

NANTYMWYN LEAD MINE (DEEP BOAT & PANNAU LEVELS), RHANDIRMWYN, CARMARTHENSHIRE:

HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT



Prepared by DAT Archaeological Services
For: The Coal Authority



DYFED ARCHAEOLOGICAL TRUST

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PANNAU LEVELS), RHANDIRMWYN,
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ASSESSMENT**

By

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EXECUTIVE SUMMARY

DAT Archaeological Services were commissioned to provide a Historic Environment Desk-Based Assessment to inform proposals for environmental remediation work at the former lead mine of Nantymwyn, near the village of Rhandirmwyn, Carmarthenshire (centred on SN 7848 4371).

Following a summary of the long history of the mine, the assessment mapped and assessed known archaeological features and identified zones of archaeological sensitivity within a study area that comprised the Lower Boat level and Pannau Level mine workings at Nantymwyn.

CRYNODEB GWEITHREDOL

Comisiynwyd Gwasanaethau Archeolegol YAD i ddarparu Asesiad ar Ddesg yr Amgylchedd Hanesyddol i hysbysu cynigion ar gyfer gwaith adfer amgylcheddol yn hen fwynglawdd plwm Nantymwyn, ger pentref Rhandirmwyn, Sir Gaerfyrddin (wedi'i ganoli ar SN 7848 4371).

Yn dilyn crynodeb o hanes hir y mwynglawdd, mapiodd ac asesodd yr asesiad nodweddion archeolegol hysbys a nododd ardaloedd o sensitifedd archeolegol o fewn ardal astudiaeth a oedd yn cynnwys yn bennaf y gwaith mwynglawdd Deep Boat Lefel a Pannau Lefel yn Nantymwyn

1. INTRODUCTION

1.1 Project Proposals and Commission

- 1.1.1 DAT Archaeological Services were commissioned by The Coal Authority to prepare a Historic Environment Desk-Based Assessment ahead of a proposed mine water treatment scheme at Nantymwyn lead mine, within the village of Rhandirmwyn, Carmarthenshire (village NGR SN 7848 4371).
- 1.1.2 Nantymwyn lead mine is dispersed across several sites, with a main area of working known as Upper Boat Level to the north of the village, workings on the southwest side the village known as the Deep Boat Level and workings on the east side of the village known as the Pannau Level. A previous Desk-Based Assessment was carried out in 2021 (Bell 2021) examining the Upper Boat Level and associated workings to the north of the village. This assessment examines the Deep Boat Level and Pannau Level workings on the fringes of the village itself.
- 1.1.3 The site is subdivided into three separate project areas (Figure 2). On the west side of the village lies the former Deep Boat Level mine openings, henceforth referred to as the Deep Boat Level, centred on SN 7821 4377. To the southwest of the village lies a larger area where material from the Deep Boat level was worked, henceforth referred to as the Deep Boat Level processing site, centred on SN 7813 4340. To the east of the village lies an outlying former mine level entrance, henceforth referred to as the Pannau Level, centred on SN 7872 4385.
- 1.1.4 Water discharge through the various mine workings is thought to be the source of metal contaminants such as zinc, copper, lead and cadmium entering local watercourses and on to the Afon Tywi. The Coal Authority and its partners are examining potential remediation works to address the issue of metal contamination to these watercourses.
- 1.1.5 In accordance with the brief supplied by the client this assessment includes but is not limited to:
- A detailed breakdown of the known archaeology in the vicinity of the site;
 - An assessment of previous land use compiled from an analysis of historical maps, aerial photographs and other archive materials;
 - A listing of the heritage-related planning constraints that may affect the site;
 - A ranking of the potential for archaeology of each of the archaeological periods to be found within the site; and
 - Recommendations for future intrusive survey and construction excavation activities on site (requirements that would need to be in place during these or similar activities).
- 1.1.6 In addition, the assessment *"should be suitable to support a planning application and should identify any potential implications to the delivery of the proposed works; the report should consider any mitigation strategies to minimize any implications"*.

1.2 Scope of the Project and Methodology

- 1.2.1 The following assessment is largely based on the methodology of the previous assessment (Bell 2021) and seeks to duplicate the layout of

assessment wherever possible to allow for a consistency in approach and subsequent understanding.

