

Land off Elm Tree Grove, Twynyrodyn, Merthyr Tydfil

Archaeological Desk-based Assessment

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By: Rachel Morgan
Client: Persimmon Homes Ltd
Project Code: RRTM19
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**Red River
Archaeology**

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CONTENTS

1.	EXECUTIVE SUMMARY	1
2.	INTRODUCTION	3
2.1	Project Background	3
2.2	Site Location and Description	3
3.	AIMS AND OBJECTIVES.....	4
3.1	Aims	4
3.2	Objectives.....	4
3.3	Planning Background.....	4
4.	SCOPE AND METHODOLOGY OF WORKS	5
4.1	Desk-based Assessment.....	5
4.2	Field Visit.....	5
4.3	Assessment of Significance.....	6
4.4	Potential Impact of Proposed Works	6
4.5	Reporting & Archiving	6
5.	SUMMARY OF ARCHAEOLOGICAL RESULTS.....	7
5.1	Historic Baseline Data	7
5.2	Prehistoric Period (Prior to AD 43)	7
5.3	Roman Period (AD 43-410).....	7
5.4	Early Medieval Period (AD 410-1066).....	7
5.5	Medieval Period (AD 1066-1540).....	7
5.6	Post-Medieval Period (AD 1540-1900).....	8
5.7	Modern Period (AD 1901- present day).....	10
5.8	Previous Archaeological Works (Events)	10
5.9	Cartographic Evidence.....	11
5.10	Historic Landscape Characterisation	12
5.11	Aerial Photographs Consultation.....	13
5.12	NWR Consultation	13
5.13	LiDAR Consultation.....	14
5.14	Field Visit.....	14

5.15	Significance of Heritage Assets.....	14
6.	POTENTIAL IMPACT OF PROPOSED DEVELOPMENT	16
6.1	Archaeological Impact	16
6.2	Historic Landscape Impact.....	16
6.3	Cultural Heritage Impact.....	17
7.	CONCLUSIONS	18
8.	REFERENCES.....	19
	Appendix 1 Known Heritage Assets within the Study Area (500 metres)	20
	Appendix 2 Known Scheduled Ancient Monuments within the Study Area (1000 Metres)	22
	Appendix 3 Known Events within the Study Area (500 Metres)	24

FIGURES

Figure 1	Site Location and Study Area
Figure 2	Cultural Heritage Sites within the Study Area (500m)
Figure 3	Scheduled Ancient Monuments within the wider Study Area (1km)
Figure 4	Previous Archaeological Events within the Study Area (500m)
Figure 5	Tithe map of 1850
Figure 6	6-inch Ordnance Survey Map (Surveyed 1868-75, published 1885)
Figure 7	6-inch Ordnance Survey Map (Surveyed 1897-98, published 1901)
Figure 8	6-inch Ordnance Survey Map (Surveyed 1903, published 1905)
Figure 9	6-inch Ordnance Survey Map (Surveyed 1914-15, published 1922)
Figure 10	6-inch Ordnance Survey Map (Surveyed 1938, published 1946)
Figure 11	6-inch Ordnance Survey Map (Surveyed 1948, published 1951)
Figure 12	Historic Landscape Characterisation Areas in the Study Area

PLATES

Plate 1	Overview of Site from northern entrance, looking south
Plate 2	Culverted watercourse in the north of Site, looking southeast
Plate 3	Overview of the coal levels along Cwm Blacks, looking southeast
Plate 4	Overview of Site towards IW016-018, looking southwest

1. EXECUTIVE SUMMARY

The desk-based assessment and field visit identified nine known heritage assets in the inner study area and two Scheduled Ancient Monuments within the outer study area. The site also lies within the Ironworks Landscapes IW016-018 that cover the Dyffryn, Pentrebach and Plymouth Ironworks. One heritage asset, the site of a former mid- to late-19th century brickworks, was located at the eastern boundary of Site which historic mapping shows included a rail track along part of the eastern boundary. Map regressions show the majority of Site itself appears to have been otherwise largely undeveloped during the Post-Medieval Industrial development of the area, and the industrial waste which still covers the area suggests it may have been used as waste ground from that time. Two stones noted on historic mapping were not located during the site visit. Within the inner study area, the projected line of a Roman Road is thought to run east-west to the north of Site whereas other assets identified are largely associated with the expansion of Merthyr Tydfil in the 19th century. These relate to domestic and amenity buildings, or structures which were subsidiary to coal mining such as airshafts. The wider study area includes the Scheduled Ancient Monuments of the former Merthyr Tramroad to the west of Site and the deserted iron mining village Ffos-y-fran to the northeast. While located on the periphery of the historic Ironworks landscapes, the Site is enclosed to the north by modern development and mature trees, and the A4060 dual carriageway has created a visual separation to the east. The Site appears to have been largely used as waste ground since the mid-19th century, and few assets pre-dating that period were recorded in the study areas. The area of the former brickworks which is located within a bank of mature trees will be retained and will therefore not be impacted by the proposed development. There is therefore low potential for the proposed development to encounter buried archaeological remains or to directly or indirectly impact upon the significance of the cultural heritage assets identified within the desk-based assessment.

Gwnaeth yr asesiad wrth ddesg a'r ymweliad maes nodi naw ased treftadaeth hysbys yn ardal fewnol yr astudiaeth, a dwy Heneb Hynafol Gofrestredig yn ardal allanol yr astudiaeth. Lleolir y safle hefyd yn Nhirweddau Gweithfeydd Haearn IW016-018, sy'n cynnwys Gweithfeydd Haearn Dyffryn, Pentrebach a Plymouth. Roedd un ased treftadaeth, sef hen safle gwaith brics o ganol i ddiwedd y 19^{eg} ganrif, wedi'i leoli ar ffin ddwyreiniol y Safle. Mae mapiau hanesyddol yn dangos trac rheilffyrdd ar hyd rhan o'r ffin honno. Drwy weithio'n ôl o fapiau modern i rai hŷn, gwelir nad oedd y rhan fwyaf o'r Safle ei hun wedi'i ddatblygu fel arall yn ystod datblygiad diwydiannol yr ardal yn y cyfnod Ôl-Ganoloesol. Mae'r gwastraff diwydiannol sy'n dal i'w weld yn yr ardal yn awgrymu ei bod yn bosibl iddi gael ei defnyddio fel tir gwastraff o'r cyfnod hwnnw. Ni ddaethpwyd o hyd i ddwy garreg a nodwyd ar fapiau hanesyddol wrth ymweld â'r safle. Yn ardal fewnol yr astudiaeth, tybir bod llinell Ffordd Rufeinig yn rhedeg o'r dwyrain i'r gorllewin i'r gogledd o'r Safle. Mae'r asedau eraill a nodwyd yn ymwneud yn bennaf â thwf Merthyr Tudful yn y 19^{eg} ganrif, sef adeiladau domestig ac amwynderau, neu strwythurau a oedd yn gysylltiedig â'r diwydiant glofaol megis ffyrdd aer. Mae

ardal ehangach yr astudiaeth yn cynnwys dwy Heneb Hynafol Gofrestredig, sef hen Dramffordd Merthyr i'r gorllewin o'r Safle, a phentref mwyngloddio haearn diffaith Ffos-y-fran i'r gogledd-ddwyrain. Er bod y Safle ar ymylon tirweddau hanesyddol y Gweithfeydd Haearn, caiff ei amgylchynu i'r gogledd gan ddatblygiadau modern a choed aeddfed, ac mae ffordd ddeuol yr A4060 wedi creu gwahaniad gweledol i'r dwyrain. Ymddengys fod y Safle wedi cael ei ddefnyddio'n bennaf fel tir gwastraff ers canol y 19^{eg} ganrif, ac ychydig iawn o asedau o'r cyfnod cyn hynny a gofnodwyd yn ardaloedd yr astudiaeth. Lleolir ardal yr hen waith brics mewn llwyn o goed aeddfed a gaiff ei gadw, ac felly ni fydd y datblygiad arfaethedig yn cael effaith arno. Felly, nid yw'n debygol y bydd y datblygiad arfaethedig yn dod ar draws gweddillion archeolegol dan ddaear nac yn effeithio'n uniongyrchol nac yn anuniongyrchol ar arwyddocâd yr asedau treftadaeth ddiwylliannol a nodwyd yn yr asesiad wrth ddesg.

2. INTRODUCTION

2.1 Project Background

- 2.1.1 This report details the archaeological cultural heritage issues that need to be considered in respect of the proposed residential development of land off Elm Tree Grove, Twynrodyn, Merthyr Tydfil, centred on NGR SO 05940 05669 (Fig. 1). The site lies on the eastern outskirts of Merthyr Tydfil, in an area of scrubland surrounded to the north, northeast and west by residential developments and to the south east by the A4060.
- 2.1.2 The report was carried out to assess whether any archaeological heritage assets would be affected by the proposed residential development which may be subject to a forthcoming planning application.

2.2 Site Location and Description

- 2.2.1 The site comprises a single, irregularly shaped piece of scrubland in the east of Twynrodyn which is currently laid to grass and crossed with informal paths. The site is bounded to the east by Elm Tree Grove leading to Oak Tree Rise, to the north by the rear of properties along Penheolferthyr, to the west by the rear gardens of properties along Wallhead Road and Aneurin Close, and to the south by further amenity land. The perimeter of site is lined by mature trees and shrubs and the A4060 lies beyond the trees to the immediate southeast of site.
- 2.2.2 The local geology is South Wales Lower Coal Measures Formation – Mudstone, Siltstone and Sandstone formed during the Carboniferous Period (318 to 319 million years ago) in an environment previously dominated by swamps, estuaries and deltas. The superficial deposits Till, Devensian-Diamicton formed during the Quaternary Period (up to 2 million years ago) in a local environment dominated by ice age conditions (British Geological Survey).
- 2.2.3 Local soils are recorded as seasonally wet acid loamy and clayey with impeded drainage (Soilscales).

3. AIMS AND OBJECTIVES

3.1 Aims

- 3.1.1 The aims of the archaeological desk-based assessment are to provide a detailed assessment of the archaeological and historic parameters of the proposed development area and to assess the potential impact of the proposed development. Archaeological assets within the study area are also assessed to determine their overall significance and where necessary, provide a strategy to mitigate potential impacts from the proposed development on any assets identified, where this is deemed relevant and appropriate.

3.2 Objectives

- 3.2.1 The objective of this report was to assess the archaeological and historic parameters of land within and surrounding the proposed residential development of land off Elm Tree Grove, Twynrodyn, and to identify any cultural heritage assets in the study area through a desk-based assessment of relevant sources and records. A field visit was undertaken to assess the archaeological and historic character of the site and surrounding area. Appropriate records of any findings were made.
- 3.2.2 The significance of any cultural heritage assets identified were assessed along with the potential impact of the development proposal on the assets and their setting. A strategy for further evaluation of potential heritage assets has been formulated where required and mitigation strategies to conserve any heritage assets identified have been devised where this is considered relevant.

3.3 Planning Background

- 3.3.1 This desk-based assessment has been carried out prior to the submission of a planning application for development.

