

Tai Tarian Ltd

HEOL CRWYS, CWMAVON

Coal Mining Risk Assessment

14023/LP/22/CMRA

CLIENT: Tai Tarian Ltd

PROJECT: Heol Crwys, Cwmavon

TITLE: Coal Mining Risk Assessment

JOB NO: 14023

DOCUMENT REF: 14023/LP/22/CMRA

Revision	Purpose Description	Originated	Reviewed	Authorised	Date
0	Final	LP	HP	RB	July 2022

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1.0 INTRODUCTION

1.1 GENERAL

Tai Tarian Ltd are proposing to redevelop a site at Heol Crwys in Cwmavon for residential end-use.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake a coal mining risk assessment.

This report presents the findings of the desk study and searches and sets out the Coal Mining Risk Assessment in line with the Coal Authority's guidelines.

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1.2 PROPOSED DEVELOPMENT

Upon site clearance, the proposed development will comprise the construction of a number of single storey residential dwellings and associated infrastructure such as access roads and car parking areas. The development will also include private gardens and areas of landscaping.

1.3 SCOPE OF WORKS

The objectives of the coal mining risk assessment are to:

1. Present a desk-based review of all available information within this report on the coal mining issues which are relevant to the site
2. Use the information obtained to identify and assess the risks to the proposed development from coal mining legacy, including cumulative impact issues
3. Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development

1.3 SCOPE OF WORKS (CONTINUED)

4. Demonstrate to the Local Planning Authority that the application is, or can be made safe and stable to meet the requirements of the National Planning Policy Framework and the requirements of the Coal Authority in respect of their determination of planning application consultations
5. Minimise the risks and effects of land instability on properties, infrastructure, and the public
6. Help to ensure that various types of development should not be placed in unstable locations without appropriate precautions
7. Bring unstable land, wherever possible back into productive use
8. Assist in safeguarding public and private investment by a proper appreciation of site conditions and necessary precautionary measures.

This report has been prepared in general accordance with the guidance within Section 11 of CIRIA Report C758 - Abandoned Mine Workings Manual and the Mining Risk Assessment Model Report Template and intends to demonstrate to the Local Planning Authority and the Coal Authority that the site is, or can be, made safe and stable, and to meet the requirements of the National Policy Planning Framework (NPPF).

The desk study comprised a review of:

- Old Ordnance Survey maps covering the site
- Geological maps of the area provided by the British Geological Survey
- South Wales Coalfield Landslip Survey Report No. EG 80/4
- A CON29M Coal Mining Report from The Coal Authority

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 and Coal Authority.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located off Heol Crwys in Cwmavon, at a National Grid Reference of 278280, 192530, see Figure 1.

The site is irregular in shape and occupies an area of approximately 1.58 hectares. The boundaries of the site are defined by Heol Crwys to the north, existing residential properties to the southwest, east, and southeast, Heol Jiwbili to the south and undeveloped land to the northeast. A site plan is presented in Figure 2.

The developed area of the site is situated on a relatively level plateau at approximate elevations of between 52m and 56m AOD. The southern and eastern edges of the site slope down towards Heol Jiwbili to the south and slope more steeply to the southeast, towards the development within Waun Wen, to a minimum elevation of 44m AOD.

The existing developed area occupies the northern area of the site with the single storey properties accessed off Heol Crwys. The properties each have small private garden areas which are secured with low picket fencing. A small electric substation is located adjacent to the properties within the northeast area.

The undeveloped slopes within the site are heavily vegetated along the southern edge and grass covered within the eastern area. The slope is retained by a brick wall along the southeast edge of the site at the end of the residential street known as Waun Wen. The location of the retaining wall is shown on Figure 2.

A site walkover has not been undertaken at this stage but will be undertaken as part of the intrusive works.

2.2 SITE OPERATIONS

The site is currently occupied by residential dwellings with associated gardens. The southern and eastern slopes of the site remain undeveloped.

2.3 SURROUNDING LAND USE

The surrounding areas are mainly developed for residential use. A public house is located beyond Heol Crwys to the north of the site.

2.4 AVAILABLE SITE INVESTIGATION DATA

There is no available site investigation data for the site to our knowledge.

3.0 SITE HISTORY

The recent history of the site has been traced with the aid of the following historical maps which have been presented in Appendix A:

Map Scale	Dates
1:2,500	1877-1878, 1899, 1918-1919, 1936-1937, 1965-1967, 1969-1978, 1973, 1975-1983, 1978-1983, 1984, 1993, 1994, 2000 (aerial photo)
1:10,560	1884, 1900, 1921, 1936, 1938-1952, 1949 (aerial photo)
1:10,000	1964, 1974, 1980, 1996, 1999, 2006, 2021

The earliest edition of the map dated 1877-1878 indicated the site to be located within an area known as Cwm-avan Works. A tramway crossed approximately through the centre of the site on a northwest to southeast orientation with other lines which crossed the southwest and northeast areas. The tramway connected into an engine house to the north of the site and with branch lines which connected into the various works buildings including a Copper Works to the northeast, a Chemical Works to the southwest and a Gas Works and Iron Works located further away to the south. Meadow Pit (Coal) was also served by the tramway and was located approximately 50m to the south. The site was mainly indicated to be covered with spoil, likely to be waste materials from the surrounding works buildings. The Copper Works buildings encroached across the northeast corner of the site and coke ovens encroached across the southeast area. A limekiln was indicated on the southern boundary of the site. Beyond the works buildings there were terraces of residential properties in the area and a Public House was located to the north of the site. A terrace of properties known as David's Row encroached across the north eastern boundary of the site.

The 1899 edition of the map indicated the tramway which crossed approximately through the centre of the site was no longer evident. Additional tramways were indicated within the southwest and northeast areas of the site. The majority of the site was still indicated to be covered with spoil materials. The Copper Works had expanded including additional buildings within the northeast area of the site and was now known as Rio Tinto Copper Works. The former Chemical Works buildings to the southwest had been extended and/or rebuilt to now be a Steel Works with the associated buildings encroaching into the site. The Iron Works to the south was no longer present and the Gas Works had expanded. Meadow Pit was indicated to be disused by this time. The limekiln on the southern boundary was now indicated to be old.

3.0 SITE HISTORY (CONTINUED)

The 1919 edition of the map indicated the configuration of the tramways within the site to have altered slightly but overall, the site remained relatively unchanged with spoil heaps still present across the site. The Steel Works buildings to the southwest had been reconfigured with some of the buildings potentially demolished.

The edition of the map dated 1936-1937 indicated single tramways crossed the northeast and southwest and with spoil heaps covering the site which still extended to the south and east. A building remained within the northeast area of the site. The Copper Works to the northeast of the site was now disused and the buildings had been demolished. The residential properties known as David's Row had also been demolished by this time, as had the former Steel Works buildings to the southwest.

The edition of the map dated 1965-1967 indicated all the tramways had now been removed from site and was now crossed by access tracks. All the former buildings associated with the works had been fully cleared from within the site and to the northeast and southwest. The spoil mounds present across the site and extending to the east and south were now indicated to be slag heaps. A surface water issue was indicated within the southeast corner of the site. Residential development had taken place in the vicinity of the site including development up to the southwest boundary of the site along Heol Cwm Mawr.

By the edition of the map dated 1969-1978 the site had been developed with residential properties known as Rofton Bungalows. There was evidence of earthworks within the site to reprofile the spoil heap to create a development plateau. A track in a cutting crossed approximately through the centre of the site on a northwest to southeast orientation. A new channel had been constructed for the surface water issue within the southeast area, with the feature culverted under Heol Jiwbili which now formed the southern boundary of the site. The northern boundary of the site was now formed by Heol Crwys with residential properties beyond. The areas beyond Heol Jiwbili to the south and the area to the east of the site remained undeveloped.

The 1973 edition of the map indicated the site to have remained unchanged. Further development had taken place to the south of the site beyond Heol Jiwbili with the construction of a residential estate known as Penllyn which included residential properties and a health centre. The area to the east of the site remained undeveloped.

The edition of the map dated 1975-1983 indicated further earthworks within the north eastern area of the site. The earthworks were associated with the reclamation works of the area to the east with an embankment of materials pushed across the eastern and north eastern area of the site. The surface water channel was no longer present within the southeast area.

3.0 SITE HISTORY (CONTINUED)

By the edition of the map dated 1978-1983 the reclaimed area to the east had been fully developed for residential use with a new development off Waun Wen. The site remained unchanged, and development continued off Waun Wen during the 1980's.

There have been no significant changes to the site or the immediate surrounding areas between the 1980's and the present day with the areas remaining developed for residential use.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is located within a residential area of Cwmavon to the south of Heol Crwys.

The developed area of the site is situated on a relatively level plateau at approximate elevations of between 52m and 56m AOD. The southern and eastern edges of the site slope down towards Heol Jiwbili to the south and slope more steeply to the southeast towards the development within Waun Wen to a minimum elevation of 44m AOD.

4.2 GEOLOGY

The 1:50,000 and 1:10,560 scale (Sheet No. SS 79 SE) geological maps of the area indicate the site to be underlain by South Wales Middle Coal Measures Formation of the Carboniferous period. These rocks typically comprise grey, productive, and coal-bearing mudstones/siltstones, with seatearths and minor sandstones. The strata dips in the vicinity of the site are indicated to be in an approximately northerly direction.

The conjectural outcrop of the Lower Four Feet seam is indicated to cross the southwest area of the site on a west to east orientation. This seam would therefore underlie the site at shallow depths. The Generalized Vertical Section indicates a number of other coal seams to underlie the Lower Four Feet including thin unnamed seams and the Bute seam. These seams would also underlie the site at shallow depth, with the conjectural outcrop of the Bute seam also potentially beneath the southwest corner of the site.

Superficial deposits of Alluvium of the Quaternary period are indicated to overlie the solid strata. These deposits typically comprise soft to firm consolidated, compressible silty clay, containing layers of silt, sand, peat, and basal gravel. A stronger, desiccated surface zone may be present.

A variable thickness of made ground is anticipated above the superficial deposits across the site due to the historical presence of spoil heaps.

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

4.2 GEOLOGY (CONTINUED)

Table 1: Summary of Anticipated Site Geology		
Geological unit	Horizon	Description
Recent	Made ground	Various materials but likely to contain waste products including colliery spoil and slag
Quaternary	Alluvium	Soft to firm consolidated, compressible silty clay, containing layers of silt, sand, peat, and basal gravel. A stronger, desiccated surface zone may be present.
Carboniferous	South Wales Middle Coal Measures Formation	Grey, productive and coal-bearing mudstones/siltstones, with seatearths and minor sandstones

The South Wales Coalfield Landslip Survey Report No. EG 80/4 has been reviewed as part of the desk study. There are no active landslips identified within an influencing distance of the site.

4.3 MINING

A CON29M Coal Mining Report for the site has been obtained from the Coal Authority and a copy is included in Appendix B.

An appraisal of the mining data and its significance is presented below.

Past Underground Coal Mining

The Coal Authority states that *“The property is in a surface area that could be affected by underground mining in 5 seams of coal at 50m to 190m depth, and last worked in 1900.”*

“Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.”

However, the Coal Authority caution that the property *“is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk.”*

4.3 MINING (CONTINUED)

As discussed previously, the conjectural outcrop of the Lower Four Feet seam is indicated to cross the southwest area of the site on a west to east orientation. Due to the northerly dip of the strata, this seam would be anticipated to underlie the site at shallow depth. The Coal Authority interactive map indicates shallow dips of between 16° and 30°. Based on these dips it is likely that the recorded workings at 50m depth are within the Lower Four Feet seam within the northeast area of the site. The additional recorded workings would be within the underlying seams such as the Bute, the Yard, the Four and Five Feet and the Gellideg. These recorded workings are at a depth that would not pose a shallow mining risk at the surface.

However, the potential for unrecorded shallows workings within the Lower Four Feet seam and within the underlying Bute seam, which lies approximately 11m below on the Generalized Vertical Section and has potential to conjecturally outcrop beneath the southwest corner of the site, should not be ruled out at this stage. The next potentially workable seam beneath the Bute seam is the Yard seam which is indicated to lie approximately 45m below the Lower Four Feet seam. This seam could be at shallower depths within the southwest corner of the site.

