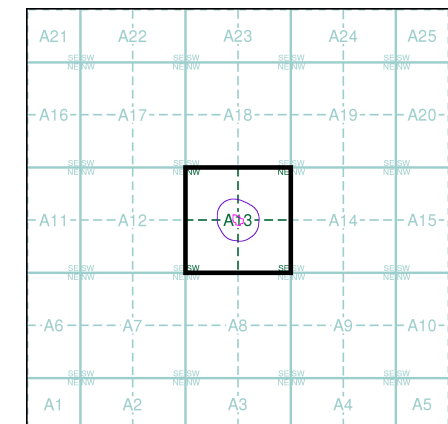
Source map scale - 1:2,500

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)

SO0208 1964 1:2,500	SO0308 1964 1:2,500
SO0207 1964 1:2,500	SO0307 1964 1:2,500

### Historical Map - Segment A13

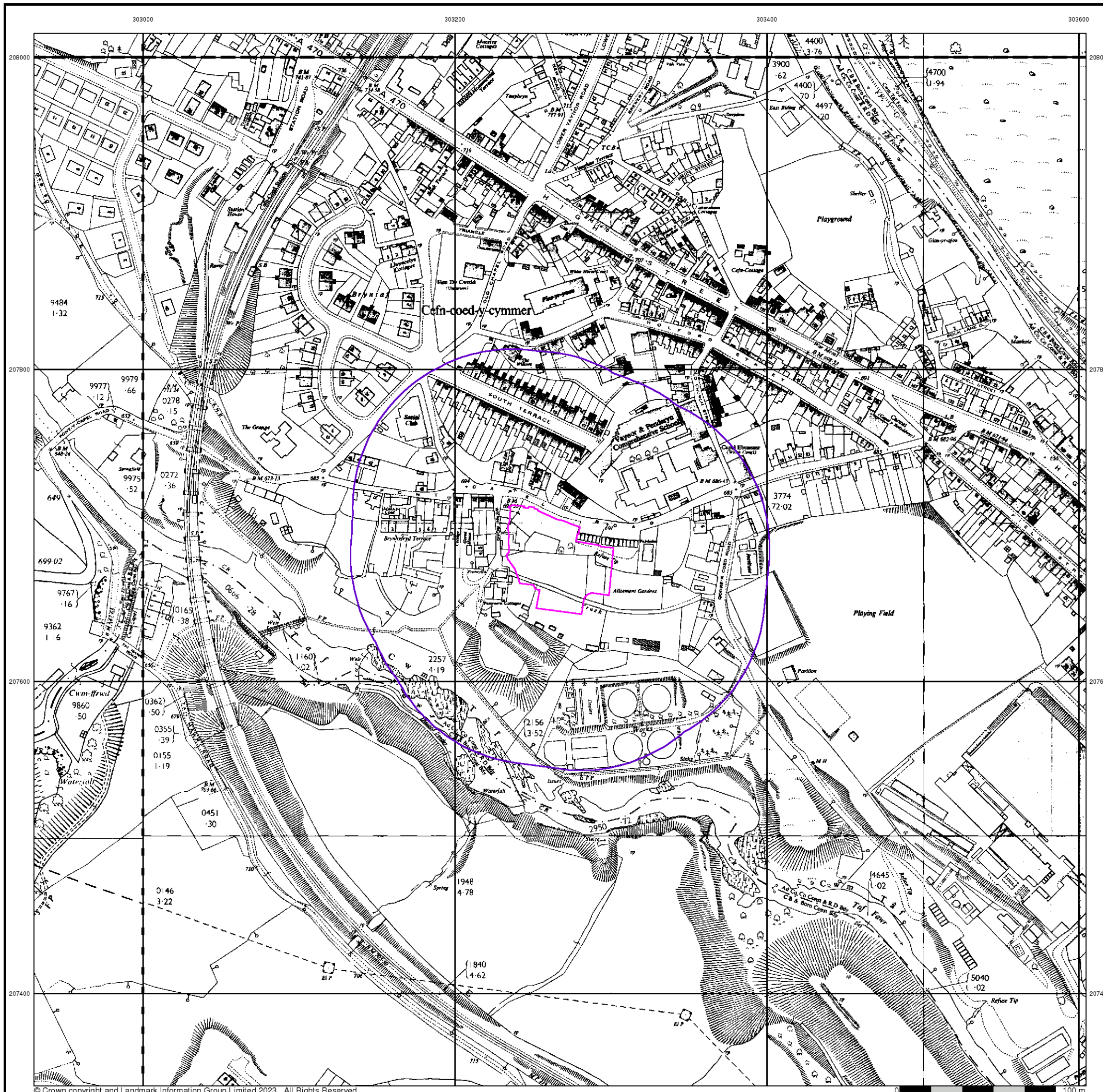


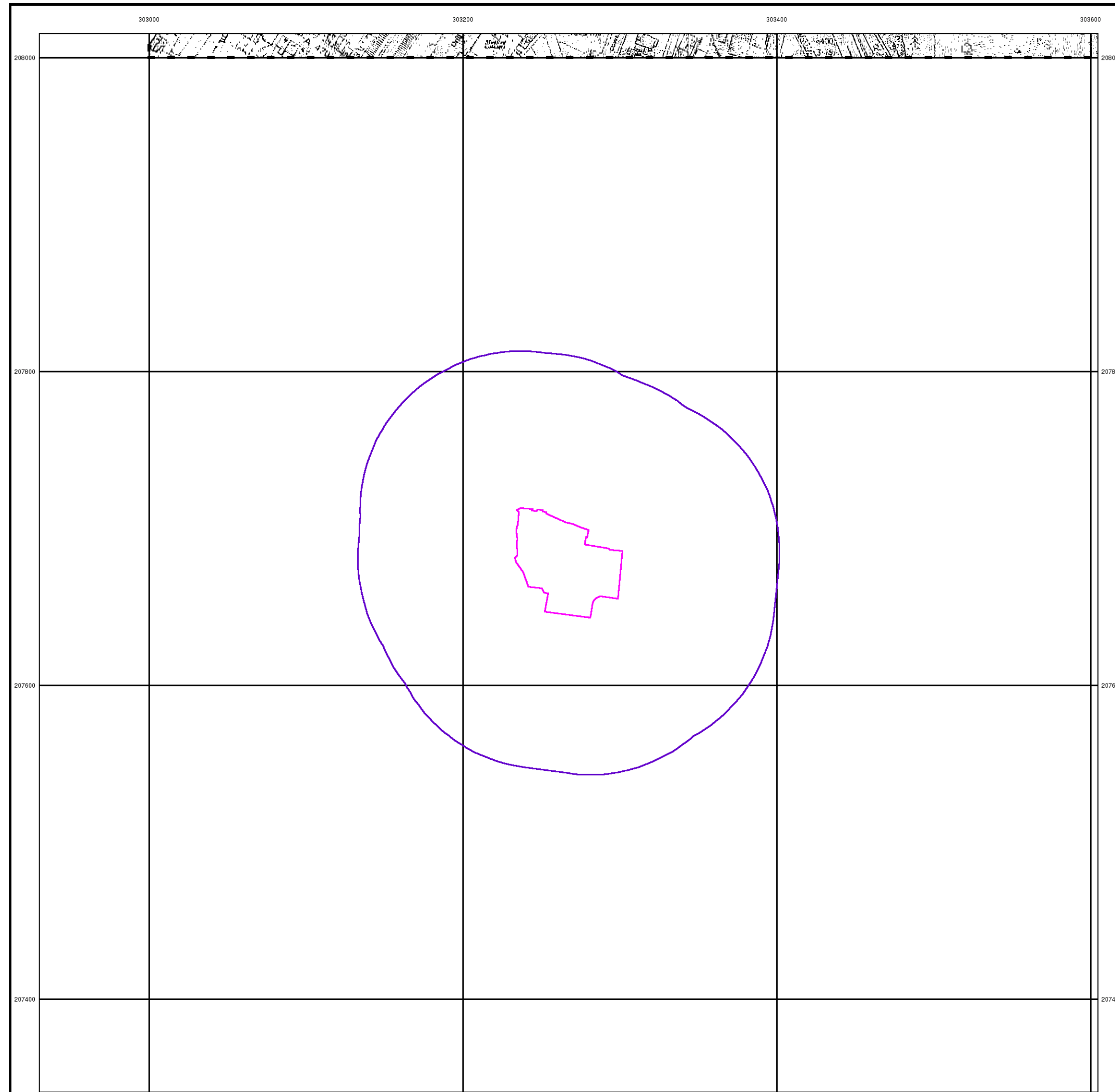
### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil





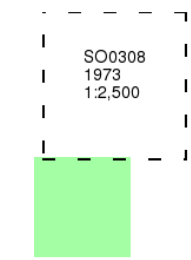
## Supply of Unpublished Survey Information

Published 1973

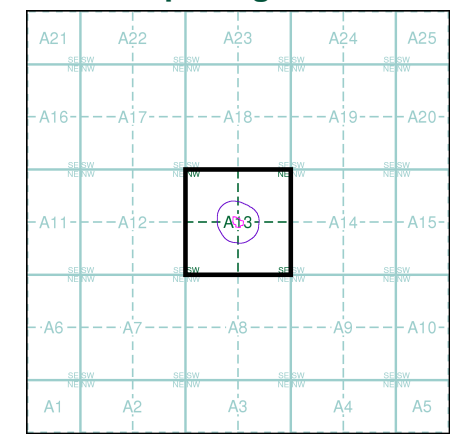
Source map scale - 1:2,500

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



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil



## Additional SIMs

Published 1979 - 1990

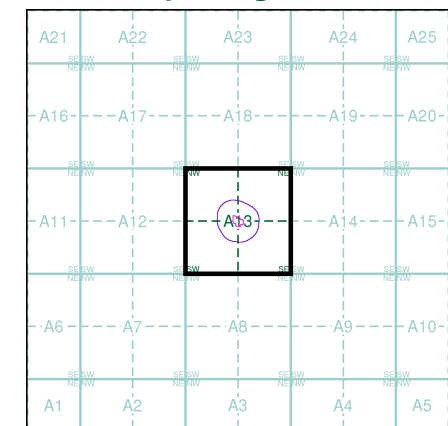
Source map scale - 1:1,250

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)