4. SCOPE AND METHODOLOGY OF WORKS

4.1 Desk-based Assessment

4.1.1 The archaeological desk-based assessment was undertaken in accordance with current best practice and the Chartered Institute for Archaeologists *Standard and guidance for desk-based assessment* (CIfA 2017). The study area for non-designated cultural heritage assets and Listed Buildings is defined as a zone 0.5km from the boundary line of the proposed development site. The study area for Scheduled Ancient Monuments, World Heritage Sites and Registered Historic Landscapes is defined as a zone 1km from the boundary line of the proposed development site.

4.1.2 The principal sources of information which were consulted to provide information about heritage assets within the study area were the Historic Environment Record (HER) for south Wales maintained by the Glamorgan Gwent Archaeological Trust (GGAT), the National Monuments Record for Wales (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW). The Central Register of Air Photography for Wales held by the National Archives was also consulted. Further relevant information was researched from a variety of additional sources including:

- Glamorgan Archive Service
- Cadw
- National Museum of Wales (NMW)
- Portable Antiquities Scheme (PAS)
- Google maps and satellite images
- The County Reference Library for publications in the Local Studies Collection.
- Where identified, local archaeologists/historians and other archaeological organizations for unpublished information and/or specialist local knowledge.
- Any other relevant sources identified.

4.2 Field Visit

4.2.1 A field visit to assess the archaeological and historical significance of the site was undertaken on 12th December 2019, and a written record produced. This was to identify historic buildings and landscape features, current land use, areas of disturbance, areas of potential colluvial or alluvial deposits etc. The setting of the site within the surrounding landscape was also noted regarding any archaeological assets identified in the desk-based assessment.

4.3 Assessment of Significance

- 4.3.1 In assessing the significance of any archaeological assets identified within the study area and its environs the archaeological, historic, architectural and artistic interests pertaining to the assets were considered. The likelihood of the presence of unknown archaeological assets within the area of the proposed development site were also considered. This was based on the review of the character and distribution of known archaeological assets in the surrounding area and the characteristics of the study area.

4.4 Potential Impact of Proposed Works

- 4.4.1 The potential impact of the proposed works was considered in relation to the proposed development with reference to the known archaeological assets in the study area. If deemed necessary, mitigation of these impacts was suggested along with recommendations for possible further archaeological work if required.

4.5 Reporting & Archiving

- 4.5.1 The results of the archaeological work form the basis of a full archive to professional standards, in accordance with current Historic England guidelines (English Heritage, 2008; Historic England, 2015), and comply with RCAHMW guidelines of Wales (RCAHMW, 2015), the *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (2018) and the ADS digital records (archaeologydataservice.ac.uk/advice).
- 4.5.2 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the CIfA in that organisation's code of conduct (CIfA, 2014a) and this will be adhered to in relation to the current project.
- 4.5.3 Digital archives will be submitted to RCAHMW. The project archive, which include photographs, plans and site notes, will be deposited with the relevant Museum or other agreed body. It will be integrated into the archive of any subsequent fieldwork.
- 4.5.4 A copy of the final report will be submitted to the regional HER in accordance with the guidelines set out in the *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (2018).

5. SUMMARY OF ARCHAEOLOGICAL RESULTS

5.1 Historic Baseline Data

- 5.1.1 Until the mid-18th century, Merthyr Tydfil was a small farming community. However, the presence of iron ore, limestone, timber, charcoal and plentiful water sources made the location ideal for ironworking, and during the Industrial Revolution Merthyr Tydfil became the centre of the South Wales iron industry (Ince 1993).

5.2 Prehistoric Period (Prior to AD 43)

- 5.2.1 No prehistoric cultural heritage assets are known from within the Site. A partially polished felsite Neolithic axe (00478m) was found in the gutter at the head of a street in Thomas Town and may have been brought down from nearby allotments.
- 5.2.2 In the wider area, a string of Bronze Age cairns runs along the ridgeline between the Taf and Taf-Merthyr valleys to the southeast of site (RCAHMW 1976a), and a univallate Iron Age enclosure of Castell Morlais to the northwest of site represents the known Iron Age activity in the wider area (RCAHMW 1976b).

5.3 Roman Period (AD 43-410)

- 5.3.1 No Roman cultural heritage assets are known from with the Site, however the projected line of a Roman road is thought to run east-west to the immediate north of Site.
- 5.3.2 The nearest known Roman remains are those at Penydarren Roman auxiliary fort, c.1km northwest of site, which dated from the late-1st to mid-2nd centuries AD. Stray finds, cremations and possible building remains indicate a probable associated extramural settlement (RCAHMW 1976b).

5.4 Early Medieval Period (AD 410-1066)

- 5.4.1 No early medieval cultural heritage assets are known from with the Site or the study area.
- 5.4.2 Activity from the early medieval period in the area is represented by an early Christian pillar-stone with ring-cross, dating from 8th-9th century which had been built into the wall of St. Tydfil's Church (RCAHMW 1976c).

5.5 Medieval Period (AD 1066-1540)

- 5.5.1 No medieval cultural heritage assets are known from with the Site or the study area.
- 5.5.2 Towards the centre of Merthyr Tydfil, St Tydfil's Church is known from documentary sources to be of at least 12th century origin, however the presence of the early medieval pillar-stone could suggest an earlier founding. The current church was largely rebuilt in the 19th century (RCAHMW 1976c). The Court House near the town centre is also thought to have medieval

origins, being recorded from at least the early 16th century, although heavily adapted during the 19th century (RCAHMMW 1982).

5.6 Post-Medieval Period (AD 1540-1900)

- 5.6.1 One post-medieval cultural heritage asset was identified within the site and two more were identified to the immediate south. A further six were identified within the wider study area.
- 5.6.2 Brick Works (PRN 05239m) were located at the eastern boundary of Site, identified as being present on the 1st edition OS map surveyed between 1868-75, but not on either the earlier 1850 Tithe map or the later 2nd edition OS map surveyed in 1897-8, so would have been extant for a maximum of 50 years, but likely less. Airshaft 3 (PRN 05249m) to the south of site was also only visible on the 1st edition OS map. A further airshaft to the east of site between the brick works is depicted on the 1st edition OS map and labelled as an 'old shaft' on the 1922, 1946 and 1951 OS maps, but was not recorded in the HER. Stone 2 (PRN 05245m) was recorded in the HER data as being depicted on the 1st, 2nd and 3rd edition OS maps, however only the 3rd edition depicts a stone in this location which is continued in the 1946 and 1951 publication. No stones were observed at any of these locations during the site visit.
- 5.6.3 As well as the presence of the air shafts, the exploitation of the coal seams in the area is evident from the presence of Coal Shaft (PRN 05250m) to the southwest of site and Old Coal Level 1 (PRN 05256m) to the south of site. A leat (PRN 02860.0m) was recorded southwest of site as part of the GGAT West Merthyr Reclamation Scheme A375.
- 5.6.4 The residential development of Merthyr Tydfil during the post-medieval period is evident in the study area from residential and amenity buildings. 65-73 Plymouth Street (PRN 01225m) to the west of site, a row of 5 upper houses of two rooms each and 4 basement single-room houses. The Twynnyrodyn Junior School (PRN 06304m) is also present to the west of site which was depicted from the 1st edition OS map until 1951. The school was subsequently demolished in the early 21st century and the site redeveloped. The Penuel Calvinistic Methodist Chapel (PRN 04992m) was located northwest of the school on OS mapping from the 1st edition onwards. A date plaque in the façade records the construction as 1860. The building has been converted to residential dwellings.
- 5.6.5 Four ironworks were constructed in Merthyr Tydfil from the mid-18th century, the earliest being at Dowlais in 1759 (c.2km northeast of site) which manufactured wrought iron. The Plymouth Ironworks (c.550m southwest of site) was constructed in 1763, the Penydarren Ironworks (c.1km north of site) in 1784, and the Cyfarthfa Ironworks in 1765 (c.2.25km northwest site). The Plymouth Ironworks is of national and international significance due to pioneering development by Isaac Wilkinson, John Guest and Richard and Anthony Hill, and a later association with the first steam-powered rail journey by Richard Trevithick.

- 5.6.6 The southwest of the study area incorporates the Historic Ironworks Landscapes 016-018 which cover the Dyffryn, Pentrebach and Plymouth Ironworks respectively. The Dyffryn and Pentrebach Ironworks were both established as subsidiaries to the Plymouth Ironworks in 1819 and 1803 respectively and so the landscapes associated with the three Ironworks are considered together. The Dyffryn Ironworks contained some of the largest furnaces at the time including two out of the only four horizontal engines used for furnace blowing in South Wales. The Pentrebach Ironworks was established as a purpose-built puddling and milling complex, and in 1869 consisted of seventy-four puddling furnaces, four forges and seven rolling mills. Due to the continued use of technologies which were becoming obsolete, the Dyffryn Ironworks became unviable in the 1880s and was dismantled in 1883 (GGAT 2005).
- 5.6.7 Dowlais continued to expand and by 1830 had become the largest ironworks in South Wales with twelve blast furnaces which produced 32,611 tons of iron (Ince 1993). As Dowlais expanded further a subsidiary ironworks, the Ivor Ironworks with four blast furnaces, was constructed nearby in 1839. By 1845 Dowlais was the largest ironworks in the world with eighteen blast furnaces. During the 1870s greater amount of foreign ore were brought in to fuel the expansion of Dowlais, however this eventually led the owners to build a new works in Cardiff in 1891 to minimise transport costs. The two ironworks worked in tandem until the 1930 when iron production ceased at Dowlais (Ince 1993).
- 5.6.8 The Plymouth Ironworks mostly supplied the Cyfarthfa Ironworks with pig iron. Additional furnaces were built at the subsidiary site of Dyffryn Ironworks in 1819 which were some of the largest in South Wales. Both sites continued to expand during the 19th century and by 1862 eleven furnaces operated between the two sites. Output reduced during the 1860s and 1870s and in 1875 the Aberdare and Plymouth Ironworks Company collapsed. No buyer was found for the site and in 1883 the buildings were dismantled (Ince 1993).
- 5.6.9 The Penydarren Ironworks supplied Robert Stephenson between 1826-30, and maintained a stationary engine and locomotive of his within the works (the Eclipse which was used on the Penydarren Tramroad). The Ironworks was one of the first to begin supply of the wrought iron rail trade, in 1830, which fuelled the subsequent expansion of the ironworks to seven blast furnaces by 1845. The company appeared to have run into trouble during the mid-1850s and was put up for sale in 1859. It was bought by the Aberdare Iron Company in 1865 who undertook some repairs, but the furnaces were not re-lit. After the collapse of the company the plant was sold off in 1883 (Ince 1993).
- 5.6.10 The Cyfarthfa Ironworks expanded during the early 19th century to become the largest in the area (with seven blast furnaces in 1872), and initially manufactured cannon (later rail and merchant iron bar). A subsidiary ironworks was constructed at Ynysfach in 1801 to facilitate the expansion. Cyfarthfa Ironworks was slowly run down during 1874-5, and after a period of

closure and modernisation the site reopened as a steel works in 1885. Production continued at the site until 1919 (Ince 1993).

5.6.11 The Scheduled Ancient Monument of Ffos-y-fran Deserted Iron Mining Village (GM496) lies c.900m east of Site. The village probably grew up as a squatter settlement on the common during the early 19th century to provide labour for the associated ironworks. The outlines of at least fifteen cottages and gardens remain around the quarry faces and former spoil tips. The village was recorded as abandoned in 1879 (CADW).