Accordingly, the potential for unrecorded shallow workings with insufficient rock cover cannot be ruled out at this stage of assessment.

The approximate area where the potential for unrecorded shallow workings with insufficient rock cover is present is shown on Figure 3.

Present Underground Coal Mining

The Coal Authority states that *“The property is not within a surface area that could be affected by present underground mining”*.

There are no issues regarding current workings.

Future Underground Coal Mining

The Coal Authority states that *“The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.”*

“The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods”.

4.3 MINING (CONTINUED)

"The property is not in an area that is likely to be affected from any planned future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future".

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

There are no currently understood issues regarding future workings.

Mine Entries

The Coal Authority states that *"There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property".*

The Coal Authority interactive map indicates the presence of two adits (one of which is shown on the geology map) located to the north of the site (just greater than 20m) approximately at the location of the Public House and residential properties. These adits are orientated into the hillside in a northerly direction and would therefore not affect the site.

The Coal Authority interactive map also indicates a shaft to be located approximately 50m to the southeast of the site. This feature would be away from the zone of influence of the site.

The Coal Authority cautions that *"based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal authority records".*

Allowances should be made for the possibility that unrecorded features could be present on site.

Coal Mining Geology

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

There are no issues regarding faults in the area.

Past Opencast Coal Mining

The Coal Authority states that *"The property is not within the boundary of an opencast site from which coal has been removed by opencast methods".*

There are no issues regarding past opencast workings.

4.3 MINING (CONTINUED)

Present Opencast Coal Mining

The Coal Authority states that *“The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods”*.

There are no issues regarding present opencast workings.

Future Opencast Coal Mining

The Coal Authority states that *“There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary”*.

“The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted”.

There are no currently understood issues regarding future opencast workings.

Coal Mining Subsidence

The Coal Authority states that *“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 31st 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”.

There are no recorded instances regarding subsidence.

Mine Gas

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

However, gas evolution from coal seams and accumulated sources such as abandoned tunnels and workings cannot be discounted and will require further assessment conducted in accordance with CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021.

If shallow unrecorded mineworkings are present, the potential for the presence of mine gas should not be ruled out.

4.3 MINING (CONTINUED)

Hazards Related to Coal Mining

The Coal Authority states that *“The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures”*.

There are no instances of subsidence related remedial works recorded for the area.

Overall Assessment

Based on the information provided by the geology maps and the general knowledge of the seams in the area, namely the Lower Four Feet and the Bute seams and the underlying Yard seam, the potential presence of unrecorded shallow workings within these seams should not be ruled out beneath the site.

The off-site adit features are orientated in a northerly direction away from site into the hillside. It is considered that these mine entries would not affect the site. The recorded shaft, located approximately 50m to the southeast, would also be considered to not be within a zone of influence. However, the presence of unrecorded mine entries should also not be ruled out.

It is therefore concluded that shallow unrecorded workings could be present, with the majority of the site located within a high-risk development area according to the Coal Authority interactive map, which correlates well with the assessment made in this report. The approximate extent of this high-risk area is presented on Figure 3.

Further investigation to determine the level of risk is required prior to development.

5.0 ASSESSMENT OF MINING CONSTRAINTS

5.1 RISKS FROM MINING LEGACY

The desk study search of the various coal mining information and maps identifies the following site-specific coal mining legacy risks to the site, see Table 2.

Table 2: Mining Legacy Risk Table				
Coal Mining Issue	Yes	No	Risk Assessment	
			Rating	Comments
Underground coal mining (recorded at shallow depths)		X	Low risk	No recorded workings are known to be present beneath the site. Shallowest recorded workings are at 50m depth.
Underground coal mining (probable at shallow depths)	X		High risk	Additional unrecorded workings possible beneath the site.
Mine entries (shafts)		X	Low-Moderate risk	No shafts indicated within the site. One shaft located approximately 50m to the southeast. Unrecorded features should not be ruled out
Mine entries (adits)		X	Low-Moderate risk	No adits are located within the site. Two adits are recorded to the north of the site. Unrecorded features should not be ruled out
Coal mining geology (faults and fissures)		X	Low risk	No faults indicated to cross the site
Record of past mine gas emissions or potential	X		Moderate risk	Potential for unrecorded mineworkings. All mineworkings pose a potential gas risk which should be considered in any future investigations and development.
Recorded coal mining surface hazard		X	Low risk	None recorded.
Surface mining (opencast workings)		X	Low risk	None recorded.

A summary of the risk posed by these features is summarised after thorough analysis of the information sources. Comment on each specific coal mining issue follows below:

5.2 RISKS FROM ABANDONED MINeworkINGS

Coal mining at depths shallower than 30m beneath ground level can pose constraints to development in the form of ground stability at the surface. The magnitude of this effect depends upon the exact depth of any workings, the thickness of competent rock cover and the extraction thickness of any coal mine workings.

The Coal Mining Risk Assessment shows that there is a possibility of unrecorded shallow workings beneath the site within the Lower Four Feet seam, the Bute seam and possibly the Yard seam.

To ensure that properties constructed over mineworkings are not affected by subsidence associated with past mining, a rock head cover in the order of ten times the maximum void thickness of the workings is generally required depending on the details of the rock strata. The information reviewed suggests that shallow mineworkings without the required rock head cover may be present beneath the site.

Superficial deposits are indicated to overlie the solid strata, but their thickness is not known.

5.3 RISKS FROM THE ABANDONED MINE ENTRIES - SHAFTS

No shafts have been recorded on site, with the nearest shaft is indicated approximately 50m to the southeast according to the Coal Authority viewer. However, the presence of unrecorded mine entries should not be ruled out.

Until recently, shafts were rarely treated on abandonment to any significant engineering standard. They were typically loosely backfilled, or with inferior capping constructed over them. With time, backfills may settle and caps fail, resulting in significant ground loss. Therefore, if a shaft lies partly or wholly within the site, or within a 20m buffer zone drawn outside the site boundary, then its effect should be considered in the site development. The size of buffer, no development zone, will depend on the diameter of the shaft the depth to rockhead and an assessment of the shaft's condition.

After the validation of the shaft caps, and, depending on their condition, a 20m radius exclusion zone for buildings should be applied.

If the development constraints require building structures to be constructed within a 15m radius of the shaft position, then pressure grouting of the shaft will be required. On completion and validation of these potential works, details of a reduced radius exclusion zone may be reported to suit the development.

5.3 RISKS FROM THE ABANDONED MINE ENTRIES – SHAFTS (CONTINUED)

The development site sits within a historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

5.4 RISKS FROM THE ABANDONED MINE ENTRIES - ADITS

No adits have been recorded on site, but two have been recorded just greater than 20m away to the north of the site. The adits are orientated in a northerly direction away from site. It is considered that these adits would not affect the proposed development. However, the presence of unrecorded features should not be ruled out.

Until recently, adits were rarely treated on abandonment to any significant engineering standard. Whilst it is likely that an adit entrance itself would have been treated, the remainder of an adit roadway may still be intact. They may have been only loosely backfilled or might be partially collapsed. Therefore, if an adit is located within influencing distance of the surface, then treatment may be required. Normal procedure would be to establish a 20m buffer zone drawn parallel to the feature within a development site. The size of buffer or no development zone, will depend on the diameter of the adit, the depth to rockhead and an assessment of the adit condition.

Hence there will need to be checks on site using drilling techniques to determine the location, form and degree of hazard posed by the feature, if found.

The site sits within a historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

5.5 COAL MINING GEOLOGY (FAULTS AND FISSURES)

The development site sits upon the South Wales Middle Coal Measures Formation.

No faults are indicated to cross the site.

5.6 RECORD OF PAST MINE GAS EMISSIONS OR POTENTIAL

There are no recorded past gas emissions recorded in the surrounding area. It should be noted that coal seams and coal mine workings pose a potential gas risk which should be considered in any future investigations and development.

5.6 RECORD OF PAST MINE GAS EMISSIONS OR POTENTIAL (CONTINUED)

At development sites with shallow coal workings, probable shallow coal mine workings, or pathway features such as mine entries and geological disturbances on or nearby the site, a more detailed gas risk assessment should be undertaken in accordance with CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021.

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

It is considered that off-site mine entries would not provide a pathway for mine gas. However, if unrecorded shallow workings are found beneath the site a programme of gas monitoring should be undertaken to confirm the level of gas risk and a mine gas risk assessment undertaken.

5.7 RECORDED COAL MINING SURFACE HAZARD

None recorded.

5.8 SURFACE MINING (OPENCAST WORKINGS)

None recorded.

5.9 DEVELOPMENT RISK PLAN

The site is located within a high-risk development area. It is considered that there is potential for the risk to be lowered by conducting a site investigation, which may highlight remediation work which would be required to be undertaken prior to the site being developed.

The coal mining legacy issues outlined in this report, including the potential for shallow unrecorded mineworkings and unrecorded mine entries to be present within the site, will have implications for the proposed development.

Therefore, as a minimum precaution against potential localised subsidence over localised remnant voids, for preliminary purposes only, it is recommended that the foundations of the proposed buildings should be reinforced such that they are capable of spanning potential voids of up to 3m diameter, with cantilever effects of 1.5m at the edges/corners.

5.9 DEVELOPMENT RISK PLAN (CONTINUED)

Although the above-described reinforced foundations would be capable of protecting against potential localised subsidence incidents, they would not be sufficient to protect against more widespread subsidence which could result if more significant or widespread remnant voids are still present beneath the site.

5.10 DEVELOPMENT PRECAUTIONS

Site Investigation and/or Remediation

Due to the potential presence of unrecorded mineworkings at shallow depth an intrusive site investigation will be required.

The site investigation works should be carried out in accordance with the guidance Section 12 of CIRIA Report C758 - Abandoned Mine Workings Manual.

The extent, depth and condition of the seams should be proved across the site by drilling a series of boreholes. The degree of extraction can be estimated with more certainty to determine the potential abnormal costs for development.

The site investigations will need to be carried out by a competent contractor, considering the findings of this report. The results should be interpreted by a qualified and competent person so that an appropriate remedial strategy can be developed.

Due to the difficulties in identifying coal related gas hazards and the proximity to other developments, it will be necessary to complete a mine gas risk assessment for the development site or undertake a programme of gas monitoring. This may recommend basic gas protection measures within the foundation design, which are resistant to permanent gases (carbon dioxide, methane, carbon monoxide).

If any of these recommended boreholes should encounter significant voids, then the above assessments may need to be reviewed and drilling and grouting stabilisation measures, or more proof drilling may become required. Bearing in mind the nature of the shallow workings, the most likely ground remediation/stabilisation strategy would be grout injection to fill any mine void spaces that could lead to ground instability in or around the proposed development. This strategy would have to be designed by a qualified and competent engineer and carried out by a qualified and competent contractor.

5.10 DEVELOPMENT PRECAUTIONS (CONTINUED)

The occurrence of unrecorded mine entries across the whole of the site cannot be discounted and consequently in areas of new build development a watching brief should be maintained throughout the site works to identify this risk. As a result, all site operatives should be made aware of this potential risk.

Coal Authority Permit

Any intrusive activities, including initial site investigation boreholes and any subsequent treatment of coal mine workings/coal mine entries for ground stability purposes require the prior written permission of the Coal Authority.

6.0 ENVIRONMENTAL RISK ASSESSMENT

There are several environmental hazards associated with the grouting of mine workings and a hazard assessment is presented in Table 3 overleaf.

Risk mitigation measures will need to be implemented to manage groundwater and mine gasses that may be encountered during the works. Consideration will also need to be given to the impact of PFA grouts on groundwater quality. A CIRIA 552 risk assessment table is presented below and demonstrates how these risks can be addressed.

6.0 ENVIRONMENTAL RISK ASSESSMENT (CONTINUED)

Table 3: Preliminary Conceptual Site Model / Conceptual Exposure Model

Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements / options
Displacement of groundwater by grout or fill	Mineworkings and fractures / discontinuities	Secondary aquifer	Minor	Unlikely	Very Low risk	Research suggests groundwater constituent monitoring in the Coal Measures has not indicated the presence of contamination. An assessment of groundwater constituent fate and transport may be required. Unlikely that the site is impacting off site receptors. It may be necessary to undertake a programme of physical and chemical groundwater monitoring of voids during and after any grouting works.
		Culverts	Minor	Unlikely	Very Low risk	Research suggests groundwater constituent monitoring in the Coal Measures has not indicated the presence of contamination. An assessment of groundwater constituent fate and transport may be required. Unlikely that the site is impacting off site receptors. It may be necessary to undertake a programme of physical and chemical groundwater monitoring of voids during and after any grouting works.