SO0307NW	SO0307NE
1979	1984
1:1,250	1:1,250
SO0307SW	SO0307SE
1990	1989
1:1,250	1:1,250

## Historical Map - Segment A13



## Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

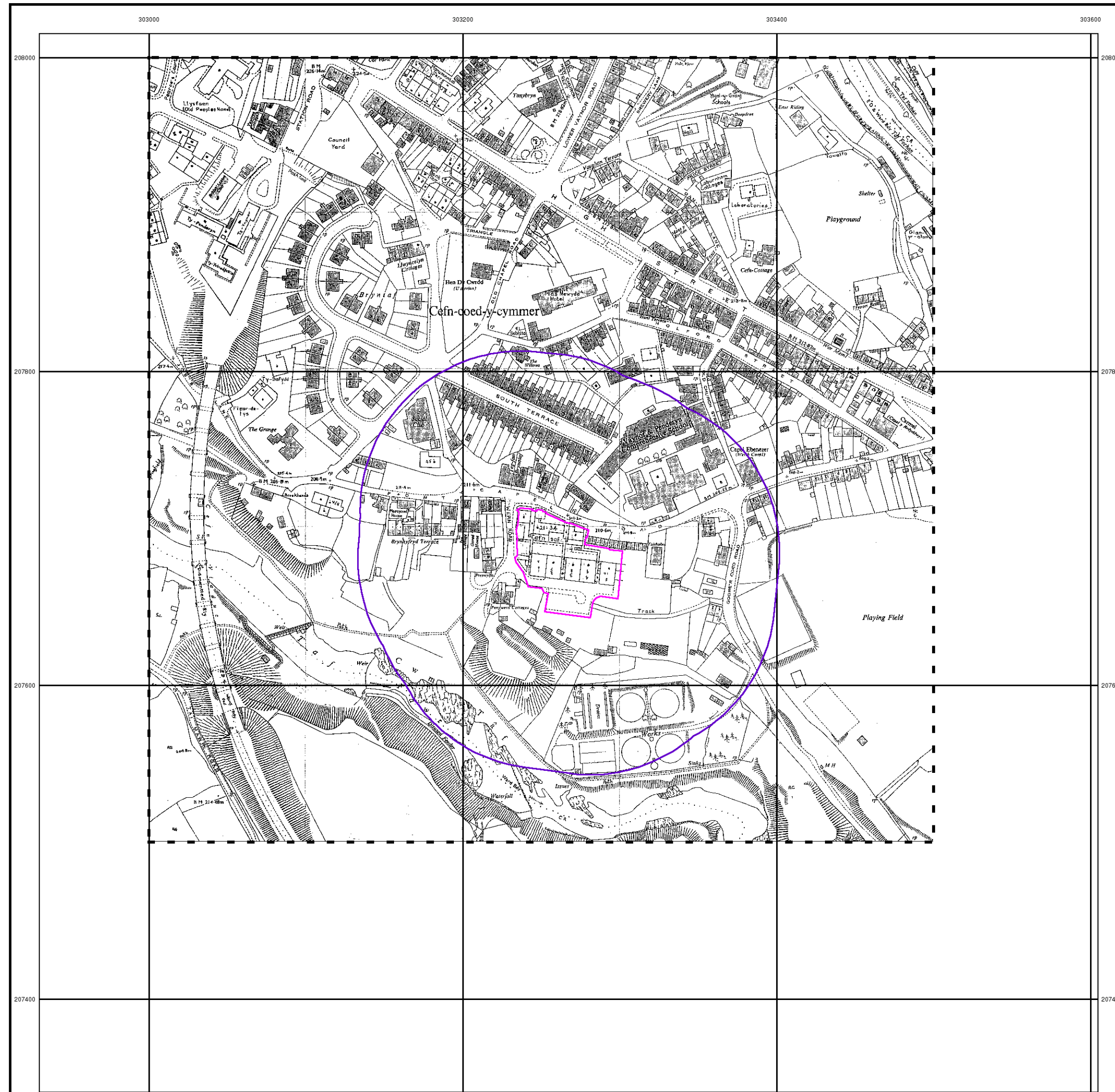
## Site Details

Cefn Isaf, Merthyr Tydfil





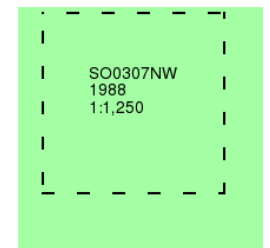




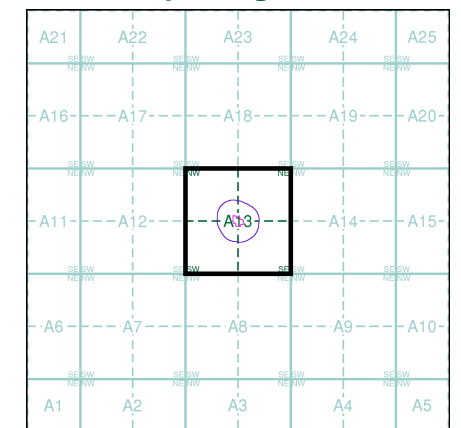
**Additional SIMs**  
**Published 1988**  
**Source map scale - 1:1,250**

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)**

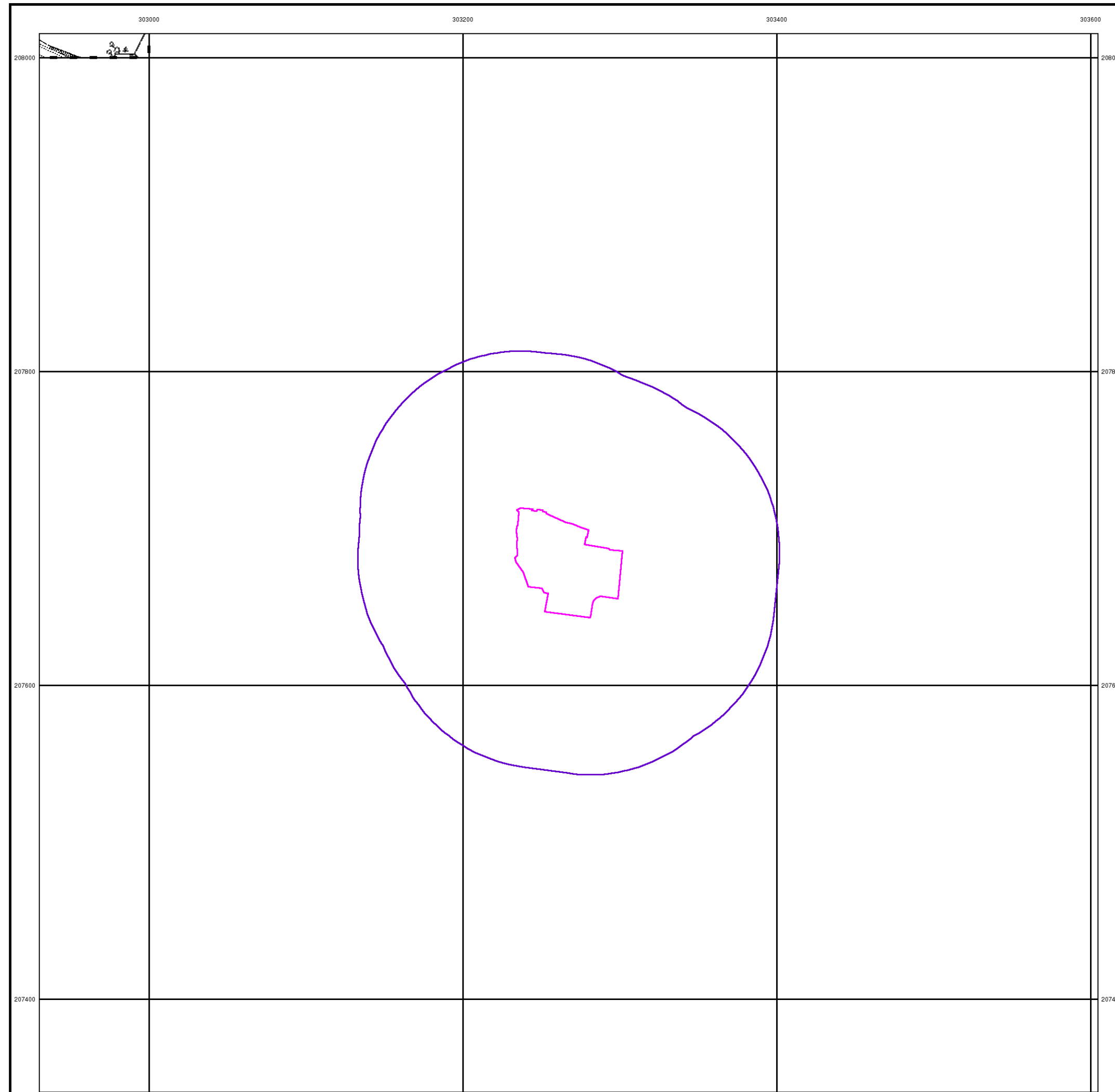


**Historical Map - Segment A13**



**Order Details**  
 Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

**Site Details**  
 Cefn Isaf, Merthyr Tydfil



## Additional SIMs

Published 1990

Source map scale - 1:2,500

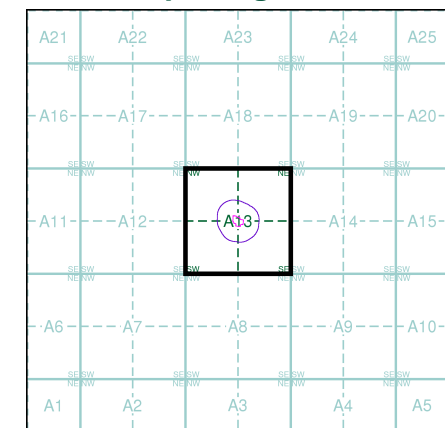
The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)

