



# Draft Intrusive Coal Mining Risk Assessment Report

Site: Land to the Southwest of Winding  
Wheel Lane, Penallta

Prepared For: Castell Construction Limited

Issue Date: December 2022

Job No: 16810

**REPORT TITLE :** Draft Intrusive Coal Mining Risk Assessment Report, Land to the Southwest of Winding Wheel Lane, Penallta




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### Document Revision Record

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## Executive Summary

Site Location and Proposed Development	Castell Construction Limited (the Client) is proposing a mixed-use development comprising 33No. residential flats and 3No. commercial units at land to the southwest of Winding Wheel Lane in Penallta, Caerphilly.																								
Site History	The site became developed by the buildings and railway/tram lines of Penallta Colliery sometime between 1901 and 1919. The colliery became disused by 1993 and the site is currently unoccupied.																								
Geology	<p>The site is shown to be underlain by the Grovesend Formation at the north and the Hughes Member at the south.</p> <p>Bedrock is recorded dipping 5-8° degrees to the north in the local area.</p> <p>The conjectured outcrop of the economically important Mynyddislwyn coal seam (1.5m thick) is recorded crossing the site from north northeast to south southwest. The Mynyddislwyn coal will consequently lie at shallow depth beneath the north of the site.</p> <p>Superficial deposits are recorded as Till of Devensian Age and are shown to overly the solid geology.</p> <p>Made ground is anticipated on site given the site's history.</p>																								
Preliminary Coal Mining Risks	<p>Workings in the Mynyddislwyn Lower Leaf coal seam are recorded at 10m depth, however the abandonment plans indicate that they lie just off site to the west.</p> <p>There is a significant risk to the site's ground stability due to the possible presence of recorded shallow workings in the Mynyddislwyn coal beneath the site. An exploratory investigation is recommended to more accurately assess this risk.</p>																								
Ground Conditions	<table><tr><th colspan="2">Depth (m)</th><th>Thickness (m)</th><th>Stratum</th></tr><tr><td>GL</td><td>- 1.2</td><td>Absent/1.2</td><td><b>MADE GROUND</b> (driller's description)</td></tr><tr><td>GL/1.2</td><td>- 8.5/11.5</td><td>7.3/10.3</td><td>Brown sandy gravelly <b>CLAY</b></td></tr><tr><td>8.5/11.5</td><td>- &gt;15</td><td>Absent/&gt;24.6</td><td><b>SANDSTONE AND SILTSTONE</b></td></tr><tr><td>8.5/9.8</td><td>- 9.3/10.6</td><td>0.5/0.8</td><td><b>COAL</b></td></tr><tr><td>9.3/10.6</td><td>- 25.0</td><td>Unconfirmed</td><td><b>SANDSTONE AND SILTSTONE</b></td></tr></table>	Depth (m)		Thickness (m)	Stratum	GL	- 1.2	Absent/1.2	<b>MADE GROUND</b> (driller's description)	GL/1.2	- 8.5/11.5	7.3/10.3	Brown sandy gravelly <b>CLAY</b>	8.5/11.5	- >15	Absent/>24.6	<b>SANDSTONE AND SILTSTONE</b>	8.5/9.8	- 9.3/10.6	0.5/0.8	<b>COAL</b>	9.3/10.6	- 25.0	Unconfirmed	<b>SANDSTONE AND SILTSTONE</b>
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Assessment of The Risk from Past Shallow Coal Workings	<p>It is concluded that proposed commercial units 02 and 03 are not at risk due to the outcrop of the Mynyddislwyn coal seam lying to the northwest of it. The Mynyddislwyn coal seam will therefore not underlie the units and will therefore not pose a ground stability risk.</p> <p>The Mynyddislwyn coal seam does lie beneath the proposed residential units at the north of the site. However, on each occasion the seam was recorded, it was intact. It is therefore considered that the risk to the proposed residential building from shallow workings is negligible and no further assessment is necessary.</p> <p>Only one rotary percussive probehole could be drilled beneath the footprint of the additional building at the far north of the site. The coal seam was intact, however additional probeholes will be required to confirm that the recorded workings do not extend southwards and beneath this area.</p> <p>Drawing 01 shows the exploratory hole locations in relation to the proposed buildings.</p>																								
Mine Gas Risk Assessment	<p>A programme of ground gas monitoring is currently being undertaken.</p> <p>Upon completion of the full twelve rounds of monitoring a mine gas risk assessment will be undertaken in compliance with CL:AIRE publication: Good Practice for Risk Assessment for Coal Mine Gas Emissions.</p>																								

## TABLE OF CONTENTS

<b>SECTION 1 Introduction and Proposed Development</b>	<b>5</b>
1.1 Introduction	5
1.2 Limitations and Exceptions of Investigation	5
1.3 Quality Assurance	5
<b>SECTION 2 Review of Existing Data</b>	<b>6</b>
2.1 Physical Setting and Current Site Use	6
2.2 Site History	7
2.3 Geological Setting	8
2.3.1 Geology	8
2.3.2 BGS Borehole Information	8
2.4 Mining	9
<b>SECTION 3 Coal Mining Data</b>	<b>10</b>
3.1 The Coal Authority Consultants Coal Mining Report	10
3.1.1 Past Underground Mining	10
3.1.2 Mine Entries	10
3.1.3 Outcrops	10
3.2 Abandonment Plans	11
3.3 Stratigraphical sequence beneath the Site	12
3.4 Conclusion	12
3.5 Geoenvironmental Risk	12
3.5.1 Mine Gas Risk Assessment	12
<b>SECTION 4 Field Investigation</b>	<b>13</b>
4.1 Site Works	13
4.2 Ground Conditions	13
4.3 Groundwater	13
<b>SECTION 5 Assessment of The Risk from Past Shallow Coal Workings</b>	<b>14</b>
5.1 General	14
5.2 Conclusions	14
<b>SECTION 6 Assessment of Mine Gas Risk</b>	<b>15</b>
<b>Tables</b>	
Table 2.1 Historical Development from Map Information	7
Table 2.2 Detailed Stratigraphical Information	8
Table 3.1 Past Underground Workings	10
Table 3.2 Mine Entries	10
Table 3.3 Outcrops	10
Table 4.2 Summary of Typical Ground Conditions	13
<b>Figures</b>	
Figure 2.1 Site Location	6
Figure 3.1 Coal Authority Abandonment Plan Extract	11
Figure 3.2 Geology and Strata Base below Ground Level	12
<b>Annexes</b>	



## Drawings

Drawing 01 Proposed Site Layout with Exploratory Hole Locations

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## **SECTION 1 Introduction and Proposed Development**

### **1.1 Introduction**

Castell Construction Limited (the Client) is proposing a mixed-use development comprising 33No. residential flats and 3No. commercial units at land to the southwest of Winding Wheel Lane in Penallta, Caerphilly.

TFW Group Limited (Terra Firma) have been commissioned by the Client to undertake an intrusive coal mining risk assessment for the site.

The main objectives of the intrusive coal mining risk assessment were to:

- Assess the presence of any unrecorded mine workings at shallow depth
- Determine the presence or otherwise of any mine entries
- Provide recommendations for any necessary ground stabilisation

In order to achieve the above objectives, TFW Group Limited carried out an assessment programme including a review of existing data, liaisons with the Coal Authority and application for the necessary permits, followed by a field investigation to collect geological data from selected locations.

### **1.2 Limitations and Exceptions of Investigation**

The Client has requested that a desk-based coal mining risk assessment followed by an intrusive investigation be undertaken to enable the defined main objectives.

The intrusive coal mining risk assessment was conducted, and this report has been prepared for the sole internal reliance of the Client and their design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of TFW Group Limited. If an unauthorised third party comes into possession of this report, they rely on it at their peril and the authors owe them no duty of care and skill. The report represents the findings and opinions of experienced geoenvironmental and geotechnical consultants. TFW Group Limited does not provide legal advice and the advice of lawyers may be required.

The subsurface geological profiles and other plots are generalised by necessity and have been based on the information found at the locations of the exploratory holes.

The investigation was limited by the topography and watercourse that flowed through the site at the north of the site

### **1.3 Quality Assurance**

The quality and environmental aspects of the assessment and investigation comply with UKAS Accredited ISO 9001:2015 and ISO 14001:2015 standards.

## SECTION 2 Review of Existing Data

### 2.1 Physical Setting and Current Site Use

The development site is irregular in shape and locates off Winding Wheel Lane, Penallta. The site centres on an approximate National Grid Reference of 314010, 195660, occupying a plan area of approximately 1.10 Hectares.

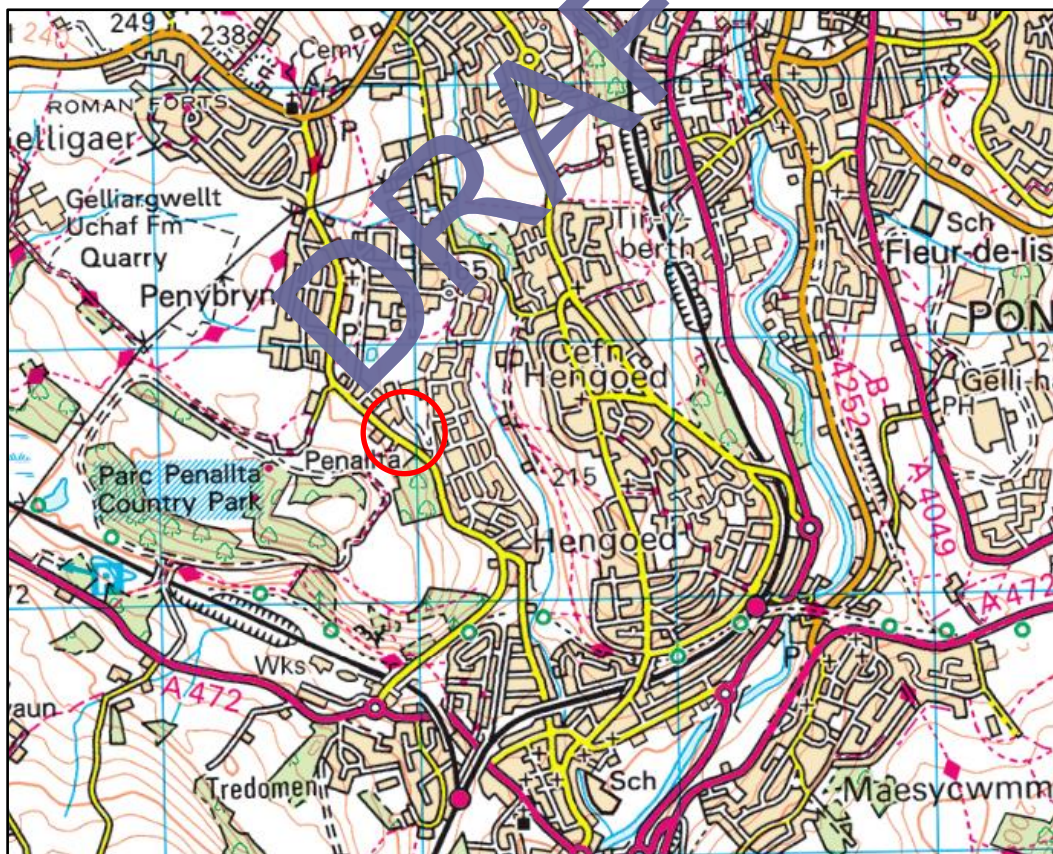
The site lies to the immediate southwest of Winding Wheel Lane and to the northeast of Penallta Road. Most of the site is covered by vegetation, including thick bramble and juvenile trees.

The site is surrounded by roads on all sides apart from to the immediate northwest where the site is bound by derelict industrial buildings. The site's boundary is formed by a stone wall along the southwest, and a mixture of wooden panel fencing, metal palisade fencing and temporary security fencing around the remainder of the site.

Approximately 40m to the north of the site is the remains of Penallta Colliery and associated winding wheel, with some buildings either laying abandoned or undergoing redevelopment.

The site's elevation is between approximately 189m and 181m AOD, sloping downwards to the east.

The site location can be seen on **Figure 2.1**.



**Figure 2.1 Site Location**

## 2.2 Site History

Historical maps of the site have been obtained in an Envirocheck Report, provided by Landmark Information Group. The history plans are supplied in **Annex A** of this report, and the most relevant editions are summarised in **Table 2.1**. Distances are approximate, and any changes in-between map editions may not be recorded

**Table 2.1 Historical Development from Map Information**

Map Edition & Scale	Key Features on Site	Key Features off Site
1875-1880 1:2,500	The site is wooded land.	Generally field land surrounds the site, with a few wooded areas. One air shaft is noted 200m west.
1900-1901 1:2,500	The site remains unchanged.	A quarry is shown 15m to the south.
1919-1920 1:2,500	Railway/tram lines crossing the site and a building located at the north appear to be associated with Penallta Colliery.	Immediately north of the site is Penallta Colliery, with the associated railway/tram lines and buildings. Several reservoirs are shown 250m north.
1960-1961 1:2,500	Railway tracks have been dismantled, replaced with an aerial ropeway. New buildings have been built at the north of the site.	Colliery is shown to have more railway tracks and has several new buildings. Quarry work is shown to be expanded to the southwest.
1974-1975 1:10,000	The site remains unchanged.	The quarries to the south of the site are marked as disused. The quarry 50m south is now marked as a disused tip.
1993 1:2,500	The ropeway is no longer shown, no railway remains on site. Only two small buildings are shown on the site.	Penallta Colliery is disused. Most railway lines are no longer shown.
2006 1:10,000	The site remains unchanged.	Residential area is shown 100m south of the site.
2021 1:10,000	The site is covered by vegetation and no buildings are located on site.	Residential development has continued to grow, in particular 50m to the east where there is a large housing estate.

## 2.3 Geological Setting

### 2.3.1 Geology

The 1:10,560 scale British Geological Map of the area (Sheet ST 19 NW) and the British Geological Survey database were consulted for geology underlying the site. The site is shown to be underlain by the Grovesend Formation at the north and the Hughes Member at the south. Detailed stratigraphical information is provided in **Table 2.2**.

**Table 2.2 Detailed Stratigraphical Information**

Period	Formation
Carboniferous	<b>Grovesend Formation:</b> Predominantly argillaceous, comprising mudstones and siltstones, with well-developed coals; minor lithic ("Pennant") sandstones; locally developed red mudstones in the type area. .
	<b>Pennant Sandstone Formation (Hughes Member):</b> Green-grey, lithic arenites ('Pennant sandstones'), with thin mudstone/siltstone and seatearth interbeds, and mainly thin coals.

Bedrock is recorded dipping 5-8° degrees to the north in the local area.

The conjectured outcrop of the economically important Mynyddislwyn coal seam (1.5m thick) is recorded crossing the site from north northeast to south southwest. The Mynyddislwyn coal will consequently lie at shallow depth beneath the north of the site.

Superficial deposits are recorded as Till of Devensian Age and are shown to overly the solid geology.

Made ground is anticipated on site given the site's history.

### 2.3.2 BGS Borehole Information

Borehole Scans record two mine shafts to the north/northeast of the site.

No.1 Shaft (313950,195780) terminated at a depth of 716m, approximately 70m north

GL to 12.4m -	Superficial deposits.
12.4m to 14.4m -	Bedrock
14.4m to 15.5m -	Mynyddislwyn coal seam
15.5m to >716-	Bedrock with many coal seams

No.2 Shaft (314032, 195778) terminated at a depth of 686m approximately 100m northeast)

GL to 15.0m -	Superficial deposits.
15.0m to 15.3m -	Coal
15.3m to 15.4m -	Clod
15.4m to 16.5m -	Coal
16.5m to >686m -	Bedrock with many coal seams



## 2.4 Mining

A Coal Authority Consultants Coal Mining Report was procured for the site and is presented in **Annex B**.

The report records workings in the Mynyddislwyn Lower Leaf coal seam at 10m beneath the site. Workings in the Six-Foot Bottom Leaf are recorded at 608m and 623m beneath the site. One mine shaft is recorded in the local area however it locates approximately 90m to the north and therefore not within influencing distance of the site.

Further information from the report is discussed in **Section 3**.

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## SECTION 3 Coal Mining Data

### 3.1 The Coal Authority Consultants Coal Mining Report

The Coal Authority Consultants Coal Mining Report is appended in **Annex B** and is summarised in the following subsections.

#### 3.1.1 Past Underground Mining

Past underground mining is recorded in two seams from shallow to a depth of 623m beneath the site. Workings depth and thicknesses are summarised in **Table 2.1**.

**Table 3.1 Past Underground Workings**

Seam Name	Depth (m)	Thickness (m)	Dip Rate	Dip Direction
Mynyddislwyn Lower Leaf	10	2.2	4.1	Northwest
Six Foot Bottom Leaf	608-623	2.0	12.5-9.5	Northwest

Several other workings are recorded off site within 100m of the site boundary.

There are no probable unrecorded shallow workings recorded, and no spine roadways recorded at shallow depth.

#### 3.1.2 Mine Entries

Mine entries on or within proximity to the site boundary that are not recorded as treated are summarised in **Table 3.2**.

**Table 3.2 Mine Entries**

Entry Type	Reference	Grid Reference	Comment	Treatment Description
Shaft	313195-001	313932, 195780	Off-site not within 50m	This entry was filled in 1991 with stone and shale to an unknown specification. In 2004 a steel cover was fitted over the shaft and a fence placed around the shaft cover.

The location of the mine entry is shown in the Coal Authority Report.

#### 3.1.3 Outcrops

Coal outcrops on or within proximity to the site boundary are summarised in **Table 3.3**.

**Table 3.3 Outcrops**

Seam Name	Distance and Direction to Outcrop	Seam Workable?	Bearing of Outcrop
Mynyddislwyn Lower Leaf	Within	Yes	30
Mynyddislwyn Lower Leaf	Within	Yes	204

### 3.2 Abandonment Plans

Abandonment plans were procured for the Cefn-Llwynau Drift Colliery in the Mynyddislwyn coal seam. An extract of the abandonment plans with the approximate site boundary overlaid is presented in **Figure 3.1**. The plans indicate that the recorded workings in the Mynyddislwyn seam do not extend beneath the site and terminate to the west of Penallta Road.



Figure 3.1 Coal Authority Abandonment Plan Extract

### 3.3 Stratigraphical sequence beneath the Site

The site is shown to be underlain by the Pennant Sandstone Formation. The anticipated stratigraphical sequence beneath the site is illustrated in **Figure 2.1**.

Strata		Thickness	Depth
Made Ground		1	0-1
Till, Devensian - Diamicton.		9	1-10
Grovesend Formation	Predominantly argillaceous, comprising mudstones and siltstones, with well-developed coals; minor lithic ("Pennant") sandstones; locally developed red mudstones in the type area. .	0-2	10-12
	<b>Mynyddislwyn Coal Seam</b>	<b>2</b>	<b>12-14</b>
Pennant Sandstone Formation (Hughes Member)	Green-grey, lithic arenites ('Pennant sandstones'), with thin mudstone/siltstone and seatearth interbeds, and mainly thin coals.	>50	>38

**Figure 3.2 Geology and Stratigraphical Base below Ground Level**

The Coal Authority Report (**Annex 3**) shows the location of outcropping coal seam relative to the site boundary.

### 3.4 Conclusion

Based on the information provided in the Coal Authority's Consultant's Report and the geological map, there is a significant risk to the site's ground stability due to the possible presence of recorded shallow workings in the Mynyddislwyn coal beneath the site.

It should be noted however, that when the site boundary is overlaid on the abandonment plans, the workings do not appear to extend onto the site, which is contrary to the Coal Authority's report. Nevertheless, there is a significant risk to the site from unrecorded workings due to the depth, thickness, and past economic importance in the local area of the Mynyddislwyn coal seam.

It is concluded that an intrusive investigation is required to more accurately assess the risk to the site from shallow workings. This includes finding the outcrop of the coal seam and confirming whether the seam has been worked.