6.0 ENVIRONMENTAL RISK ASSESSMENT (CONTINUED)

Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements / options
PFA based grout	Groundwater	Secondary aquifer	Minor	Unlikely	Very Low risk	Check quality of proposed PFA sources.
Sediment laden drilling flush	Surface water run-off, overland flow	Drains and water courses	Medium	Likely	Moderate risk	The drilling contractor must have a methodology to reduce the risk of overland flow developing to a practical minimum and if overland flow does develop a procedure to stop and or mitigate any harmful impacts
Displacement and or release of mine gases	Boreholes, mineworkings, discontinuities in the rock mass and superficial deposits. Accumulation in enclosed spaces of future buildings on site, or migration to buildings off site, leading to asphyxiation, or risk of explosion Inhalation	Future site residents/ neighbouring residents	Severe	Medium	Moderate risk	Risk assess in accordance with CL:AIRE document 'Good Practice for Risk Assessment for Coal Mine Gas Emissions dated October 2021
		Construction workers	Severe	Low likelihood	Moderate risk	Personal monitoring to be implemented by site operatives during the investigation and drilling and grouting works. Boundary monitoring in boreholes containing monitoring standpipes.
Shallow soil and groundwater contamination	Dermal contact, ingestion, and inhalation hazardous soil constituents	Construction workers	Medium	Likely around shaft	Moderate risk	Gross contamination unlikely on site but precautions in line with those set out in HSG66 and in accordance with a yellow site under BDA guidelines should be followed. All construction workers should be provided with appropriate levels of PPE to mitigate the risk of contact with potentially contaminated soils.

APPENDIX A

HISTORICAL MAPS

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				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	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
	Bracken		Heath
	Marsh		Reeds
	Building		Glasshouse
	Sloping Masonry		Pylon
	Cutting		Embankment
	Road Under		Road Over
	Level Crossing		Foot Bridge
	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
	Civil Parish		
	BP, BS Boundary Post or Stone		Police Station
	Church		Post Office
	Club House		Public Convenience
	Fire Engine Station		Public House
	Foot Bridge		Signal Box
	Fountain		Spring
	Guide Post		Telephone Call Box
	Mile Post		Telephone Call Post
	Mile Stone		Well

1:10,000 Raster Mapping

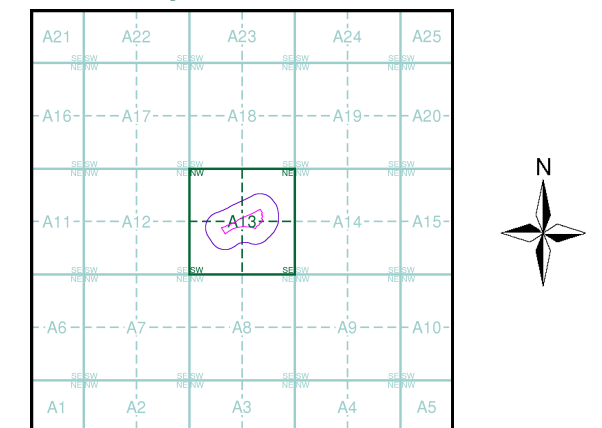
	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	Sand		Sand Pit
	Slopes		Top of cliff
	General detail		Underground detail
	Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
	Area of wooded vegetation		Non-coniferous trees
	Non-coniferous trees (scattered)		Coniferous trees
	Coniferous trees (scattered)		Positioned tree
	Orchard		Coppice or Osiers
	Rough Grassland		Heath
	Scrub		Marsh, Salt Marsh or Reeds
	Water feature		Flow arrows
	Mean high water (springs)		Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	Bench mark (where shown)		Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
	Site of (antiquity)		Glasshouse
	General Building		Important Building

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1884	2
Glamorganshire	1:10,560	1900	3
Glamorganshire	1:10,560	1921	4
Glamorganshire	1:10,560	1936	5
Glamorganshire	1:10,560	1938 - 1952	6
Historical Aerial Photography	1:10,560	1949	7
Glamorganshire	1:10,560	1951	8
Ordnance Survey Plan	1:10,000	1964	9
Ordnance Survey Plan	1:10,000	1974	10
Ordnance Survey Plan	1:10,000	1980	11
Ordnance Survey Plan	1:10,000	1996	12
10K Raster Mapping	1:10,000	1999	13
10K Raster Mapping	1:10,000	2006	14
VectorMap Local	1:10,000	2021	15

Historical Map - Slice A



Order Details

Order Number: 292811731_1_1
Customer Ref: 14023/LP
National Grid Reference: 278280, 192530
Slice: A
Site Area (Ha): 1.58
Search Buffer (m): 1000

Site Details

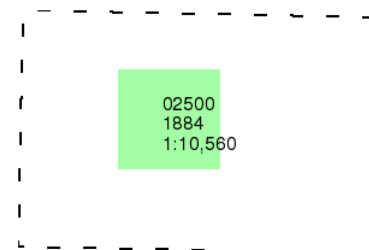
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

Landmark
INFORMATION GROUP

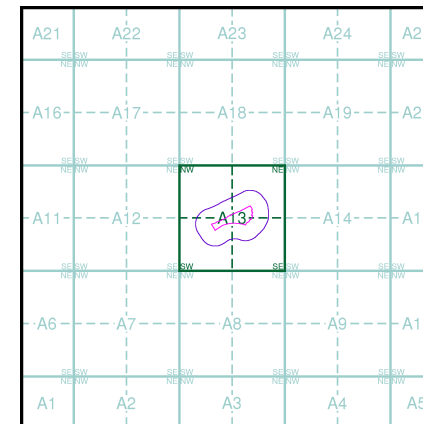
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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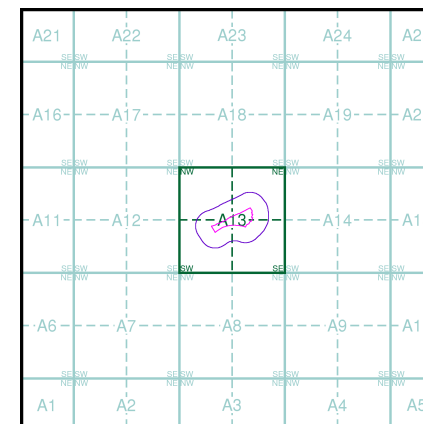
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

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Map Name(s) and Date(s)

025NW 1900 1:10,560	025NE 1900 1:10,560
025SW 1900 1:10,560	025SE 1900 1:10,560

Historical Map - Slice A



Order Details

Order Number: 292811731_1_1
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National Grid Reference: 278280, 192530
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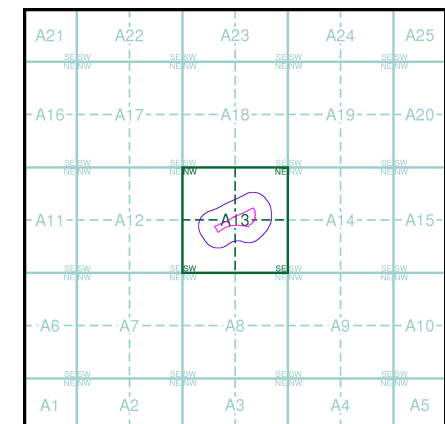
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

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)

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025SW 1921 1:10,560	025SE 1921 1:10,560

Historical Map - Slice A



Order Details

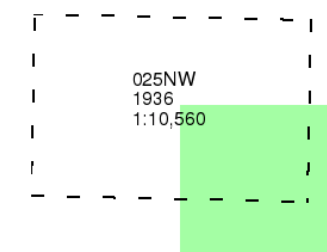
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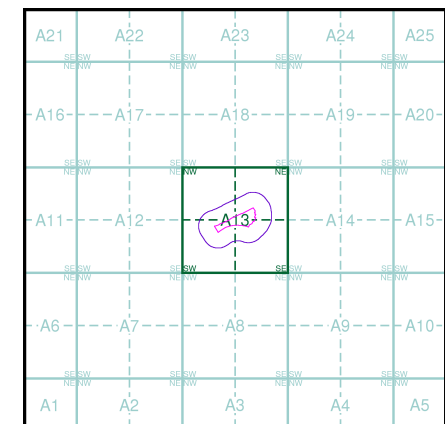
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

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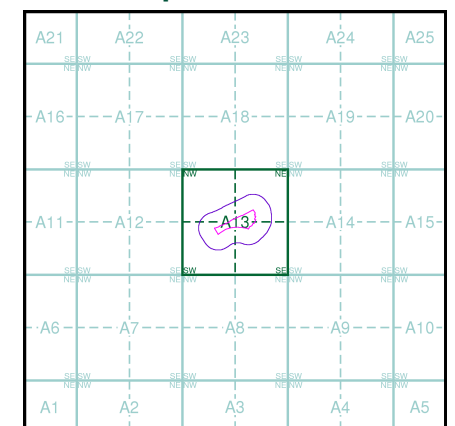
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

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Map Name(s) and Date(s)

025NW 1951 1:10,560	025NE 1951 1:10,560
025SW 1952 1:10,560	025SE 1938 1:10,560

Historical Map - Slice A



Order Details

Order Number: 292811731_1_1
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National Grid Reference: 278280, 192530
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Search Buffer (m): 1000

Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

Historical Aerial Photography

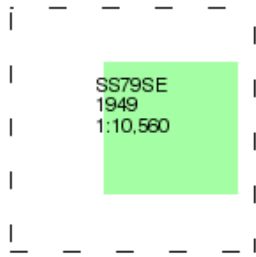
Published 1949

Source map scale - 1:10,560

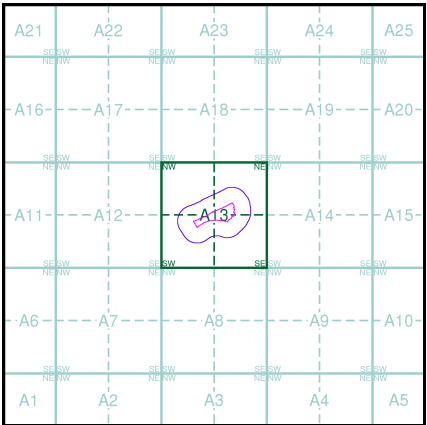
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 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

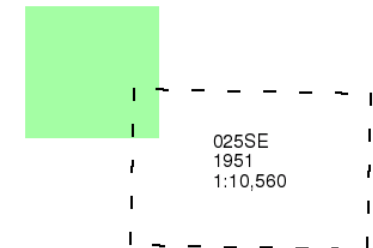
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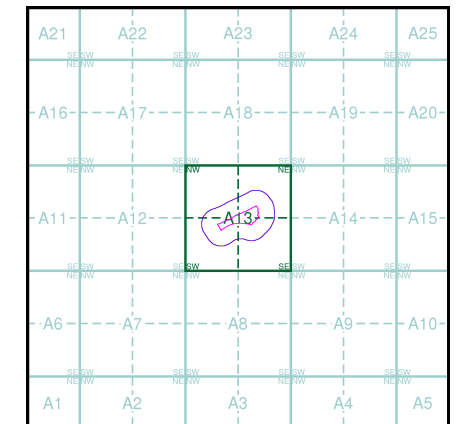
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

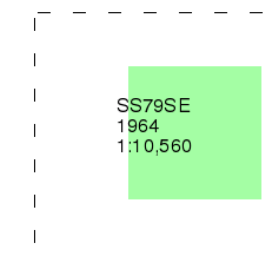
Ordnance Survey Plan

Published 1964

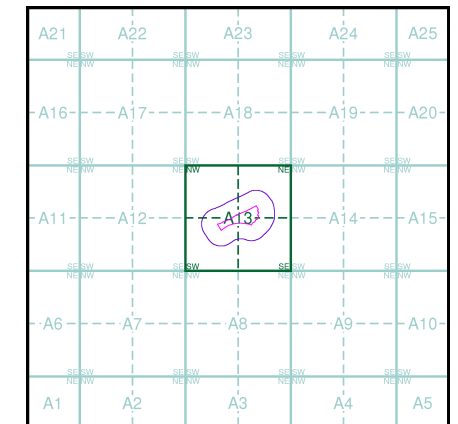
Source map scale - 1:10,000

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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