- 1.2.2 The scope of the assessment follows the Standard and Guidance For Historic Environment Desk-Based Assessment as laid down by the Chartered Institute for Archaeologists (CIfA 2014). The standard is stated by CIfA as:

Desk-based assessment will determine, as far as is reasonably possible from existing records, the nature, extent and significance of the historic environment within a specified area. Desk-based assessment will be undertaken using appropriate methods and practices which satisfy the stated aims of the project, and which comply with the Code of Conduct and other relevant regulations of CIfA. In a development context desk-based assessment will establish the impact of the proposed development on the significance of the historic environment (or will identify the need for further evaluation to do so) and will enable reasoned proposals and decisions to be made whether to mitigate, offset or accept without further intervention that impact.

- 1.2.3 A desk-based assessment is defined by CIfA as:

.....a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely historic assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of historic assets and, in England, the nature, extent and quality of the known or potential archaeological, historic, architectural and artistic interest. Significance is to be judged in a local, regional, national or international context as appropriate.

- 1.2.4 The desk-based study of the area identifies known archaeological sites within the site and its environs and assesses the potential for hitherto unknown remains to be present within the proposed development area. This will help inform future decision making, design solutions and potential mitigations strategies, including the potential for further archaeological works.

- 1.2.5 The report also includes a brief assessment of the impact on the settings of surrounding designated historic assets, including Scheduled Monuments, Listed Buildings, historic landscape character areas and undesignated archaeological sites. This utilises the best practice guidance in *Setting of Historic Assets in Wales* (Cadw 2017).

- 1.2.6 The report presents relevant information from a number of sources including:

- Dyfed Archaeological Trust Historic Environment Record (HER) data;
- Map regression exercise using earlier cartographic sources;
- Available and relevant reports on any archaeological work undertaken in the area that affects the site or its setting;
- Archive records held at the County Archive, the National Library of Wales (NLW) and the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW);
- Aerial photography, satellite imagery and Lidar data;
- Relevant records held by the developer;

- Identification of any scheduled monuments, listed buildings, registered parks and gardens, registered historic landscapes, or conservation areas within or in the vicinity of the site area (Cadw, DAT, NRW);
 - Assessment of the archaeological potential of the area;
 - Assessment of the likely impact upon the settings of surrounding features of the historic environment; and
 - Assessment of likely impacts on any identified remains within the development site (or potential remains) and likely requirements, if any, for further stages of archaeological work.
- 1.2.7 This assessment is limited to the parameters of the project area as defined by The Coal Authority (illustrated on Figure 2), as such it concentrates on the Deep Boat and Pannau Levels of the Nantymwyn lead mine complex, the remaining parts of the mine complex having been assessed previously (Bell 2021). An initial search area of 1km from the boundary of the project area has been used to identify sites recorded on the Historic Environment Record and other sources and examine the potential impact on the setting of high status, designated, historic assets in the surrounding landscape.
- 1.2.8 The assessment included a site walkover of the project area, undertaken on the 16th May 2023 by Philip Poucher.
- 1.2.9 For the purposes of planning policy in Wales, the historic environment is defined as:

All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed (Welsh Government 2017).

A historic asset is:

An identifiable component of the historic environment. It may consist or be a combination of an archaeological site, a historic building or area, historic park and garden or a parcel of historic landscape. Nationally important historic assets will normally be designated (ibid).

1.3 Abbreviations

- 1.3.1 All sites recorded on the regional Historic Environment Record (HER) are identified by their Primary Reference Number (PRN) and located by their National Grid Reference (NGR). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Reference Number (NPRN). Altitude is expressed to a height above Ordnance Datum (aOD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section at the rear of the report.

1.4 Illustrations

- 1.4.1 Printed map extracts are not necessarily reproduced to their original scale. North is towards the top of the page unless otherwise indicated.

1.5 Timeline

1.5.1 The following timeline gives date ranges for the various archaeological periods that may be mentioned within this report.

Table 1: *Archaeological and Historical Timeline for Wales*

Period	Approximate date	
Palaeolithic –	c.450,000 – 10,000 BC	Prehistoric
Mesolithic –	c. 10,000 – 4400 BC	
Neolithic –	c.4400 – 2300 BC	
Bronze Age –	c.2300 – 700 BC	
Iron Age –	c.700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – c. AD 410	Historic
Post-Roman / early medieval Period –	c. AD 410 – AD 1086	
Medieval Period –	1086 – 1536	
Post-Medieval Period ¹ –	1536 – 1750	
Industrial Period –	1750 – 1899	
Modern –	20th century onwards	

¹ The post-medieval and Industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust

2. POLICIES AND GUIDANCE

2.1 The Historic Environment (Wales) Act

2.1.1 The *Ancient Monuments and Archaeological Areas Act 1979* was previously the primary legislation for protecting archaeological remains and Scheduled Monuments. This has been amended by *The Historic Environment (Wales) Act 2016* which has three main aims as defined by Cadw:

- to give more effective protection to Listed Buildings and Scheduled Monuments;
- to improve the sustainable management of the historic environment; and
- to introduce greater transparency and accountability into decisions taken on the historic environment.