### 3.5 Geoenvironmental Risk

#### 3.5.1 Mine Gas Risk Assessment

It is considered that unflooded worked coal seams within 150m of ground level, potentially presents a mine gas risk to any future development. Further investigation and risk assessment should be undertaken prior to development of the site.

## SECTION 4 Field Investigation

### 4.1 Site Works

An intrusive coal mining risk assessment comprising 8No. rotary percussive probeholes was undertaken between the 9<sup>th</sup> and 16<sup>th</sup> November 2022.

One rotary percussive probehole was drilled on the footprint of the proposed commercial building at the centre of the site, and a further six rotary percussive probeholes were drilled on the footprint of the proposed residential building at the north. One more rotary percussive probehole was drilled at the far north of the site where an additional building may be built. However, the drilling at the far north of the site was limited due to the topography, vegetation and a watercourse that flows through the site.

The fieldwork was supervised by Terra Firma, who logged the exploratory holes to the requirements of BS 5930:2015+A1:2020. The proposed locations of the exploratory holes were determined by Terra Firma in general accordance with BS 10175:2011+A2:2017 in order to assess the findings of the preliminary conceptual site model.

Probeholes referenced PH02 to PH10 were formed using a track mounted rotary drilling rig. The probehole was advanced from surface using a downhole hammer with water as the flushing medium. PH01 and PH09 were not drilled due to site limitations.

On completion, boreholes were installed with slotted standpipes consisting of a 50mm ID HDPE slotted tube set in a granular filter zone and sealed above with a bentonite plug. Installations were protected at surface with a flush cover. Full installation details are recorded on the relevant logs.

The probehole logs are presented in **Annex C**.

Exploratory hole locations are shown on **Drawing 01**.

### 4.2 Ground Conditions

The ground conditions encountered by the exploratory holes can in general be summarised as shown in **Table 4.1**.

**Table 4.1 Summary of Typical Ground Conditions**

Depth (m)			Thickness (m)	Stratum
GL	-	1.2	Absent/1.2	<b>MADE GROUND</b> (driller's description)
GL/1.2	-	8.5/11.5	7.3/10.3	Brown sandy gravelly <b>CLAY</b>
8.5/11.5	-	>35	Absent/>24.6	<b>SANDSTONE AND SILTSTONE</b>
8.5/9.8	-	9.3/10.6	0.5/0.8	<b>COAL</b>
9.3/10.6		>35.0	Unconfirmed	<b>SANDSTONE AND SILTSTONE</b>

### 4.3 Groundwater

Groundwater inflows could not be determined due to water flush having been used as the flushing medium.



## SECTION 5 Assessment of The Risk from Past Shallow Coal Workings

### 5.1 General

Eight rotary percussive probeholes were drilled across the site.

The site investigation shows the following generalised strata to a depth of up to 35m below current ground level:

- Made Ground
- Till Deposits
- Siltstone and Sandstone
- Intact Coal (Mynyddislwyn)
- Siltstone and Sandstone

As discussed in Section 3 of this report, the Coal Authority records the outcrop of the Mynyddislwyn coal seam crossing the middle of the site from north northeast to south southwest. Bedrock is recorded dipping at 5-8° to the north. The Mynyddislwyn will therefore underlie the north of the site at shallow depth.

The rotary percussive drilling confirms the Mynyddislwyn outcrops through the centre of the site. The coal seam was not recorded in PH02 and PH03 but was recorded in PH04, PH05, PH06, PH07, PH08, and PH10 at very shallow depth. On each occasion, the coal seam was recorded intact. Drilling at the far north of the site was limited due to the vegetation, topography, and watercourse, which flows through the site.

### 5.2 Conclusions

It is concluded that proposed commercial units 02 and 03 are not at risk due to the outcrop of the Mynyddislwyn coal seam lying to the north west of it. The Mynyddislwyn coal seam will therefore not underlie the units and will therefore not pose a ground stability risk.

The Mynyddislwyn coal seam does lie beneath the proposed residential units at the north of the site. However, on each occasion the seam was recorded, it was intact. It is therefore considered that the risk to the proposed residential building from shallow workings is negligible and no further assessment is necessary.

Only one rotary percussive probehole could be drilled beneath the footprint of the additional building at the far north of the site. The coal seam was intact, however additional probeholes will be required to confirm that the recorded workings do not extend southwards and beneath this area.

**Drawing 01** shows the exploratory hole locations in relation to the proposed buildings.

## **SECTION 6 Assessment of Mine Gas Risk**

A programme of ground gas monitoring is currently being undertaken.

Upon completion of the full twelve rounds of monitoring a mine gas risk assessment will be undertaken in compliance with CL:AIRE publication: Good Practice for Risk Assessment for Coal Mine Gas Emissions.

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**ANNEX 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

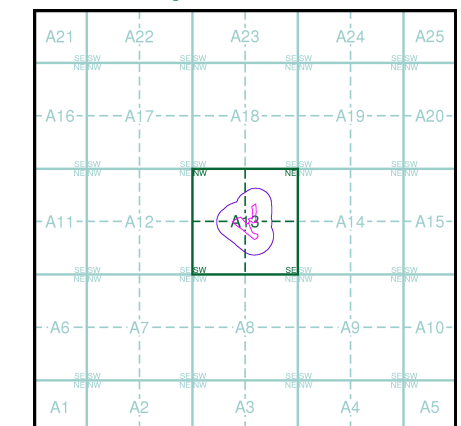


Geotechnical & Geoenvironmental Specialists

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1884 - 1885	2
Monmouthshire	1:10,560	1885 - 1886	3
Glamorganshire	1:10,560	1901	4
Glamorganshire	1:10,560	1921 - 1922	5
Glamorganshire	1:10,560	1938 - 1953	6
Historical Aerial Photography	1:10,560	1945 - 1949	7
Glamorganshire	1:10,560	1953	8
Ordnance Survey Plan	1:10,000	1960 - 1965	9
Ordnance Survey Plan	1:10,000	1965	10
Ordnance Survey Plan	1:10,000	1974 - 1975	11
Ordnance Survey Plan	1:10,000	1983 - 1986	12
Ordnance Survey Plan	1:10,000	1995	13
10K Raster Mapping	1:10,000	1999	14
10K Raster Mapping	1:10,000	2006	15
VectorMap Local	1:10,000	2021	16

## Historical Map - Slice A



## Order Details

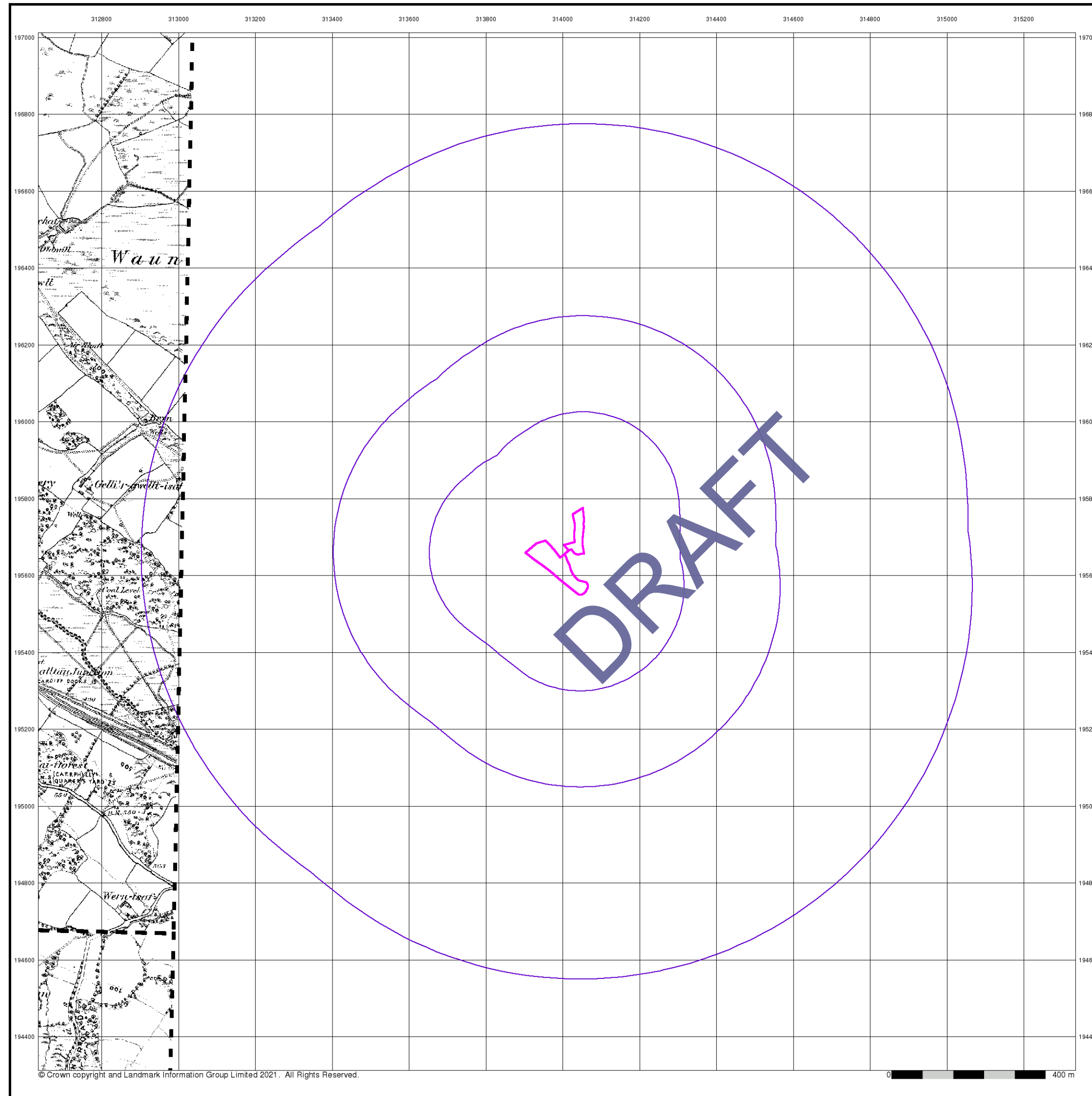
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

## Site Details

Winding Wheel Lane, Penallta, CF82 6AA

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Geotechnical & Geoenvironmental Specialists

## Glamorganshire

Published 1884 - 1885

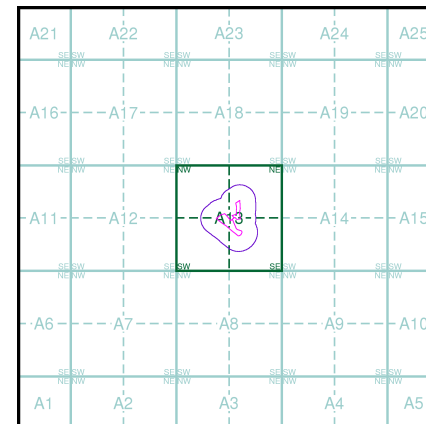
Source map scale - 1:10,560

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)

01900	1884	1:10,560
02800	1885	1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

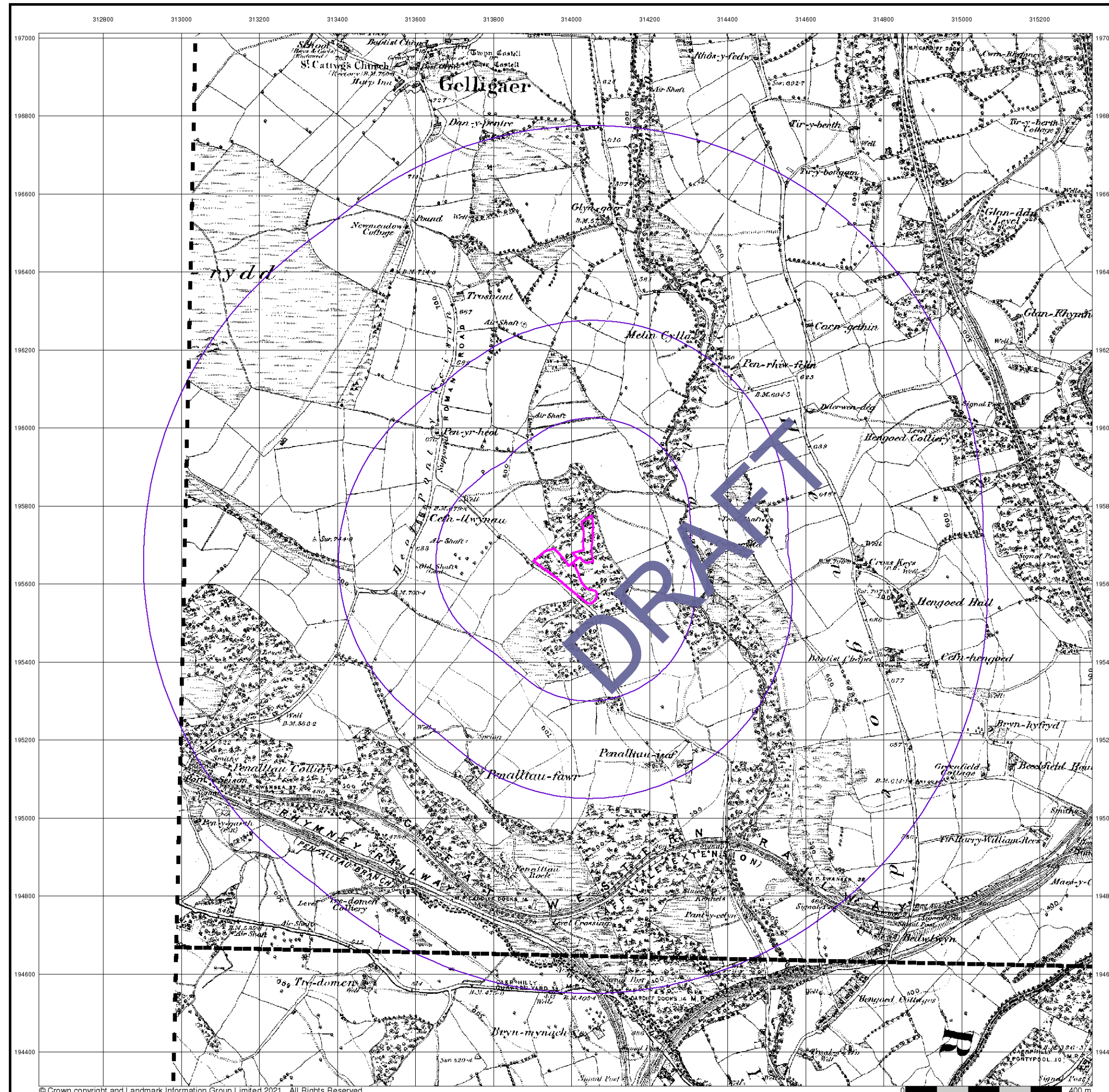
### Site Details

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Geotechnical & Geoenvironmental Specialists

## Monmouthshire

Published 1885 - 1886

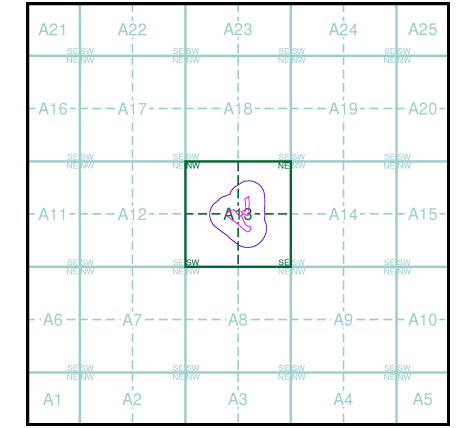
Source map scale - 1:10,560

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)

02200
1886
1:10,560
02700
1885
1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

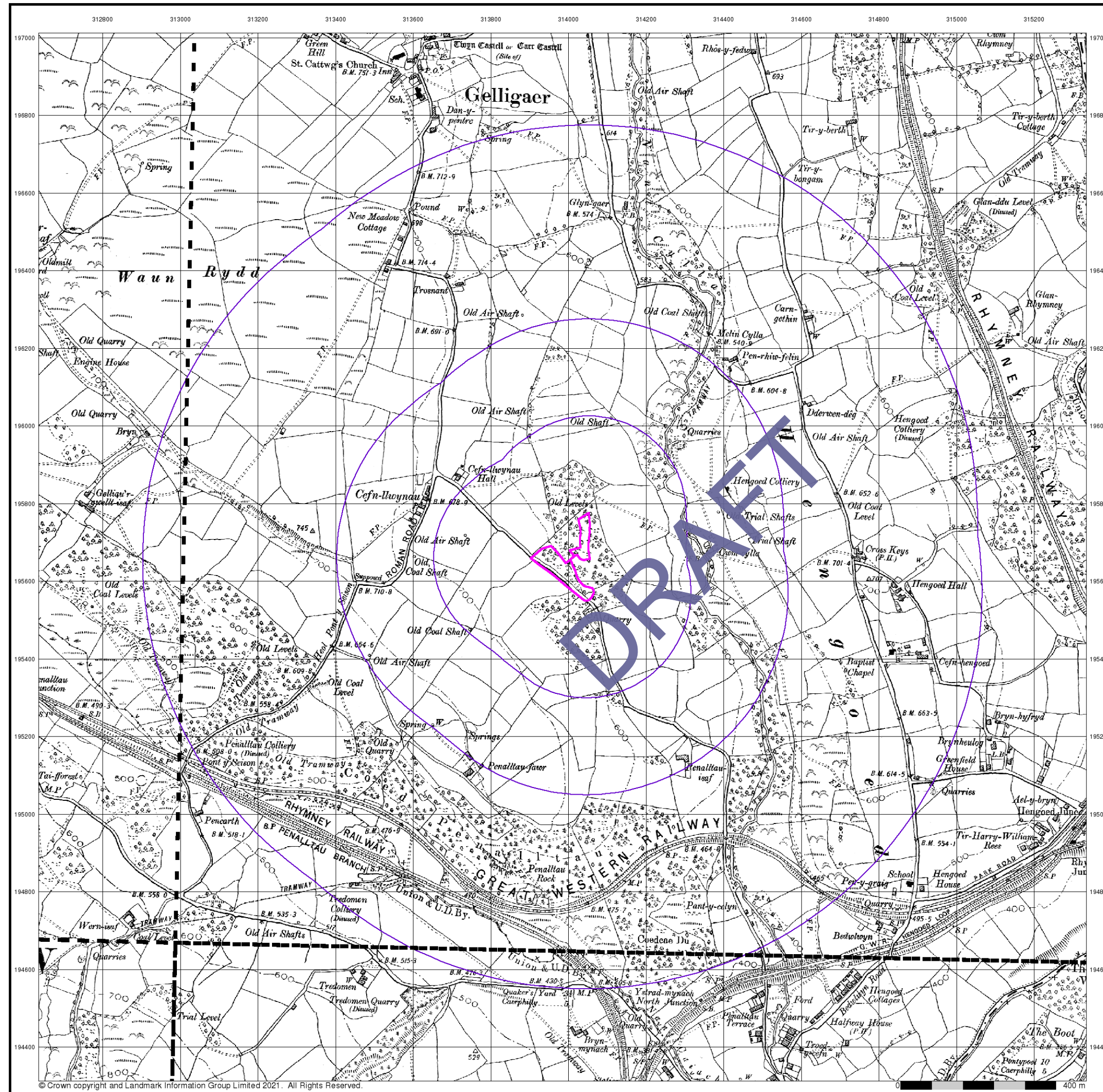
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## Glamorganshire

Published 1901

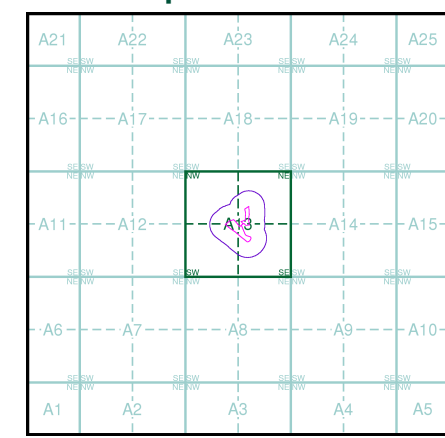
Source map scale - 1:10,560

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)