SO0208  
1990  
1:2,500



## Historical Map - Segment A13



## Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

## Site Details

Cefn Isaf, Merthyr Tydfil



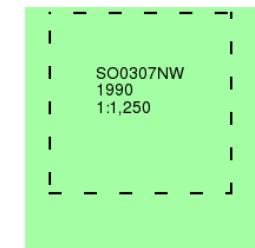
## Additional SIMs

Published 1990

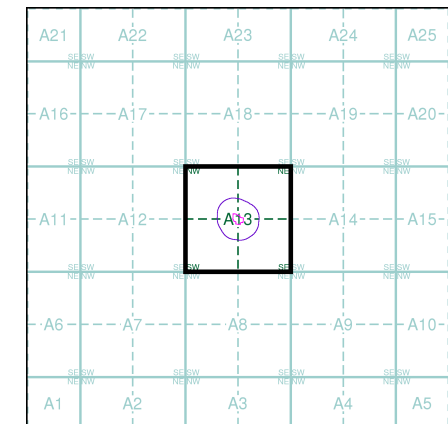
Source map scale - 1:1,250

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

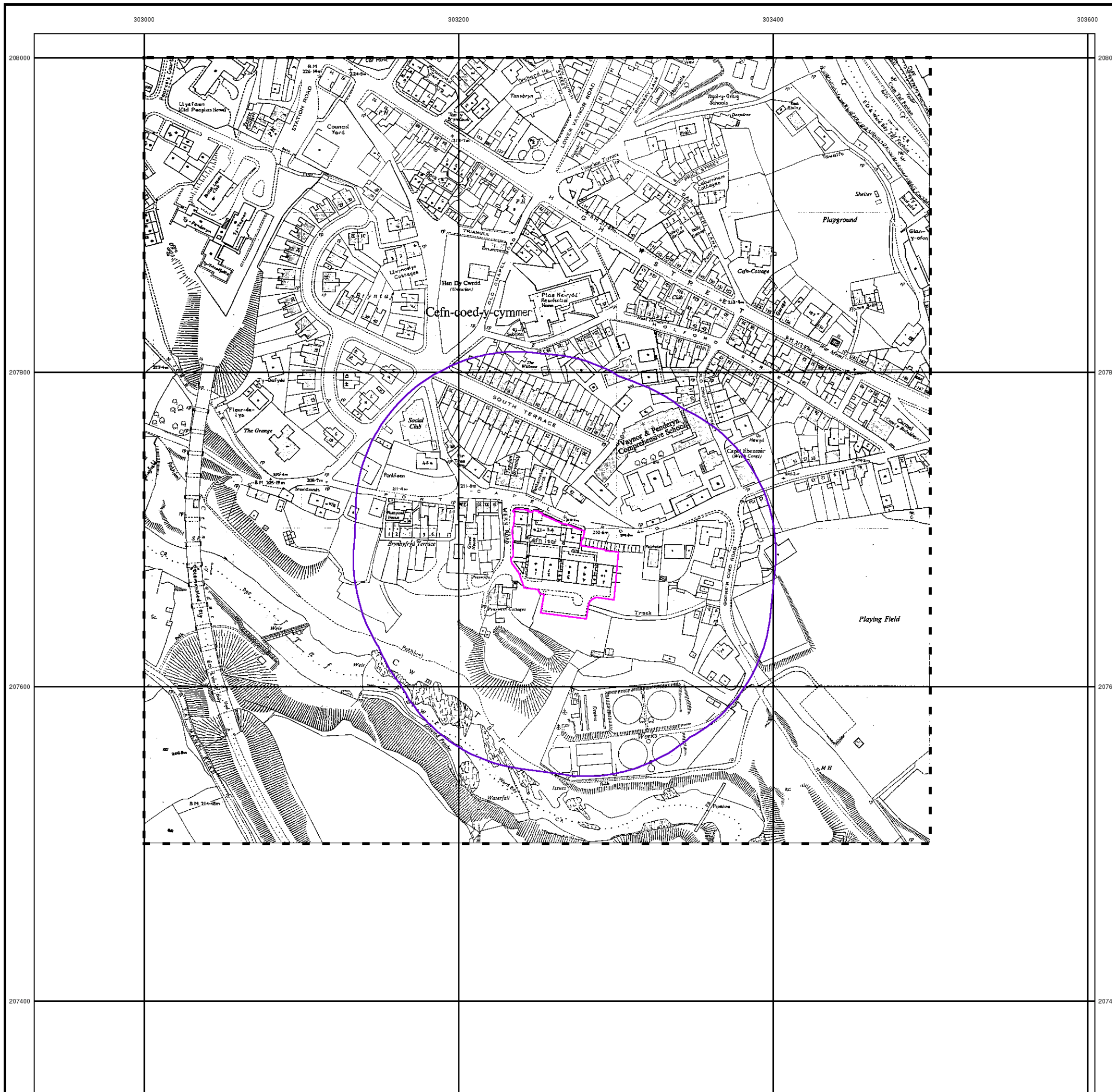


## Order Details

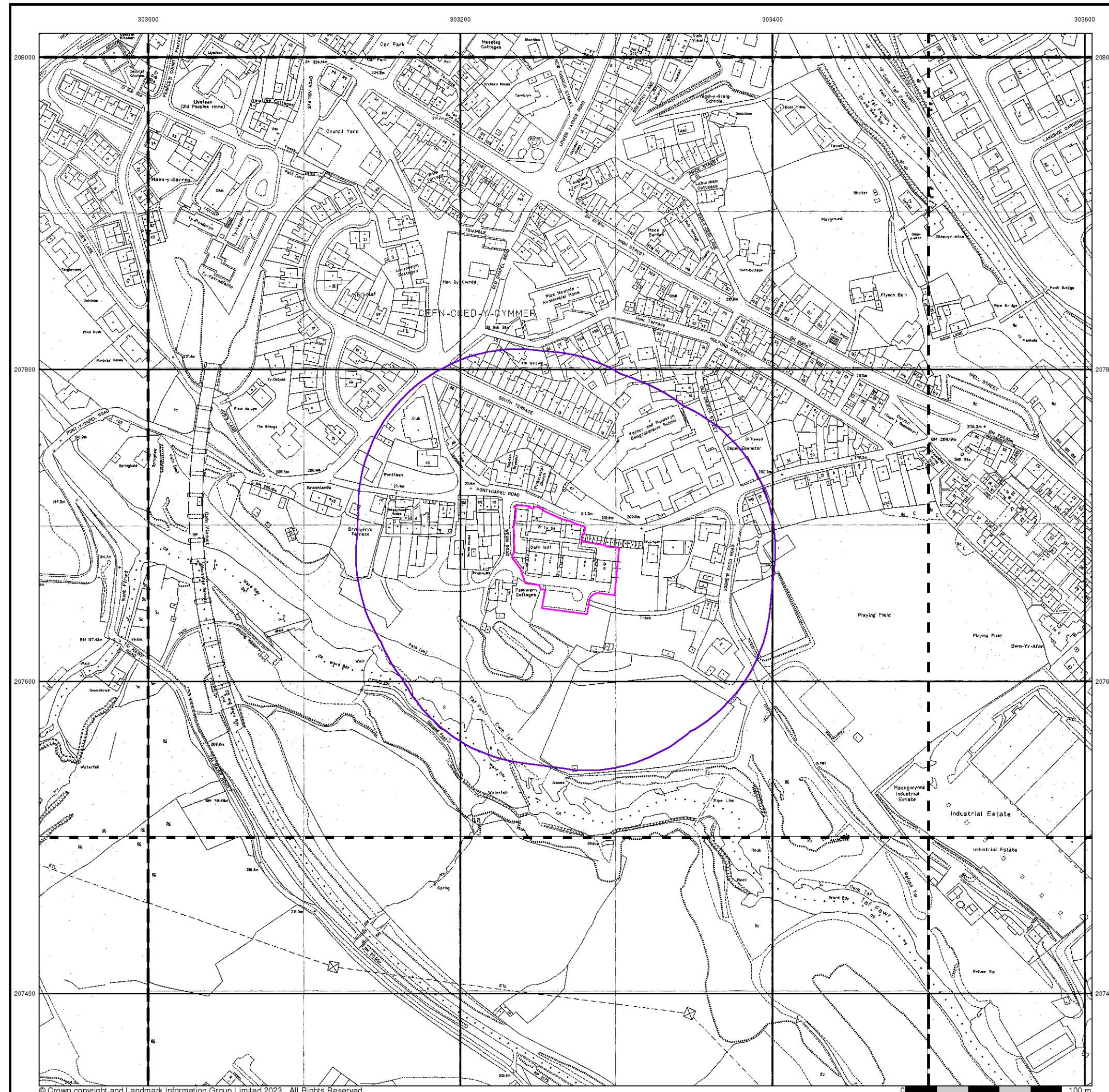
Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

## Site Details

Cefn Isaf, Merthyr Tydfil







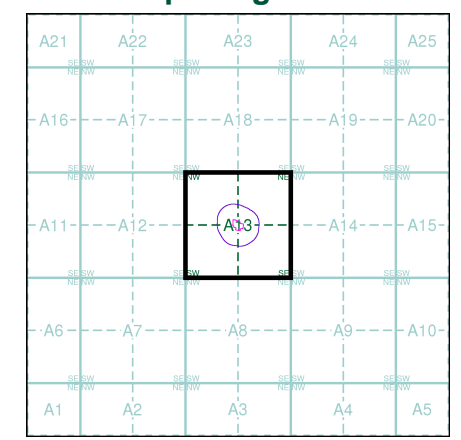
## Large-Scale National Grid Data Published 1993 Source map scale - 1:1,250

'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)

500208SE	500308SW	500308SE
1993	1993	1993
1:1,250	1:1,250	1:1,250
500207NE	500307NW	500307NE
1993	1993	1993
1:1,250	1:1,250	1:1,250
500207SE	500307SW	500307SE
1993	1993	1993
1:1,250	1:1,250	1:1,250

### Historical Map - Segment A13



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

### Site Details

Cefn Isaf, Merthyr Tydfil



303000

303200

303400

303600

208000

208000

207800

207800

207600

207600

207400

207400



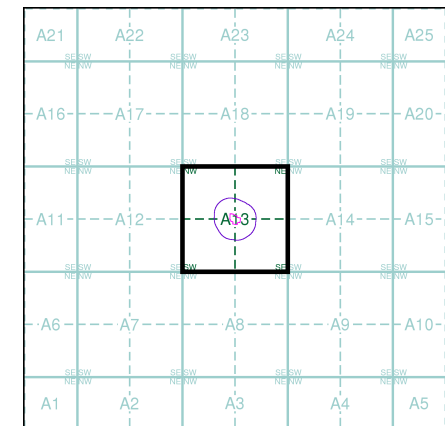
**soiltechnics**  
 environmental • geotechnical • building fabric

**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**



**Order Details**

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 100

**Site Details**

Cefn Isaf, Merthyr Tydfil

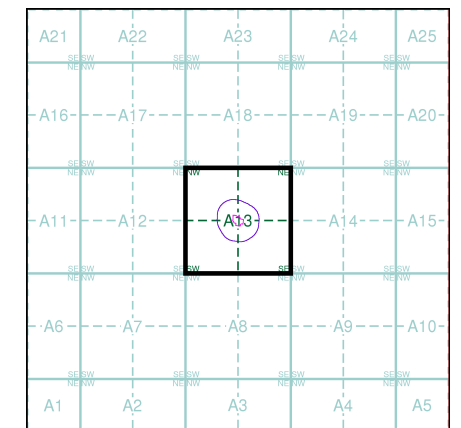
**Landmark**  
 INFORMATION GROUP

Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk



- 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 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
- 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 (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
- Hazardous Substances**
- COMAH Site
  - Explosive Site
  - NIHHS Site
  - Planning Hazardous Substance Consent
  - Planning Hazardous Substance Enforcement
- Geological**
- BGS Recorded Mineral Site