2.1.2 The Act amends the Ancient Monuments and Archaeological Areas Act 1979 and also the Planning (Listed Buildings and Conservation Areas) Act 1990. It is supported by a number of planning guidance documents. The Act most specifically provides better safeguards for the protection of Scheduled Monuments, Listed Buildings and historic parks and gardens. It also includes further guidance on place names.

2.2 Planning Policy Wales

2.2.1 *Planning Policy Wales* (Ed.11, 2021) sets out the Welsh Government's land use planning policies. Its primary objective is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the *Planning (Wales) Act 2015*, the *Well-being of Future Generations (Wales) Act 2015* and other key legislation.

2.2.2 Chapter 6, 'Distinctive and Natural Places', explains how planning systems must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the general well-being of present and future generations. It also sets out the planning policies for the sustainable management of specific categories of historic environment assets.

2.3 Technical Advice Note 24: The Historic Environment

2.3.1 This technical advice note provides guidance on how the planning system considers the historic environment during development plan preparation and decision making on planning and Listed Building consent applications. It also provides specific guidance on how the following historic environment assets should be considered:

- Scheduled monuments
- archaeological remains
- Listed buildings
- conservation areas
- historic parks and gardens
- historic landscapes
- historic assets of special local interest
- World Heritage Sites

2.3.2 The technical advice note usefully gathers together the selection criteria employed in the designation of scheduled monuments and listed buildings and the registration of historic parks and gardens and historic landscapes.

- 2.3.3. Advice and decisions on planning applications affecting nationally significant historic environment features (or designated historic environment assets) is provided by Cadw acting on behalf of Welsh Government.
- 2.3.4 This report will also make reference to other guidance documents published by Cadw, namely: *Conservation Principles* (March 2011); *Heritage Impact Assessment in Wales* (May 2017); *Managing Historic Character in Wales* (May 2017); and *Setting of Historic Assets in Wales* (May 2017).

2.4 Local Development Plan

- 2.4.1 The Carmarthenshire Local Development Plan (LDP) was adopted in December 2014, and sets out the planning development strategy for the area. The LDP policies are set out in line with national policy and guidance outlined above, but applies a rational and consistent basis for decision making at local level.
- 2.4.2 Policy SP13 addresses the protection and enhancement of the built and historic environment. It states that proposals relating to historic/culturally important sites and features, such as listed buildings, conservation areas and Scheduled Ancient Monuments (SM), will be considered in line with national guidance and legislation.

3 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1 The workings of the Deep Boat Level are located to the west and southwest of the village of Rhandirmwyn, the workings of the Pannau Level are located on the northeast edge of the village. Rhandirmwyn itself is a small village on the lower west-facing slopes of the Tywi valley in northeast Carmarthenshire. The village is spread along the main valley road to Llandovery, which lies 10km to the south, and a side road that crosses the river to the west.
- 3.2 The Deep Boat Level comprises two elements. The mine entrances (Deep Boat Level) lie on the lower valley slopes, currently the private gardens of No.1 The Old Dray, a collection of converted mine buildings to the south. The site is surrounded by enclosed agricultural land to the west, north and east. A tarmac road runs south, along a former tramline, crossing the local road between village and river bridge, to connect to the associated area of workings to the south. This area (Deep Boat Level processing site) lies on private land associated with Pen-y-gorof cottage to the east, occupying lower ground on the edge of the Afon Twyi, which flows north to south and comes within 15m of the southern end of the site. The site comprises a large area of processed mining waste enclosed by rising ground to the north and east, with dense scrub and trees growing on this sloping fringe. To the west lies a caravan park on the banks of the river, to the south a sewage farm. The trackway to Pen-y-gorof and the sewage farm encloses the east side of the site, running along higher ground, with enclosed agricultural land beyond. Water emerges from the mine workings to the north, draining through the gardens and along a watercourse to the road to the south. A local watercourse then drains along the road and into the river to the west. Water within the complex to the south collects towards the southern end of the site, before draining into the adjacent river a short distance to the south.
- 3.3 The Pannau Level lies on higher ground just above the village to the northeast, reached by a small road that accesses a row of former 19th century mining cottages (Pannau Cottages) and modern 20th century houses above (Argall Avenue). The mine levels and shafts lie on the banks of a steep local watercourse that drains from the slopes of Pen Cerrig-mwyn to the northeast, fed by ancillary streams draining from the hillside to the east. The site now largely lies in an area of coniferous plantation that extends up the hillside to the Upper Boat Level workings to the north.
- 3.4 The underlying geology of the sites comprises slumped mudstone, siltstone and sandstone of the Yr Allt Formation, overlain by glacial diamicton and gravel deposits, with sand and gravel river terrace deposits underlying the area of the Deep Boat workings (BGS viewer 2023). Both the Deep Boat and Pannau workings likely follow lode-bearing fault lines, BGS data indicating a main fault running northeast - southwest. The Deep Boat workings appear to follow the main fault line that passes through the Upper Boat workings, with the Pannau level following a diverging fault line (BGS – GeoIndex 2023).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 General