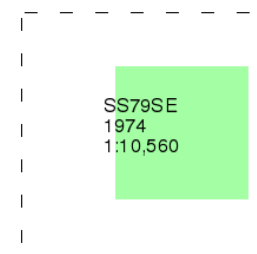
Ordnance Survey Plan

Published 1974

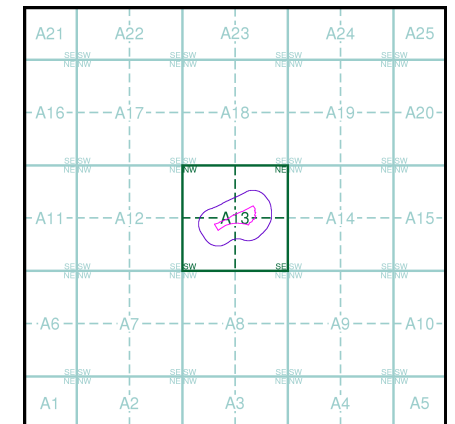
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Customer Ref: 14023/LP
National Grid Reference: 278280, 192530
Slice: A
Site Area (Ha): 1.58
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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

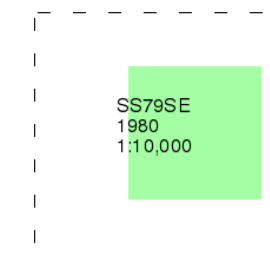
Ordnance Survey Plan

Published 1980

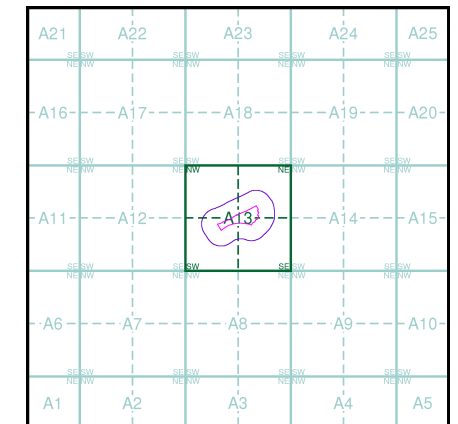
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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

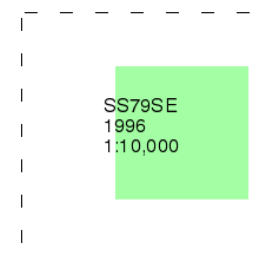
Ordnance Survey Plan

Published 1996

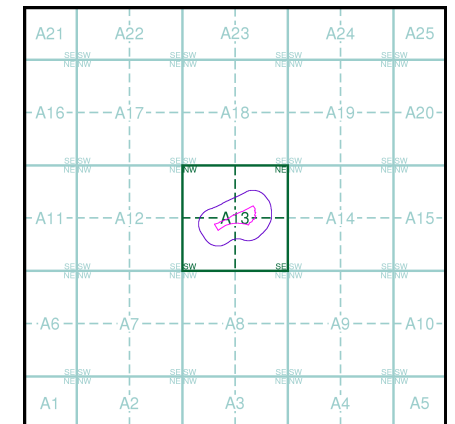
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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

Intégral
Géotechnique

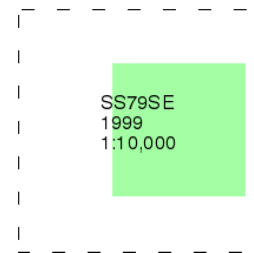
10k Raster Mapping

Published 1999

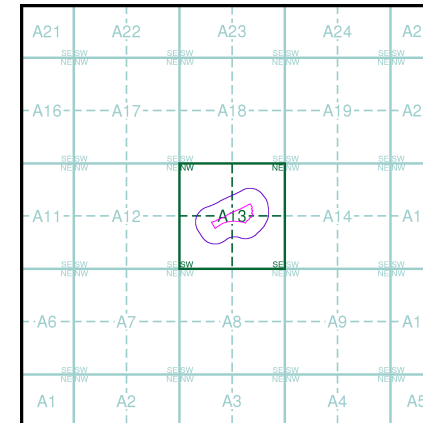
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Intégral Géotechnique

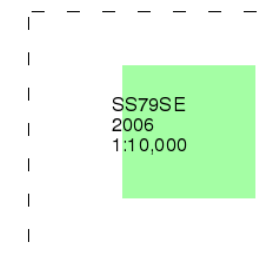
10k Raster Mapping

Published 2006

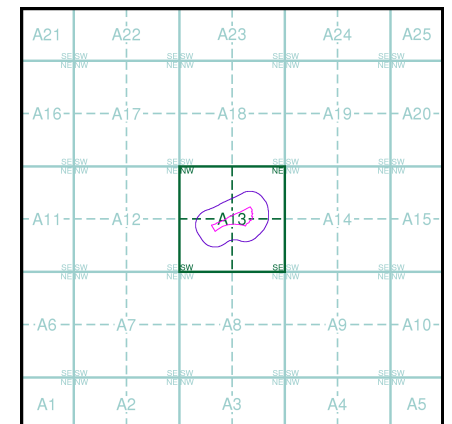
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Site Details

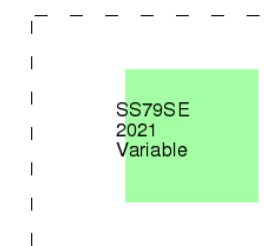
Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

Landmark
INFORMATION GROUP

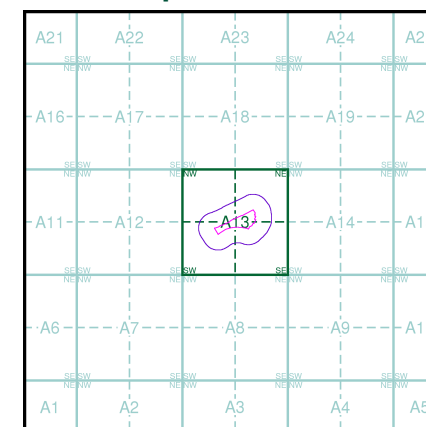
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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

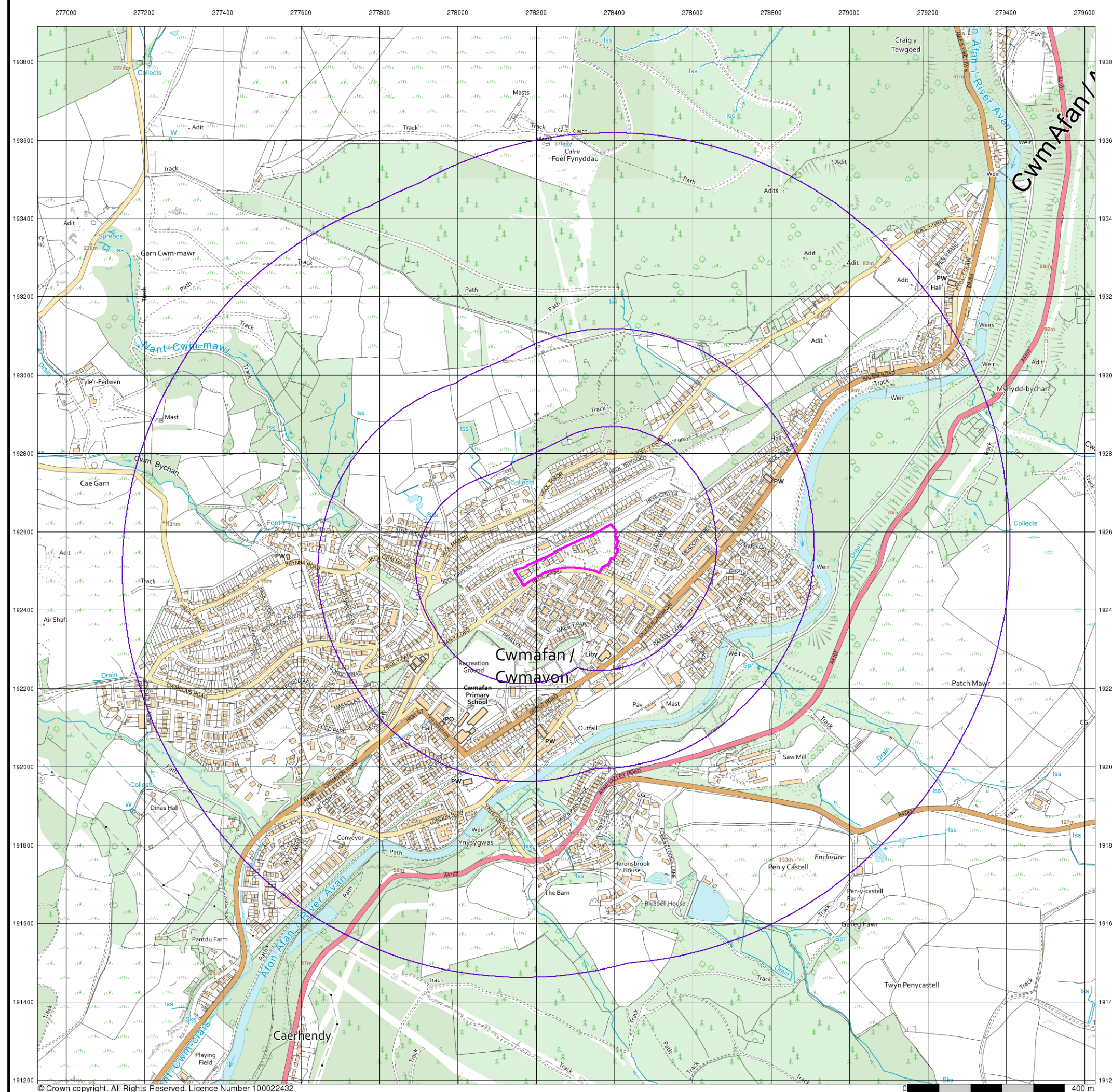


Order Details

Order Number: 292811731_1_1
Customer Ref: 14023/LP
National Grid Reference: 278280, 192530
Slice: A
Site Area (Ha): 1.58
Search Buffer (m): 1000

Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA



Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



Large-Scale National Grid Data 1:2,500 and 1:1,250

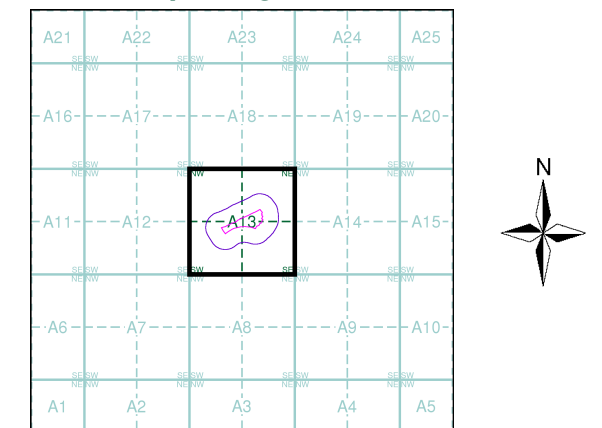


Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1877 - 1878	2
Glamorganshire	1:2,500	1899	3
Glamorganshire	1:2,500	1918 - 1919	4
Glamorganshire	1:2,500	1936 - 1937	5
Ordnance Survey Plan	1:2,500	1965 - 1967	6
Ordnance Survey Plan	1:2,500	1969 - 1978	7
Supply of Unpublished Survey Information	1:2,500	1973	8
Ordnance Survey Plan	1:2,500	1975 - 1983	9
Additional SIMs	1:2,500	1978 - 1983	10
Additional SIMs	1:2,500	1984	11
Large-Scale National Grid Data	1:2,500	1993	12
Large-Scale National Grid Data	1:2,500	1994	13
Historical Aerial Photography	1:2,500	2000	14

Historical Map - Segment A13



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Customer Ref: 14023/LP
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INFORMATION GROUP