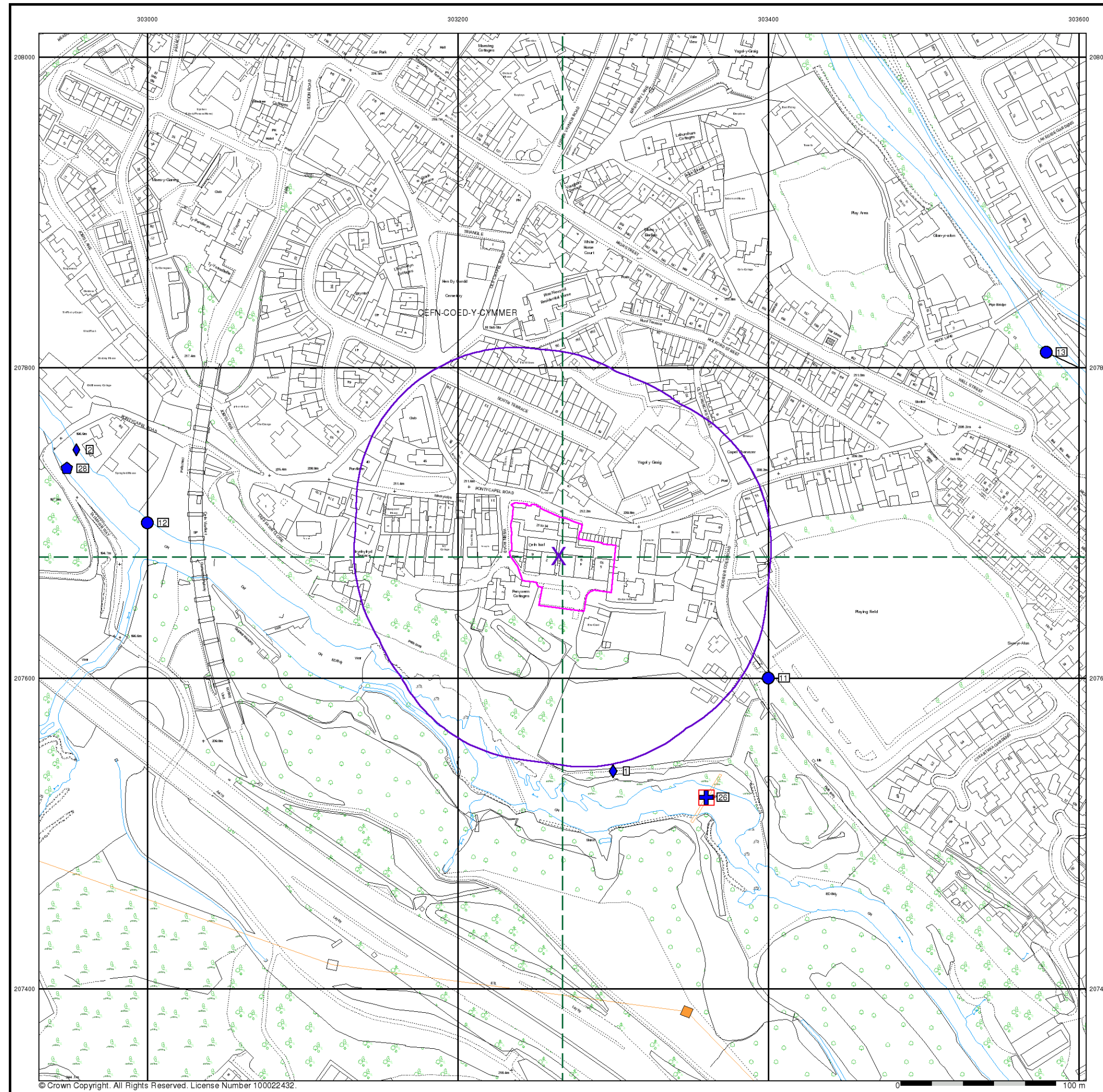
## Site Sensitivity Map - Segment A13



**Order Details**

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Plot Buffer (m): 100

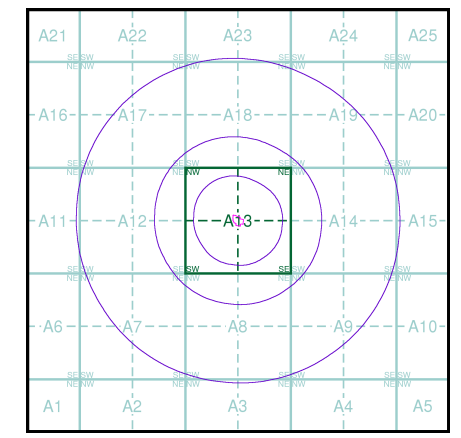
**Site Details**  
 Cefn Isaf, Merthyr Tydfil





- 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
  - 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