5.6.12 The Scheduled Ancient Monument of Merthyr Tramroad Tunnel (Trevithick's Tunnel) (GM573) is situated c.550m southwest of Site. The tramroad was built in 1793 to connect the ironworks of Merthyr Tydfil to the Glamorganshire Canal at Abercynon. The tunnel initially extended for c.110m underneath the charging area of the blast furnaces of the Plymouth Ironworks and was further extended south by another c.70m. The first passenger carrying locomotive, designed by Richard Trevithick, passed through the tunnel in 1804, although the damage caused by the locomotive to the tram-plates meant the use of the engine on the route was short-lived. The line eventually closed in c.1880 (CADW).

5.7 Modern Period (AD 1901- present day)

5.7.1 One cultural heritage asset from the modern period was recorded within the study area. Dowlais Colliery (PRN 07573m) was recorded to the immediate north of site and appeared on a GKN list of Controlled Establishments in 1915.

5.8 Previous Archaeological Works (Events)

5.8.1 The Merthyr Tramroad field survey (PRNs E005369 and E005389) identified a stretch of the former Merthyr Tramroad to the west of site (Fig. 4). This Tramroad formed part of the pioneering development of the railways, having a specialised track, conveying paying passengers and mechanical traction. It was arguably important in sustaining the iron industry in Merthyr Tydfil by allowing alternative goods transportation which otherwise used the Glamorganshire Canal. The stretch of Tramroad within the study area contains the Trevithick Tunnel (see above).

5.8.2 The Southeast Wales Industrial Ironworks Project (PRN E000954) assessed the survival of the ironworks landscape in the area of the northern coalfield rim, including the study area, with a view to inform the conservation, protection and management of the monuments and landscapes (Fig. 4). This study associated the Site with the Plymouth Ironworks and its subsidiaries, Pentrebach and Dyffryn to the southwest, and as such it is included in landscapes IW016-018.

5.8.3 Before the Twynorodyn Junior School was demolished, a photographic survey was undertaken of the building in 2008 (Fig. 4).

5.9 Cartographic Evidence

- 5.9.1 The Tithe Map of 1850 shows the site to be the western half of a large parcel of land called Coedcae (along with a similarly sized parcel to the northeast and a very large parcel to the south and southeast) (Fig. 5). The field had Trebedda Farm at its centre, although this is located just outside the site to the northeast) and was recorded as being pasture, although the field name (lit. *tree field*) may suggest former woodland. The farmyard of Trebedda Farm extended southwest into site, and two further enclosures were present in the field to the northeast of Trebedda Farm, outside site. The site is shown to be some distance southeast of the settlement of Merthyr Tydfil with the intervening landscape divided into a series of smaller fields, most of which are meadow.
- 5.9.2 The 1st Edition Ordnance Survey (OS) map (Glamorgan XII), surveyed between 1868 to 1875 and published in 1885, showed the Site as being wasteland crossed with paths (Fig. 6). A brickworks, with a brickkiln and air shaft were present in the east of Site to the immediate south of Trebeddau (formerly labelled Trebedda Farm) The northeast side of the Site is bounded by a road which extended south from Pen-yr-heol to Trebeddau and the brickworks. A tramway, a short section of which is within Site, extended southeast from the brickworks towards various coal and ironstone workings. Topographically the Site was depicted as more varied than the earlier Tithe map would suggest, with the centre-east of Site around the brickworks being a level plateau crossed with paths. This drops off to the south of Site towards the Cwm Blacks stream and also to the west and northwest which still retained some woodland. Apart from the other side of the Cwm Blacks valley to the south of Site and Ironstones Levels to the southeast, the land in the immediate area around Site appeared to remain farmland at this time. However, the Dowlais Railway formed the northwest border of the fields to the immediate west of Site. The town of Merthyr Tydfil has expanded greatly eastwards between the 1850 Tithe map and the 1st Edition OS map, with the creation of Thomas Town to the east and Twyn-yr-odyn to the southeast of the original centre of Merthyr Tydfil. Twyn-yr-odyn at this time was a linear development along the Twyn-yr-odyn Road which extended east from Merythr Tydfil towards Pen-yr-heol.
- 5.9.3 The 2nd Edition OS map (Glamorgan XII.NW) revised in 1897-8 and published in 1901 (and the Brecknockshire LI.NW, revised in 1903 and published in 1905) showed the brickworks, tramway and airshaft as no longer present, and the northeast boundary of Site was depicted as a path or track rather than a road (Figs. 7 and 8). The flatter part of the site towards the centre-north appeared to have been divided into two or three fields, however, the remainder of Site appeared largely unaltered.
- 5.9.4 The 3rd Edition OS map (Brecknockshire LI) revised in 1914-15 and published in 1922, showed the Site as waste ground (Fig. 9). A tramway was depicted along the northeast boundary of Site

alongside a path, and an 'Old Shaft' was labelled east of the Site to the immediate south of Trebeddau. A stone was labelled in the west and southwest of Site, but otherwise the Site appeared largely unaltered. In the wider area, residential development had expanded along Glifach Cynon, which lead from the Twyn-yr-odyn Road, up to the Dowlais Railway.

- 5.9.5 Subsequent mapping depicted no further changes in the area until the 5th Edition OS map (Brecknockshire LI.NW), revised in 1948 and published in 1951, when in-fill residential development was depicted between the west boundary of Site and the former Dowlais Railway (Figs. 10 and 11). The Dowlais Railway itself was no longer depicted, however the cutting was still in place.

5.10 Historic Landscape Characterisation

- 5.10.1 The majority of the Site falls within the Historic Landscape Cwm Blacks (Merthyr Tydfil 048) which is characterised as reclaimed 19th century coal workings. The area was used in the late 18th and early 19th century for extraction of ironstone and coal associated with the Plymouth Ironworks during the time it was owned by Anthony Hill. The Landscape Characterisation records the area was the location of iron mines by 1813 and by 1826 included a network of tramroads and inclines connecting to the Plymouth Ironworks. By the 1st edition OS map the area had been intensively worked and mining seems to have ended, presumably with the closure of the Plymouth Ironworks, although numerous tracks were still extant within the study area reflective of the earlier tramroads (GGAT).
- 5.10.2 The western edge of Site lies within the Historic Landscape Ysgubor Newydd (Merthyr Tydfil 037) which is characterised by 20th century council housing built over former agricultural land (GGAT).
- 5.10.3 The surrounding historic landscape areas differ to east, north and west. Those areas west of Site are characterised as largely connected with the settlement and residential expansion of Merthyr Tydfil during the early Industrial and later periods, generally as ribbon development along the transport network followed by later in-fill development with varying degrees of historical integrity. To the east of Site, the landscapes are characterised as broadly more associated with the extraction industries associated with the ironworks along with associated infrastructure and varying degrees of retained agriculture. To the north, the landscape was characterised as formerly industrial in nature, due to the influence of the nearby Dowlais Ironworks, and included a transport corridor and housing along with a reclaimed extractive landscape (GGAT).
- 5.10.4 The Site also falls within the Merthyr Tydfil Registered Historic Landscape HLW (MGI) 2 which retains the industrial landscape character which identified Merthyr Tydfil as the most important town in South Wales during the Industrial Revolution. Numerous relict features are

still retained within the landscape, despite some intensive reclamation in areas, which reflect the significant exploitation of the mineral wealth within the surrounding hinterland during the 18th and 19th centuries. The remains include significant and pioneering former ironworks with associated coal mining, water power, transport links, terraced housing and Cyfarthfa Castle, built for the Crawshay family who were one of the most prominent owners of the ironworks (CADW).

- 5.10.5 The Site lies within the Ironworks Landscapes IW016-18 which cover the Dyffryn, Pentrebach and Plymouth Ironworks respectively. These landscapes cover the core location of each Ironworks, and only part of the Plymouth Ironworks is included within the inner study area, however all three Ironworks were part of the same company, so they are all included as one entity. The areas which contained the former Dyffryn, Pentrebach and Plymouth Ironworks were reclaimed during the 1970s and contained no standing remains of the ironworks except the Merthyr Tramroad Tunnel, although it is thought the Dyffryn and Plymouth sites could hold buried remains.

5.11 Aerial Photographs Consultation

- 5.11.1 The Central Register of Air Photography for Wales were consulted however no reply was received to the enquiry.
- 5.11.2 An aerial photograph from 1945 shows the Site to be a level plateau with a small valley to the west and southeast sides. Trebeddau Farm can be discerned, as can the route of the former rail track in the northeast which appears by then to have reverted to a farm track. The area appears to have been crossed by more subtle, informal tracks, although the line of what could be a road extends from the southwest of site, across the western valley and extends along the line of a current track to the southwest. The immediate surrounding area is predominantly agricultural fields although development has encroached up to the line of the Gilfach-Cynon road up to the line of the Dowlais Railway cutting.

5.12 NWR Consultation

- 5.12.1 Landmaps compiled by Natural Resources Wales describe the proposed development site as unbuilt land, derelict or waste ground, with land being currently unused or reclaimed (MRTHRVS876). The site also lies within the northern end of the Taff Valley Corridor classified as built environment with settlement, processing, communications and reclaimed land. This is characterised as the main transport and communication corridor which links Merthyr to Cardiff and Barry. Development is generally later industrial settlement (post-1850s) associated with coal extraction, with some fieldscapes at the valley bottom (MRTHRHL012).

5.13 LiDAR Consultation

- 5.13.1 LiDAR data held by Natural Resources Wales was consulted at 0.5m and 1m DSR. These showed the site to be mostly flat with vegetation around the periphery. A linear feature which extends northeast-southwest across the southern half of site corresponds with a path seen in satellite imagery, as does a similar feature in the north of site. A tree-lined track extends west-southwest across the south of site. Other small anomalies across the site correspond with patches of vegetation.
- 5.13.2 The LiDAR data shows the wider area to be largely suburban with some industrial and transport elements. The ground rises to the east of the A4060 and is much less developed, with features likely associated with coal extraction to the northeast. Any anomalies identified in the LiDAR data appear to correspond with modern landscaped features or vegetation.

5.14 Field Visit

- 5.14.1 A site visit was conducted on 12th December 2019 and included a photographic record and field notes.
- 5.14.2 The proposed location for the development is situated upon a large flat plain bounded by mature trees and crossed with informal tracks (Plate 1). A culverted watercourse runs southeast in the northern part of Site (Plate 2). Much of the landscape is covered with industrial material, such as, coal, slate and broken masonry underlying sparse areas of grass, indicative of the earlier use of the Site for mining activity. A dense patch of vegetation is present towards the centre of the Site. The historic landscape overlooking the area to the northeast was not visible from Site due to the eastern treeline and rows of housing (Plate 3). Towards the south of the Site the land abruptly drops down to another flat plain covered in the same industrial material which likely represents the old coal levels (Plate 4). A small valley to the west separates the Site from an area of modern housing. Within the town of Twynnyrodyn itself the School building located on the 1922 OS maps has been removed and replaced with housing known as Clos Y Ysgol. The Methodist church located on James St. is still present, though it appears to have a different function.