019SE 1901 1:10,560	020SW 1901 1:10,560
028NE 1901 1:10,560	029NW 1901 1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

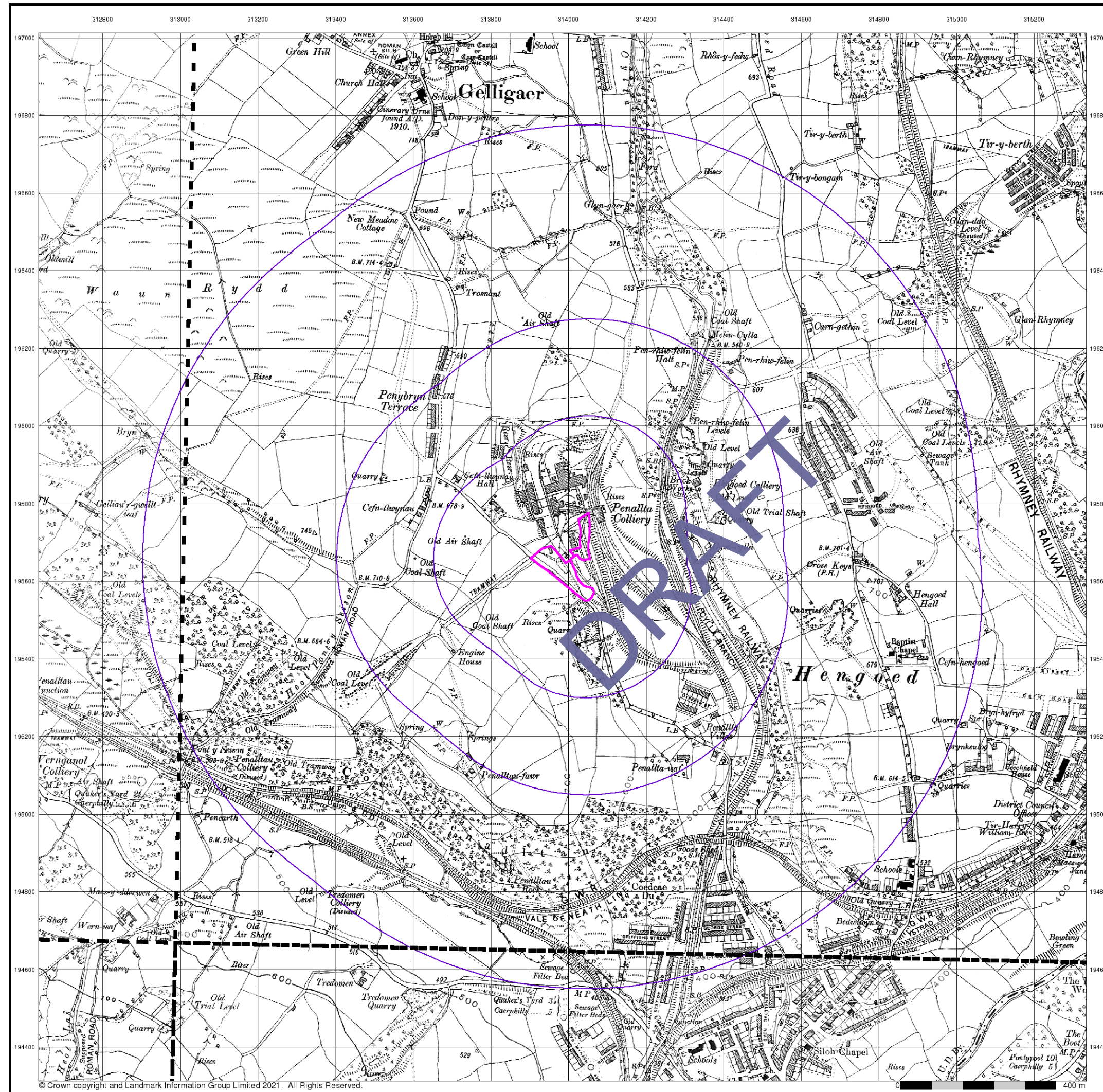
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## Glamorganshire

Published 1921 - 1922

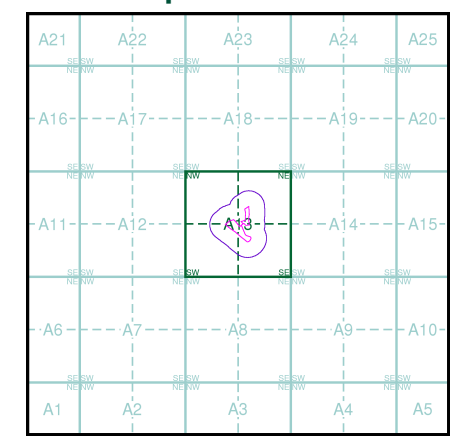
Source map scale - 1:10,560

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)

019SE 1921 1:10,560	020SW 1922 1:10,560
028NE 1921 1:10,560	029NW 1922 1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

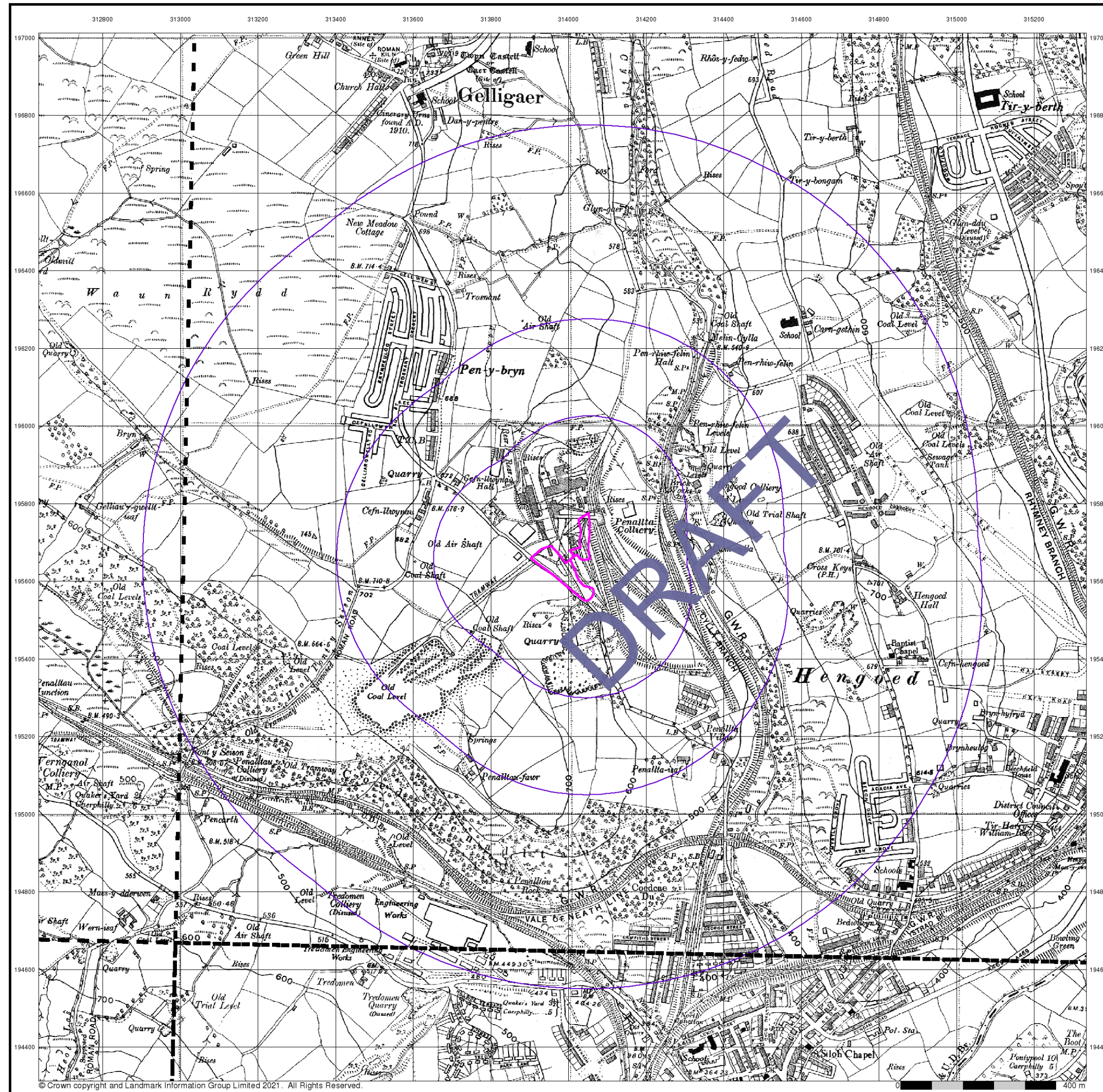
### Site Details

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Geotechnical & Geoenvironmental Specialists

Glamorganshire

Published 1938 - 1953

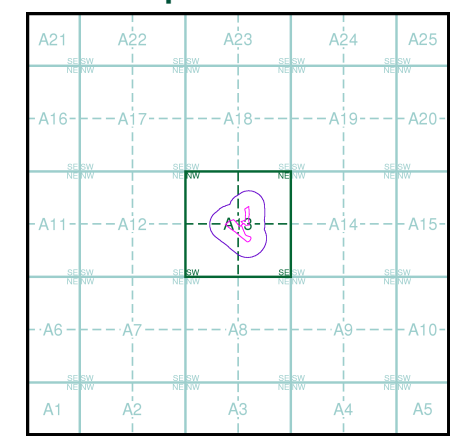
Source map scale - 1:10,560

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)

019SE 1938 1:10,560	020SW 1938 1:10,560
028NE 1953 1:10,560	029NW 1951 1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

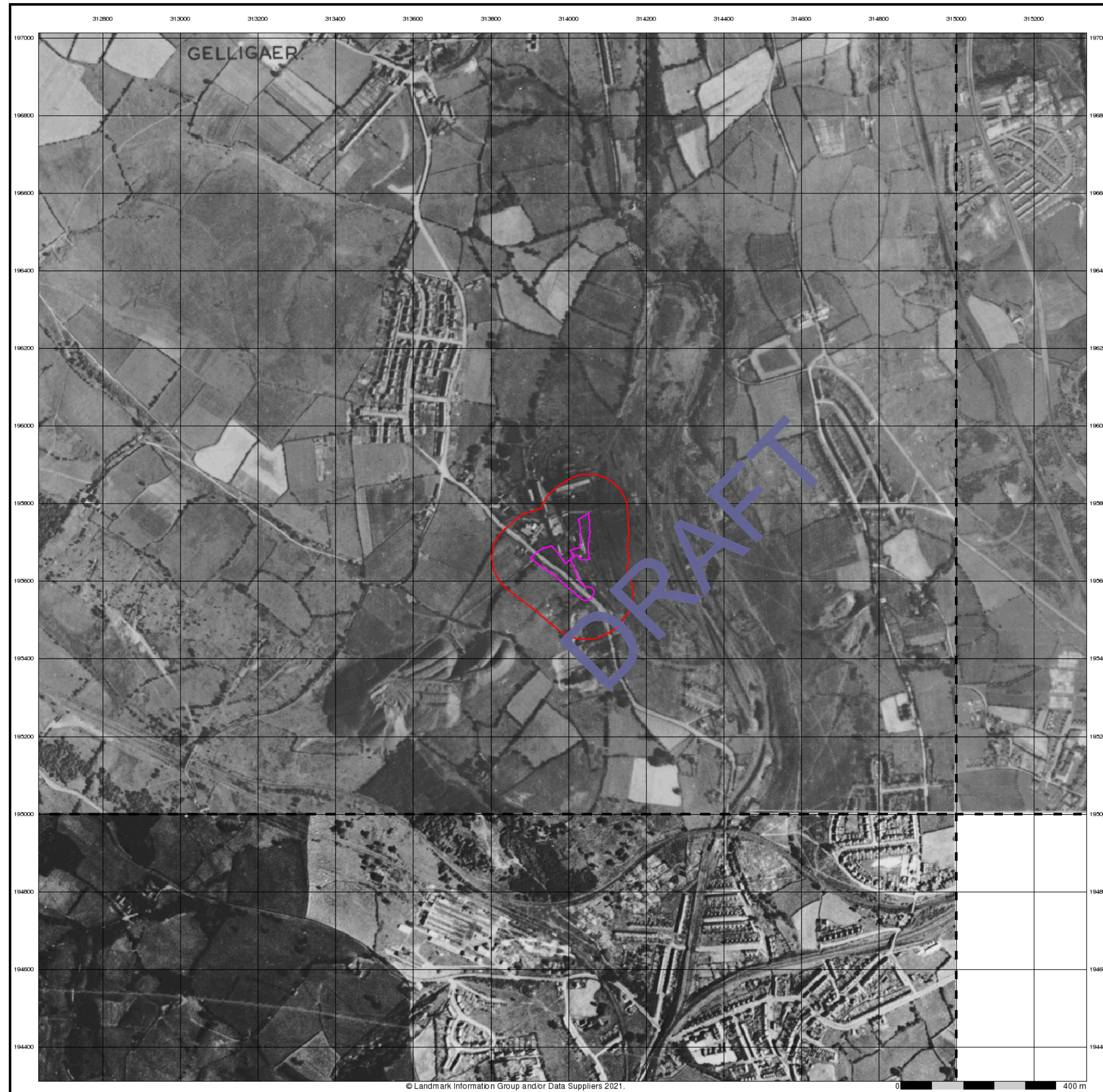
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Geotechnical & Geoenvironmental Specialists

## Historical Aerial Photography

Published 1945 - 1949

Source map scale - 1:10,560

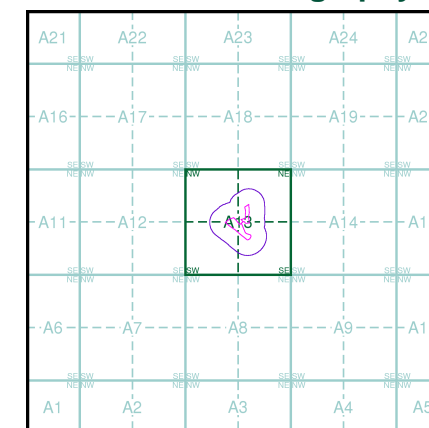
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the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

ST19NW 1945 1:10,560	ST19NE 1949 1:10,560
ST19SW 1947 1:10,560	

### Historical Aerial Photography - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

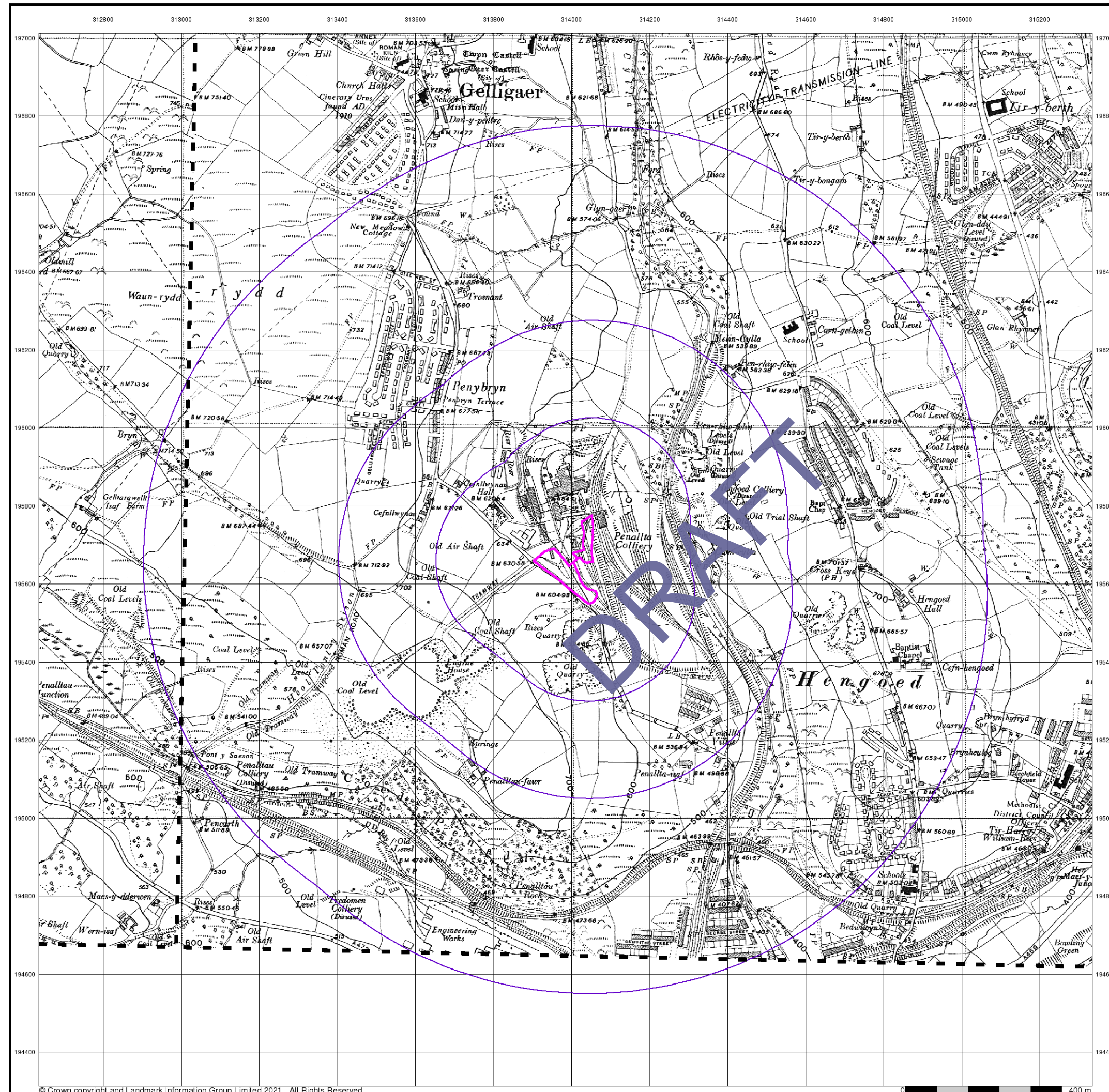
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Glamorganshire

Published 1953

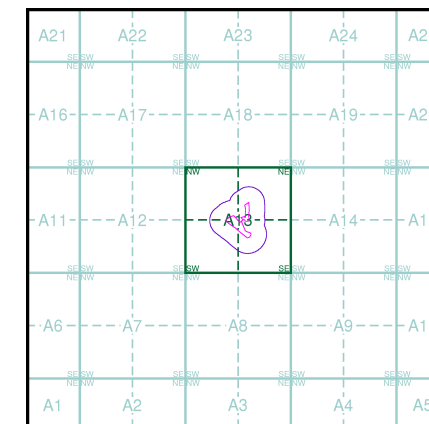
Source map scale - 1:10,560

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)