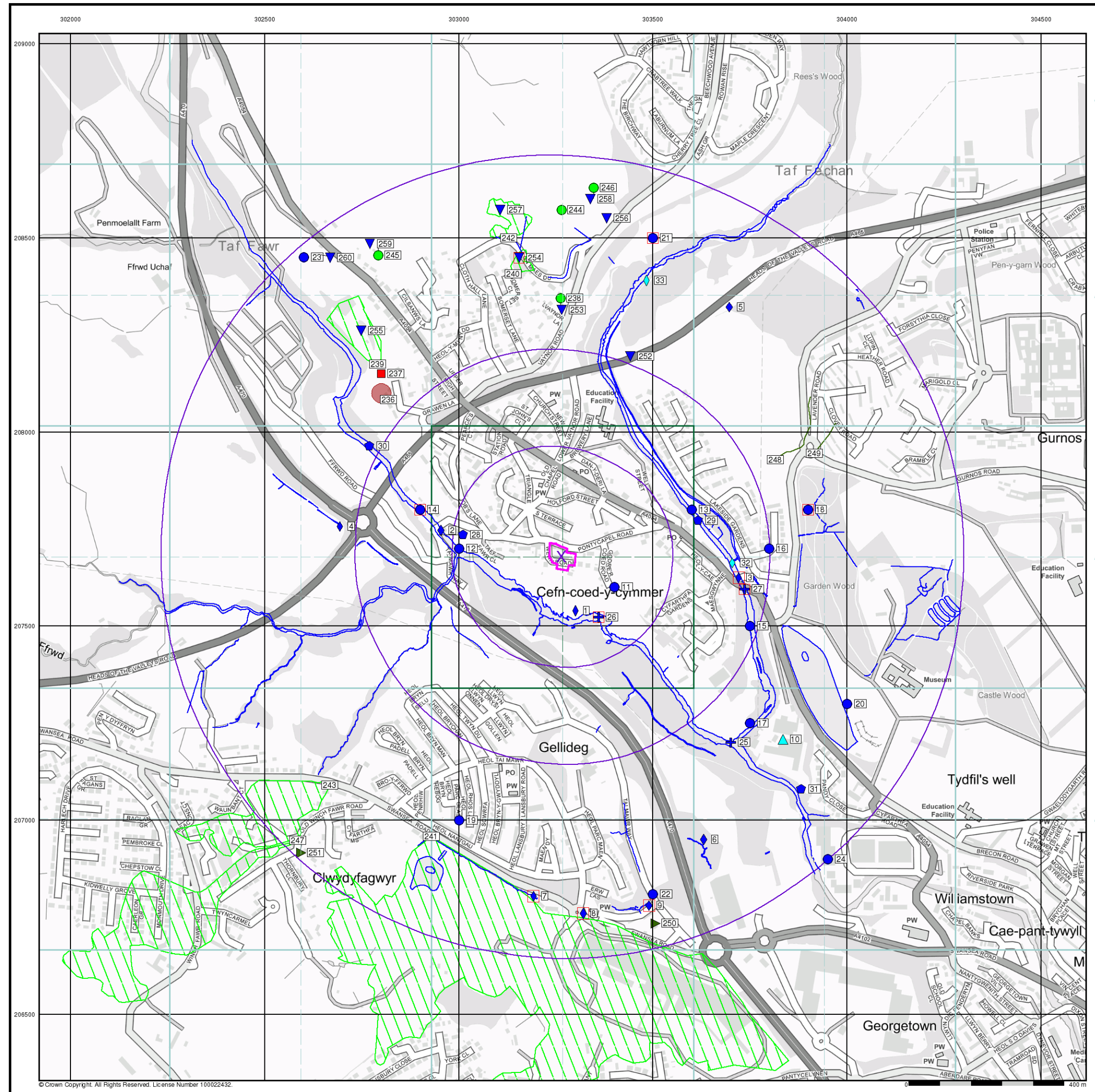
### Site Sensitivity Map - Slice A



**Order Details**

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

**Site Details**  
 Cefn Isaf, Merthyr Tydfil








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## Industrial Land Use Map

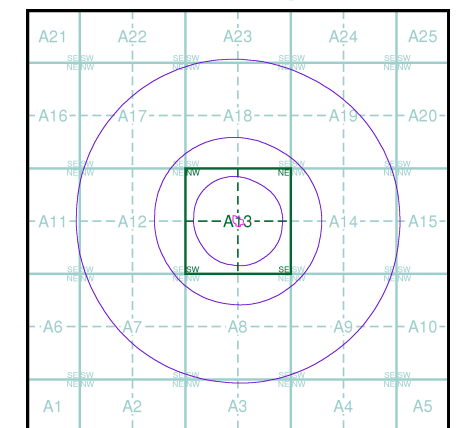
### General

-  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



### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000




### Site Details

Cefn Isaf, Merthyr Tydfil










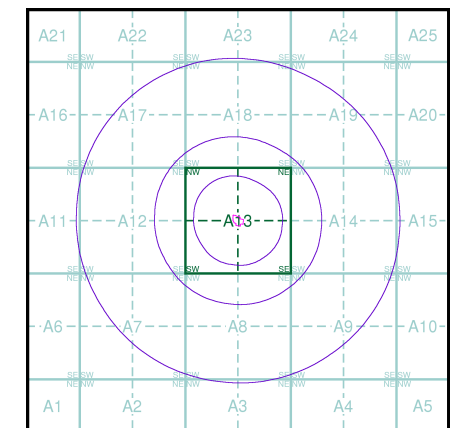
### General

-  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

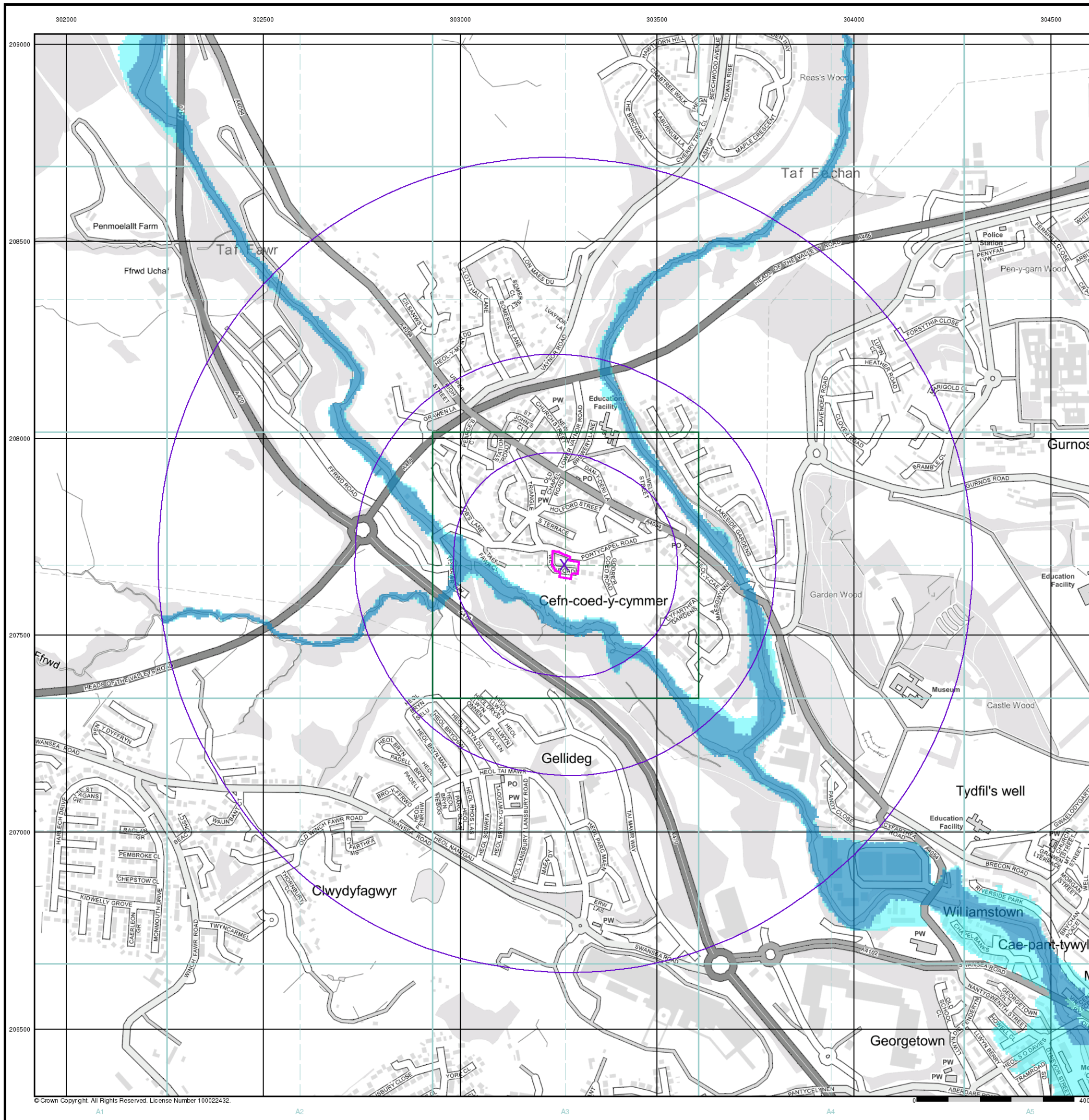


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



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### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

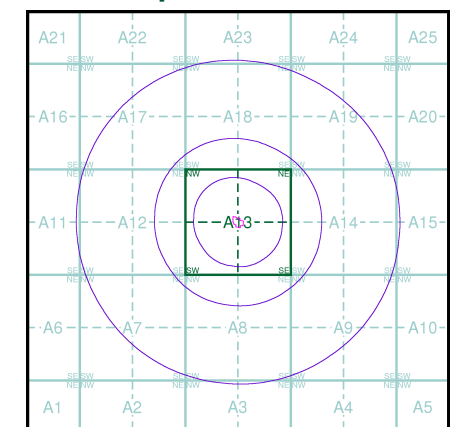
### Agency and Hydrological (Boreholes)

- 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](http://www.envirocheck.co.uk).

### Borehole Map - Slice A

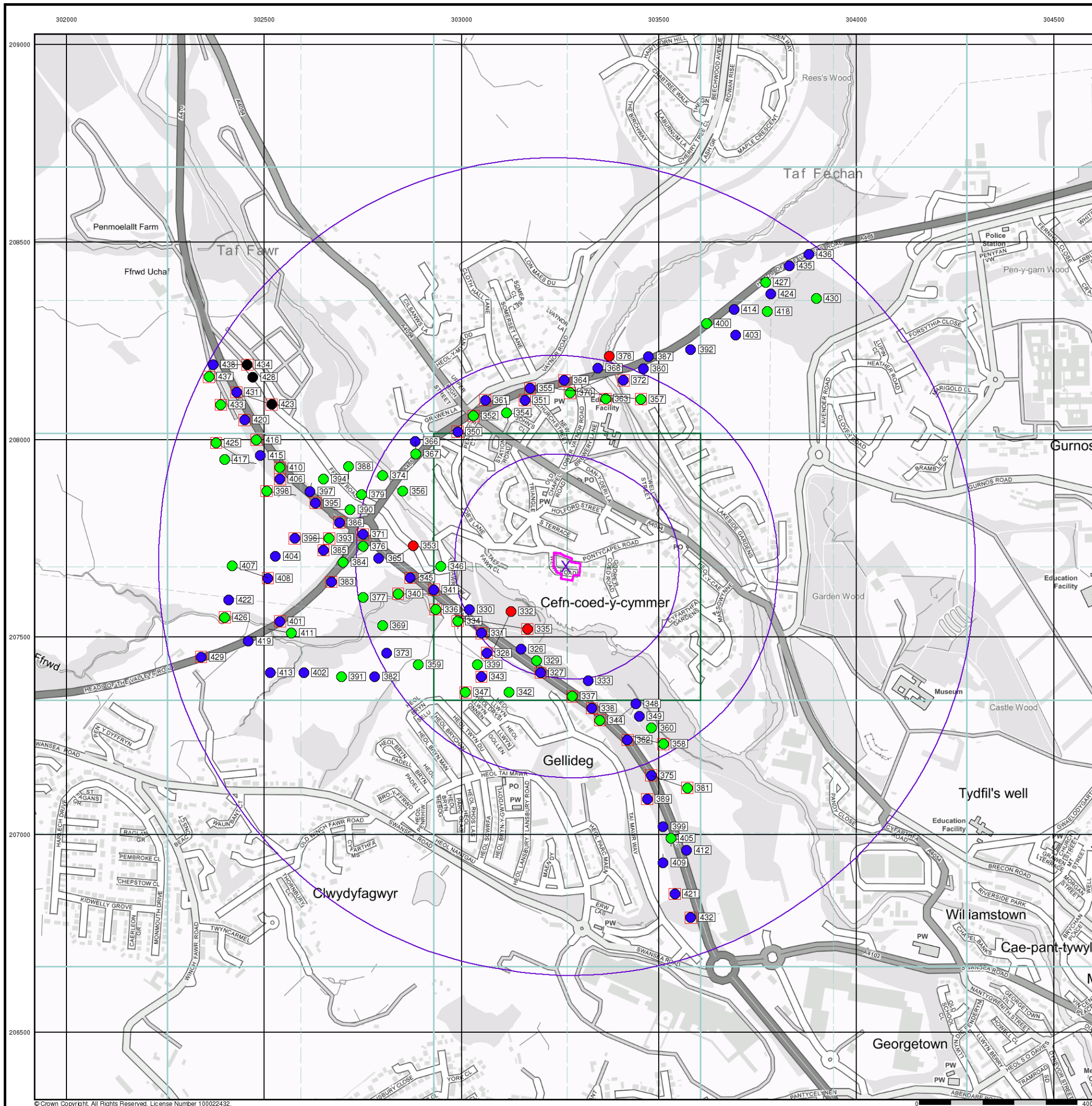


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



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### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

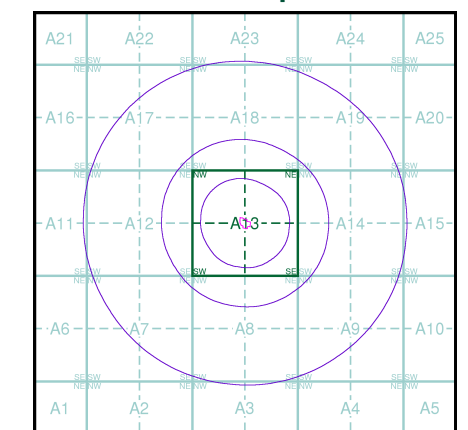
### OS Water Network Data

- |  |              |  |                         |
|--|--------------|--|-------------------------|
|  | Canal        |  | Drain                   |
|  | Reservoir    |  | Other                   |
|  | Foreshire    |  | Lake                    |
|  | Marsh        |  | Transfer                |
|  | Tidal River  |  | Lock Or Flight Of Locks |
|  | Inland River |  | Sea                     |

### Contours (height in meters)

- Standard Contour 105 Mean Low Water
- Master Contour 100 Mean High Water
- Spot Height 167.3