5.15 Significance of Heritage Assets

- 5.15.1 The heritage assets identified within the Site are largely of low significance as remnants of extractive industries, thought to be associated with the former Plymouth Ironworks, and a short-lived brickworks. The stones depicted on OS mapping as being located in and around Site are of low significance as no further information is known about them and they could not be located during the site visit.

- 5.15.2 The heritage assets identified within the inner study area are also of individual low significance however cumulatively they contribute to the significance of Merthyr Tydfil as the preeminent town in South Wales during the Industrial Revolution.
- 5.15.3 The heritage assets identified within the outer study area are of national significance as Scheduled Ancient Monuments. The Merthyr Tramroad Tunnel (GM573) is highly significant due to the connection with both the Plymouth Ironworks and as the location for the world's first passenger journey by railway locomotive. The Ffos-y-fran deserted iron mining village is highly significant as evidential information for 18th and 19th century iron working practices and living conditions.

6. POTENTIAL IMPACT OF PROPOSED DEVELOPMENT

6.1 Archaeological Impact

- 6.1.1 The proposed development is located in an area thought to have been used for extraction of iron during the late 18th and first half of the 19th centuries but which was only recorded as having contained a brickworks and former air shafts during the late 19th century and onwards. The site visit found the area still retained waste likely derived from the earlier extraction, with no evidence for the stones depicted on OS mapping.
- 6.1.2 The dearth of earlier assets in the study area and the likely disturbance by post-medieval extractive industry indicates a low probability of archaeological remains being encountered during the proposed development. The location of the possible route of a Roman Road to the north of Site could indicate a slightly higher probability of remains towards the north of Site, however this area is also likely to have been disturbed by the extractive industries and post-medieval development.

6.2 Historic Landscape Impact

- 6.2.1 The proposed development would have a low to medium impact on the surrounding Historic Landscapes. The Site contributes to two Historic Landscape Characterisation Areas as well as the Ironworks Landscapes associated with the Plymouth, Pentrebach and Dyffryn Ironworks, and also lies within the Registered Historic Landscape of Merthyr Tydfil. The Registered Historic Landscape embodies the industry associated with Merthyr Tydfil as the centre for ironworking in South Wales during the late 18th and early 19th centuries. The Site was also included within the hinterland of the Plymouth, Pentrebach and Dyffryn Ironworks due to its use for associated extractive industry in the late 18th to early 19th centuries. As such the Site formerly contributed to these highly significant Ironworks. The Plymouth Ironworks itself and its subsidiary ironworks of Pentrebach and Dyffryn have been largely destroyed except for the Merthyr Tramroad Tunnel (GM573) and the Site itself contains only waste materials as visible evidence of its former association with the works. The majority of Site also falls within the Cwm Blacks Historic Landscape noted for its late 18th and early 19th coal and ironstone extraction and associated tramroads for Plymouth Ironworks when it was owned by Anthony Hill.
- 6.2.2 As such the Site contributes to six Historic Landscapes of differing levels, all of which embody the development of Merthyr Tydfil as an industrial ironworking centre in the late 18th and early 19th centuries. The Site itself appears to have been purely used for extraction of which there is little remaining physical evidence apart from waste, and as such forms a small contribution overall to these Landscapes. The Site is divided from the majority of the remaining Historic Landscapes by 20th century residential development and a major trunk road, the A4060, from which it is screened by mature trees.

6.3 Cultural Heritage Impact

- 6.3.1 The proposed development would have a low impact on the Cultural Heritage assets identified within the Site and inner and outer study areas. The majority of the assets identified within the inner study area of the desk-based assessment are either no longer extant, have been developed during the modern period or could not be located during the site visit. Of those in the outer study area, only the Merthyr Tramroad Tunnel has an association with the Site, both having been associated with the Plymouth Ironworks.

7. CONCLUSIONS

- 7.1.1 The proposed development Site is located on the southeast outskirts of Merthyr Tydfil within an area of largely 20th century residential development and is bounded to the southeast by a major trunk road which divides the Site from the landscapes to the east. The Site was the location of former late 18th to early 19th century coal and ironstone extraction associated with the former Plymouth Ironworks located to the southwest. These Ironworks and its subsidiaries of Pentrebach and Dyffryn were significant in the development of Merthyr Tydfil as an iron production centre due to the pioneering development by its owners, and were also associated with the first steam-powered rail journey.
- 7.1.2 The proposed development has a low potential to encounter buried archaeological remains apart from any which may be associated with the former extraction works or the former brickworks located at the eastern boundary of site in the late 19th century. The extraction works are likely to have heavily disturbed any earlier archaeological remains which may have been present on Site.
- 7.1.3 The Site lies within and contributes to both the Registered Historic Landscape of Merthyr Tydfil and the Ironworks Landscapes associated with the significant Plymouth, Pentrebach and Dyffryn Ironworks. This contribution is associative, based on the provision of coal and/or ironstone to the Plymouth Ironworks along the former connective tramroads, however neither the infrastructure nor the Ironworks are extant, apart from the Merthyr Tramroad Tunnel (GM573), having been reclaimed and redeveloped during the 20th century. The location of the Site within 20th century development has created a disconnect with other surviving elements of the Ironworking Landscapes, although the Site does contribute in a small way to the overall Industrial Landscape.

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APPENDIX 1 KNOWN HERITAGE ASSETS WITHIN THE STUDY AREA (500 METRES)

Asset No	NGR	Type	Description	Date
GGAT00478m	SO05530599	Axe	Neolithic felsite stone axe A felsite stone axe found in a gutter at the head of a street on the edge of Thomas Town on Twyntrodyn Hill, Merthyr Tydfil, which may have been brought down from nearby allotments or fields.	Neolithic
GGAT01225m	SO05370546	House	65-73 Plymouth Street There were 5 upper houses in this row, & 4 basements. Upper houses had 2 rooms with very low ceilings in the bedrooms. Basement houses had just 1 square room.	Post-Medieval
GGAT02860.0m	SO05600530	Leat	WM63 GGAT West Merthyr Reclamation Scheme A375	Post-Medieval
GGAT04992m	SO05600581	Chapel	PENUEL CALVINISTIC METHODIST CHAPEL, MERTHYR TYDFIL Location of Penuel Methodist Chapel, as noted from the OS (1876) First Edition Map. Shown on modern day map as Penuel House. Now converted into residential dwelling.	Post-Medieval
GGAT05239m	SO0602405658	Brickworks	Brick Works Brick Works visible on first (1876) edition OS map but not on the second (1898) edition.	Post-Medieval
GGAT05245m	SO0593205443	Stone	Stone 2 Stone visible on first (1876), second (1900) and third (1919) edition OS maps.	Post-Medieval
GGAT05249m	SO0595705434	Shaft	Air Shaft 3 Air Shaft visible on the first (1876) edition OS map.	Post-Medieval

GGAT05250m	SO0570605013	Shaft	Coal Shaft Coal Shaft visible on the first (1876), second (1900) and third (1919) edition OS maps.	Post-Medieval
GGAT05256m	SO0591605276	Level	Old Coal Level 1 Old Coal Level visible on the first (1876) and second (1900) edition OS maps.	Post-Medieval
GGAT06304m	SO0567505768	School	Twynirodyn Junior School Twynirodyn Junior School. Demolished and now the site of modern residential housing.	Post-Medieval
GGAT07573m	SO0606	COLLIERY	Dowlais Colliery Colliery appearing on a GKN list of Controlled Establishments in 1915.	MODERN

APPENDIX 2 KNOWN SCHEDULED ANCIENT MONUMENTS WITHIN THE STUDY AREA (1000 METRES)

Asset No	NGR	Type	Description	Date
GM496	SO 07138 05678	Deserted Village	Ffos-y-fran Deserted Iron Mining Village A squatter settlement of Ironstone workers' dwellings and garden plots built on the tips adjacent to ironstone quarries. Probably of late C18, early C19 date, the settlement was erected on land leased by the Penydarren Ironworks. The ironworks provided housing for key workers in the works only; the others, many of whom worked for the company on the 'bargain' system had to find their own accommodation. In this case, the ironstone quarrymen set up their squatter village adjacent to their place of work, the company appearing to turn a blind eye to the practice. (RCAHMW) The monument consists of the remains of a deserted iron mining village and adjacent mining earthworks, probably dating to the 18th or 19th century. The village was recorded in about 1879 as abandoned. It probably grew up around the early 19th century as a squatter settlement on the common, permitted by the Lord of the Manor in order to provide labour for the isolated upland iron ore mines. As many as a hundred people may have lived in the village. The foundations of at least fifteen cottages and outlines of gardens nestle under quarry faces and former spoil tips in irregular pattern. Several paths criss-cross the area between the cottages and the mines. The monument is of national importance for its potential to enhance our knowledge of 18th or 19th century iron working and other industrial practices. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structure itself may be expected to contain archaeological information concerning chronology and building techniques. An iron forge may be part of a larger cluster of monuments and their importance can further enhanced by their group value. The scheduled area comprises the remains described and areas around them within which related evidence may be expected to survive. (CADW)	Post-Medieval
GM573	SO 05598 04908	Tramroad	Merthyr Tramroad Tunnel (Trevithick's Tunnel) The first railway tunnel used by a railway locomotive. Tunnel, built in 1802-3, carrying the Merthyr Tramroad (nprn 91513) under the furnace charging bank of Plymouth Ironworks (nprn 34114). The original tunnel has been extended to the south. The northern end is buried and both tunnels are currently	Post-Medieval

		inaccessible, but the south portal of the later tunnel has been 'restored', with new stonework, steel grille, mosaic blocking wall and flooring, &c. (B.A.Malaws, RCAHMW, 23 January 1992.) The monument comprises the remains of the Merthyr Tramroad Tunnel. It is situated at Pentrebach and forms an important element in the nineteenth century Merthyr (or Penydarren) tramroad. The Merthyr tramroad was built in 1793 and ran from the ironworks of Merthyr Tydfil to the Glamorganshire Canal at Abercynon. The tramroad ceased to be used in about 1880. It was carried in a tunnel under the charging area of the blast furnaces of the Plymouth Ironworks at Pentrebach. The tunnel measures about 110m in length, 2.44m in height and 2.57m in width. In 1830, the tunnel was subsequently extended to the south, the new section measuring about 70m in length, 3.96m in height and 3.96m in width. The great Railway Era was the product of two distinct lines of development: the growth of tramways and the appearance of the locomotive steam engine. These were first brought together, albeit in a tentative manner, by Richard Trevithick. On the 21st of February 1804, Richard Trevithick's high-pressure steam engine travelled the Merthyr Tramroad, passing through the tunnel on its way to Abercynon. It pulled five wagons, containing ten tons of iron (the haulage of which was intended to discharge a substantial wager) and seventy passengers (the great majority of whom being last-minute opportunistic day-trippers) - and was the world's first journey by a passenger carrying railway locomotive. To achieve this, the existing double line of tramplates was removed from the tunnel and replaced by a single line below the centre of the arch. However, the brittle cast iron tram-plates used on the Merthyr tramroad had been designed for horse-drawn traffic and broke under the weight of the locomotive. After several further journeys (and many more damaged tramplates), the experiment was abandoned and the engine, deprived of its wheels, put to use in the foundry. The monument is of national importance for its potential to enhance and illustrate our knowledge and understanding of the development of the transport network associated with the iron industry. The importance of the monument is further enhanced by the survival of detailed historical documentation and its association with the early railway pioneer, Richard Trevithick. (CADW)	
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APPENDIX 3 KNOWN EVENTS WITHIN THE STUDY AREA (500 METRES)

Asset No	NGR	Type	Description
GGATE005389	SO0467009720	FIELD SURVEY	Merthyr Tramroad As part of a project covering the Merthyr Tramroad undertaken by Archaeological Investigations a field survey was undertaken on parts of the track over a number of site visits.
GGATE005389	ST0845094850	FIELD SURVEY	Merthyr Tramroad As part of a project covering the Merthyr Tramroad undertaken by Archaeological Investigations a field survey was undertaken on parts of the track over a number of site visits.
GGATE005369	SO0467009720	PROJECT	Merthyr Tramroad Archaeological field survey carried out by Archaeological Investigations Ltd on the Merthyr Tramroad in 2004.
GGATE005369	ST0845094850	PROJECT	Merthyr Tramroad Archaeological field survey carried out by Archaeological Investigations Ltd on the Merthyr Tramroad in 2004.
GGATE000954	SO0965205462	Project	Southeast Wales Industrial Ironworks Project This project was instigated in response to the ongoing threats faced by industrial remains of Southeast Wales. The aim of the project was to assess the current state of survival/preservation of ironworks landscape in the area of the northern coalfield rim to inform conservation, protection and management of these monuments and their associated landscapes.
GGATE000108	SO0567505768	Photographic Survey	Twynnyrobyn Junior School Photographic survey carried out in advance of demolition of 19th century Twynnyrobyn Junior School for a proposed residential development.