- 4.1.1 A detailed background to the archaeology and history of the area and the mine itself has been included in the previous assessment (Bell 2021). The following assessment does not seek to repeat that information in its entirety and attempts to summarise it where appropriate whilst including any additional background pertinent to the specific project areas being studied. There will inevitably however be a great deal of overlap between the two assessments.

4.2 Historic Landscape

- 4.2.1 The entire Nantymwyn lead mine area falls within the Tywi Valley Registered Historic Landscape (HLW (D) 5) recorded on the Register of Landscapes of Outstanding Historic Interest in Wales (Cadw 1998). This landscape area encompasses the entirety of the valley from its headwaters near the Llyn Brianne reservoir to the estuary mouth in Carmarthen Bay, a distance of some 90km.
- 4.2.2 A full description of this landscape can be found in the Register (Cadw 1998), reproduced in the previous assessment (Bell 2021). The principal significance of the valley is as setting for a unique group of planned parks and gardens, and its historic, artistic associations with the Picturesque which have been recorded from the 18th to 20th centuries, leading to a widespread popular sense of the Tywi valley as a cherished landscape. The history of the valley can be reasonably well traced back into the medieval period, with many of the gentry families developing from medieval lineages and together with the prevalence of medieval castles and planted boroughs this adds to an understanding of the medieval landscape. The changing course of the river has led to changes in the pattern of communication routes along the valley throughout history, and the prevalence of more recent farming along the valley floor may have obscured medieval and earlier landscapes, although pockets of ancient woodland survive on the valley slopes. The prehistoric landscape is less well-understood.
- 4.2.3 To better characterise the historic environment of the Historic Landscape it has been sub-divided into several Historic Landscape Character Areas (HLCA) (Figure 3). The project areas lie within HLCA 216 Rhandirmwyn, a full description of which can be found in Murphy & Ludlow 2000 and online at <https://dyfedarchaeology.org.uk/HLC/HLCTowy/area/area216.htm>, as well as being reproduced in the previous assessment (Bell 2021).
- 4.2.4 This area formed the border lands between Cantref Bychan on the east side of the river, which came under Anglo-Norman rule in the early 12th century, and Cantref Mawr to the west which remained an independent Welsh lordship until the late 13th century. The lands around Rhandirmwyn lay within the Manor of Nant-y-bai, granted to the Cistercian Abbey of Strata Florida in *circa* 1200. It was probably largely upland pasture, operated by tenant farmers. 'Rhandir' translates as 'shareland', suggesting the tenant had inherited, perpetual rights to their holdings. After the Dissolution the manor became the Ystrad-ffin estate, a survey of 1629 indicating much of the present settlement and enclosure pattern had been established by that date. Lead was being mined early in this region, possibly as early as the Roman era, but certainly recorded by the late 13th century, indicating an early mining community in the area. By the late 18th century the local mines employed 400 workers, suggesting Rhandirmwyn was likely a comparatively large settlement by that time.

- 4.2.5 The characteristic elements of this area include dispersed farms and 19th century lead mining communities. Rhandirmwyn is the principal former mining community, with 19th and 20th century workers cottages, chapels and church. Fields are small and irregular, with woodland, overgrown hedges and conifer plantations lending a heavily wooded aspect to the area. The lead mining industry comprises one the main recorded archaeological components, but Bronze Age standing stones and round barrows are included, as well as an Iron Age hillfort and possible medieval well and chapel sites.