### OS Water Network Map - Slice A

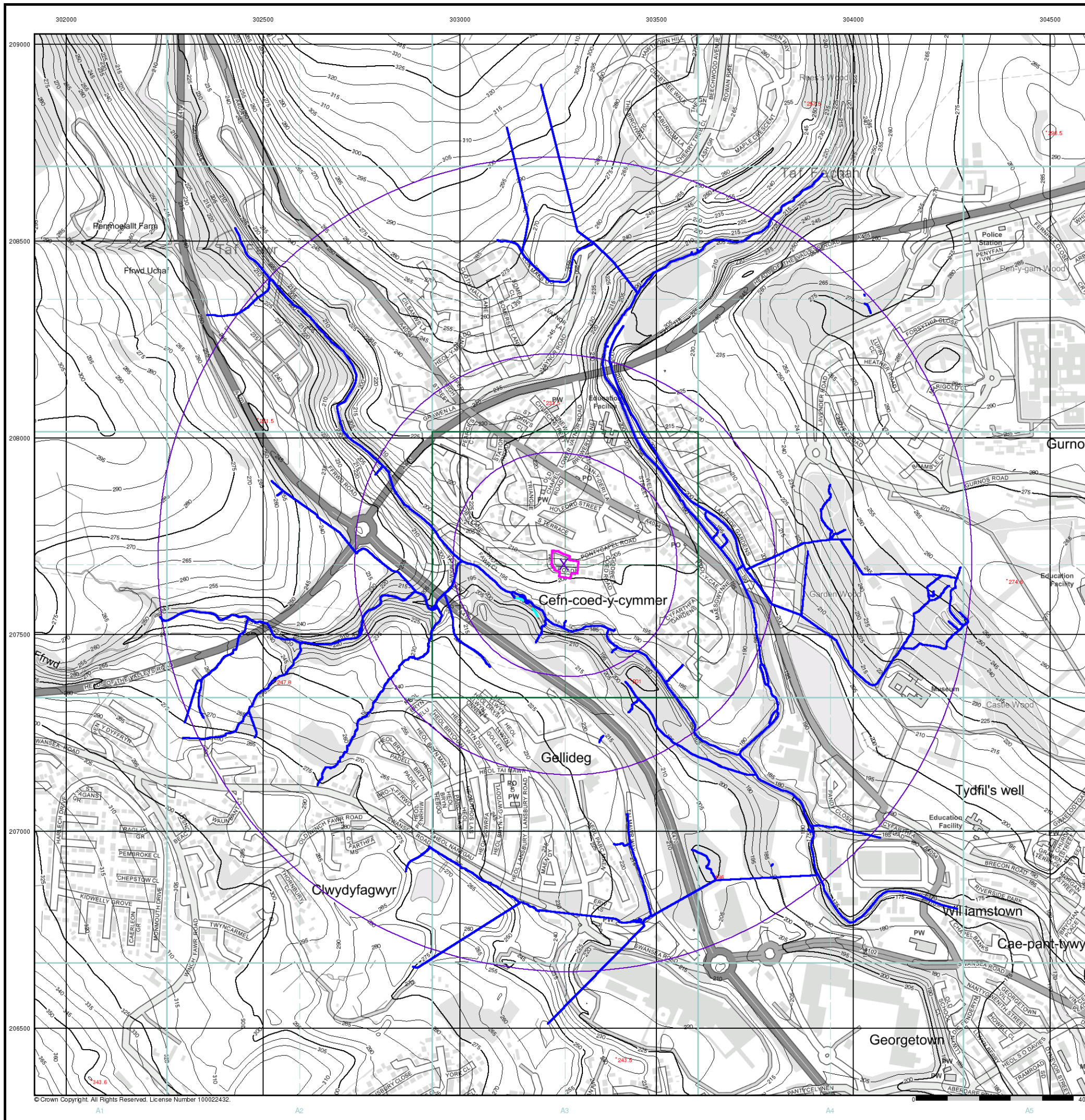


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details




Cefn Isaf, Merthyr Tydfil



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### General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

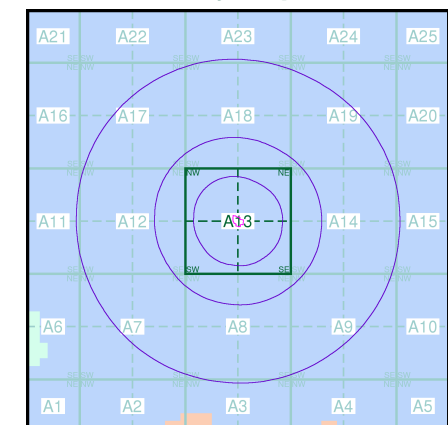
### Risk of Flooding from Surface Water

-  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

### EANRW Suitability Map - Slice A

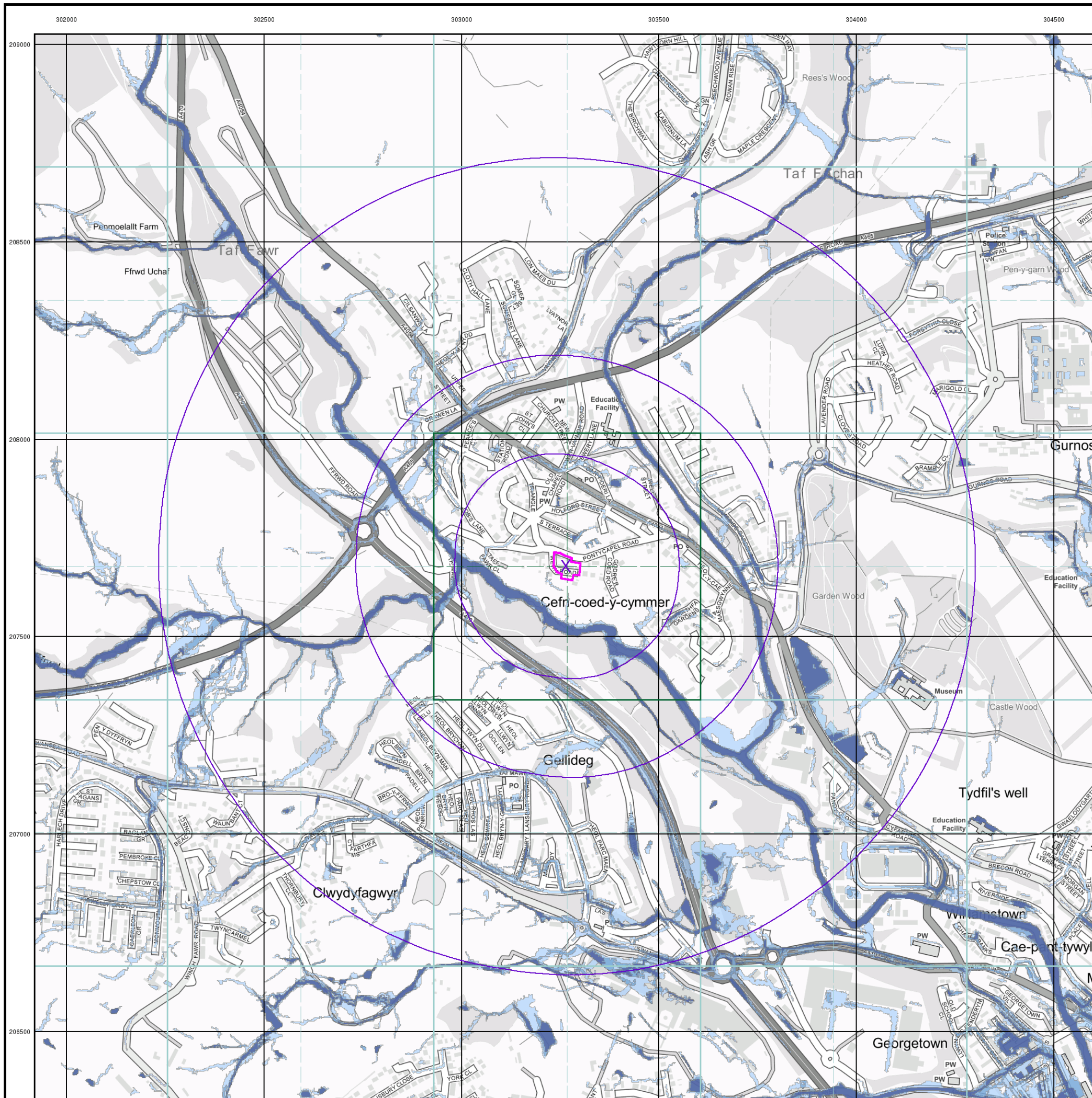


### Order Details

Order Number: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

Cefn Isaf, Merthyr Tydfil



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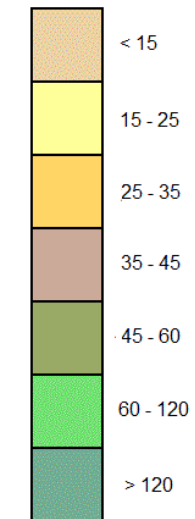


### General

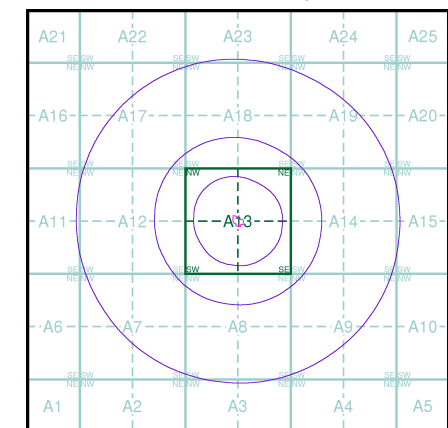
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

### Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



### Estimated Soil Chemistry Arsenic - Slice A

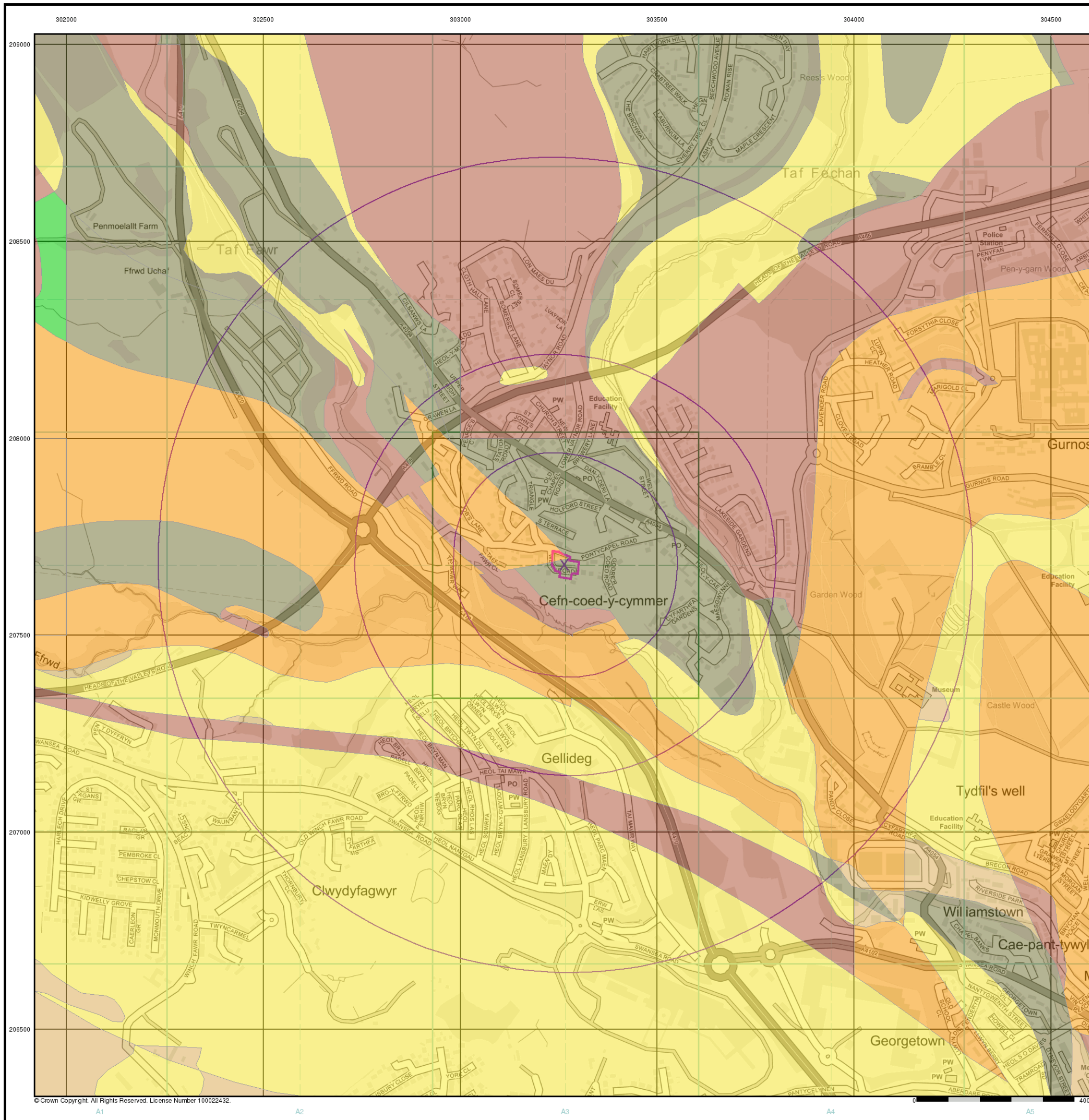


### Order Details

Order Details: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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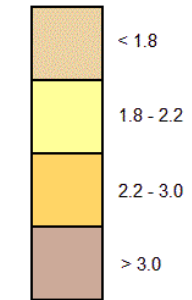