019SE 1953 1:10,560	020SW 1953 1:10,560
---------------------------	---------------------------

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

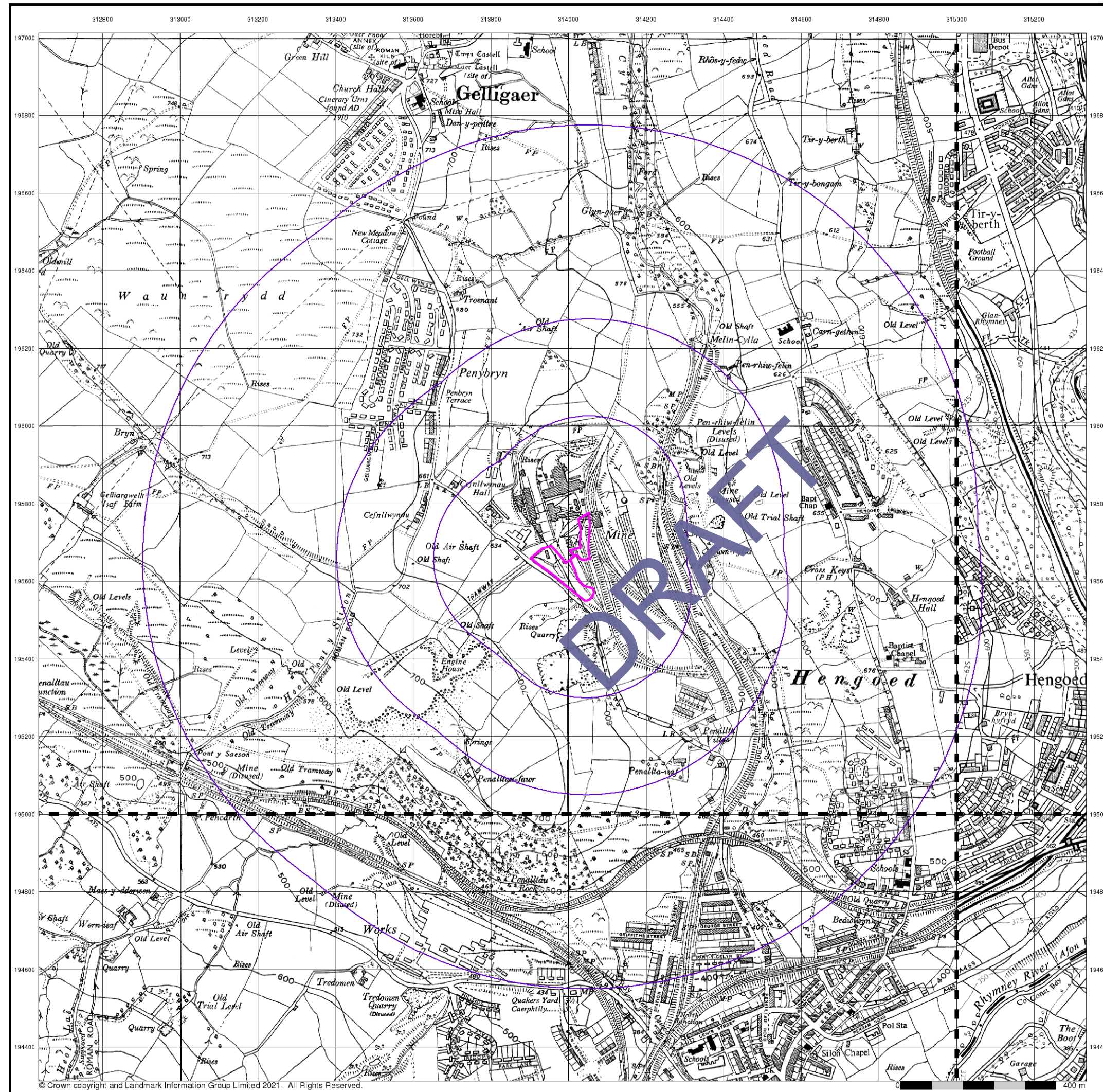
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Geotechnical & Geoenvironmental Specialists

## Ordnance Survey Plan

Published 1960 - 1965

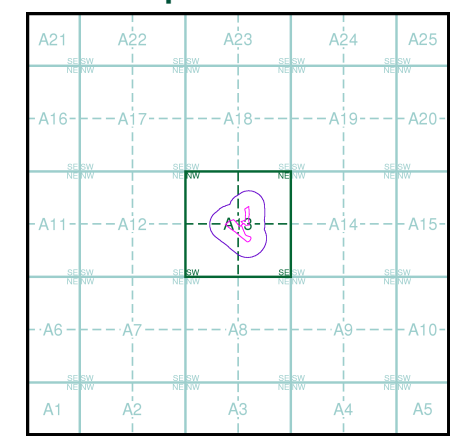
Source map scale - 1:10,000

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)

ST19NW	ST19NE
1960	1965
1:10,560	1:10,560
ST19SW	ST19SE
1960	1965
1:10,560	1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

### Site Details

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## Ordnance Survey Plan

Published 1965

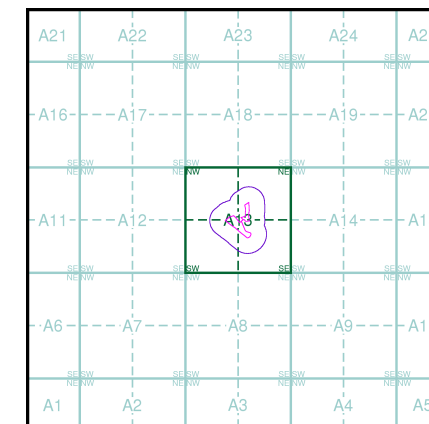
Source map scale - 1:10,000

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)

ST19NW  
1965  
1:10,560  
ST19SW  
1965  
1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

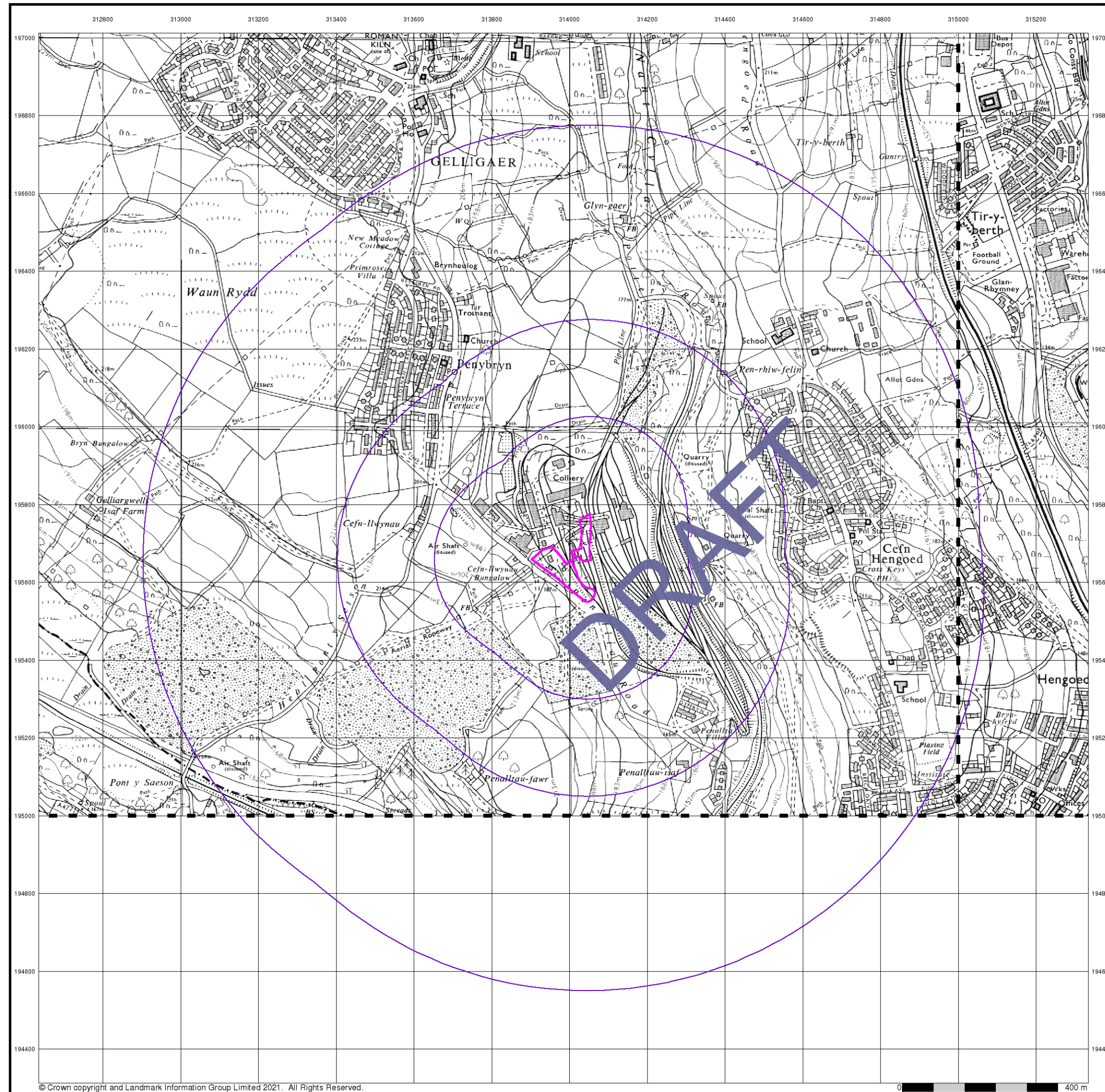
### Site Details

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## Ordnance Survey Plan

Published 1974 - 1975

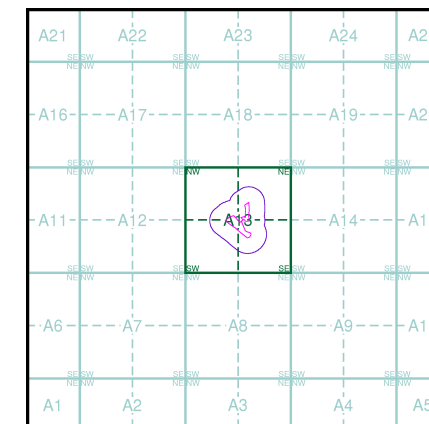
Source map scale - 1:10,000

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)

ST19NW 1974 1:10,000	ST19NE 1975 1:10,000
----------------------------	----------------------------

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

### Site Details

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## Ordnance Survey Plan

Published 1983 - 1986

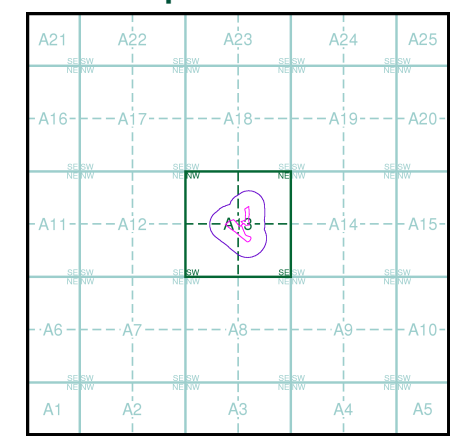
Source map scale - 1:10,000

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)

ST19NW	1986	1:10,000
ST19SW	1983	1:10,000
ST19SE	1983	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

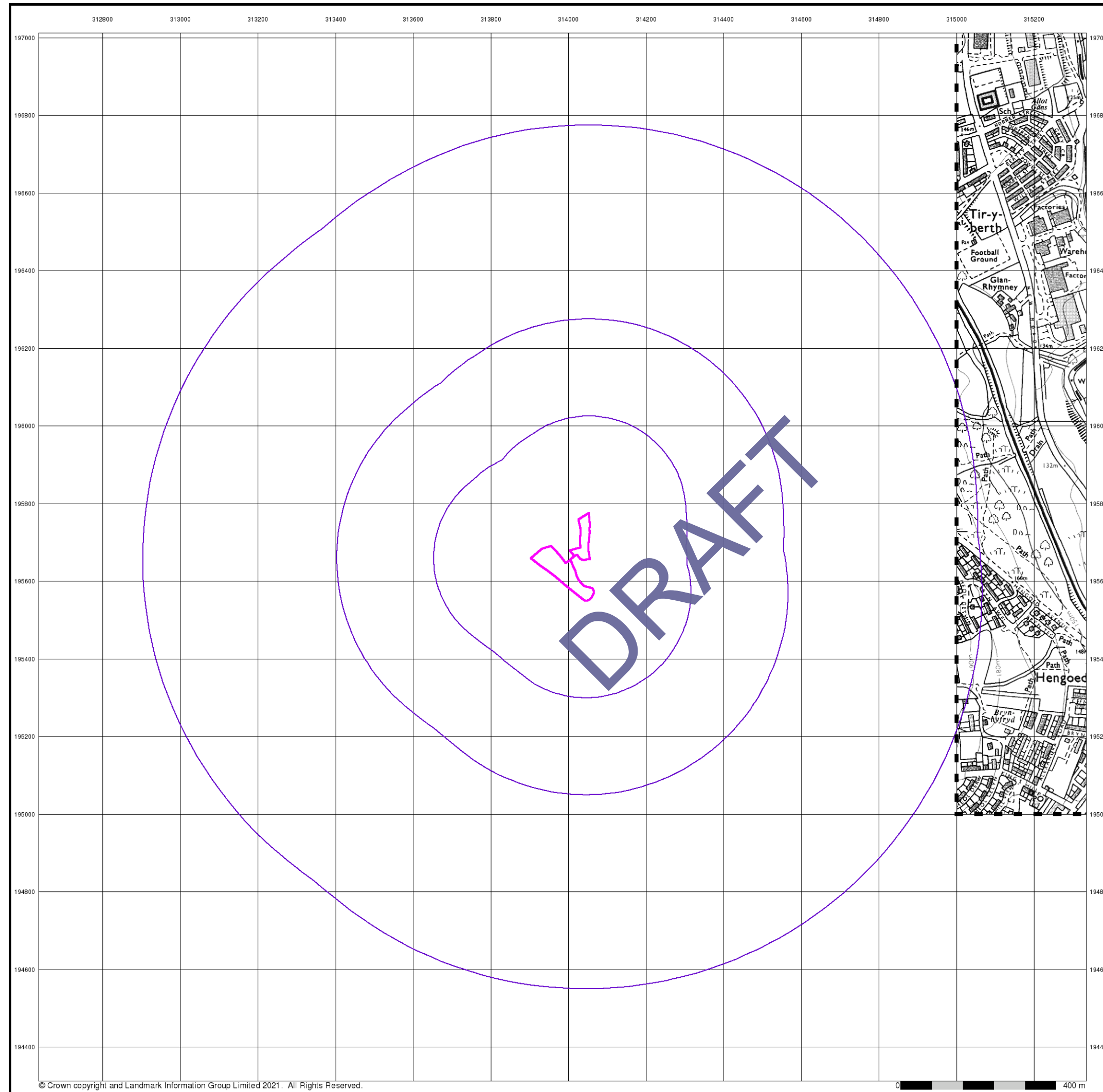
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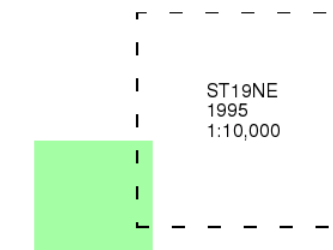
## Ordnance Survey Plan

Published 1995

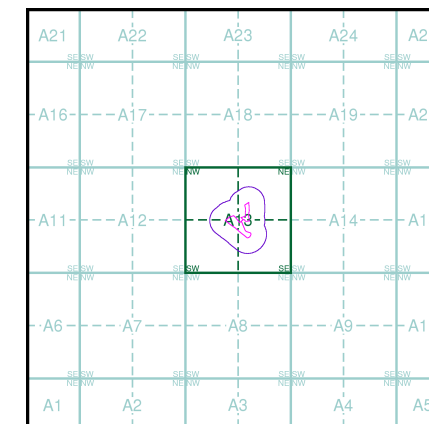
Source map scale - 1:10,000

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: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

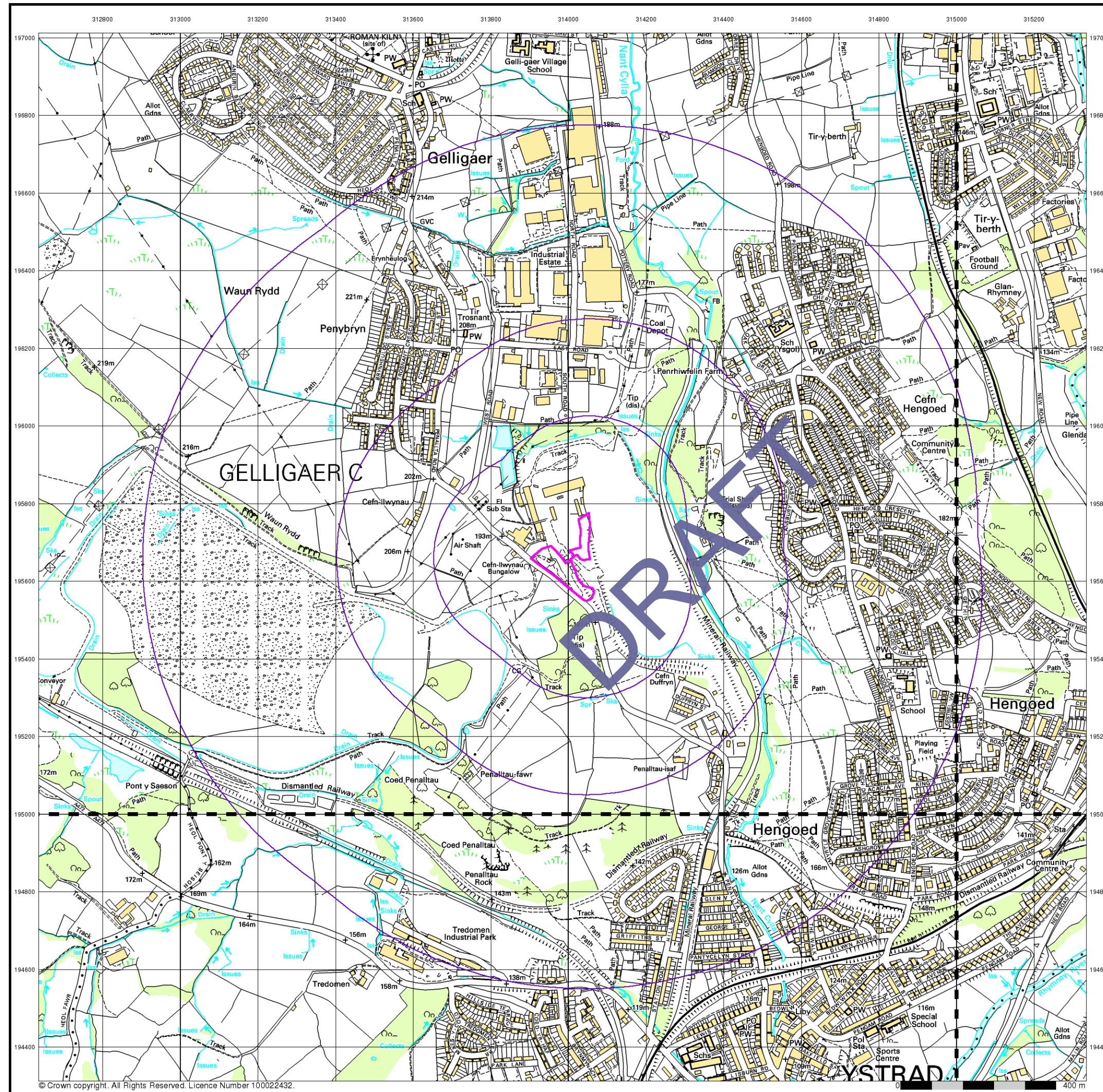
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## 10k Raster Mapping

Published 1999

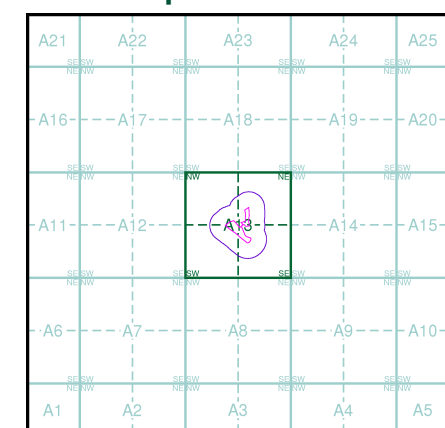
Source map scale - 1:10,000

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)

ST19NW	ST19NE
1999	1999
1:10,000	1:10,000
ST19SW	ST19SE
1999	1999
1:10,000	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