4.3 Historical Development

- 4.3.1 Again, a detailed historical development of mining is provided in the previous assessment (Bell 2021), drawn from a number of sources not principally including Lewis (1967), Hughes (1992), Hall (1971 & 2011) and Brabham and Umar (2011).
- 4.3.2 The earliest recorded archaeological sites in the area predate the mining industry and comprise a series of Bronze Age standing stones and round barrows located on the summits of Nant Gwyn (PRNs 4112, 4113 & 7784) and Garn Fair (PRNs 4120 & 4121) to the east. Such barrows are typically burial sites but can form the focus of a site of funerary and ritual significance. These sites are located on prominent hilltops, and the visibility of such sites would appear to be an important factor in their setting. It is possible similar sites could have occupied the summits of Cnŵch and Pen Cerrig-mwyn to the north, lost to later mining and forestry. The presence of activity in the Iron Age is suggested by a defended enclosure occupying the summit of Dinas Bach (PRN 5543), which overlooks the river valley to the west of the Deep Boat workings. Farming and settlement activity associated with these prehistoric sites is likely within the fertile lower slopes of the river valley, but currently no evidence of such activity has come to light within the locality of the project areas.
- 4.3.3 It is possible that lead mining activity began in the area during the Roman period. It is known that the Dolaucothi gold mines at Pumpsaint, 12km to the west, were being worked from the 1st to 4th centuries, and some of the mining remains around the Pen Cerrig-mwyn outcrop to the northeast include evidence of hushing, an early form of mining activity where a torrent of water would be used to strip away loose material to reveal underlying mineral deposits. Evidence of this hushing was partly buried beneath 17th century workings, giving an indication of their age, and it has been suggested that the form of these hushing channels, associated leats and tanks are similar to those found at Roman Dolaucothi (Lewis 1977). Radiocarbon dates from some leats have also yielded 5th to 7th century dates from the peat, possibly building up subsequent to their earlier, Roman, use (Timberlake 2002). Further radiocarbon dating from the 9th to 11th century was also obtained from deposits in association with possible rudimentary ore processing works on the site (ibid). Currently this activity is recorded on the thinner soils on higher ground above the project areas where access to ore-bearing minerals would be easier, and associated mining activity on the lower slopes may be less likely. A Roman road is recorded travelling up the Tywi valley from the fort and settlement at Llandovery although at present this is only traced to the south of Cilycwm, on the west bank of the river, but there is potential that this may have continued as far north as Rhandirmwyn. At present however, unlike Pumpsaint no further evidence of activity during the Roman period, such as forts and roads, have been recorded in the locality.

- 4.3.4 Mining may also have been carried out during the medieval period by the Cistercians, and there are late 13th century references to mining (HLCA description above) in the wider area. The earliest documented evidence of mining in Rhandirmwyn dates from the reign of Henry VIII when 'Peter the German' made reference to an old mine in the area eligible for paying royalties. A contemporary reference from the The Black Book of St David also mentions an active lead mine near Llandovery in 1530, thought to refer to Rhandirmwyn. The mine was later leased by Bushell in 1641, and it is thought some of the workings in the Upper Boat Level may date to this period, but it is thought these workings are unlikely to be extensive (Hughes 1992).
- 4.3.5 By the late 17th the royal monopoly on many of the metal mines of the area was being challenged by prominent landowners, and by the 18th century the spread of private operations opened the orefield to more extensive mining. By the 1740s there are references to mine adits in the Upper Boat Level, along with some processing facilities. In the 1760s the mine may have been managed by Chauncey Townsend, who was responsible for opening up many of the early metal mining operations throughout the hills of northern Carmarthenshire and Ceredigion (Hughes 1992). In 1775 the mine became part of the Earl of Cawdor's estate, who employed John Rolley as his mine agent, and between 1770 and 1780 the Upper Boat adit and level system were driven. The level was flooded to allow the ore to be transported by narrow boats, propelled along by workers either rowing, or pushing along the walls and ceiling of the passages with their hands and feet. These works are depicted on a watercolour by John "Warwick" Smith" who visited the mine in 1792, showing the flooded channels, wharfs and crushing mill. This painting is held at the National Library of Wales and has now been digitized for online viewing². Accounts from this period survive and show 1778-9 to be the most productive years. It is reputed that the mine employed around 400 people at this time. There appears to be no date associated with the opening of the Pannau Level, but this level exploited Roderick's Lode as did some of the mid to late 18th century Upper Boat Level workings, and therefore the level may also date to this period. The level would appear to fit into a description of the active mine workings given in 1815 by the Reverend Walter Davies (Hughes 1992).
- 4.3.6 In 1785 the Deep Boat Level was driven northwards, taking 13 years to excavate the 730m to join with the Upper Boat Level workings. In 1805 the mine agent, John Rolley, died, succeeded by Joel Williams, an experienced Cornish miner. Production at the mine reached peak profitability in the early 19th century, although plans of 1808 show that the Deep Boat Level had still failed to find worthwhile mineral at this level (Hall 2011). Work continued amidst fluctuating lead prices and a diminished workforce into the latter half of the century, although by the 1820s the Earl of Cawdor appears to acknowledge dropping profits by leasing the mine out rather than operating it directly. In 1836 the lease was obtained by the Williams brothers, one of Cornwall's richest mining families. Further levels were driven some 60m below Deep Boat Level during this period, but much of the mining was still focused on the Upper Boat Level workings. Surviving cost sheets from 1879 show 44 workers employed at Upper Boat Level,