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Intégral Géotechnique

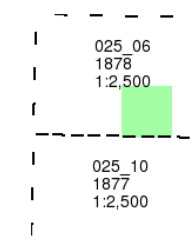
Glamorganshire

Published 1877 - 1878

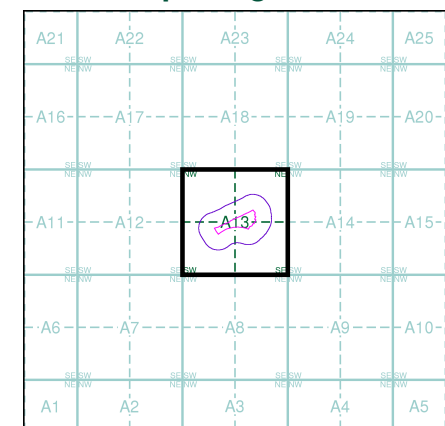
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

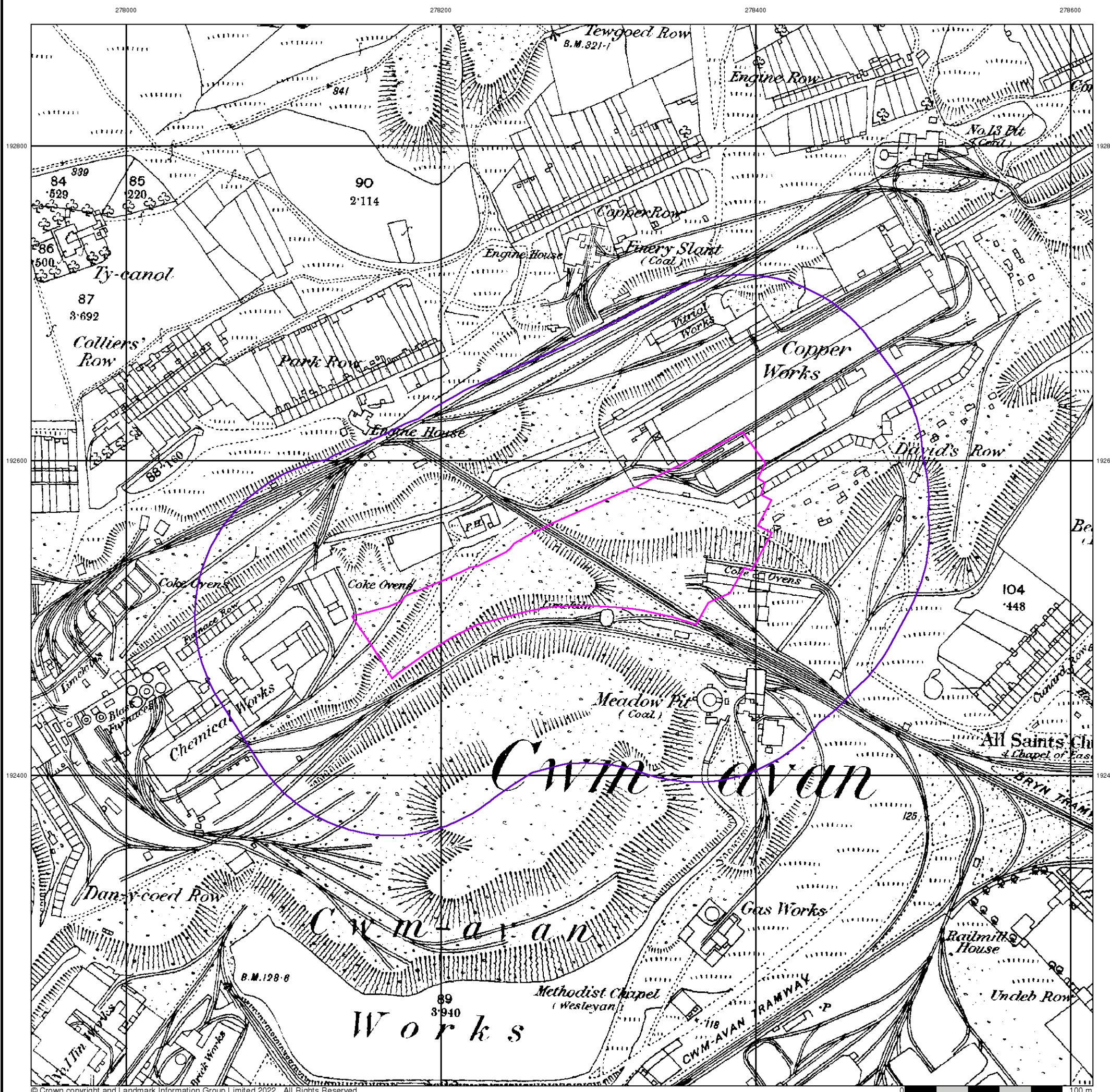
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Site Area (Ha): 1.58
Search Buffer (m): 100

Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

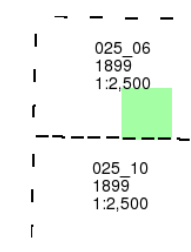
Landmark
INFORMATION GROUP

Tel: 0844 844 9952
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Web: www.envirocheck.co.uk

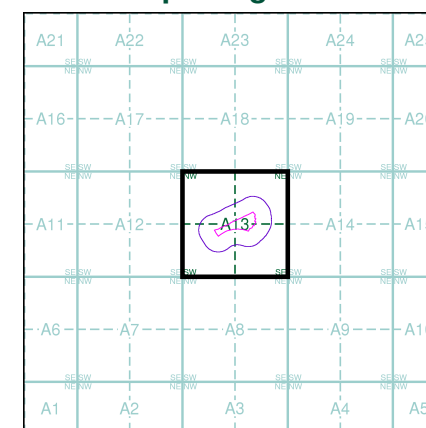


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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

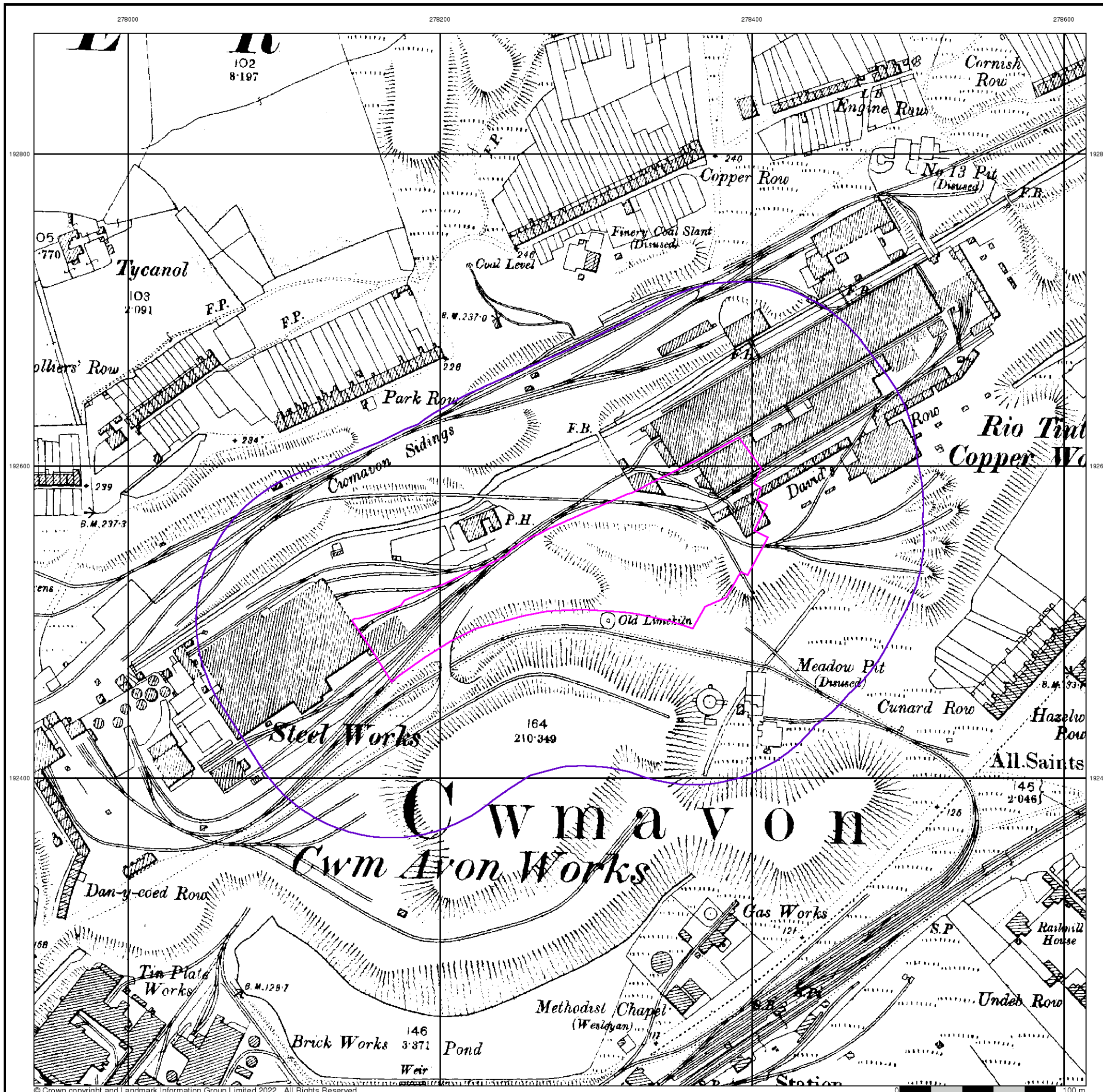


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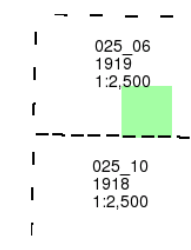
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Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

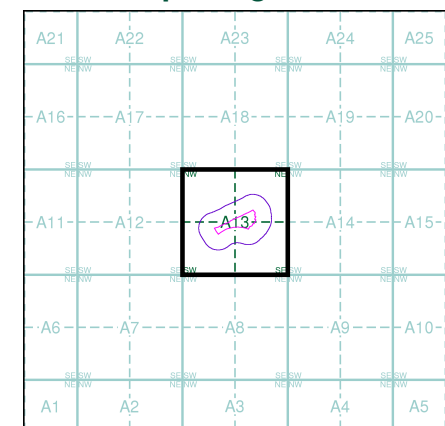


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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