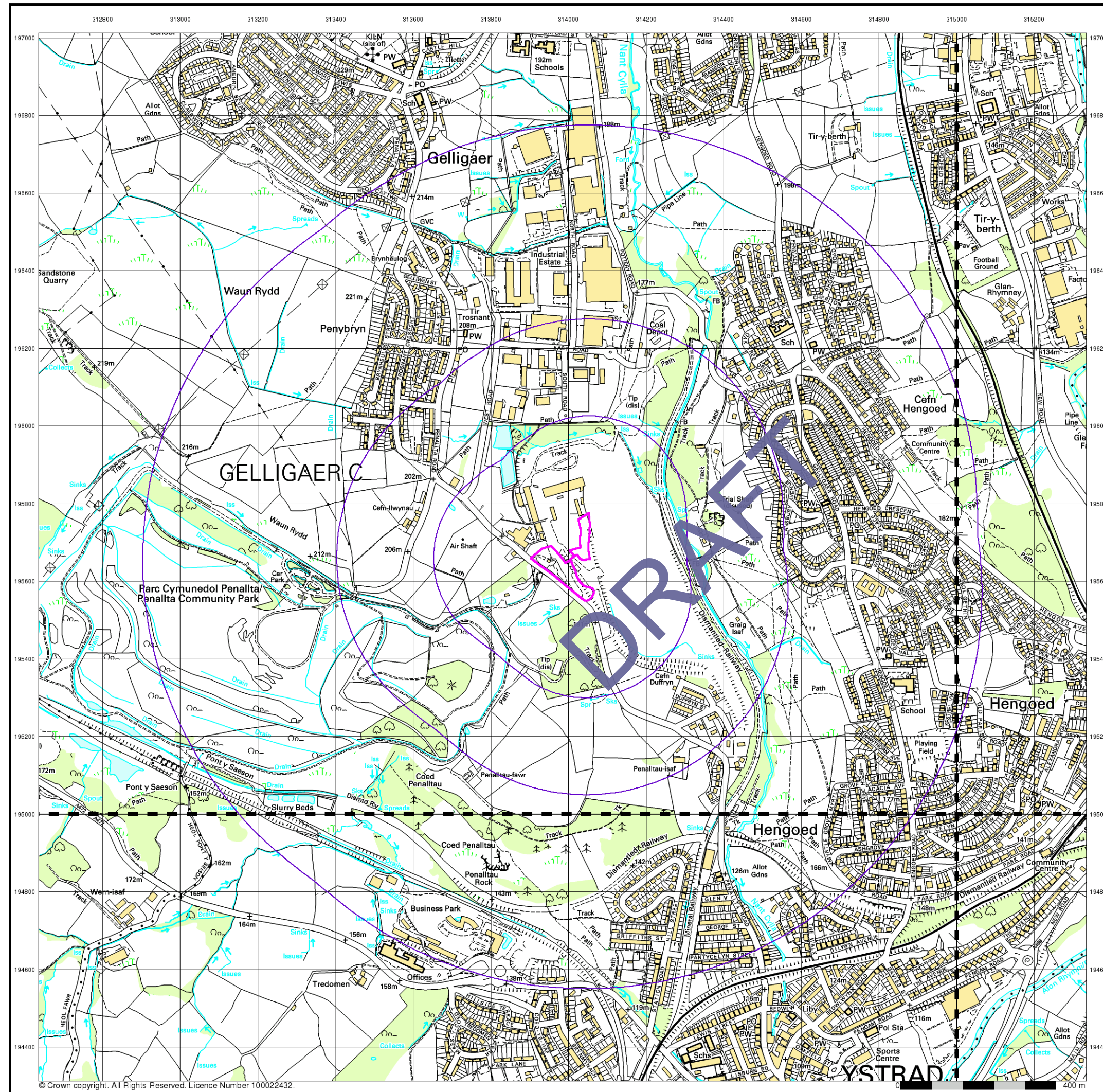
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Geotechnical & Geoenvironmental Specialists

## 10k Raster Mapping

Published 2006

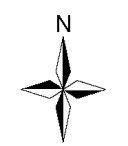
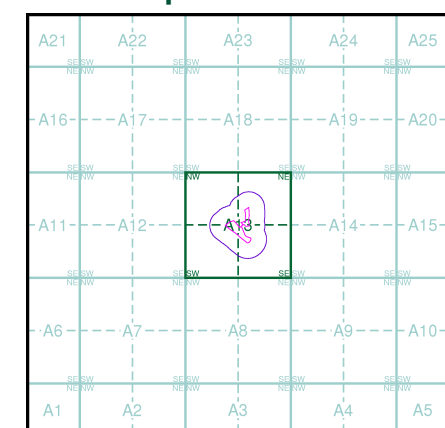
Source map scale - 1:10,000

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)

ST19NW	ST19NE
2006	2006
1:10,000	1:10,000
ST19SW	ST19SE
2006	2006
1:10,000	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

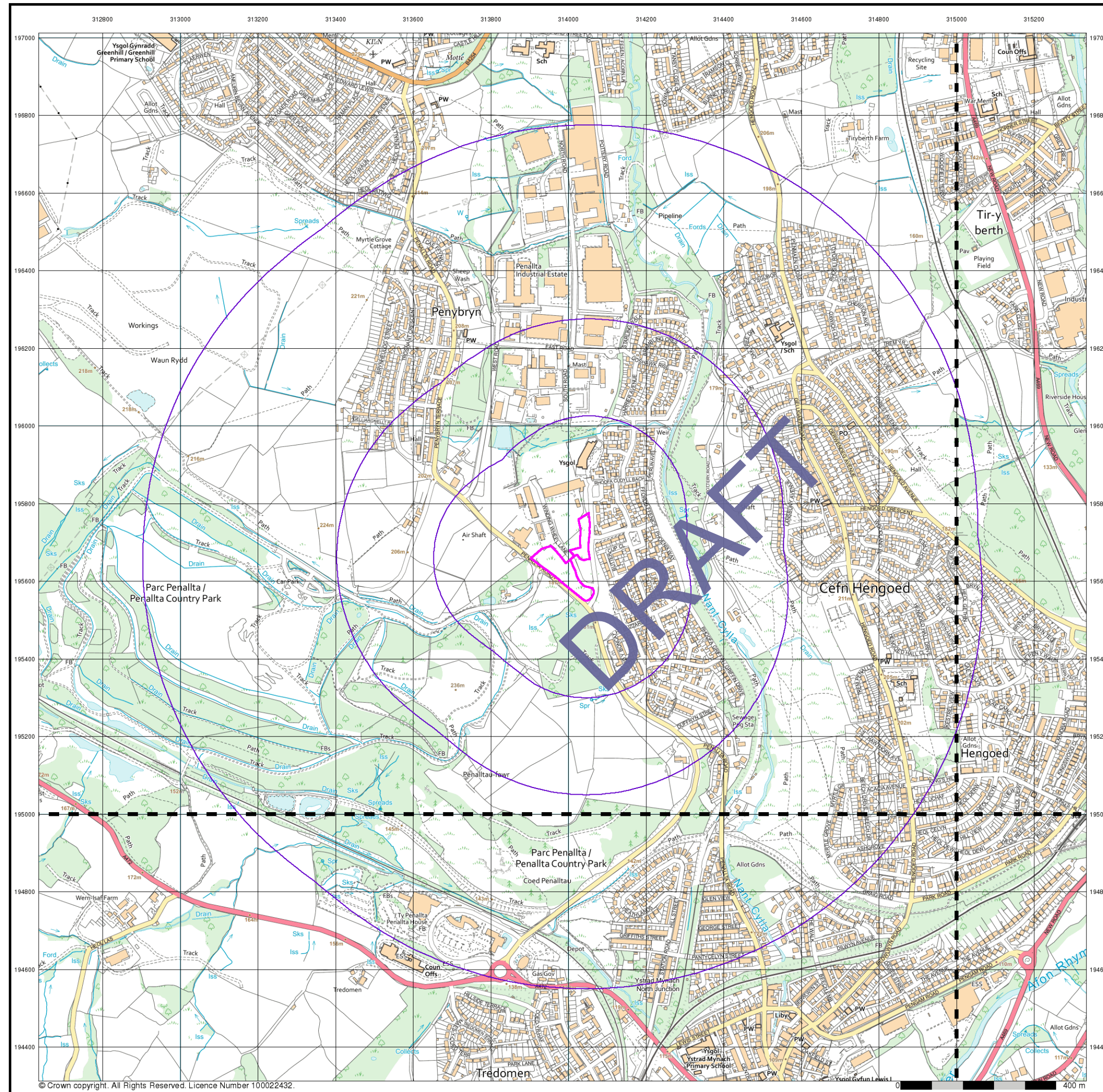
### Site Details

Winding Wheel Lane, Penallta, CF82 6AA



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Web: www.envirocheck.co.uk





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## VectorMap Local

Published 2021

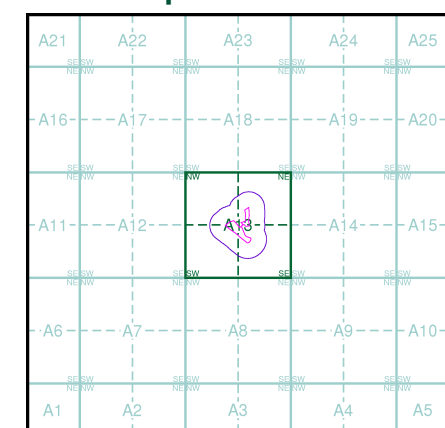
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

### Map Name(s) and Date(s)

ST19NW 2021 Variable	ST19NE 2021 Variable
ST19SW 2021 Variable	ST19SE 2021 Variable

### Historical Map - Slice A



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 1000

### Site Details

Winding Wheel Lane, Penallta, CF82 6AA



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

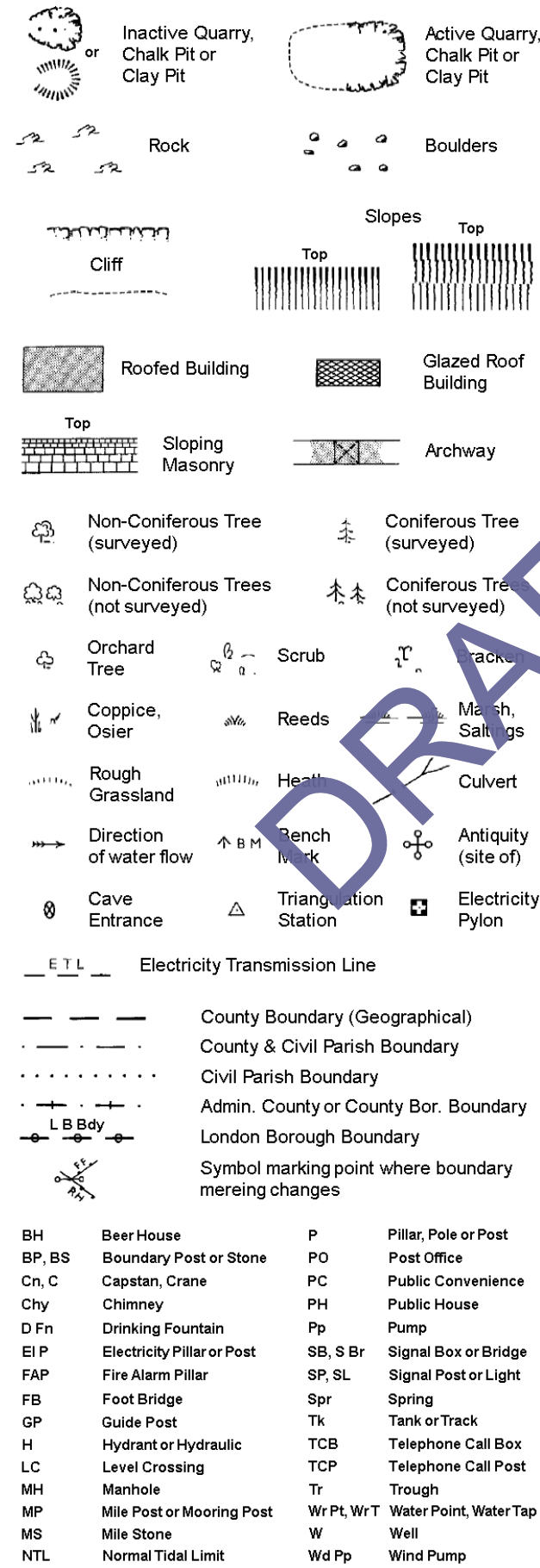


# Historical Mapping Legends

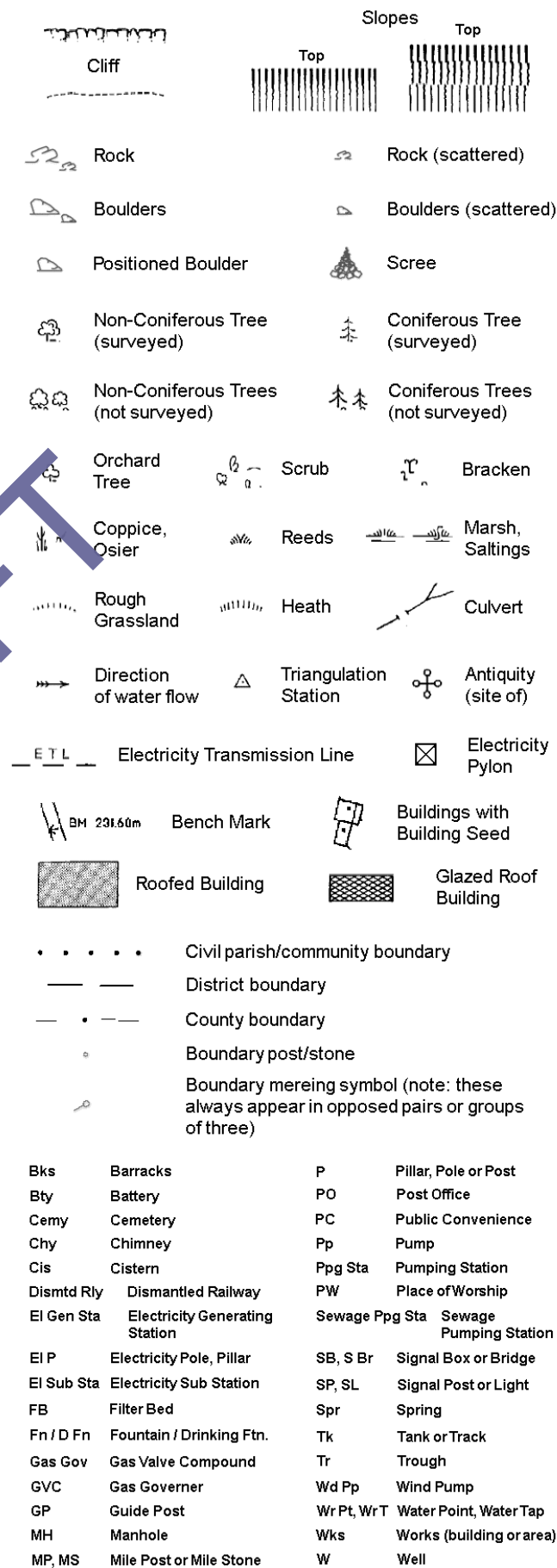
## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



## 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

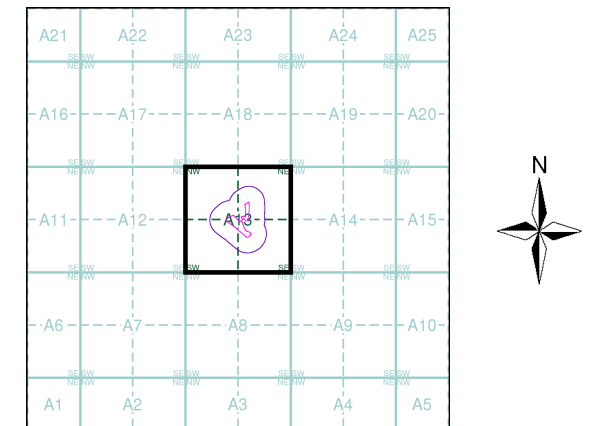


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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:2,500	1878	2
Glamorganshire	1:2,500	1878	3
Glamorganshire	1:2,500	1901	4
Glamorganshire	1:2,500	1919	5
Ordnance Survey Plan	1:2,500	1960 - 1961	6
Additional SIMs	1:2,500	1961 - 1987	7
Additional SIMs	1:2,500	1985	8
Additional SIMs	1:2,500	1992	9
Large-Scale National Grid Data	1:1,250	1993	10
Large-Scale National Grid Data	1:2,500	1993	11
Historical Aerial Photography	1:2,500	2000	12

## Historical Map - Segment A13



## Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

## Site Details

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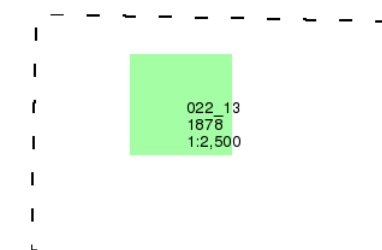
**Monmouthshire**

**Published 1878**

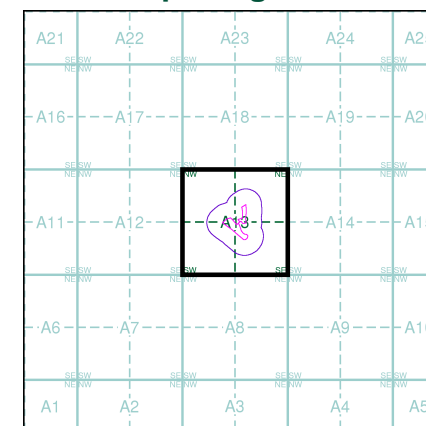
**Source map scale - 1:2,500**

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

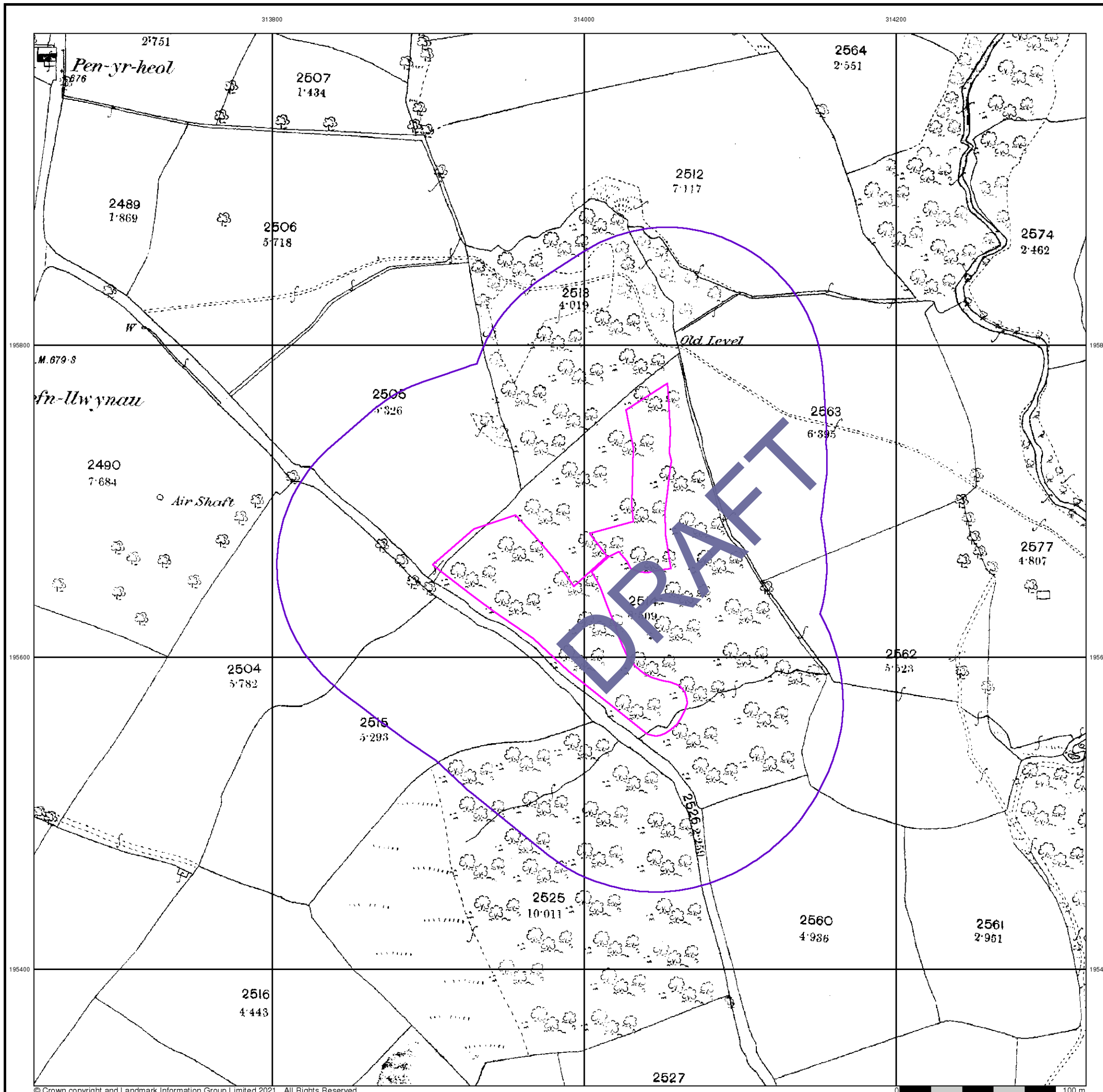
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