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<https://viewer.library.wales/1443296#?c=&m=&s=&cv=&manifest=https%3A%2F%2Fdamsssl.llgc.org.uk%2Fiiif%2F2.0%2F1443296%2Fmanifest.json&xywh=1780%2C1578%2C3825%2C2357>

with 14 men extending the Deep Boat Level as well as continuing one of the main Upper Boat Level shafts below the Deep Boat workings.

- 4.3.7 In the later 19th century, from 1887 until 1900, there was a further period of work at the Upper Boat Level workings. At the Deep Boat Level two additional shafts were sunk during this period. One shaft, lying within the project area to the north of the original level entrance was apparently sunk to improve ventilation, however being so close to the entrance Hughes (1992) suggests it may have been sunk to repair the stonework where the built level entrance met bedrock. In 1900 the Williamses relinquished their lease of Nantymwyn.
- 4.3.8 The mining lease was renewed in 1914 by Joseph Argall (previously the mine manager in the 1890s) and the Nantymwyn Mine Co. Ltd was formed. During this period the Deep Boat Level was drained, replacing the canals with tramways and wagons to transfer ore to the surface. Operations continued on a limited basis, employing up to 33 men, until 1925 when The Sulphide Corporation, an Australian enterprise, bought 50% of the Nantymwyn Mine Company's shares. The emphasis was now on the extraction of zinc ore, as well as its recovery from the large tips of tailings. A new shaft was sunk from the Upper Boat to the Deep Boat Level, and work began on clearing out the Deep Boat Level (completed in 1931) in search of zinc deposits, which ultimately proved fruitless (Hall 2011). In 1929 a new crushing mill was constructed at the Upper Boat Level site. This was constructed by re-using plant removed from a former mill. Brabham & Umar (2011) suggest this plant was removed from the mill at Upper Boat adit portal, although Hughes (1992) suggests it was removed from the disused crushing mill in the Deep Boat Level processing site. Between June and October 1930, over 6000 tons of tailings was milled. The lead and zinc were separated by a process of fine grading followed by froth flotation to produce a fine-grained residue. Production came to an abrupt close at the end of October 1930 owing to disappointing recoveries and the economic impacts on the prices of lead and zinc owing to the onset of the Great Depression. Operations were then turned to resampling some of the old workings and clearing out and rehabilitating the levels which had deteriorated into poor and dangerous conditions. This work focused on the Deep Boat Level during 1931, clearing out over 800m of the old workings, undertaking just over 20m of new development. Work was hampered as all working below the Deep Boat Level had become flooded and the level was acting as a drain the main Upper Boat Level workings leading to intermittent inundations and collapse, which appears to have been an issue since the 1890s. The mine went into liquidation in 1932, much of the plant was dismantled and shipped to South Africa. All the accessible mine adits were reportedly blocked up when work ceased in 1932. The company was eventually wound up in 1937. The mine abandonment plan produced in 1932 (and indeed the 1876 plan) is generally considered to be under representative of the true extent of remaining mine features (Coal Authority refs OM4077 and OM10856).
- 4.3.9 In 1966, Nantymwyn was bought from the Cawdor Estate by the Economic Forestry Group. A little while after, construction began on the Llyn Brianne dam and large quantities of mine tailings were removed and used in the construction of the dam. An area around the Deep Boat Level adit equating to roughly 2.5ha was cleared of tailings, subsequently reseeded and now a caravan park. It is estimated that around 75% of the tailings deposited in this area were removed (Brabham & Umar 2011), and building remains may also have been removed from the site during this period. It seems that little material was removed from the Upper Boat Level adit area. The

planting of forestry commenced in the early 1970s at which time much of the tailings at Upper Boat Level were removed or bulldozed flat to aid the construction of the forestry tracks still extant today. The slopes of Pen Cerrig-mwyn were also ploughed ahead of planting, damaging, and removing evidence of the most ephemeral surface archaeology and creating a confusion of spoil tips and other features.