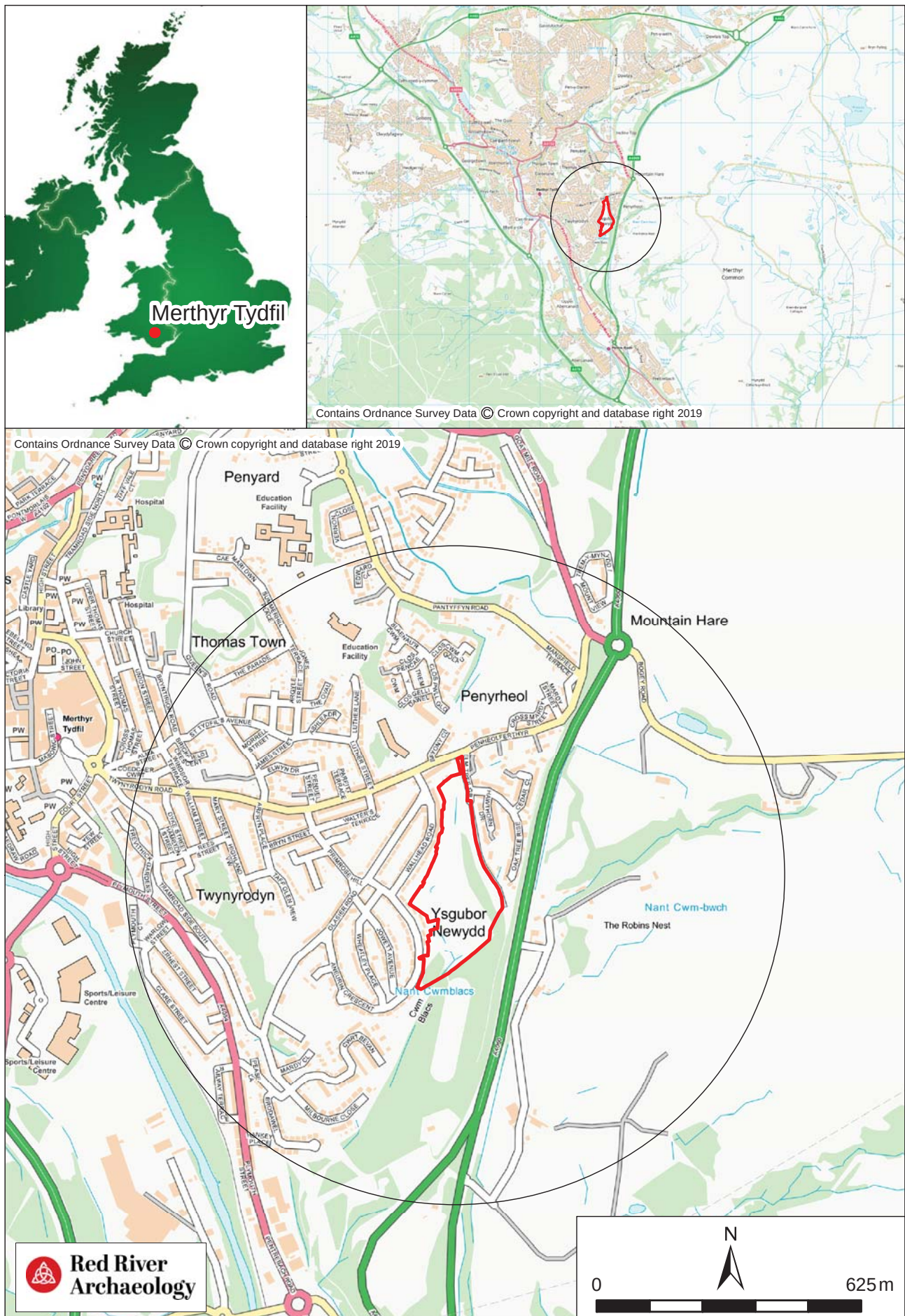


Figure 1 - Site Location and Study Area.

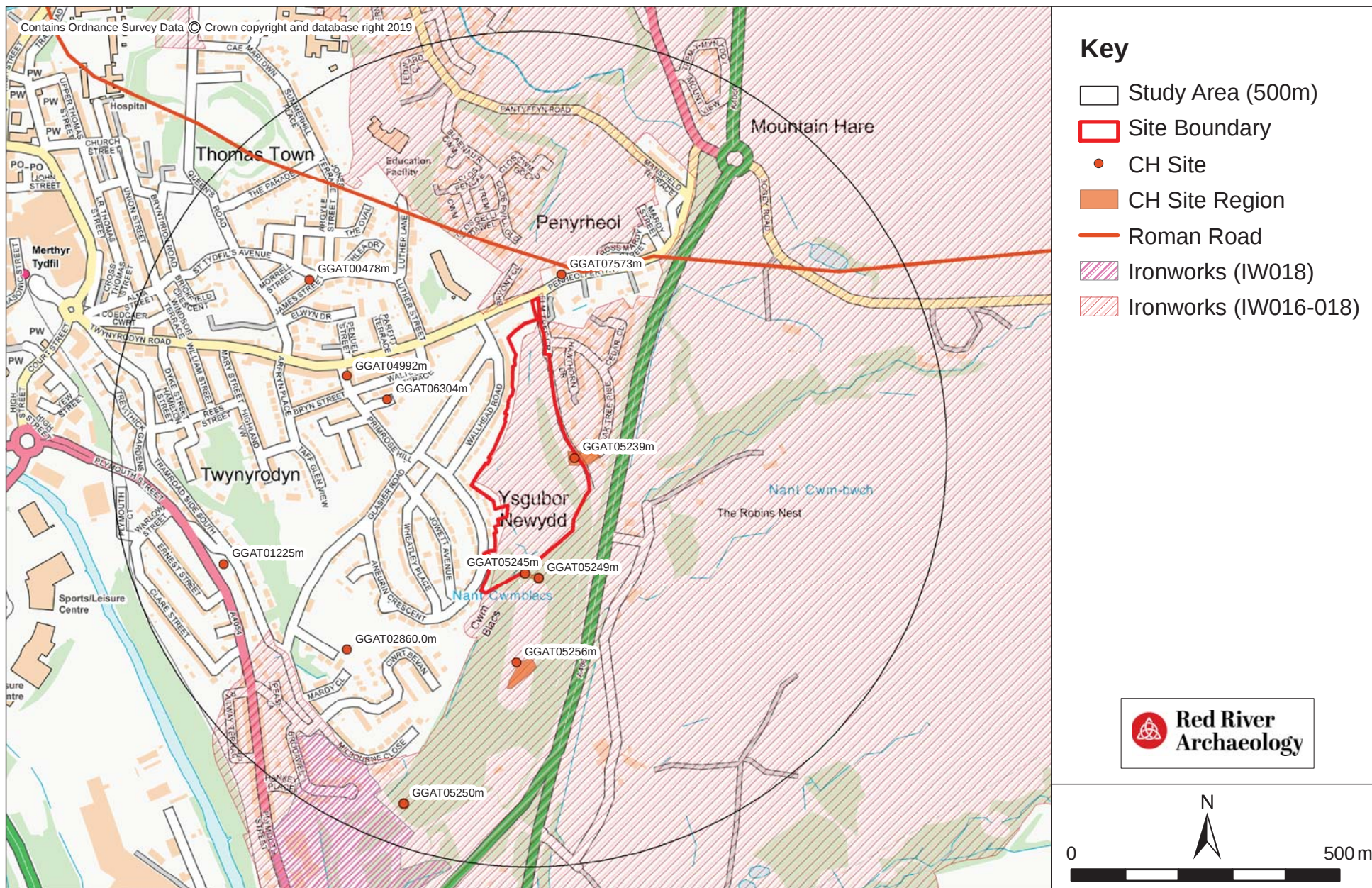


Figure 2 - Cultural Heritage Sites within the Study Area (500m).