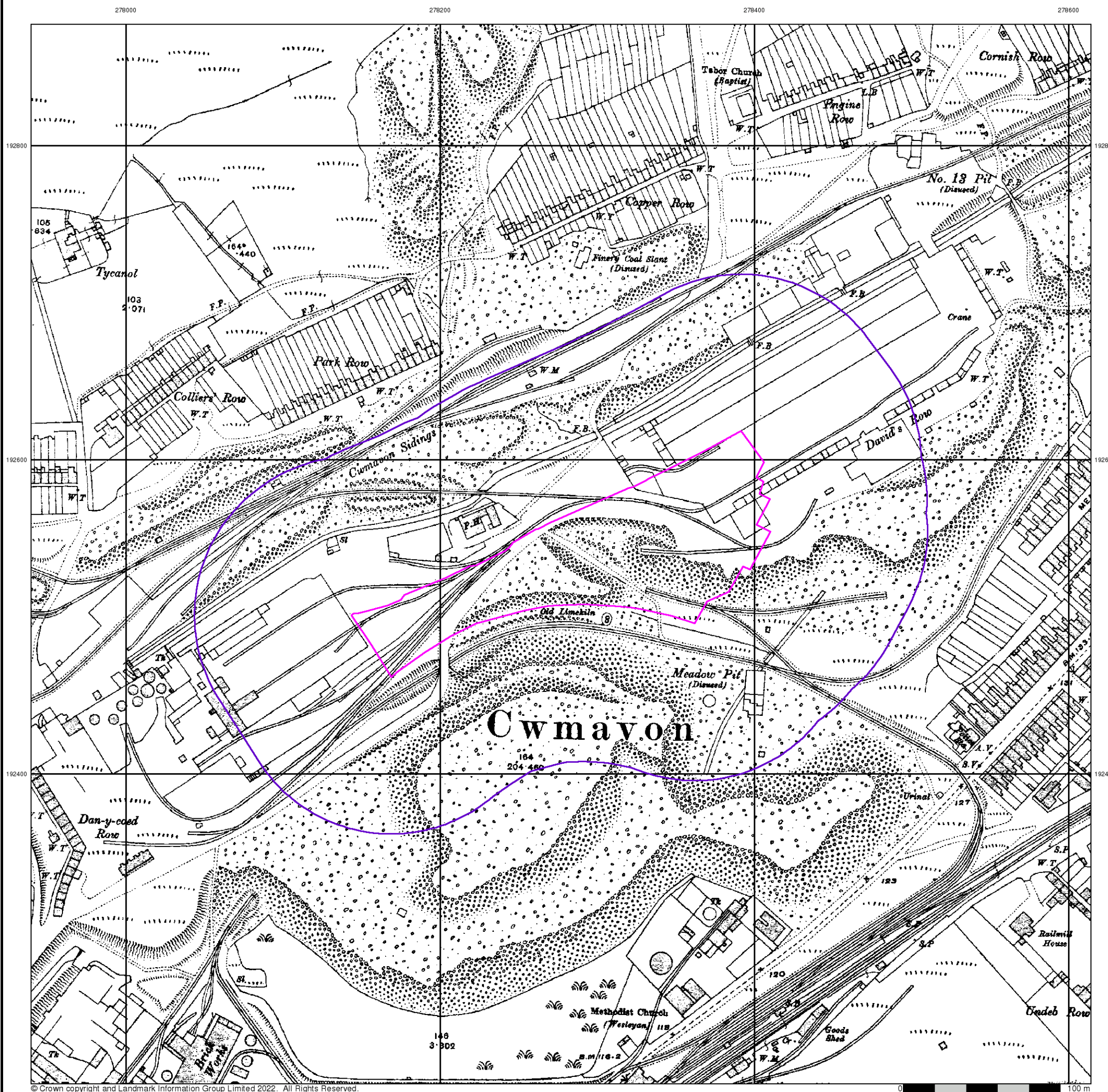


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National Grid Reference: 278280, 192530
Slice: A
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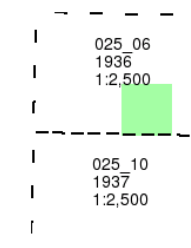
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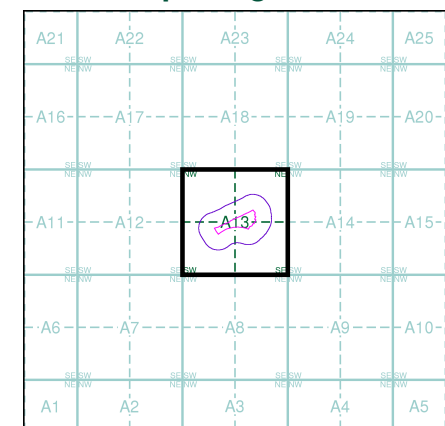


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Historical Map - Segment A13

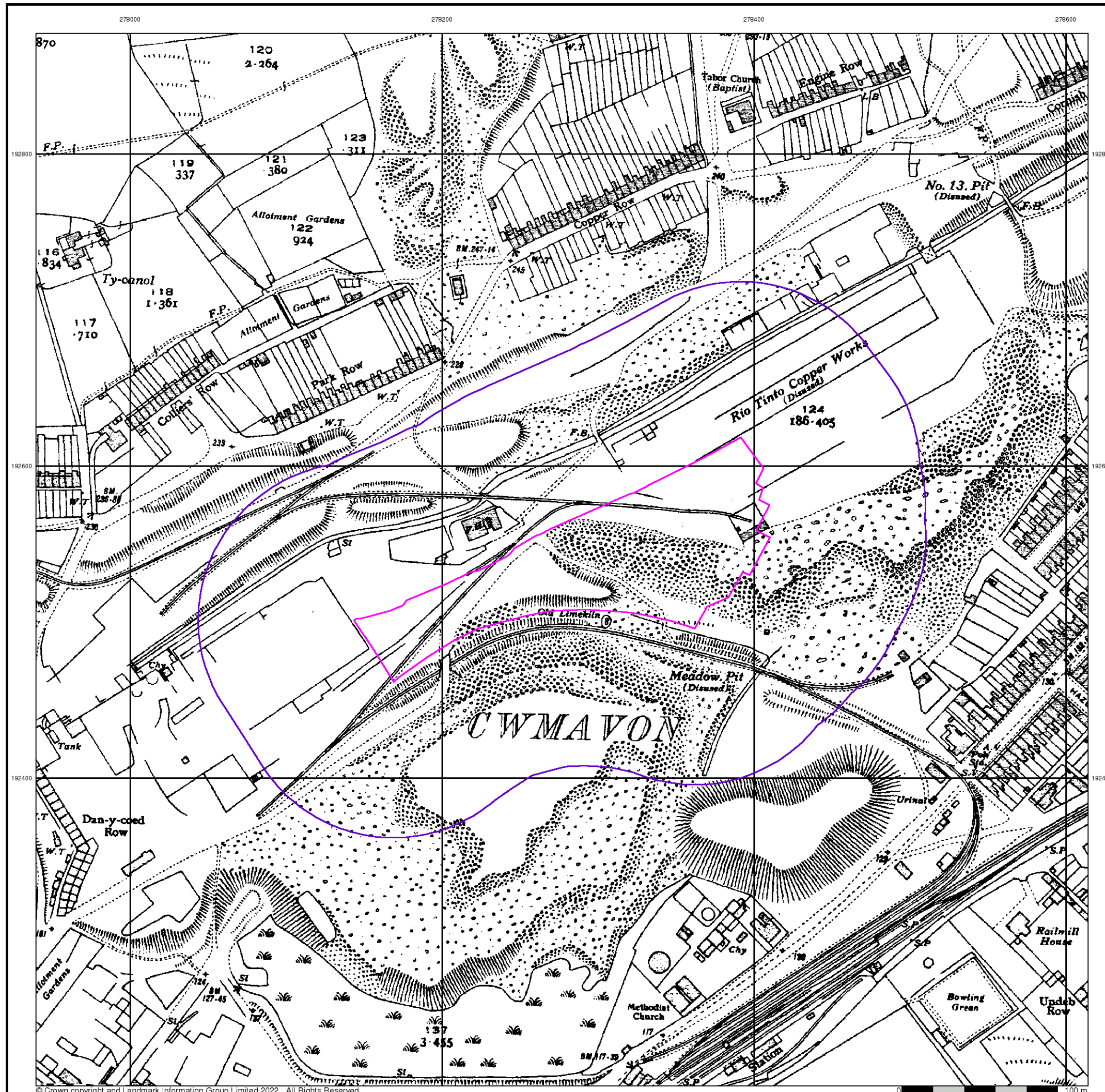


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Site Details

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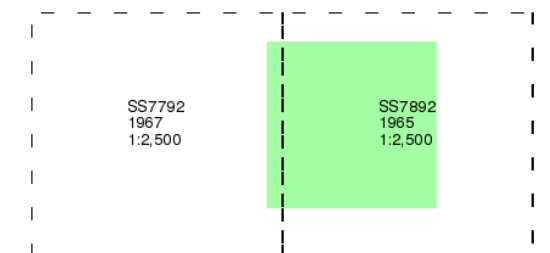
Ordnance Survey Plan

Published 1965 - 1967

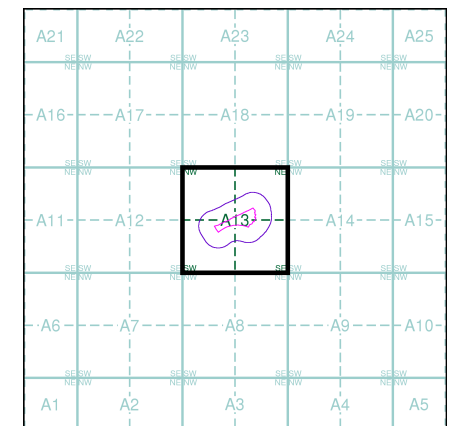
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13