### General

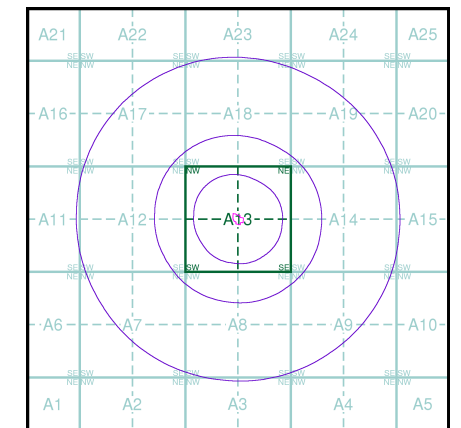
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

### Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



### Estimated Soil Chemistry Cadmium - Slice A

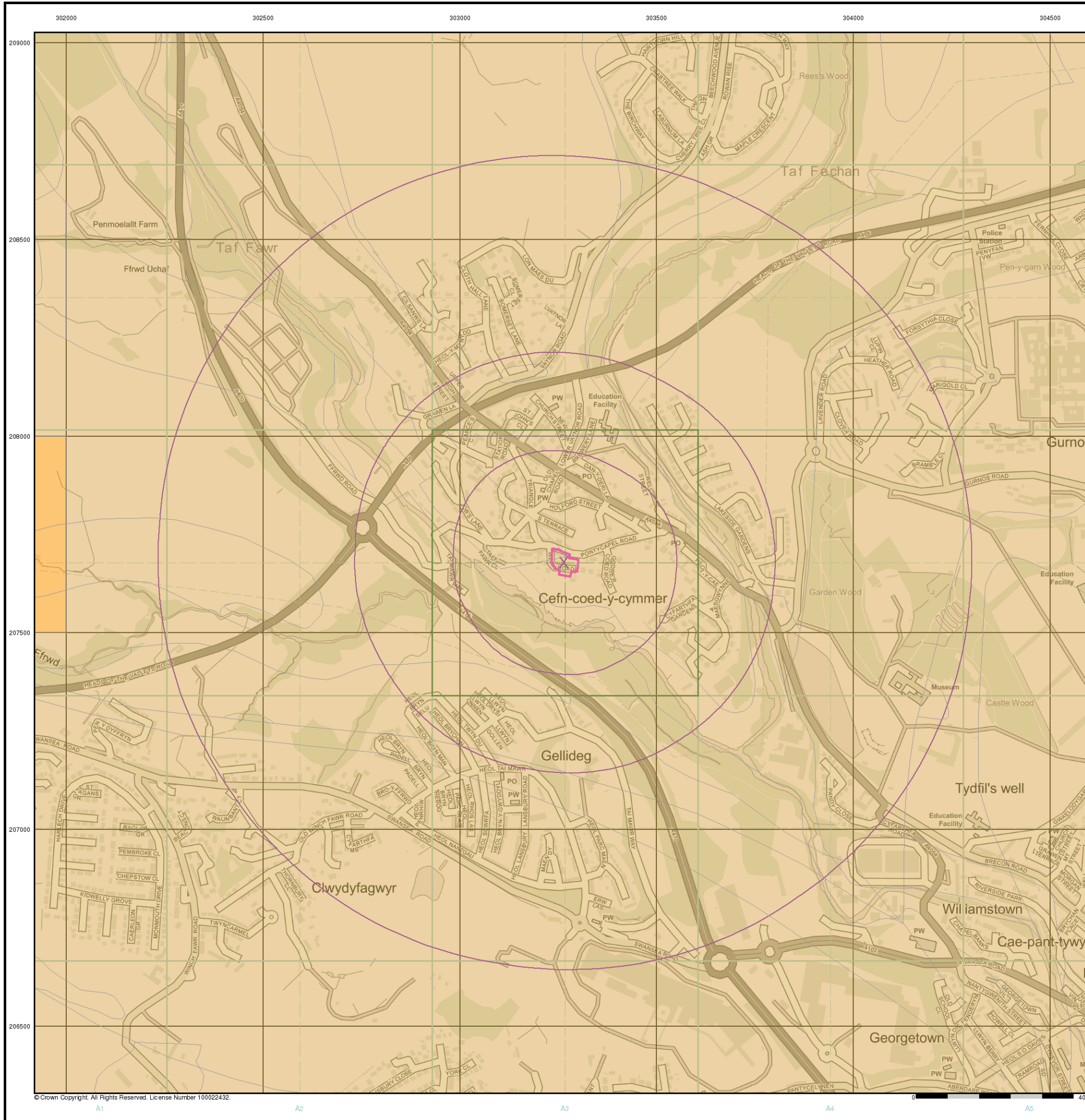


### Order Details

Order Details: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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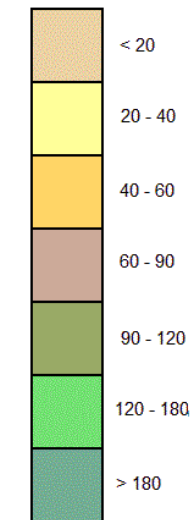


### General

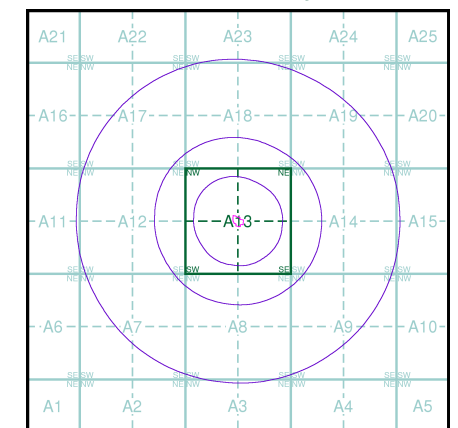
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

### Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



### Estimated Soil Chemistry Chromium - Slice A

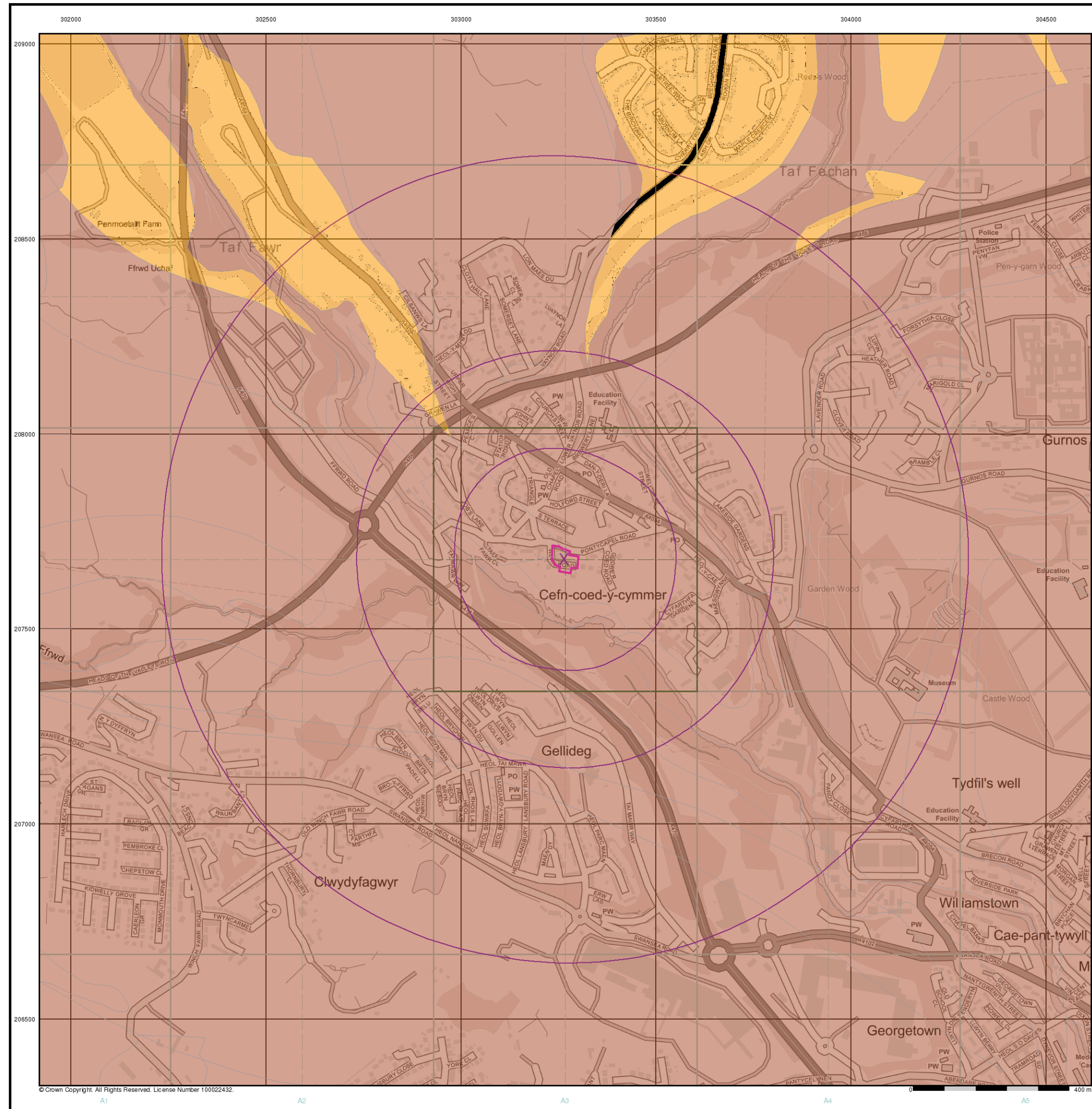


### Order Details

Order Details: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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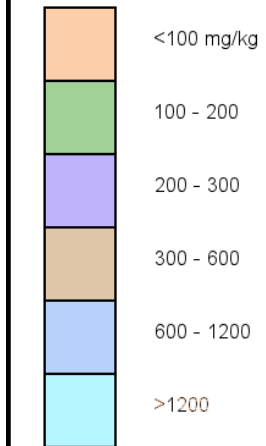