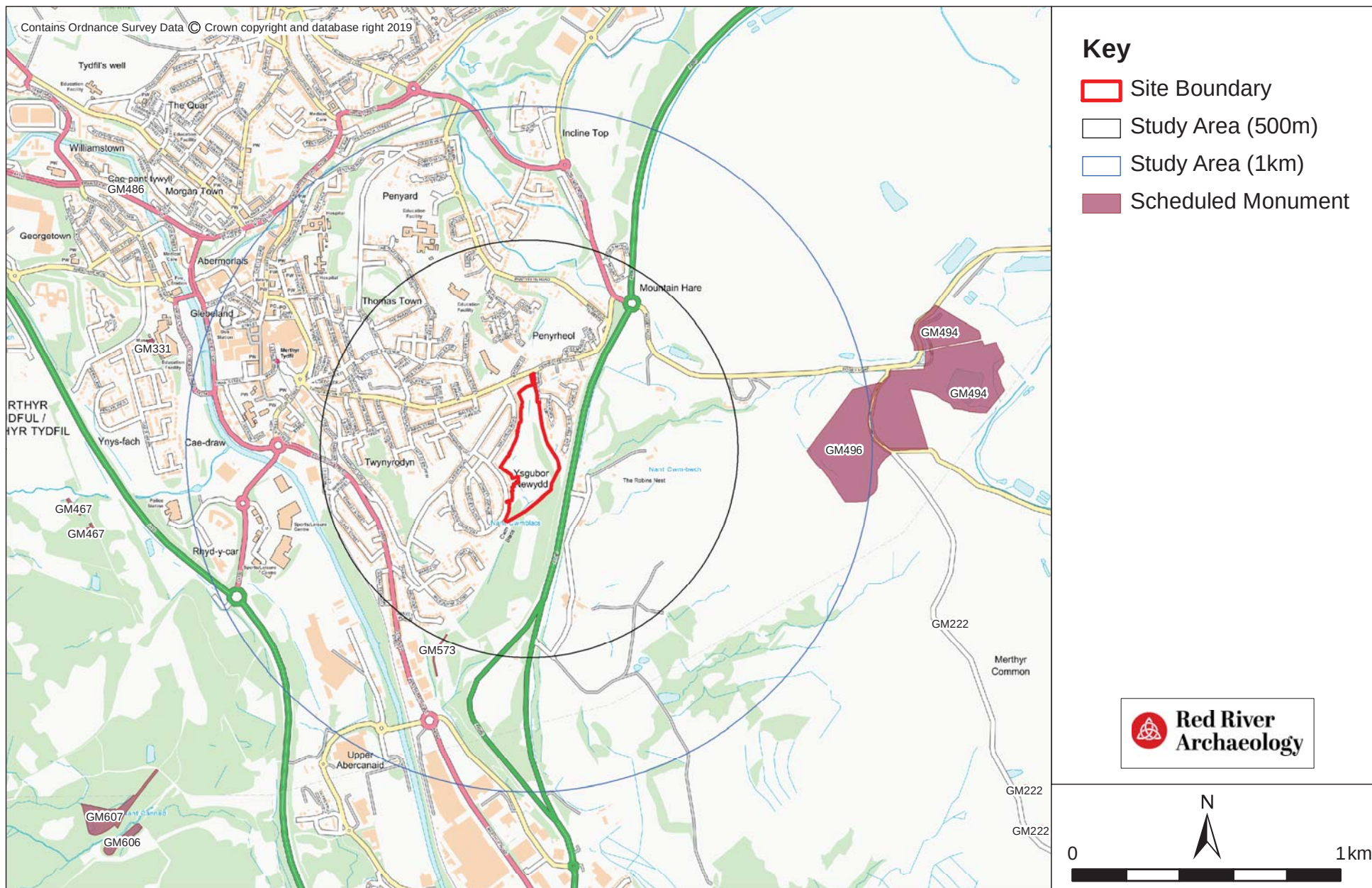


Figure 3 - Scheduled Ancient Monuments within the wider Study Area (1km).

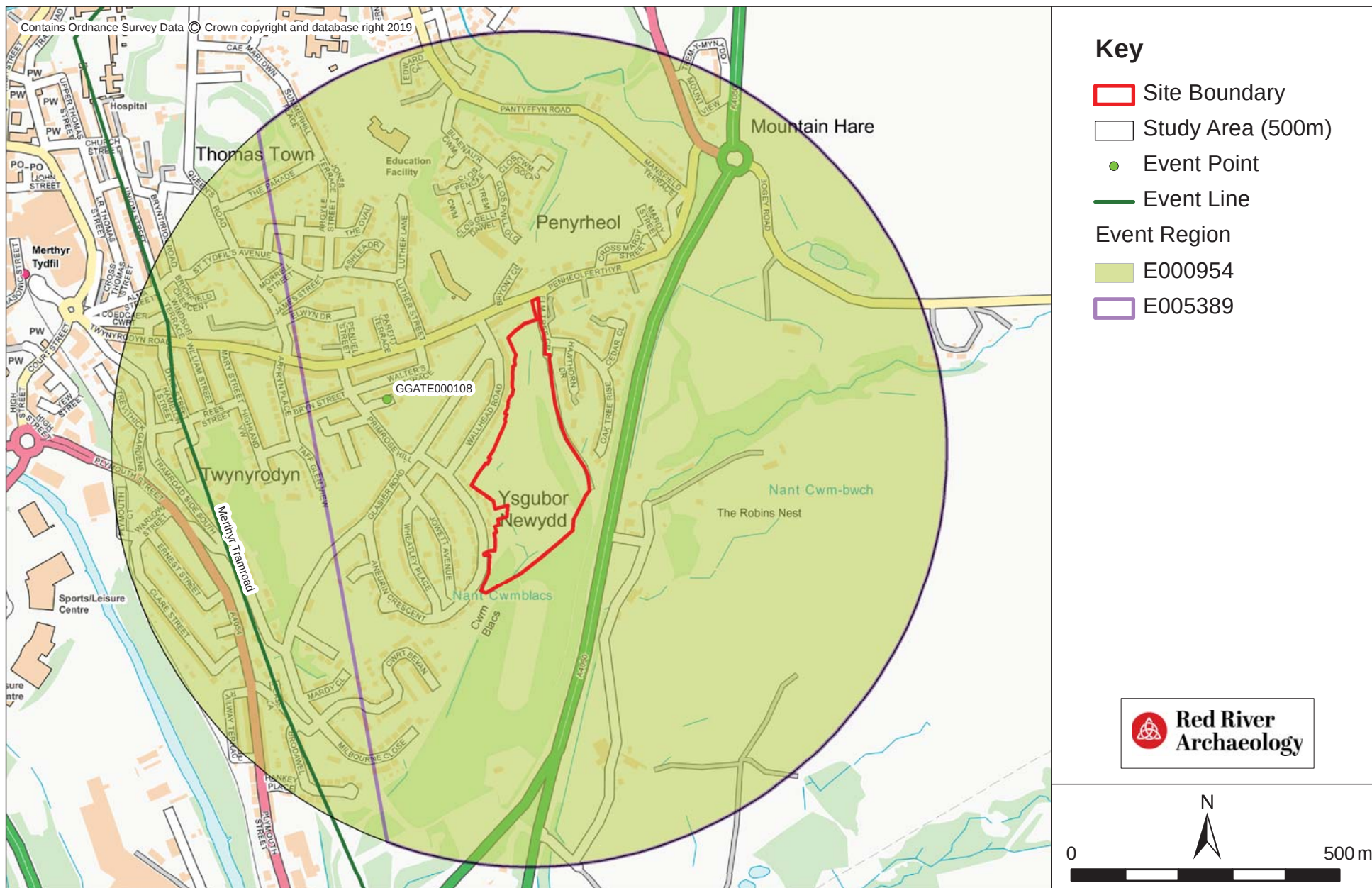


Figure 4 - Previous Archaeological Events within the Study Area (500m).

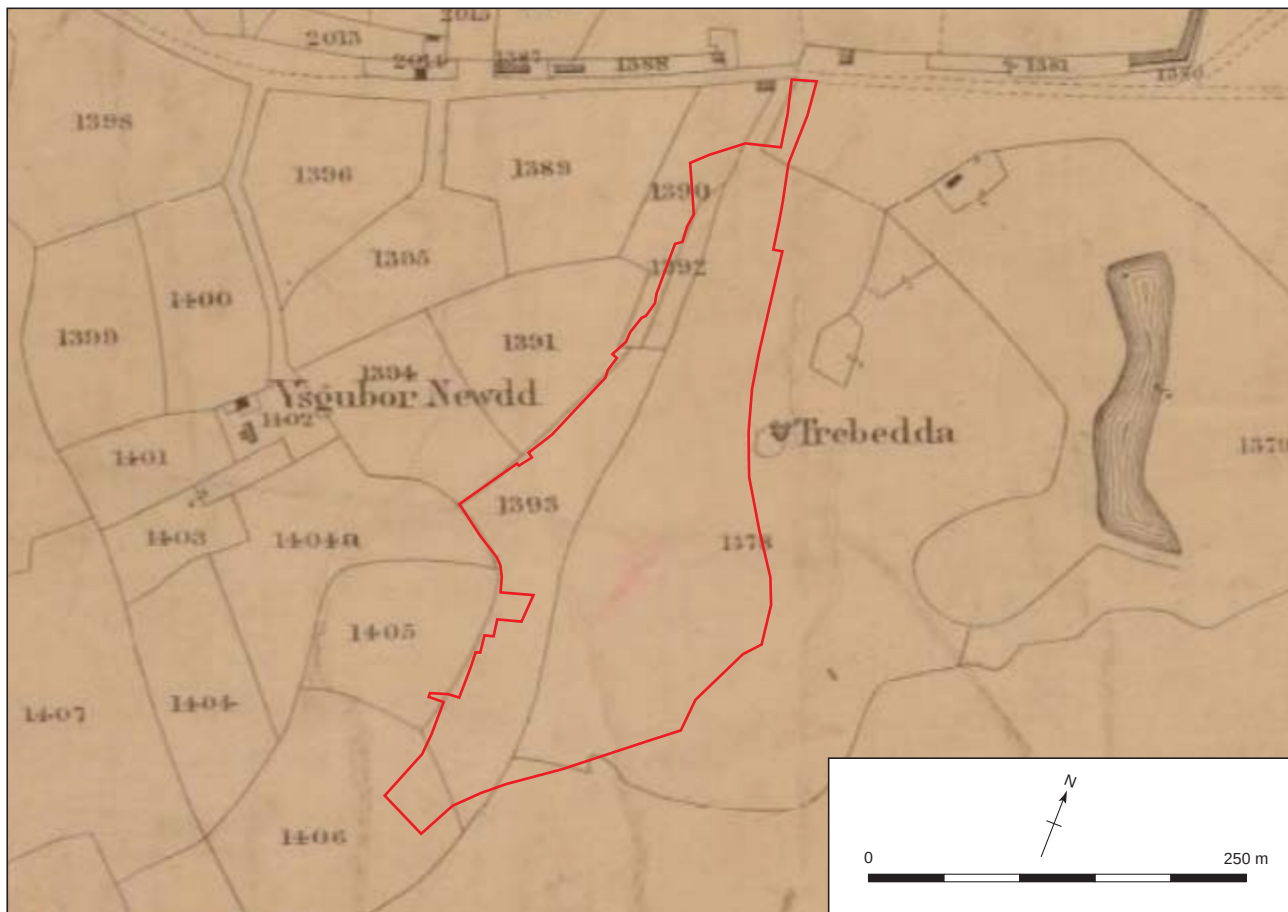


Figure 5 - Tithe map of 1850.