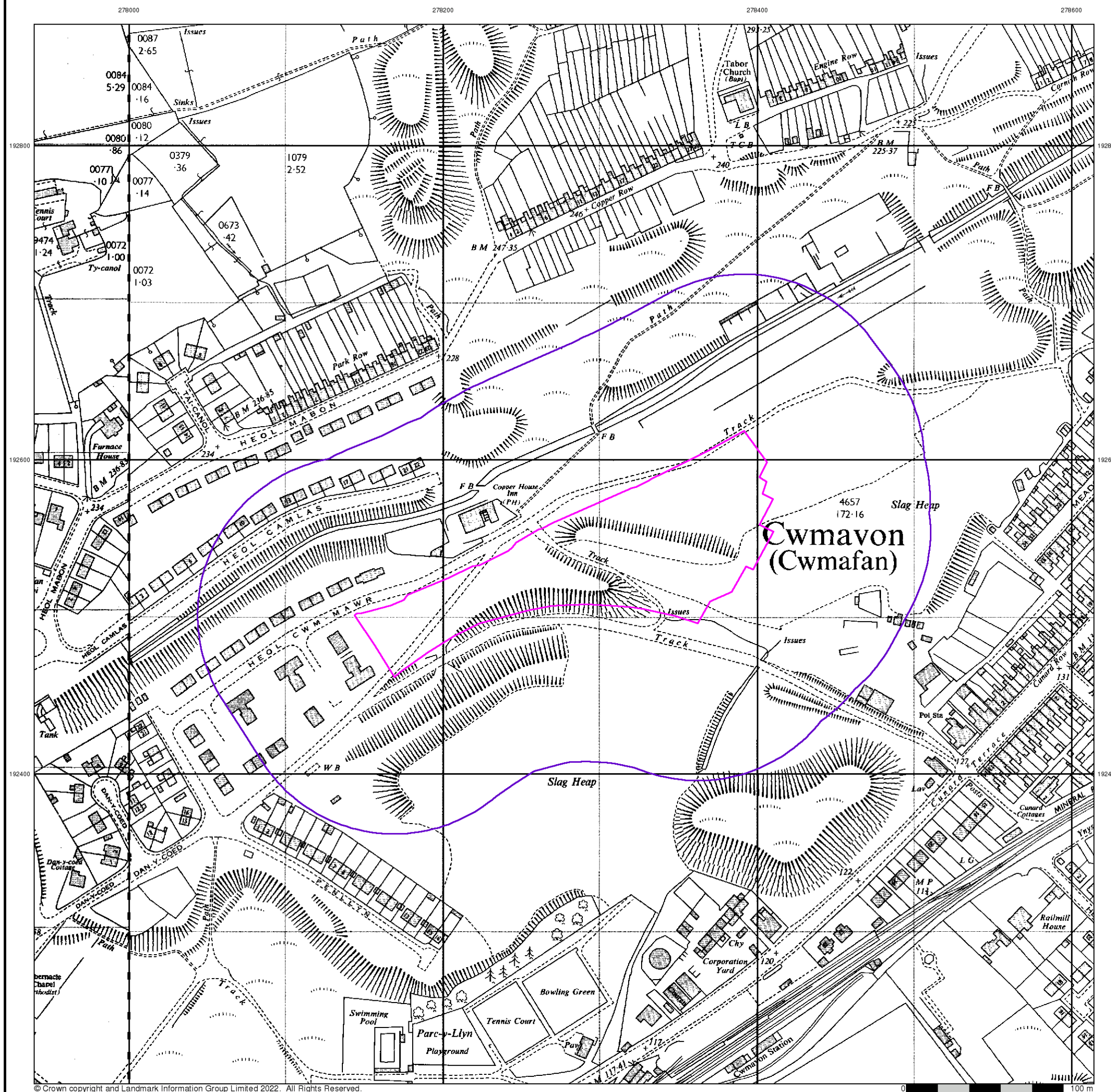


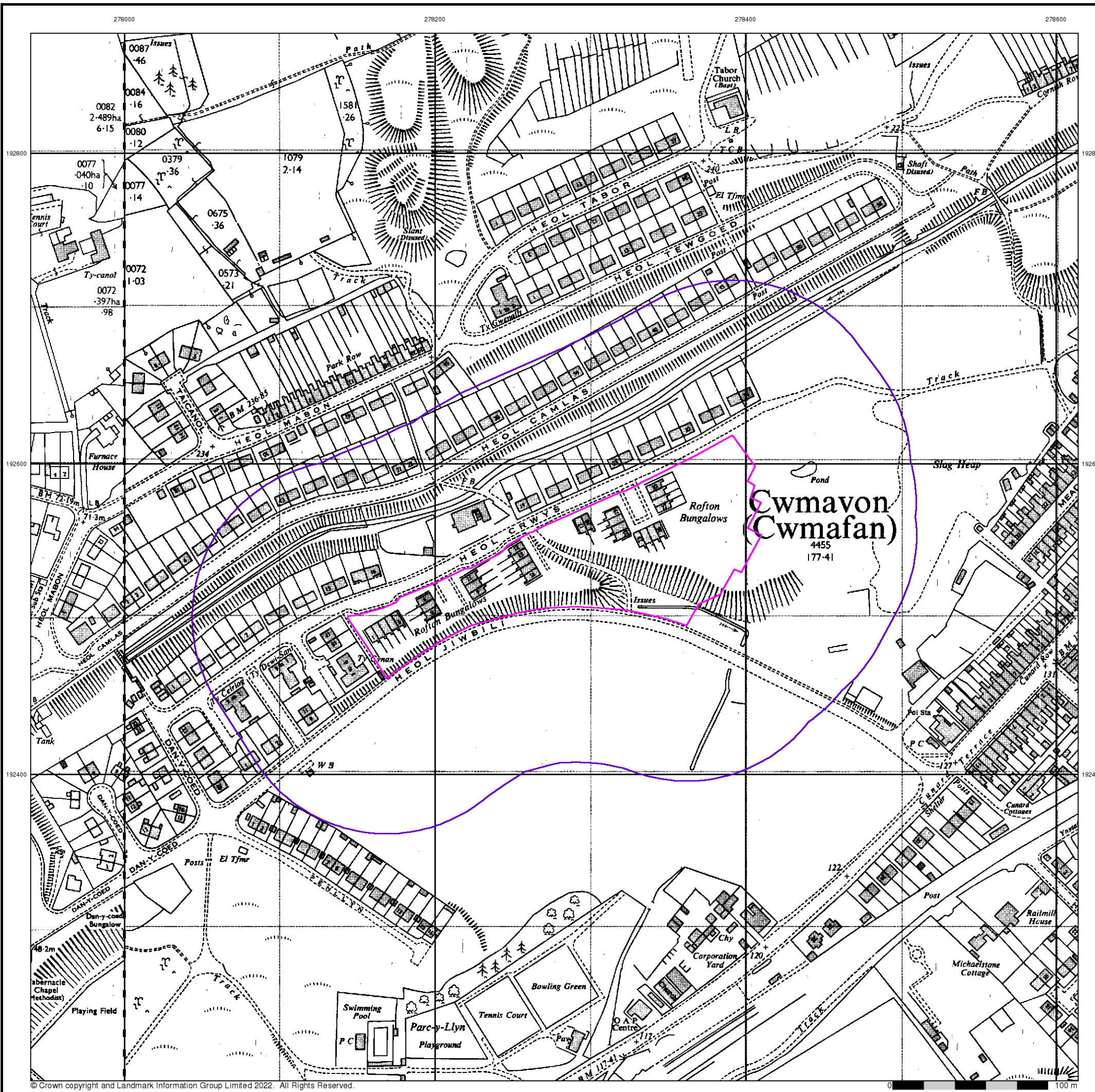
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Slice: A
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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA





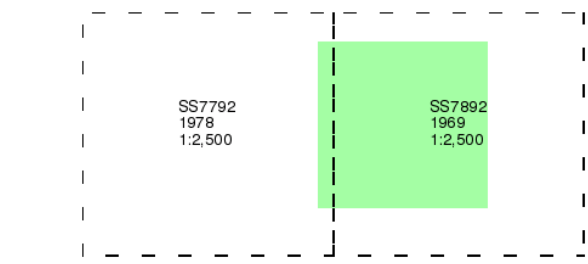
Ordnance Survey Plan

Published 1969 - 1978

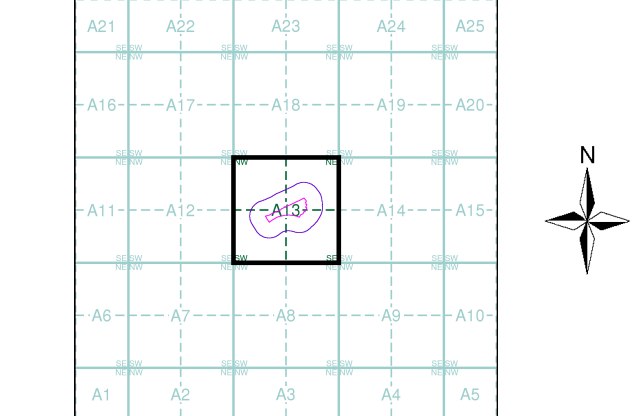
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Heol Crwys, Cwmavon, Port Talbot, SA12 9PA



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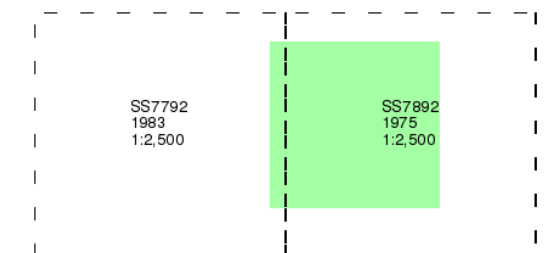
Ordnance Survey Plan

Published 1975 - 1983

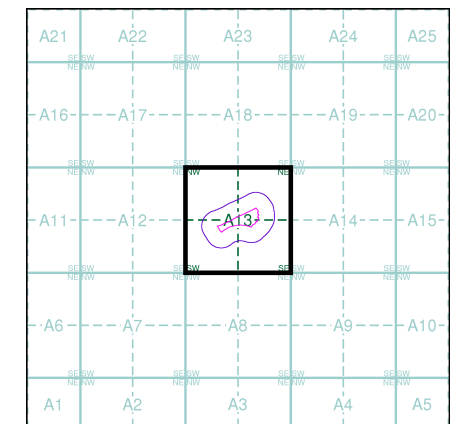
Source map scale - 1:2,500

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Historical Map - Segment A13

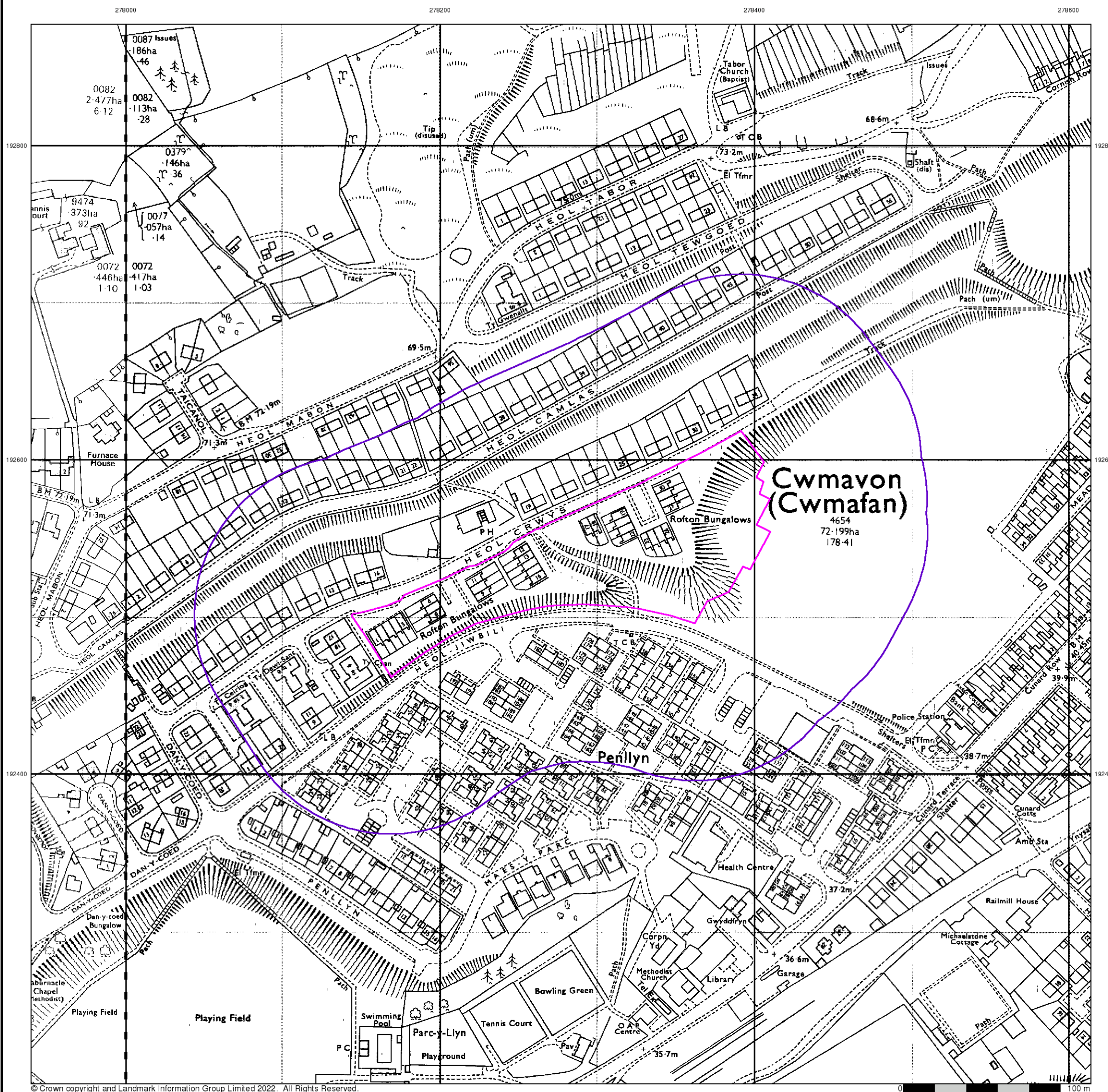


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Site Details

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Intégral Géotechnique

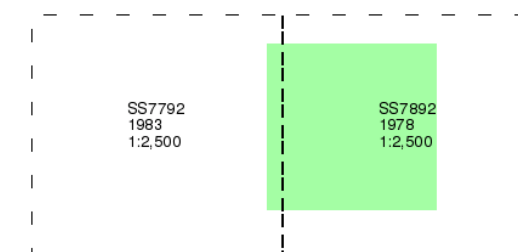
Additional SIMs

Published 1978 - 1983

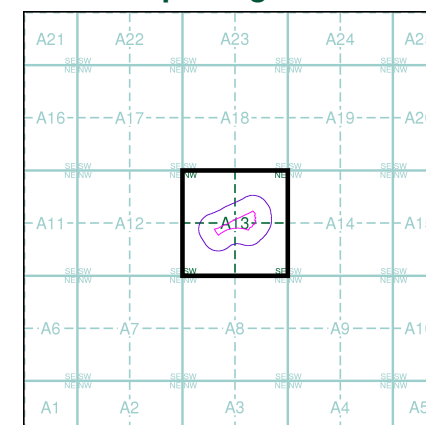
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

Order Number: 292811731_1_1
Customer Ref: 14023/LP
National Grid Reference: 278280, 192530
Slice: A
Site Area (Ha): 1.58
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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

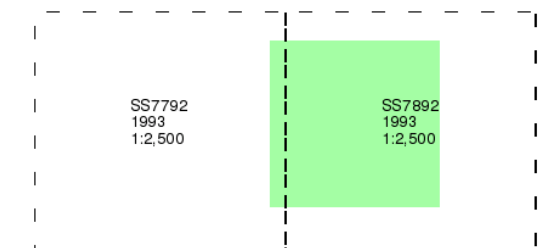
Large-Scale National Grid Data

Published 1993

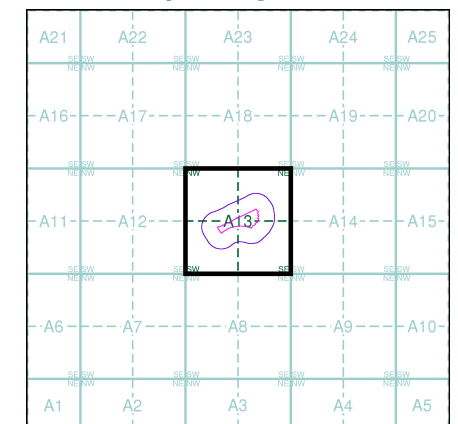
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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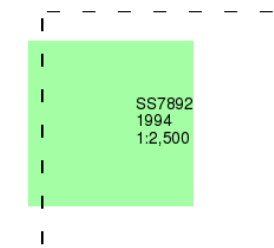
Large-Scale National Grid Data

Published 1994

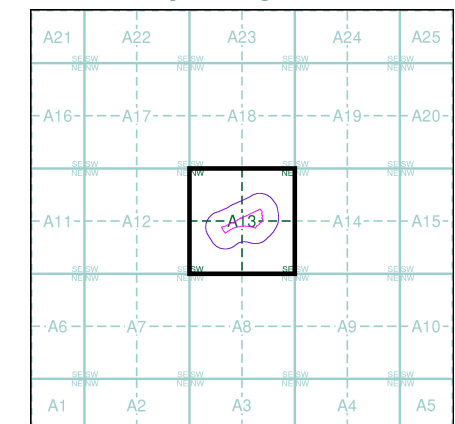
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1999, 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.