4.4 Recorded Archaeology

Designated scheduled monuments (Figure 3)

- 4.4.1 Scheduled Monuments are historic and archaeological sites considered to be of national importance. These sites are given legal protection, and consideration of the impact of development upon these sites and their settings are considerations of the planning process.
- 4.4.2 There are no scheduled monuments within the project areas, or within 100m of those areas.
- 4.4.3 Within the wider 1km study area there are two scheduled monuments. Within the Upper Boat Level workings 500m to the north of the project areas lies **CM215 Nant-y-mwyn Lead Mine Engine House** (PRN 61156), which includes structural remains, tips and a small reservoir associated with the mine workings.
- 4.4.4 Around 1km to the southeast of the project areas lies **CM343 Nant Gwyn Round Cairn and Standing Stone** (PRNs 4120 & 4121), a Bronze Age site on the summit of a nearby hill.

SM No	SM Name	Period	NGR	Site Type
CM215	Nantymwyn Lead Engine House	Post-Medieval	SN7871844496	Engine House
CM343	Nant Gwyn Round Cairn and Standing Stone	Bronze Age	SN79344305	Round Barrow and Standing Stone

Table 2: Scheduled Monuments within 1km of the Nantymwyn project area.

Designated listed buildings (Figure 3)

- 4.4.5 Listed buildings are buildings and structures of national importance given legal protection by being placed on a 'List' of Buildings of Special Architectural or Historic Interest. Buildings on the List are given one of three grades which denote their level of importance (Grade I, II* & II), Grade I being the highest. A listed building may not be demolished, extended, or altered without special permission from the local planning authority.
- 4.4.6 There are 12 listed buildings within 1km of the project areas, seven of which lie within 100m of the project areas. No listed buildings lie within the bounds of the project areas.
- 4.4.7 Of the seven listed buildings within 100m, all are Grade II listed and fall into two groups. To the west, close to the Deep Boat Level workings, lies the **Church of St Barnabas (ref. 21411)**. This church was built in 1877 as the parish church for the newly created (in 1875) parish of Ystradffin. The church was designed by the leading Victorian architect, John

Loughborough Pearson, paid for by Lord Cawdor. It was consecrated on Lord Cawdor's birthday in 1878, which was also St Barnabas' Day.

- 4.4.8 The remaining listed buildings include **Nos.1-8 Pannau Street (Ref. 21414, 21422-6)**. This is a row of mid-19th century cottages, built on Lord Cawdor's land, presumably for workers at the Nantymwyn mine. A row of single-storey cottages, labelled 'miners' lodging houses', are shown on a map of 1858, the current two-storey houses presumably superceded these. Originally they comprised eight houses, but four central houses have been amalgamated into two. No.1 was formerly the Miners Arms Inn.

PRN Number	Listing	Name	NGR	Grade
61151	21411	Church of St Barnabas	SN78127243600	II
21836 / 61154	21414	1 Pannau Street	SN7859143779	II
61160	21422	2 Pannau Street	SN7858543782	II
61161	21423	3 Pannau Street	SN7857843785	II
61162	21424	5 Pannau Street	SN7857443788	II
61163	21425	7 Pannau Street	SN7856543793	II
61164	21426	8 Pannau Street	SN7855843796	II

Table 3: Listed Buildings within 100m of the Nantymwyn project area.