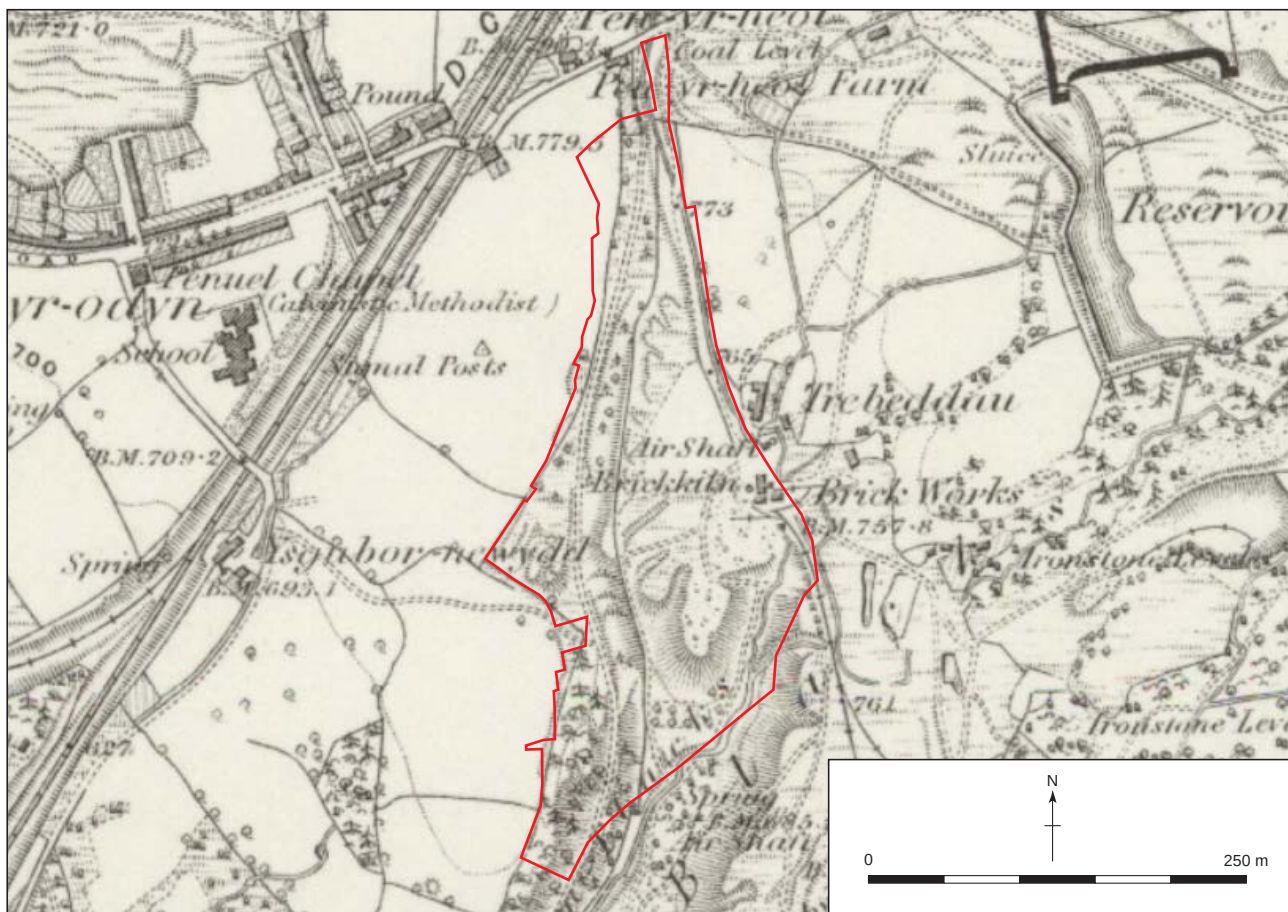


Figure 6 - 6-inch Ordnance Survey Map (Surveyed 1868-75, Published 1885).

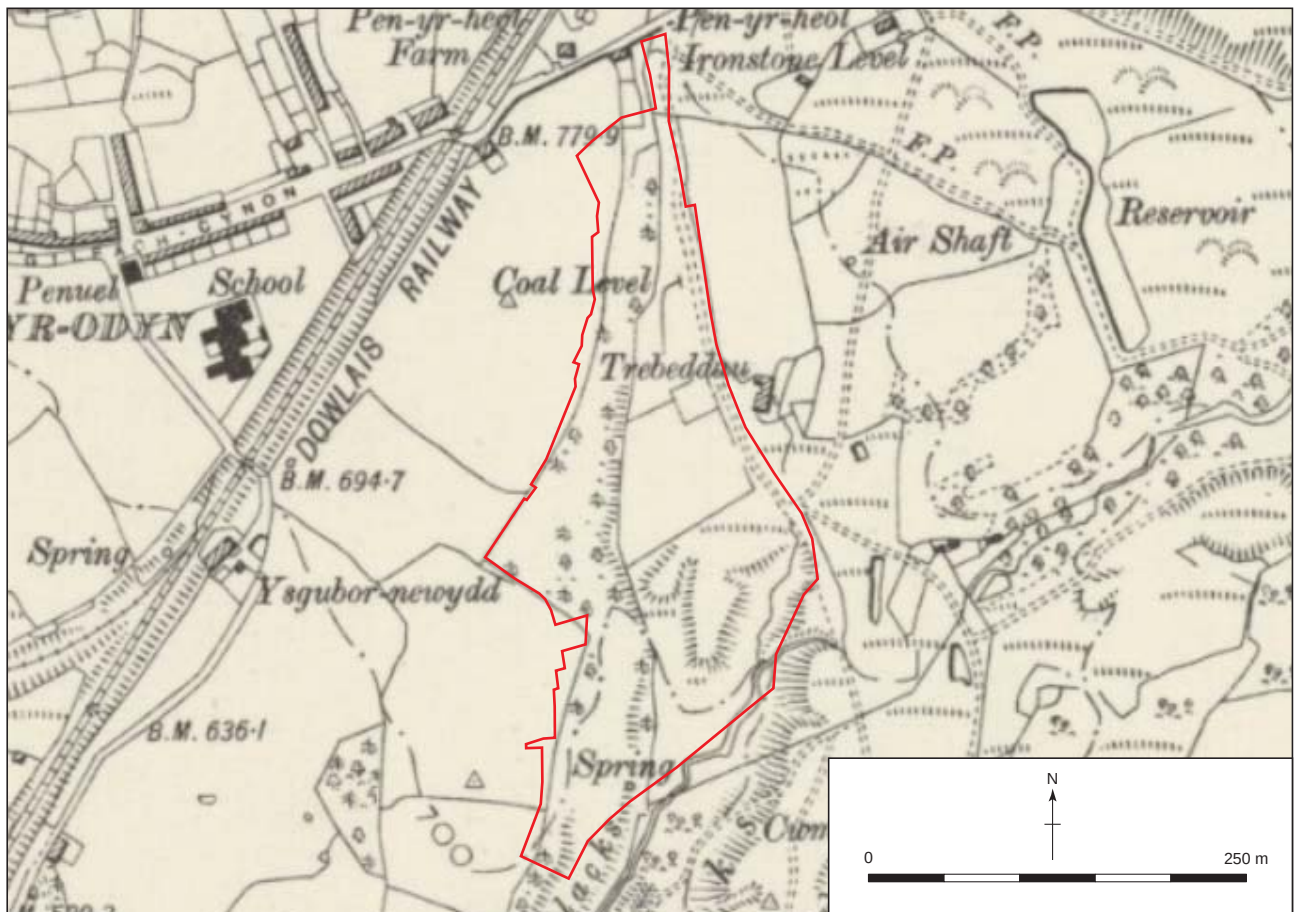


Figure 7 - 6-inch Ordnance Survey Map (Surveyed 1897-98, Published 1901).

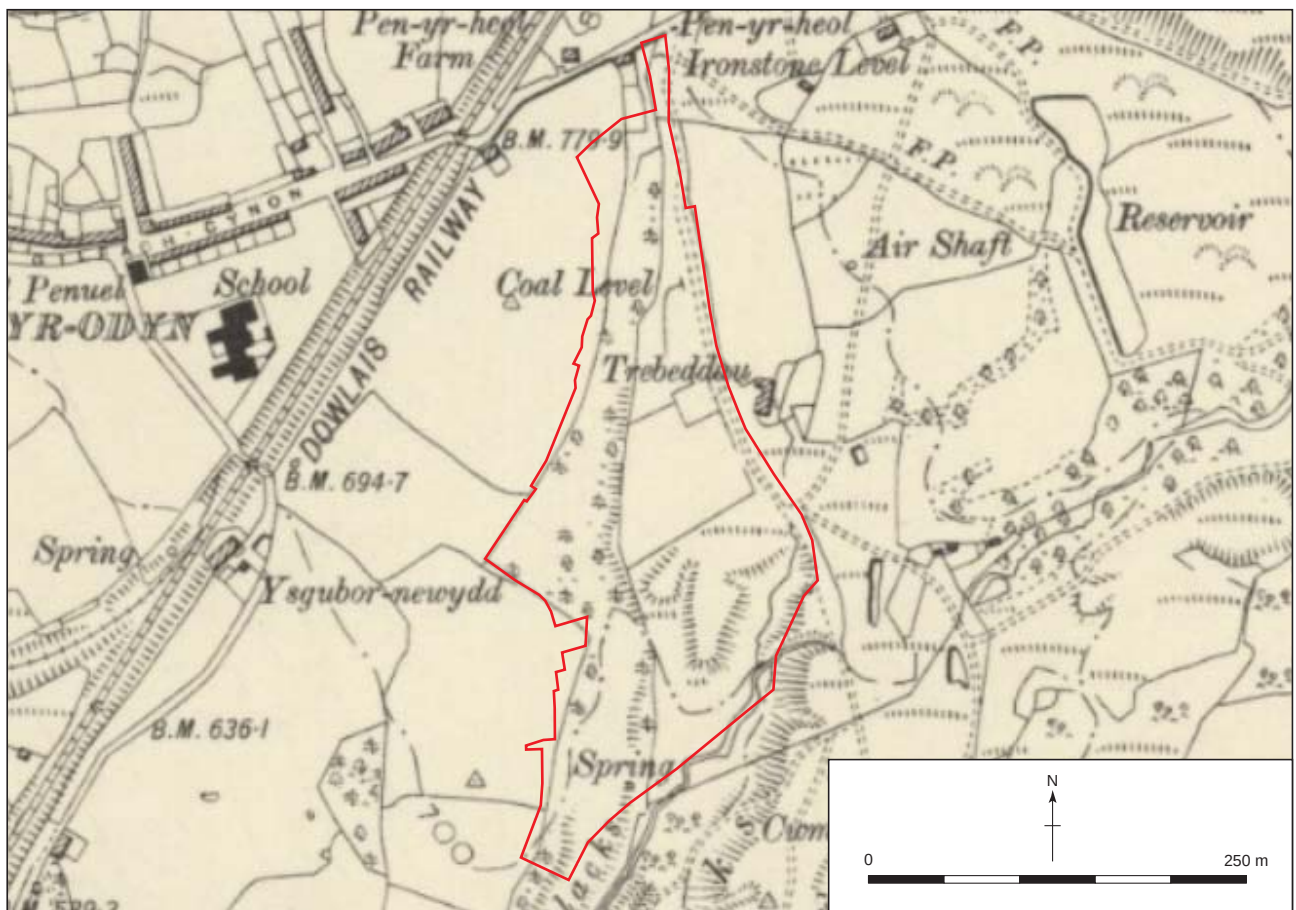


Figure 7 - 6-inch Ordnance Survey Map (Surveyed 1903, Published 1905).