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INFORMATION GROUP

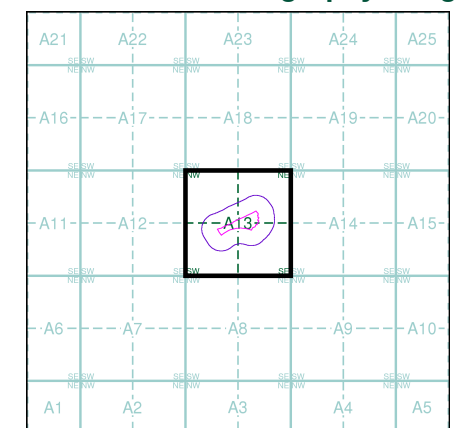
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Aerial Photography

Published 2000

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

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Site Details

Heol Crwys, Cwmavon, Port Talbot, SA12 9PA

APPENDIX B

CON29M COAL MINING REPORT FROM THE COAL AUTHORITY



The Coal
Authority

CON29M

coal mining report

HEOL CRWYS, CWMAVON, NEATH PORT TALBOT, SA12 9PA



Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 5



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **14023/LP**
Our reference: **51003004469001**
Date: **18 March 2022**

Client name:
**INTEGRAL GEOTECHNIQUE
(WALES) LTD.**

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk



The Law
Society

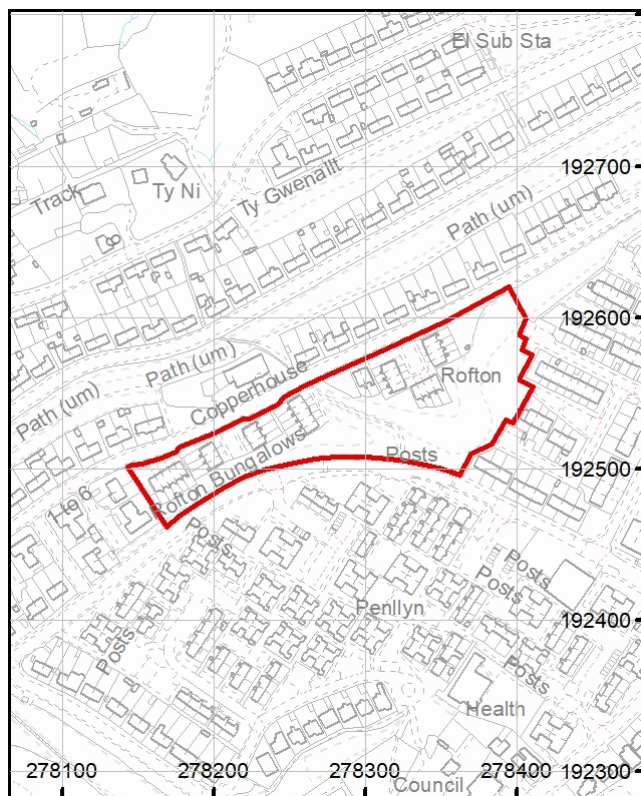
Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Professional opinion



Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 5 seams of coal at 50m to 190m depth, and last worked in 1900.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

In addition the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Professional opinion sections of the report.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

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

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

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

10 Mine gas

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

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

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

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

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **0800 288 4242**. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

FIGURES



NORTH

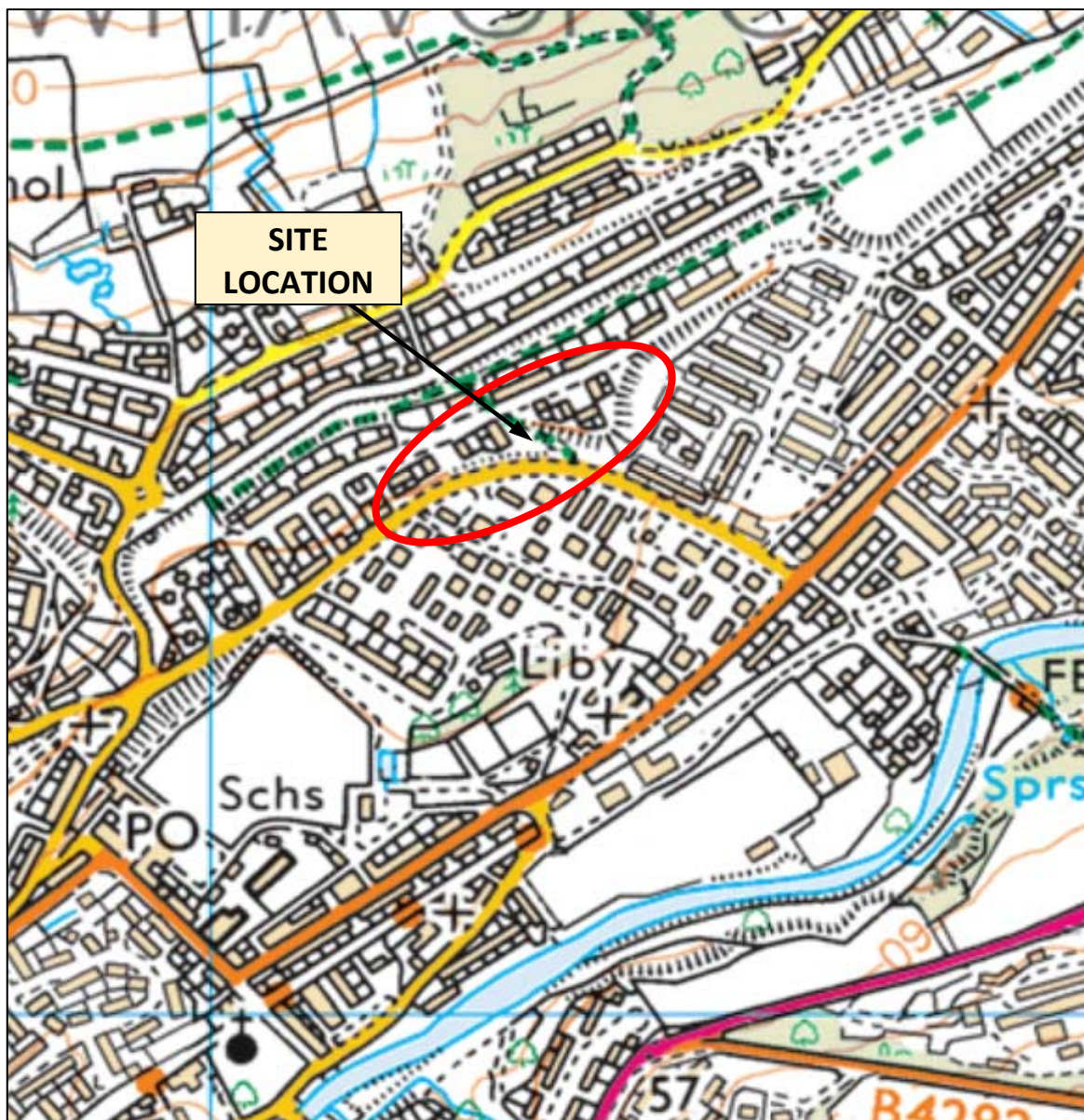


FIGURE 1: SITE LOCATION

Heol Crwys, Cwmavon

Intégral
Géotechnique

Intégral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 2080 7991
Fax: 029 2086 2176

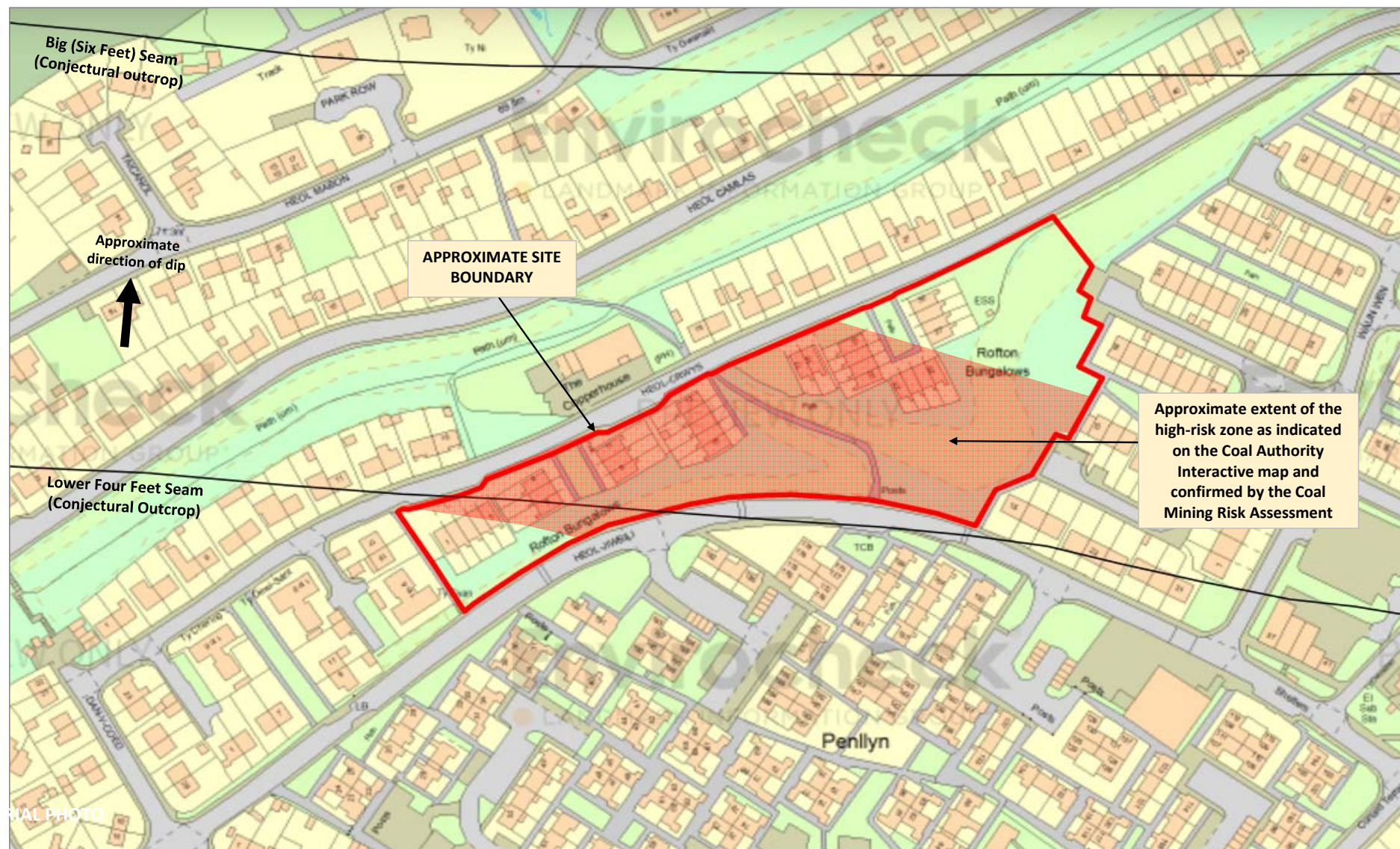


FIGURE 3: GEOLOGY AND MINING

Heol Crwys, Cwmavon

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