Winding Wheel Lane, Penallta, CF82 6AA



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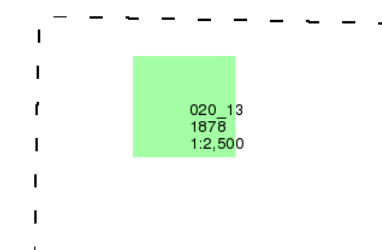
**Glamorganshire**

**Published 1878**

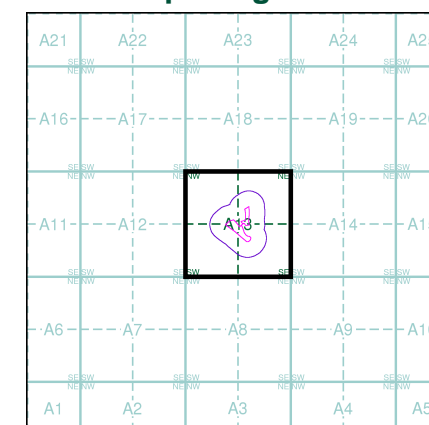
**Source map scale - 1:2,500**

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

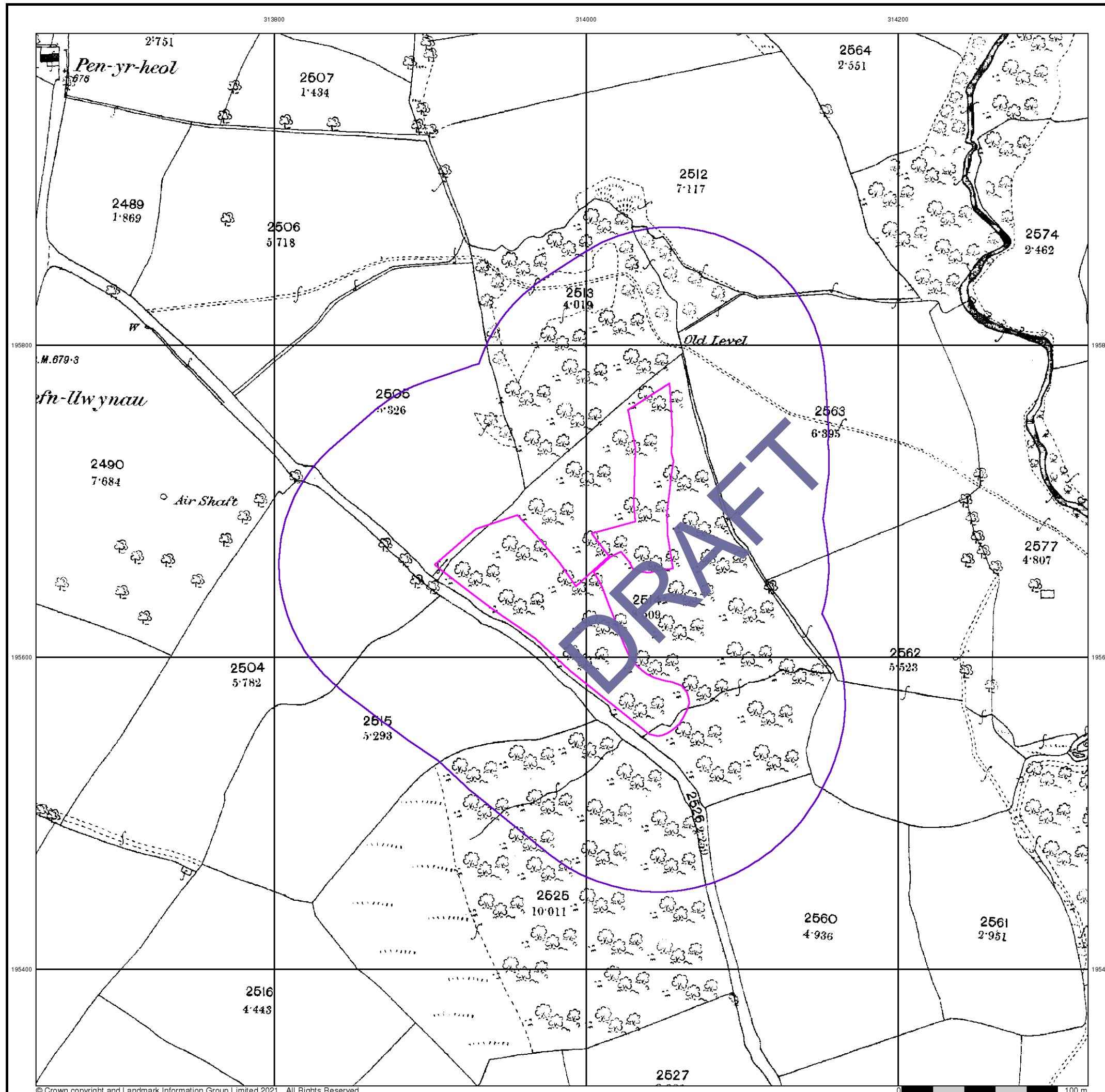
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

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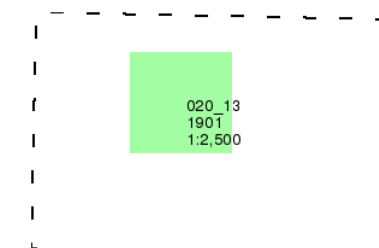
**Glamorganshire**

**Published 1901**

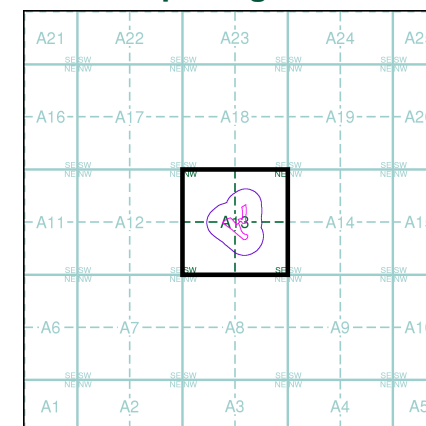
**Source map scale - 1:2,500**

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

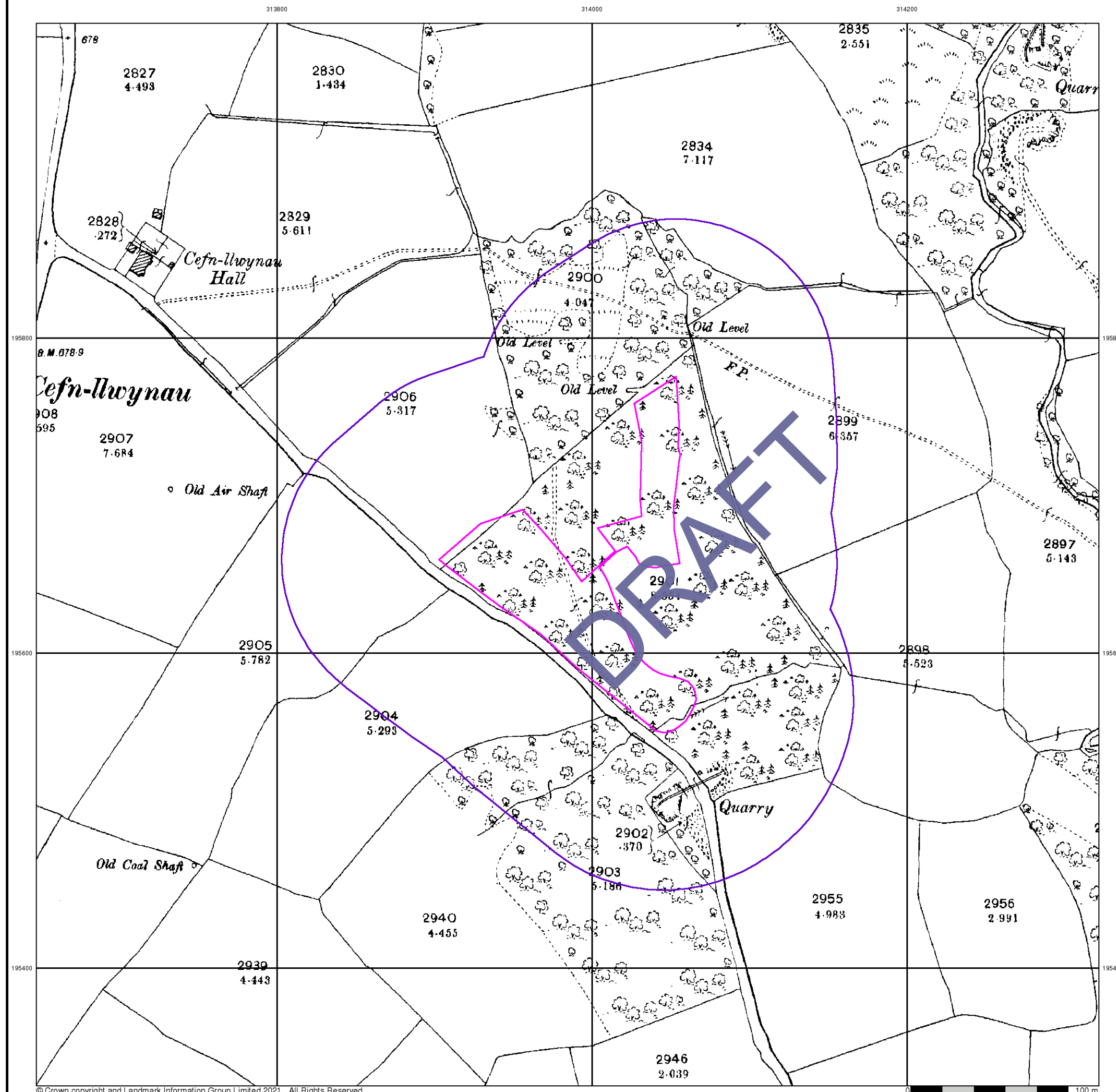
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Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

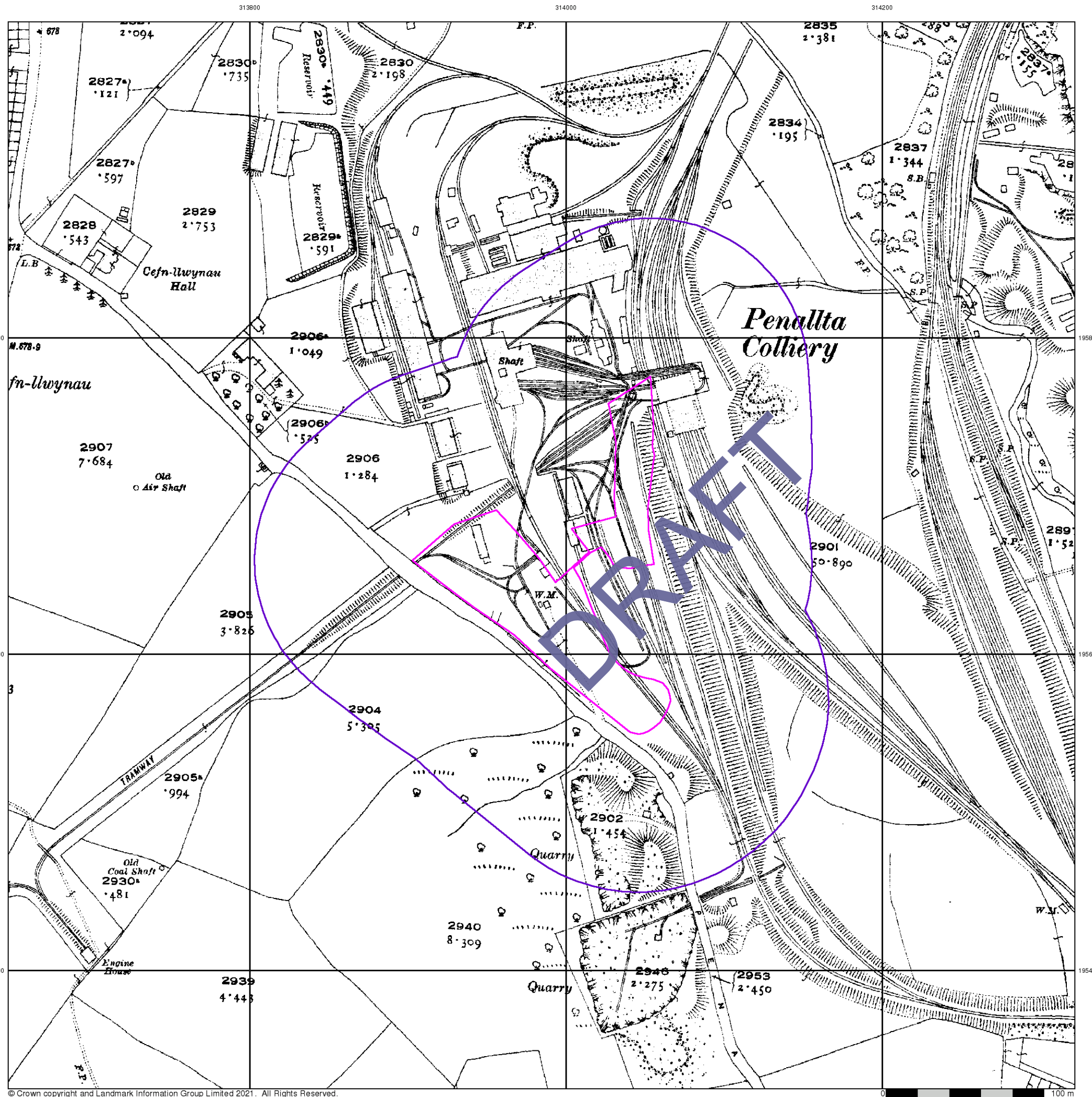
### Site Details

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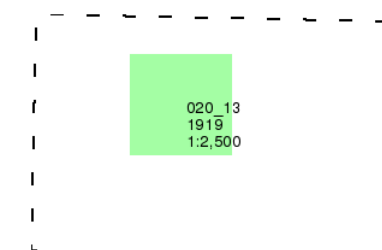
**Glamorganshire**

**Published 1919**

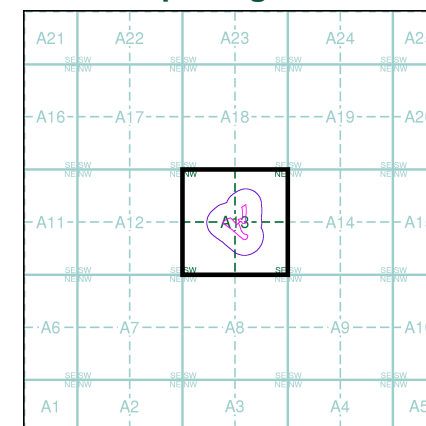
**Source map scale - 1:2,500**

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

### Map Name(s) and Date(s)



### Historical Map - Segment A13



### Order Details

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

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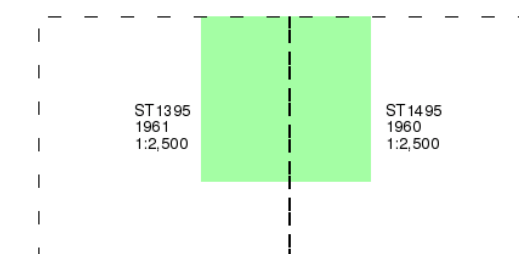
## Ordnance Survey Plan

Published 1960 - 1961

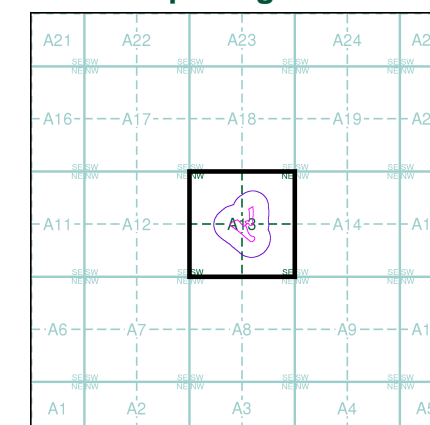
Source map scale - 1:2,500

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: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

Winding Wheel Lane, Penallta, CF82 6AA

**Landmark**  
INFORMATION GROUP

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Fax: 0844 844 9951  
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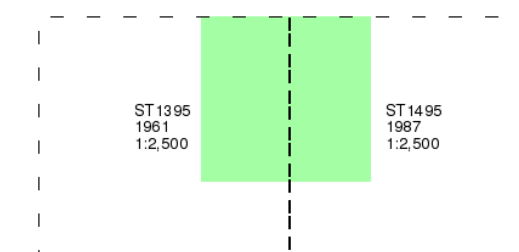
## Additional SIMs

Published 1961 - 1987

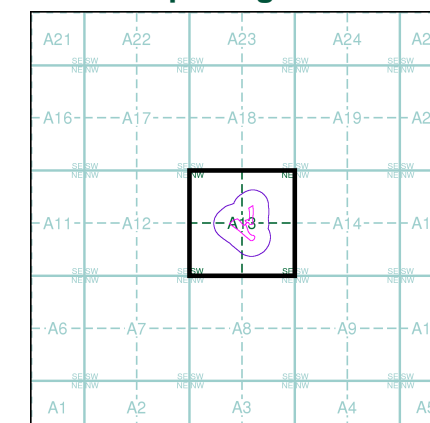
Source map scale - 1:2,500

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

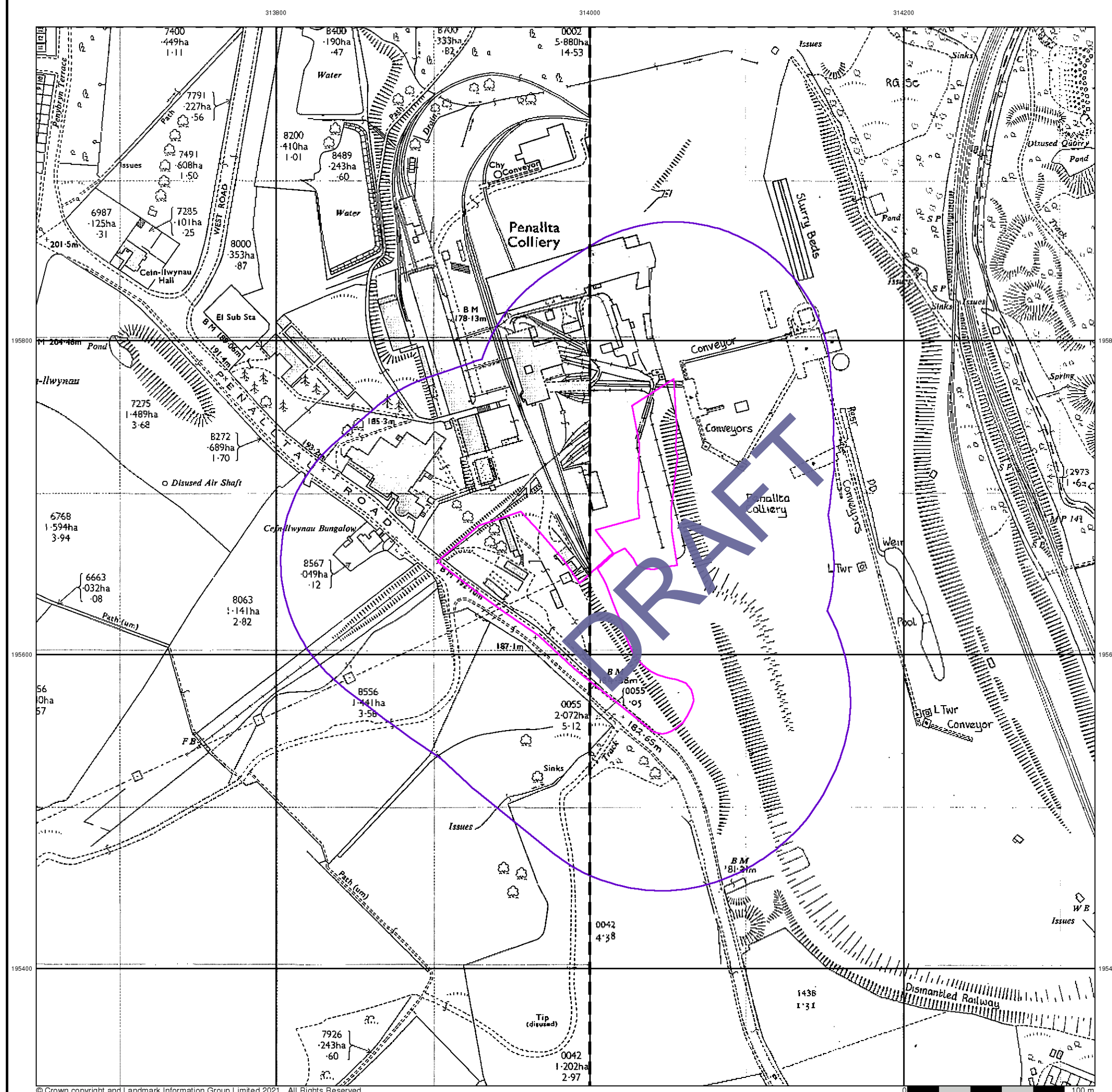
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