## General

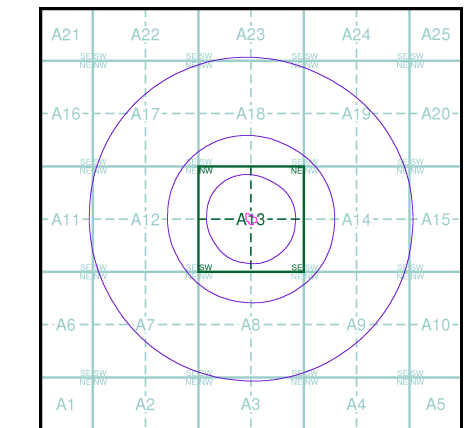
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

## Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



## Estimated Soil Chemistry Lead - Slice A

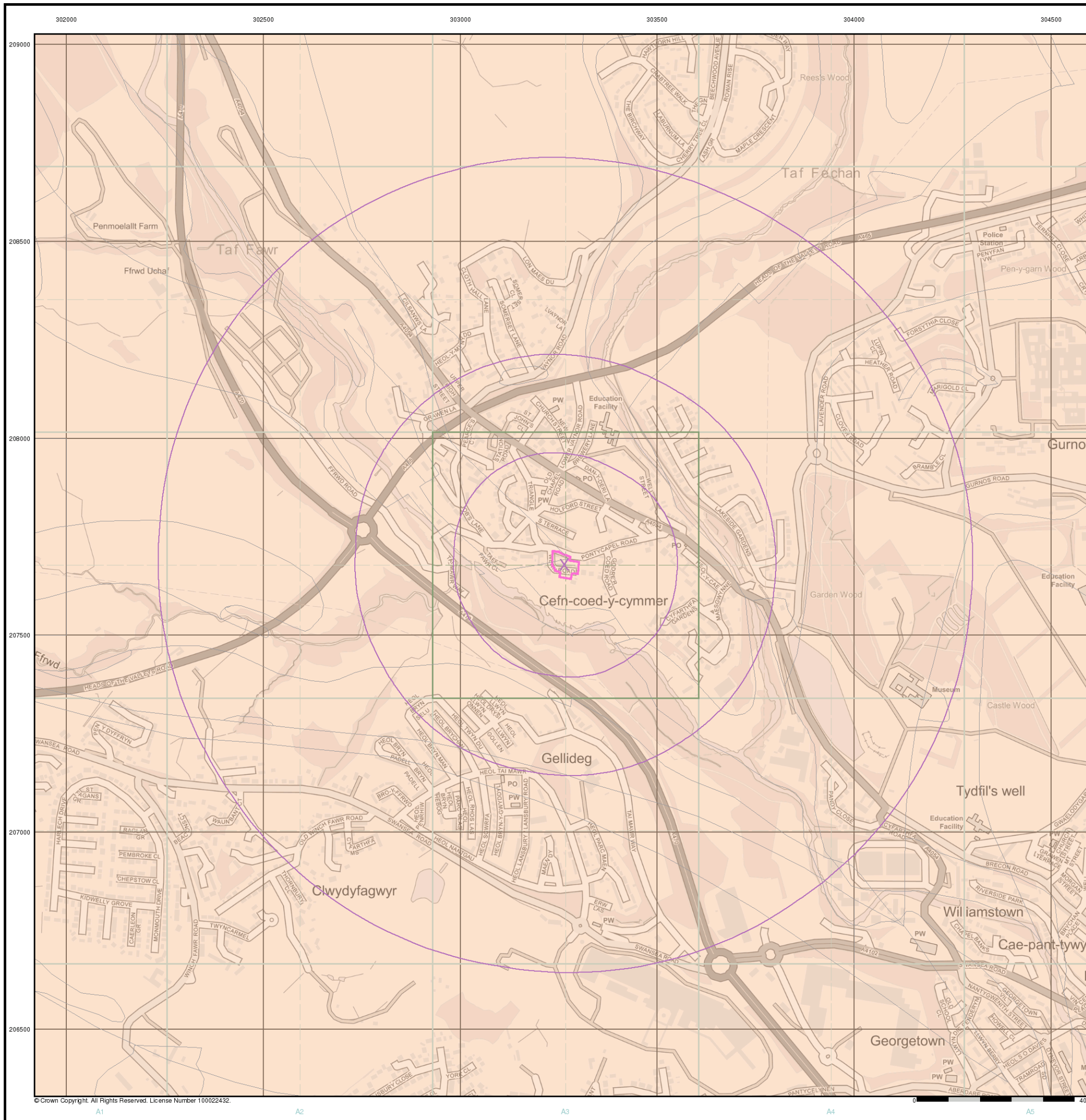


## Order Details

Order Details: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

## Site Details

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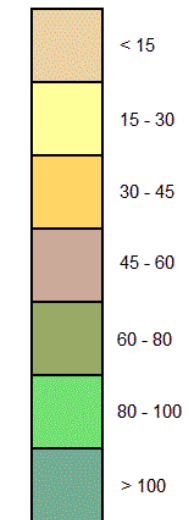


### General

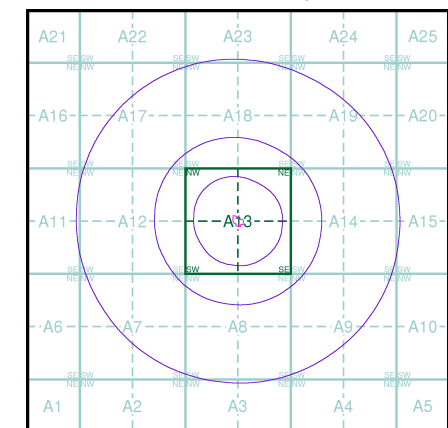
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

### Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



### Estimated Soil Chemistry Nickel - Slice A

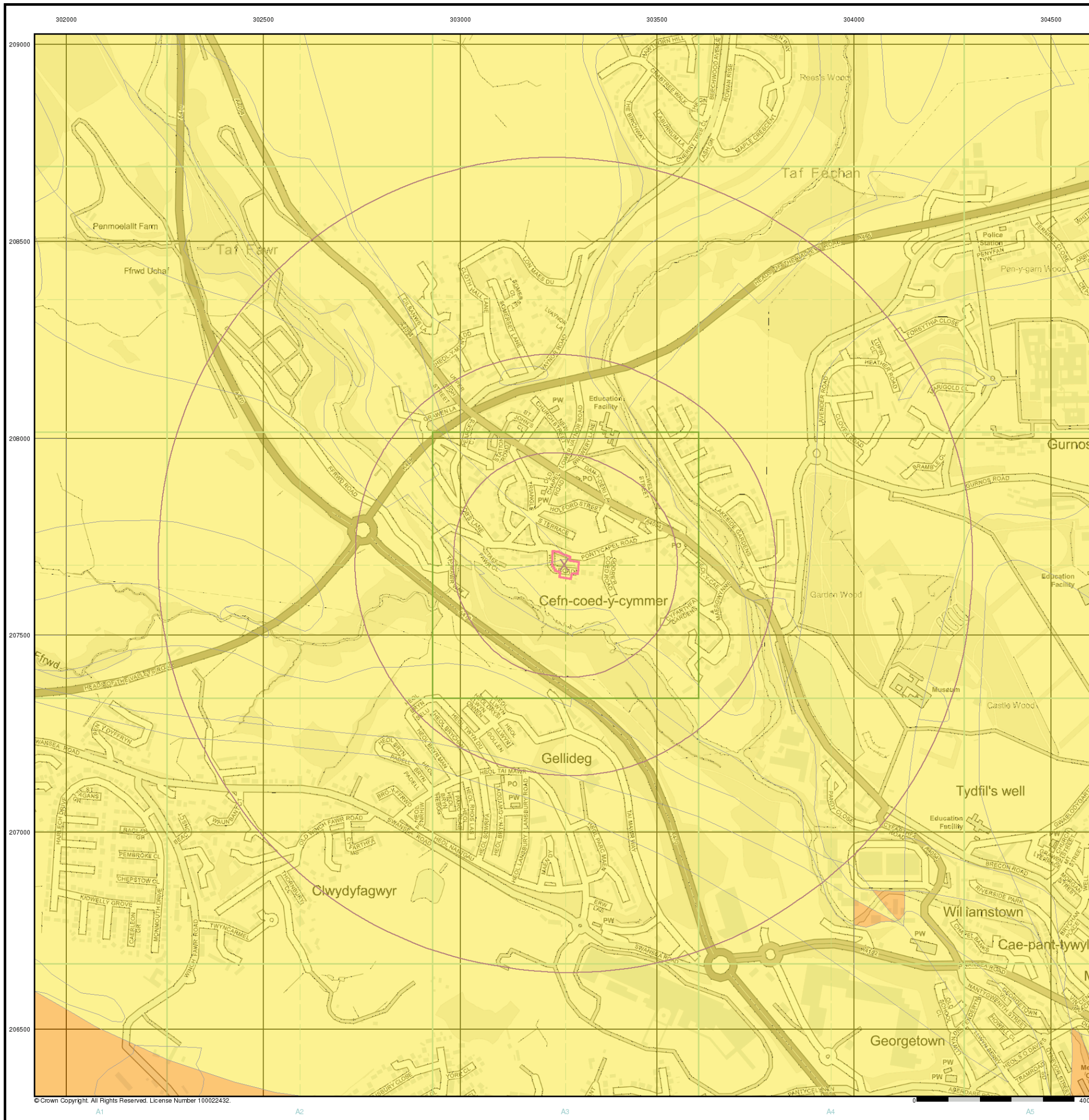


### Order Details

Order Details: 314168170\_1\_1  
 Customer Ref: STV6119  
 National Grid Reference: 303270, 207680  
 Slice: A  
 Site Area (Ha): 0.32  
 Search Buffer (m): 1000

### Site Details

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