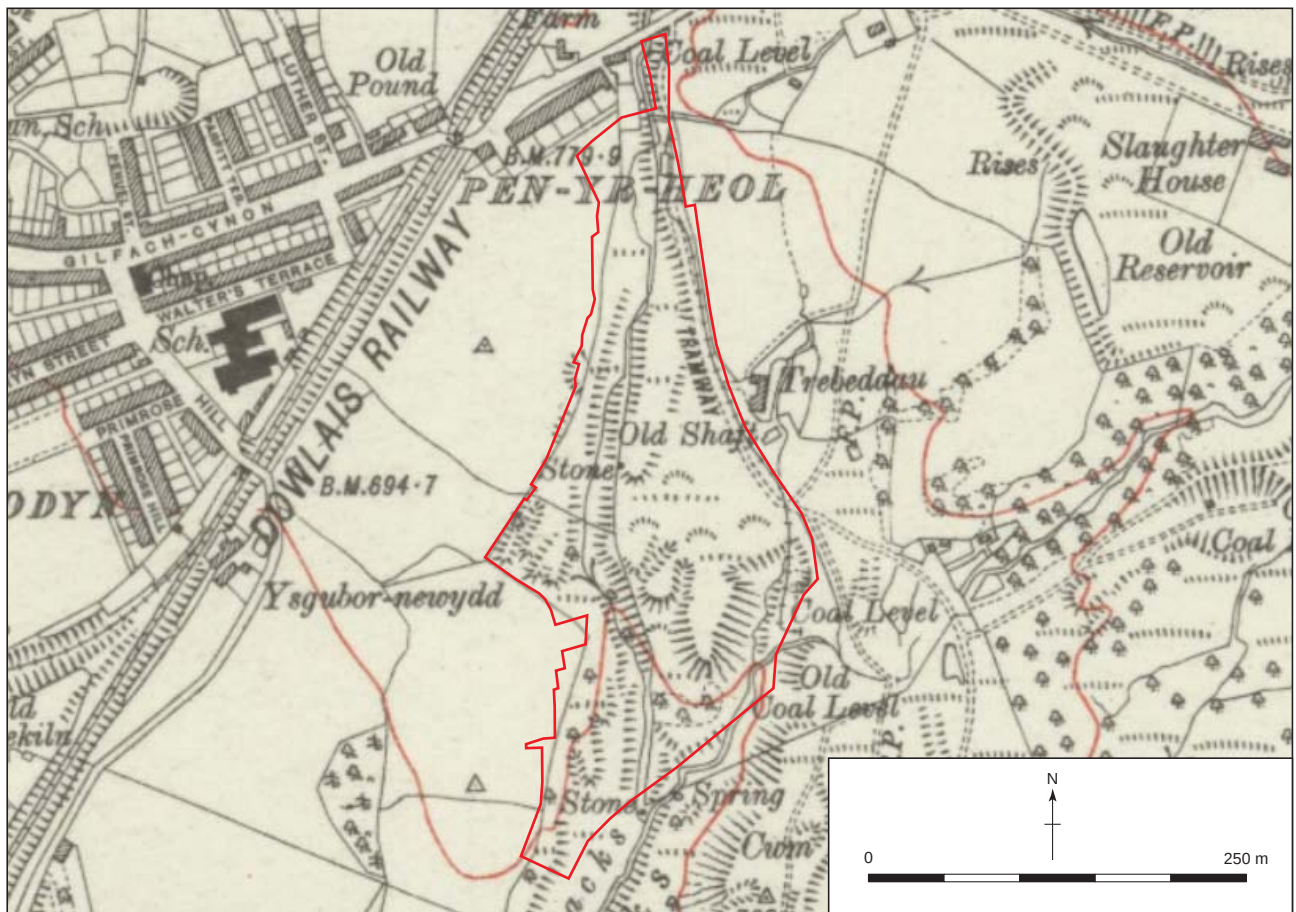


Figure 9 - 6-inch Ordnance Survey Map (Surveyed 1914-15, Published 1922).

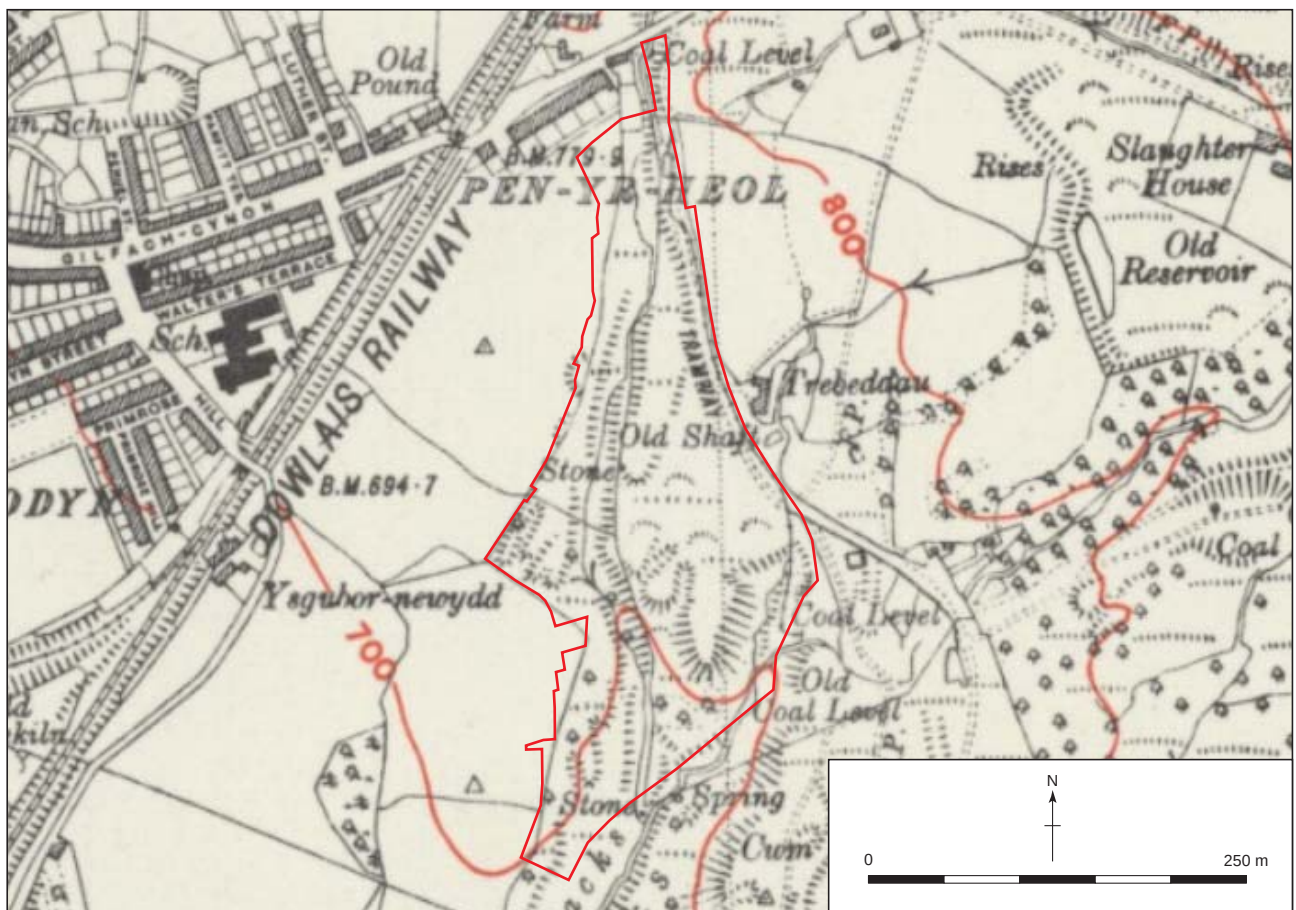


Figure 10 - 6-inch Ordnance Survey Map (Surveyed 1938, Published 1946).



Figure 11 - 6-inch Ordnance Survey Map (Surveyed 1948, Published 1951).

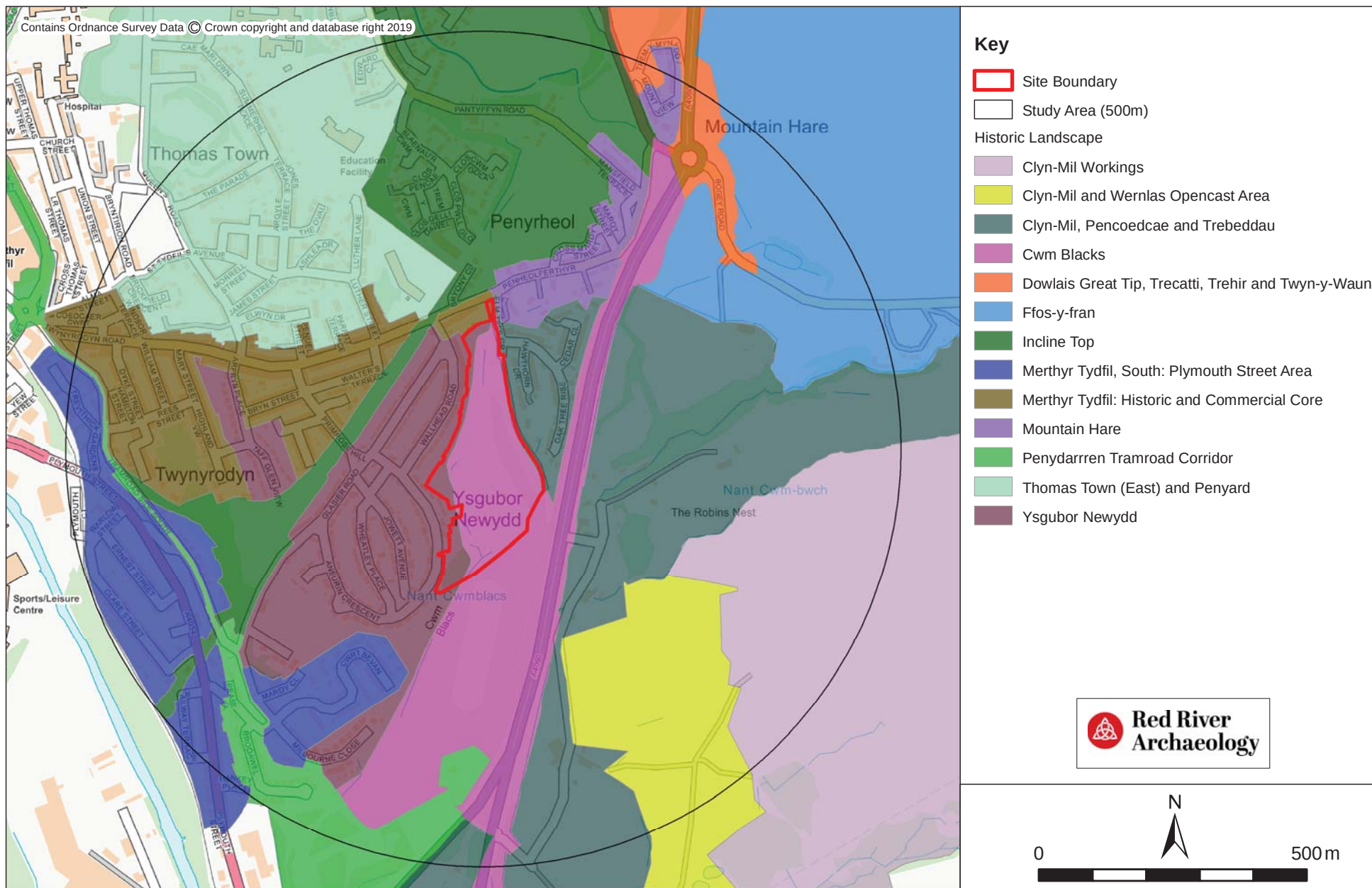


Figure 12 - HCLA Data.



Plate 1 - Overview of site from northern entrance, looking south



Plate 2 - Culverted watercourse in the north of site, looking southeast



Plate 3 - Overview of the coal levels along Cwm Blacks, looking southeast



Plate 4 - Overview of site towards IW016-018, looking southwest