## Site Details

Winding Wheel Lane, Penallta, CF82 6AA

**Landmark**  
INFORMATION GROUP

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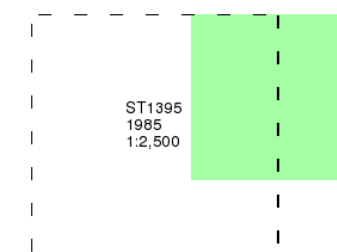
## Additional SIMs

Published 1985

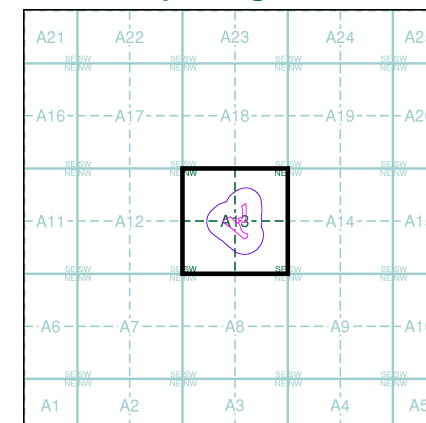
Source map scale - 1:2,500

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: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

## Site Details

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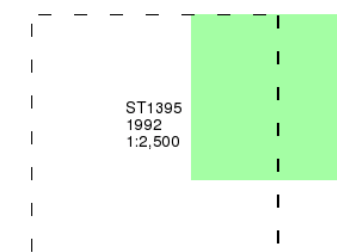
## Additional SIMs

Published 1992

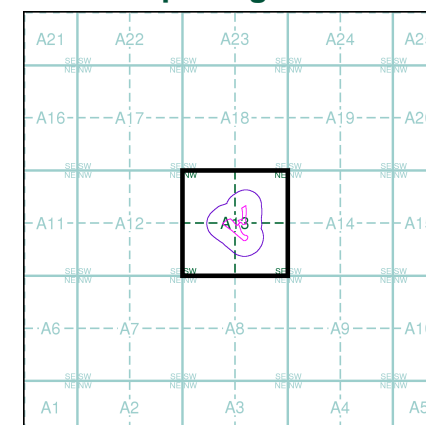
Source map scale - 1:2,500

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: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

## Site Details

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## Large-Scale National Grid Data

Published 1993

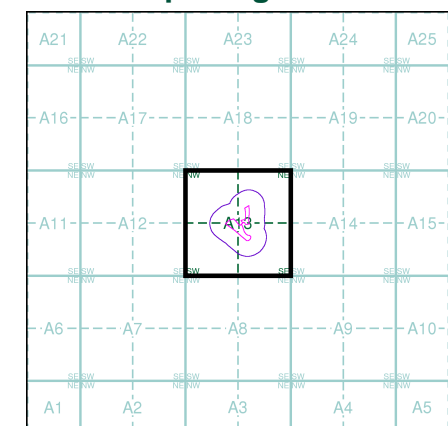
Source map scale - 1:1,250

'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)

ST1495NW
1993
1:1,250
ST1495SW
1993
1:1,250

### Historical Map - Segment A13



### Order Details

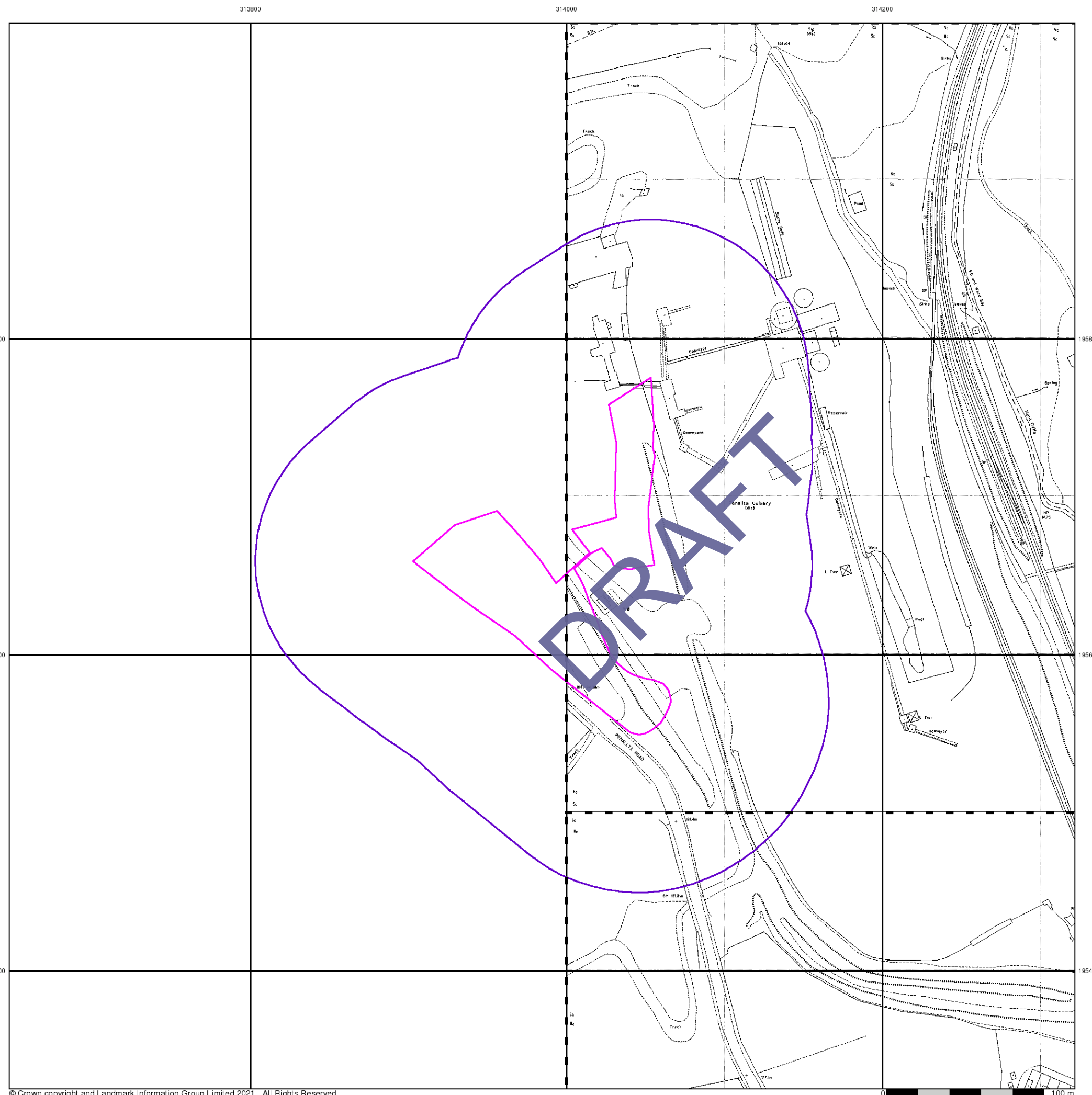
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

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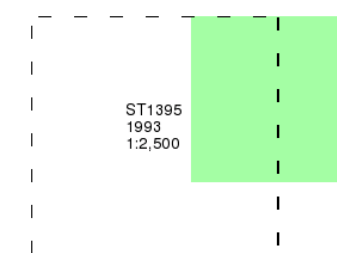
## Large-Scale National Grid Data

Published 1993

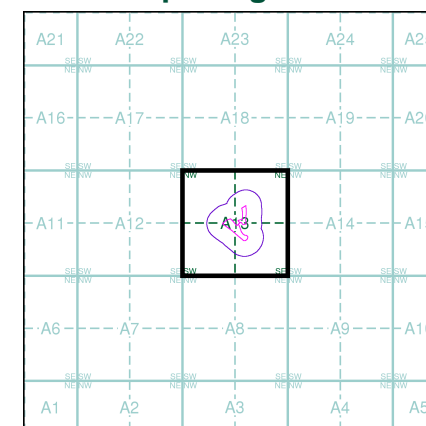
Source map scale - 1:2,500

'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



### Order Details

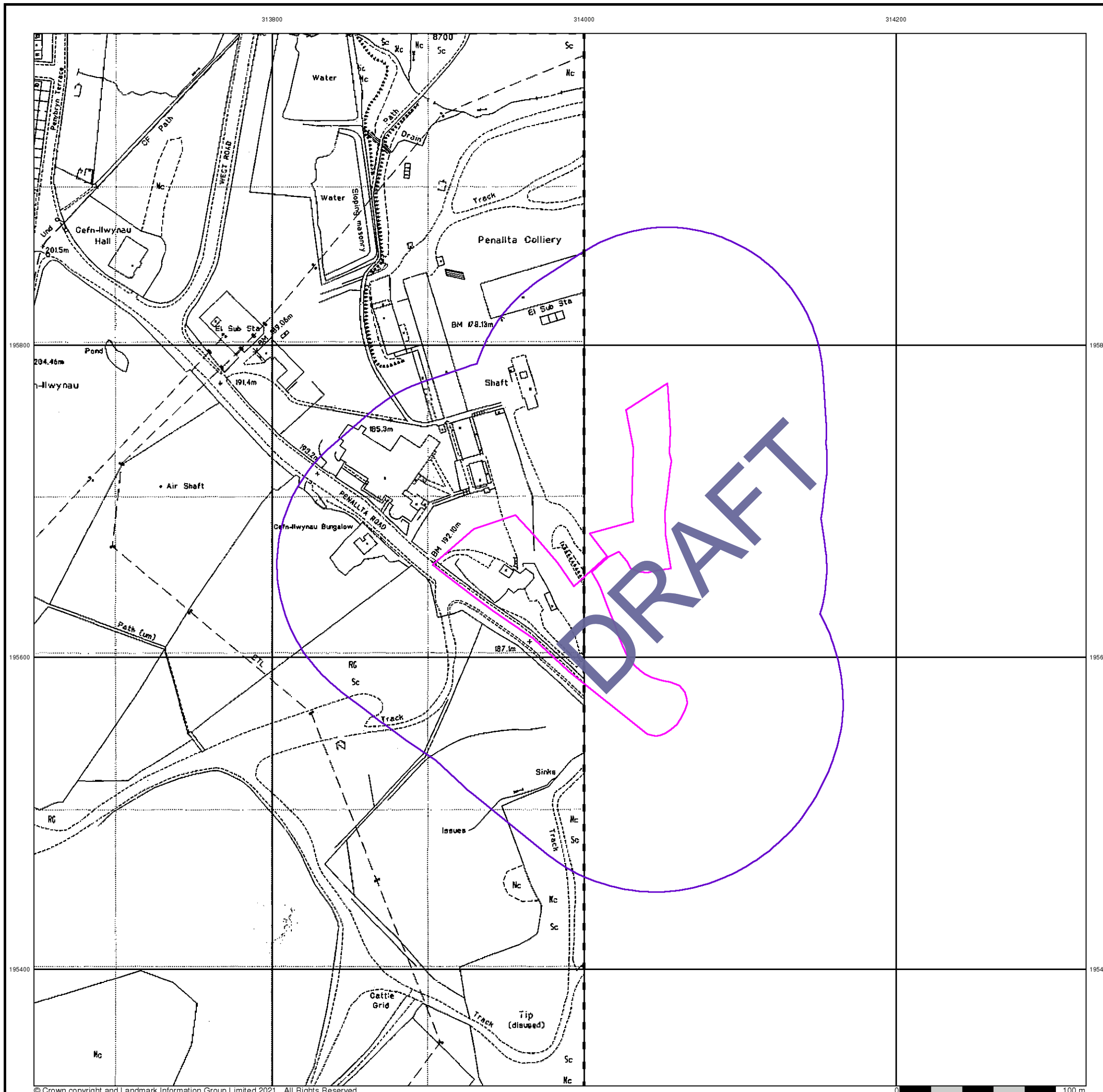
Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

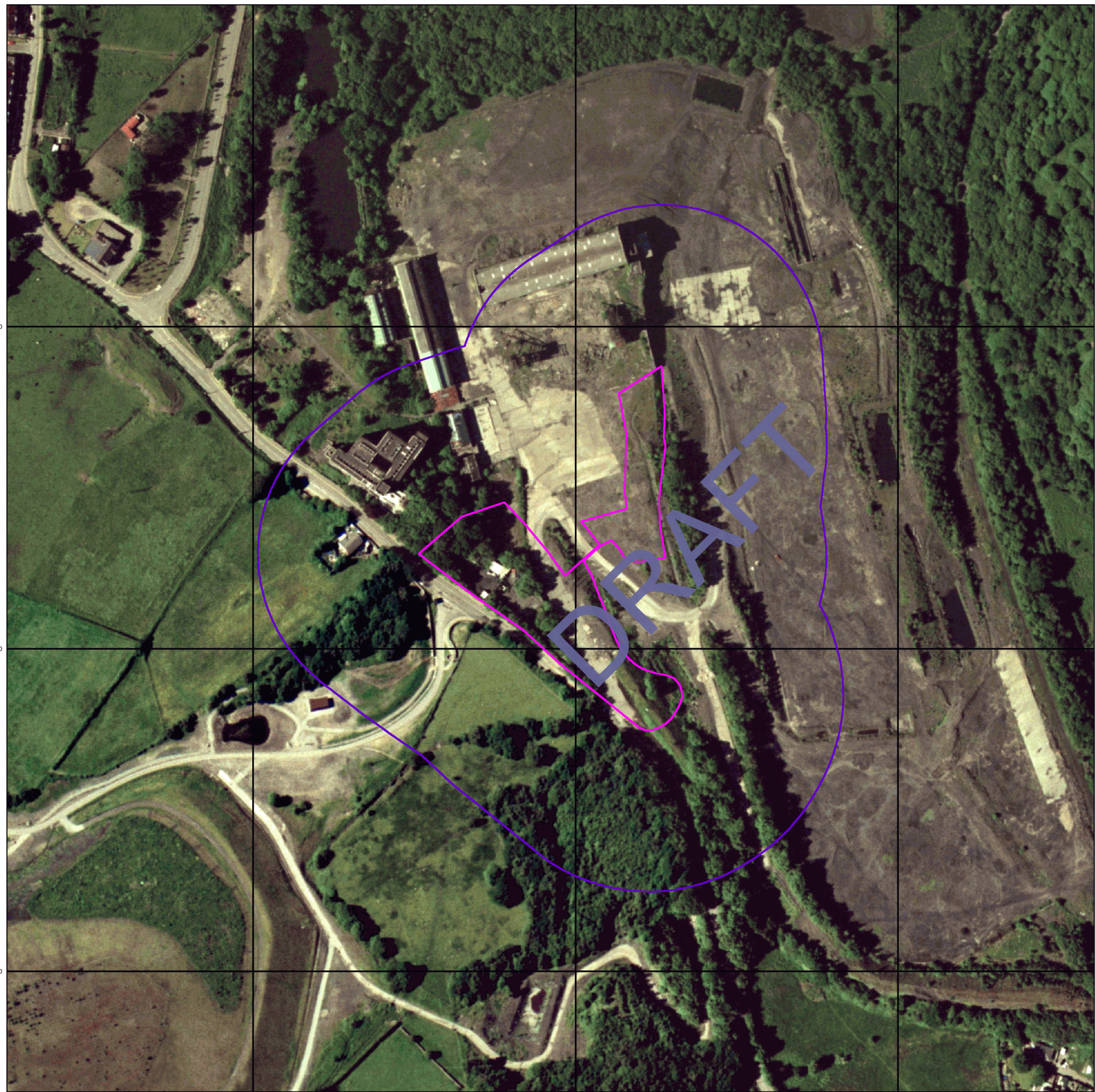
Winding Wheel Lane, Penallta, CF82 6AA



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Fax: 0844 844 9951  
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0 100 m



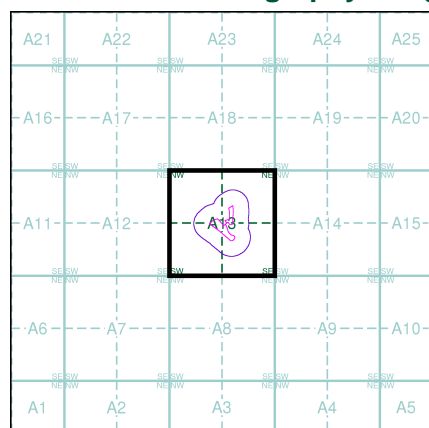
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## Historical Aerial Photography

**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

Order Number: 286102402\_1\_1  
Customer Ref: 16810  
National Grid Reference: 314010, 195660  
Slice: A  
Site Area (Ha): 1.1  
Search Buffer (m): 100

### Site Details

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**ANNEX B**  
**Consent Authority Report**



The Coal  
Authority

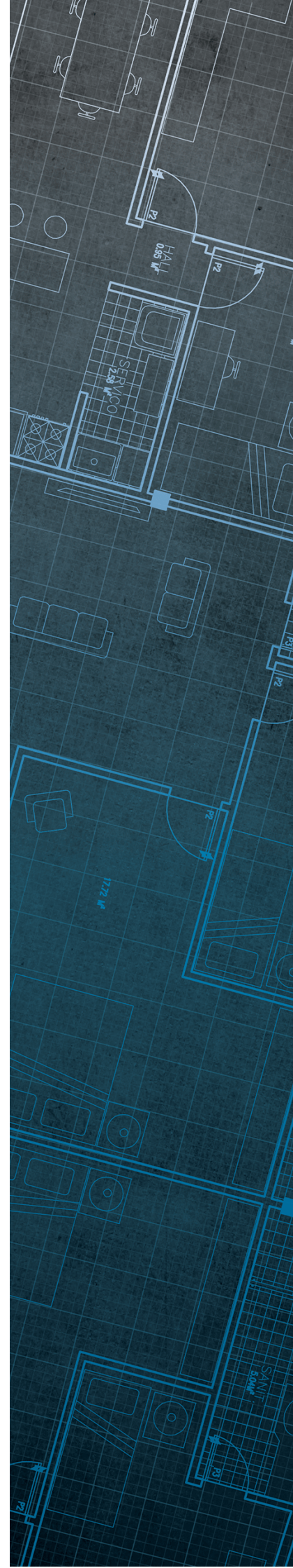
# Consultants Coal Mining Report

Land Off Winding Wheel Lane  
Penallta  
Caerphilly  
CF82 6BJ

DRAFT

Date of enquiry:	19 December 2022
Date enquiry received:	19 December 2022
Issue date:	19 December 2022

Our reference:	51003330861001
Your reference:	305164849_1





# 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

NLIS Hub

## Enquiry address

Land Off Winding Wheel Lane  
Penallta  
Caerphilly  
CF82 6BJ

## 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



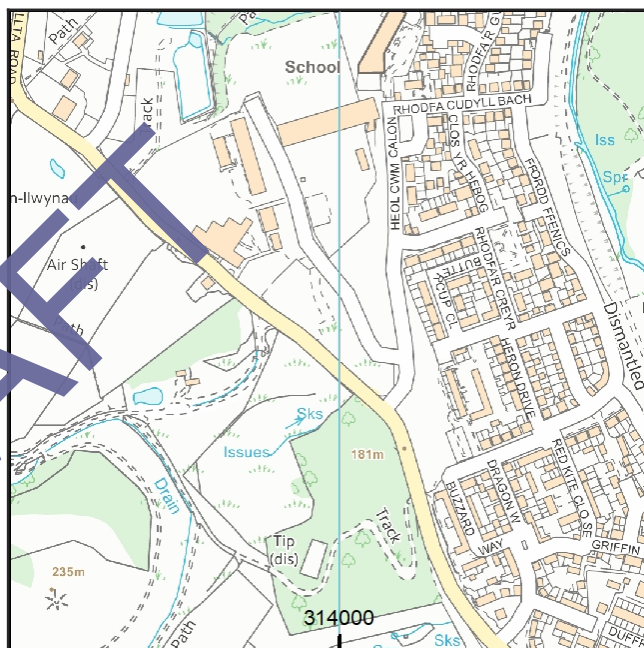
[in/company/the-coal-authority](#)



**f** /thecoalauthority



 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	MYNYDDISL WYN LOWER LEAF	Coal	45JK	10	Beneath Property	4.1	North-West	220	1873
unnamed	6FT BOTTOM LEAF	Coal	45Y2	538	East	11.3	North-West	200	1948
unnamed	6FT BOTTOM LEAF	Coal	45XP	551	South	15.1	North-West	200	1926
unnamed	6FT BOTTOM LEAF	Coal	45Y8	559	East	11.2	North-West	200	1948
unnamed	6FT BOTTOM LEAF	Coal	45XZ	560	South	11.1	North	200	1931
unnamed	6FT BOTTOM LEAF	Coal	45Y1	576	North-East	12.1	North-West	200	1922
unnamed	LOWER 7FT BOTTOM LEAF	Coal	45B0	577	South-East	1.2	West	147	1961
unnamed	TWO FOOT NINE	Coal	45G6	598	South-West	4.1	North-West	120	1952
unnamed	6FT BOTTOM LEAF	Coal	45Y5	599	North-East	14.4	North-West	200	1930
unnamed	FOUR FOOT	Coal	45EE	601	South-West	9.5	North-West	170	1955
unnamed	6FT BOTTOM LEAF	Coal	45Y3	604	South	12.0	North-West	200	1940
unnamed	6FT BOTTOM LEAF	Coal	45Y4	608	Beneath Property	12.5	North-West	200	1940
unnamed	6FT BOTTOM LEAF	Coal	45Y6	609	North-East	11.9	North-West	200	1954
unnamed	6FT BOTTOM LEAF	Coal	45XQ	623	Beneath Property	9.5	North-West	200	1918
unnamed	6FT BOTTOM LEAF	Coal	45Y7	624	North-East	11.7	North-West	200	1920
unnamed	6FT BOTTOM LEAF	Coal	45XO	629	South-West	3.0	North-West	200	1927

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	FOUR FOOT	Coal	45EB	631	West	6.8	West	170	1930
unnamed	UPPER NINE FOOT	Coal	45V1	675	South-West	2.4	North-West	120	1926
unnamed	6FT BOTTOM LEAF	Coal	45C6	678	North	6.2	North-West	180	1919
unnamed	FOUR FOOT	Coal	45FO	680	North	2.8	North-West	160	1948
unnamed	UPPER NINE FOOT	Coal	45V0	681	South-West	3.0	North-West	120	1920
unnamed	FOUR FOOT	Coal	45EC	690	North-West	3.8	North	190	1937
unnamed	6FT BOTTOM LEAF	Coal	45XR	692	North	0.9	South-West	180	1915
unnamed	UPPER NINE FOOT	Coal	45V7	710	North-West	6.8	North	120	1918
unnamed	FOUR FOOT	Coal	45F3	712	North	2.5	South-East	150	1930
unnamed	LOWER NINE FOOT	Coal	45QZ	713	West	5.7	North-West	122	1960
unnamed	LOWER NINE FOOT	Coal	45QX	722	North-West	4.1	North-West	122	1961
unnamed	LOWER NINE FOOT	Coal	45R0	732	West	2.9	North-West	122	1960

#### Probable unrecorded shallow workings

None.

#### Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

#### Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	313195-001	313962 195780	This entry was filled in 1991 with stone and shale to an unknown specification. In 2004 a steel cover was fitted over the shaft and a fence placed around the shaft cover	Coal	



### Abandoned mine plan catalogue numbers

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

16366	SWR2905	R14546
SWT1268	SWR3072	SWR2916
SWR553	SWR3947	SWR3941

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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

### Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
MYNYDDISLWYN LOWER LEAF	Coal	Yes	Within	N/A	30
MYNYDDISLWYN LOWER LEAF	Coal	Yes	Within	N/A	204

### 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.

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## Section 3 – Licensing and future mining activity

### Future underground mining

None recorded.

### Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

### Court orders

None recorded.

### Section 46 notices

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

### Withdrawal of support notices

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

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

### Payments to owners of former copyhold land

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

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## Section 4 – Further information

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

### Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

**MINE GAS:** Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

### Development advice

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

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



## 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 Metaliferous 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.

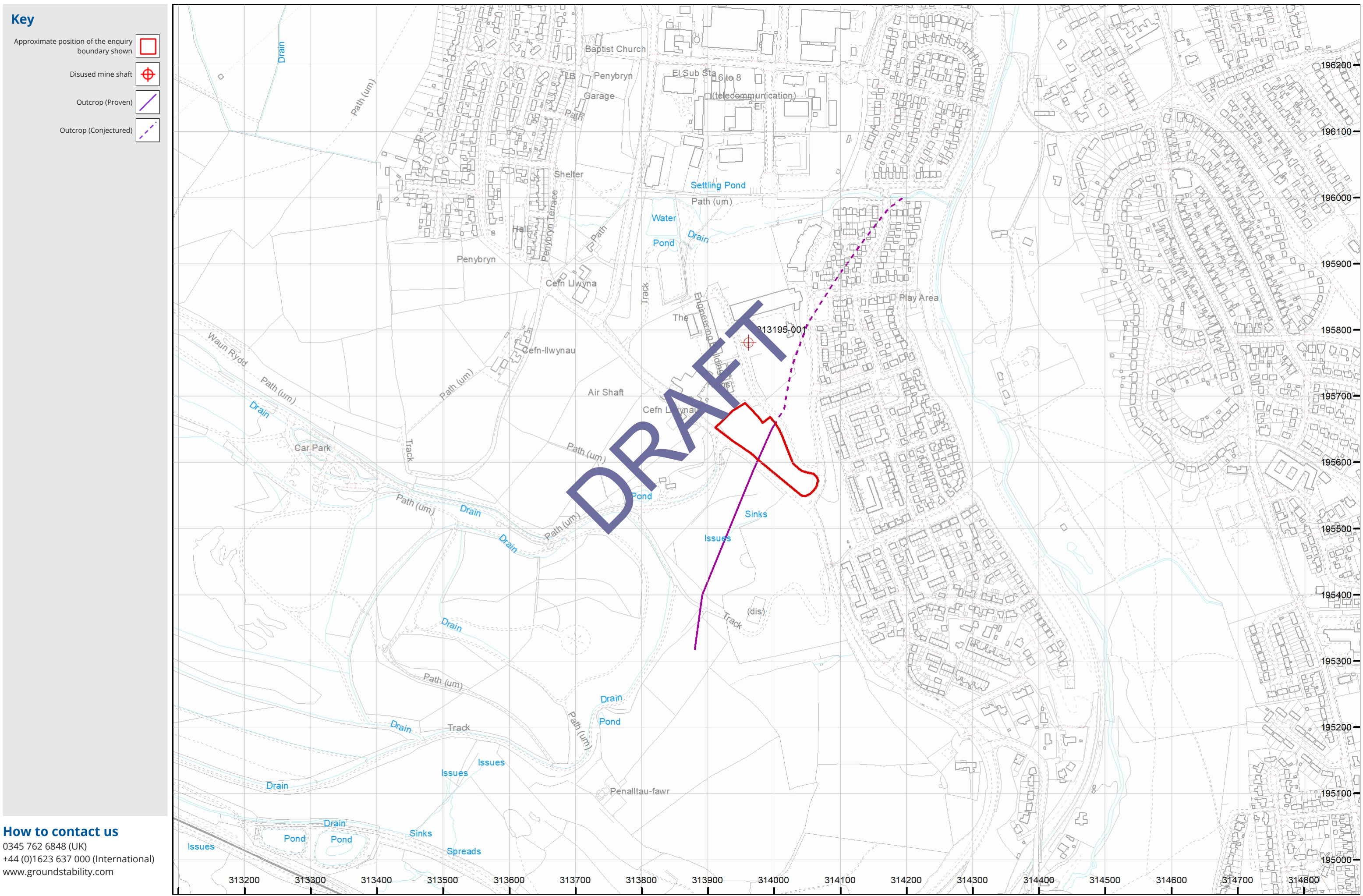
### **Withdrawal of support notices**

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.

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





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ANNEX C  
Probe Logs

# Borehole Log

Borehole No.

**PH02**

Sheet 1 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 09/11/2022 - 09/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				1.20				MADE GROUND: Colliery spoil (driller's description)	1
								Brown sandy gravelly CLAY (driller's description).	2
									3
									4
									5
									6
									7
									8
									9
									10
									11
				11.50				Grey SANDSTONE	12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



# Borehole Log

Borehole No.

**PH02**

Sheet 2 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta	Level:	Scale 1:100	Logged By MP
Client: Castell Construction Limited	Dates: 09/11/2022 - 09/11/2022		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				24.00				Grey SANDSTONE	21
									22
									23
								Grey SILTSTONE with sandstone bands	24
									25
									26
									27
									28
									29
				30.00				End of Borehole at 30.000m	30
									31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.

# Borehole Log

Borehole No.

**PH03**

Sheet 1 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 10/11/2022 - 10/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				1.20				MADE GROUND: Colliery spoil (driller's description)	1
								Brown sandy gravelly CLAY (driller's description).	2
									3
									4
									5
									6
									7
									8
									9
				10.40				Grey SILTSTONE with sandstone bands	10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



# Borehole Log

Borehole No.

**PH03**

Sheet 2 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 10/11/2022 - 10/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				24.60			xxxxxx	Grey SILTSTONE with sandstone bands	21
							xxxxxx		22
							xxxxxx		23
							xxxxxx		24
							xxxxxx		25
							xxxxxx		26
							xxxxxx		27
							xxxxxx		28
							xxxxxx		29
							xxxxxx		30
							xxxxxx		31
							xxxxxx		32
							xxxxxx		33
							xxxxxx		34
				35.00			xxxxxx	Grey SANDSTONE	35
							xxxxxx		36
							xxxxxx		37
							xxxxxx		38
							xxxxxx		39
							xxxxxx		40

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.

# Borehole Log

Borehole No.

**PH04**

Sheet 1 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 10/11/2022 - 11/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				1.20				MADE GROUND: Colliery spoil (driller's description)	1
								Brown sandy gravelly CLAY (driller's description).	2
									3
									4
									5
									6
									7
									8
									9
				9.40				COAL	10
				10.00				Grey SILTSTONE with sandstone bands	11
									12
									13
									14
									15
									16
				16.80				Dark grey SANDSTONE	17
				17.20				Grey SANDSTONE with dark grey bands	18
									19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



# Borehole Log

Borehole No.

**PH04**

Sheet 2 of 2

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta	Level:	Scale 1:100	Logged By MP
Client: Castell Construction Limited	Dates: 10/11/2022 - 11/11/2022		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								Grey SANDSTONE with dark grey bands	21
									22
									23
									24
									25
									26
									27
									28
									29
									30
									31
									32
									33
									34
				35.00				End of Borehole at 35.000m	35
									36
									37
									38
									39
									40

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.

# Borehole Log

Borehole No.

**PH05**

Sheet 1 of 1

Project Name: Penallta

Project No:  
16810

Co-ords:

Hole Type  
RO

Location: Winding Wheel Lane, Penallta

Level:

Scale  
1:100

Client: Castell Construction Limited

Dates: 14/11/2022 - 14/11/2022

Logged By  
MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				1.20				MADE GROUND: Colliery spoil (driller's description)	1
								Brown sandy gravelly CLAY (driller's description).	2
									3
									4
									5
									6
									7
									8
				8.50				COAL	9
				9.30				Grey SANDSTONE	10
									11
									12
									13
									14
									15
									16
									17
									18
				18.50				End of Borehole at 18.500m	19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



# Borehole Log

Borehole No.

**PH06**

Sheet 1 of 1

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 15/11/2022 - 15/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				0.80				MADE GROUND: Colliery spoil (driller's description)	
								Brown sandy gravelly CLAY (driller's description).	1
									2
									3
									4
									5
									6
									7
									8
				8.70				COAL	9
				9.40				Grey SANDSTONE	10
									11
									12
									13
									14
									15
									16
									17
									18
				18.50				End of Borehole at 18.500m	19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.

# Borehole Log

Borehole No.

**PH07**

Sheet 1 of 1

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 14/11/2022 - 14/11/2022	Logged By MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								Brown sandy gravelly CLAY (driller's description).	1
									2
									3
									4
									5
									6
									7
									8
				9.00				COAL	9
				9.80				Grey SANDSTONE	10
									11
									12
									13
									14
									15
									16
									17
									18
				18.50				End of Borehole at 18.500m	19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



# Borehole Log

Borehole No.

**PH08**

Sheet 1 of 1

Project Name: Penallta

Project No:  
16810

Co-ords:

Hole Type  
RO

Location: Winding Wheel Lane, Penallta

Level:

Scale  
1:100

Client: Castell Construction Limited

Dates: 11/11/2022 - 14/11/2022

Logged By  
MP

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				1.20				MADE GROUND: Colliery spoil (driller's description)	1
								Brown sandy gravelly CLAY (driller's description).	2
									3
									4
									5
									6
									7
									8
				8.80				COAL	9
				9.30				Grey SANDSTONE	10
									11
									12
									13
									14
									15
									16
									17
									18
				18.50				End of Borehole at 18.500m	19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.

# Borehole Log

Borehole No.

**PH10**

Sheet 1 of 1

Project Name: Penallta	Project No: 16810	Co-ords:	Hole Type RO
Location: Winding Wheel Lane, Penallta		Level:	Scale 1:100
Client: Castell Construction Limited		Dates: 15/11/2022 - 15/11/2022	Logged By MP

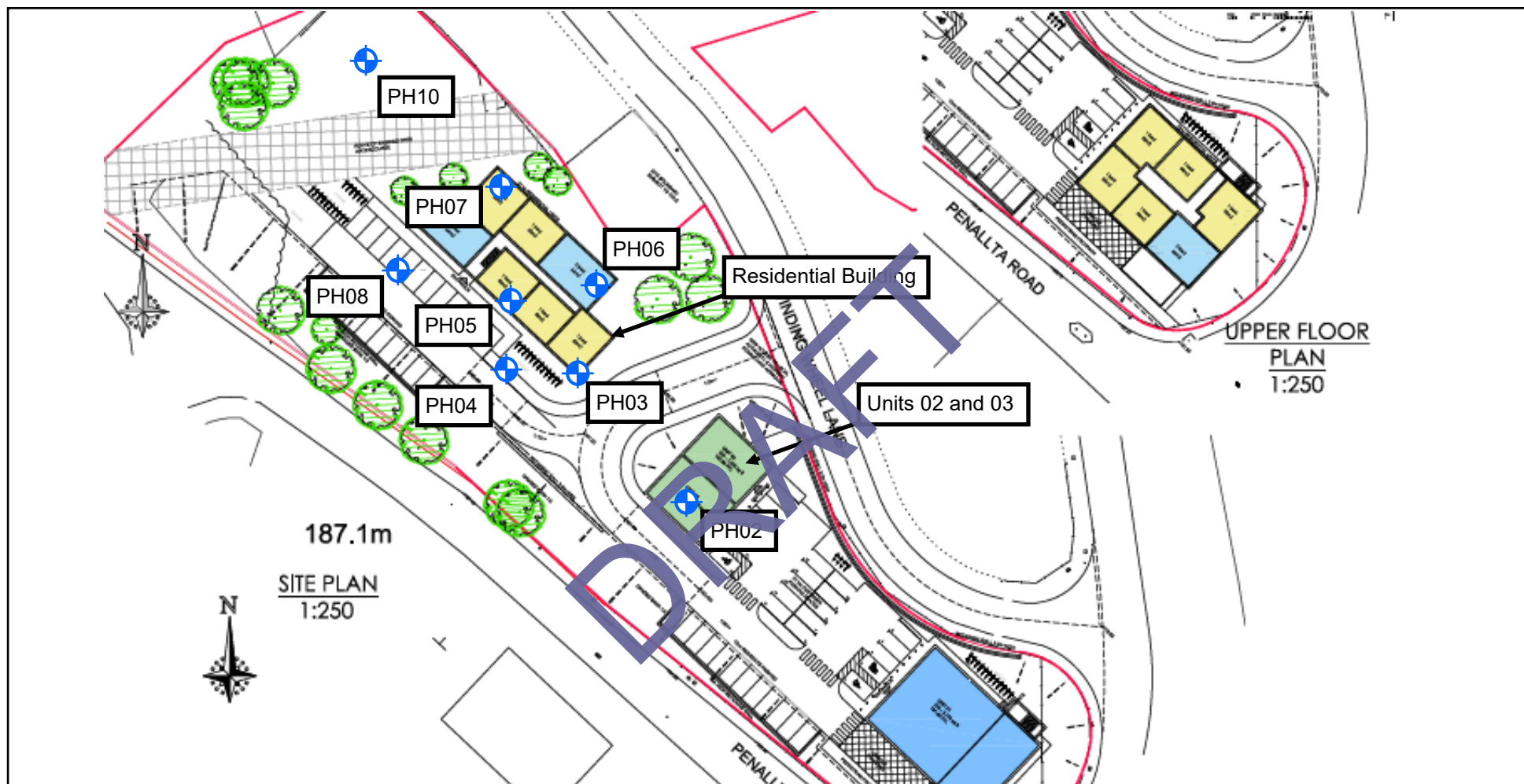
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								Brown sandy gravelly CLAY (driller's description).	1
									2
									3
									4
									5
									6
									7
									8
									9
				9.80				COAL	10
				10.60				Grey SANDSTONE	11
									12
									13
									14
									15
									16
									17
									18
				18.50				End of Borehole at 18.500m	19
									20

Remarks: 1] Inspection pit excavated to 1.2m. 2] Borehole terminated at 30m. 3] On completion a 50mm standpipe (50mm) was installed to 3.0m depth. Slotted pipe with granular response zone from 1.0m-3.0m, solid standpipe with bentonite seal GL-1.0m, and a flush cover.



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DRAWINGS



**Site Name:** Cwmtwrch  
**Project Number:** 16830  
**Drawing Title:** Exploratory Hole Locations  
**Drawing Number:** 01  
**Scale:** Not to scale

**KEY**



**Probehole Locations**





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