Non-designated archaeological assets (Figures 11 & 12)

- 4.4.9 A search of the regional Historic Environment Record (HER) and other databases was initially made within the 1km search area around the proposed project areas. This wider search area was used in order to ascertain a more general understanding of the historic and archaeological background to the area.
- 4.4.10 The HER records 203 assets within the initial large study area. Included within this are some Bronze Age and Iron Age sites and one medieval mansion site, but the vast majority of the records refer to later post-medieval sites associated directly with the mine, or indirectly as part of the associated settlement. Several post-medieval farmsteads are also recorded. Fourteen assets are recorded on the NMR database within the large study area, all of which are included in the HER records. These sites are shown on Figures 11 and 12, and a list of these sites can be found in Appendix II.
- 4.4.11 Of these records fifteen assets are recorded within or immediately adjacent to the bounds of the project areas themselves. All recorded features within these areas relate to mining features, and these are presented in Figures 13 to 15, and listed and described in Appendix I.

Non-designated newly identified archaeological assets (Figures 13-15)

- 4.4.12 A further 10 archaeological assets have been identified as a result of the research undertaken as part of this assessment. All of these assets are located within the bounds of the project areas. These assets have been given the prefix 'NM' and numbered consecutively. These new assets are presented in Figures 13 to 15, and listed and described in Appendix I.

4.5 Map Regression and Aerial Photography

Llanfair ar y Bryn Tithe Map 1843 (Figure 4)

- 4.5.1 As identified in the previous assessment the tithe map, although depicting a lot of topographical information with reasonable accuracy, was more concerned with land ownership for tax collection than providing a comprehensive record of all buildings and mine workings. As such, many mining structures have been omitted from this map. Within the Deep Boat Level workings the row of cottages (Dray Cottages, PRN 29691) are shown, with a depiction of a mine level (PRN 99382) immediately to the north. The cottages, and the fields surrounding the cottages on all sides, were under the ownership of the Earl of Cawdor, and occupied by 'John Harries'. This may have been the John Harris who was appointed as the mine agent in the 1860s (Hughes 2011).
- 4.5.2 The trackway that runs south from the mine level and past Dray Cottages, which has been identified as the line of a former mine tramway (PRN 29693), is depicted on the map, continuing south as far as the northern end of the main processing area. This processing area is not however marked on the map, which instead depicts two fields labelled 'Gorrf', occupied by Thomas Williams. It is possible that Thomas may have been part of the Williams family that ran the mines throughout much of the 19th century, although at this time the mine was run by William and 'J.M' Williams, therefore this change in occupier makes it uncertain where the mine workings were being processed at this site at the time.
- 4.5.3 At the Pannau Level very little detail is shown. Pannau Street is shown, as is a short row of cottages that preceded the current Pannau Street cottages (PRN 29689). The street continues, providing access to the mine workings, but there is no indication of the workings themselves. The main stream that runs northeast – southwest and alongside Pannau Street appears to divide land occupied by John Harries to the northwest, and potentially therefore mining land, and land occupied by Elizabeth Hughes to the southeast.

Plan and Section of Nantymwyn Mine 1876 (Figure 5)

- 4.5.4 A plan and section of the underground workings survives from 1876. The plan shows extensive workings throughout the hillside, with the Deep Boat Level marked. The route of the level is shown, and the location of vertical shafts, and diverging routes along the tunnel potentially cut to allow boats to pass each other (Brabham & Umar 2011). The plan does not however show surface features and workings corresponding to the project areas.

Ordnance Survey 1st edition 25" map published in 1888 (Figure 6)

- 4.5.5 In 1888 the Deep Boat Level is depicted as a single level (PRN 99382), likely corresponding to that shown on the tithe map, towards the southern end of the project area. The entrance to the level appears to be marked by a stone (NM01), the form and nature of which is unclear. Extending from the level entrance is the tramway (PRN 29693), connecting directly to the processing site to the south. A footbridge crosses the tramway just in front of the level entrance, providing access to a footpath from the cottages to the south (PRN 29691), which are labelled as a 'Smithy'.
- 4.5.6 The tramway runs south past the new St Barnabas church, and along the route of the current track as far as the modern sheds associated with Pen-

y-Gorof, where it diverges slightly to run along an embankment along the eastern edge of the project area. At the northern end of this area lies a U-shaped arrangement of buildings at SN 7812 4346. This is recorded in the HER as PRN 99902, but not provided with an accurate grid reference. This collection of buildings is thought to include a crushing mill and dressing floors, but the complex suggests further buildings, with circular features adjacent that may be buddle pits. Spread out to the south of these buildings is an irregular spoil heap (PRNs 99304 & 99384), accessed via short sections of tramline (NM02) from the buildings. To the southeast of this spoil a drainage channel (NM03) has been cut, which exits the southern end of the site, draining into the nearby river at SN 78083 43211. At the northern end of the site lies a well (NM04) at SN 7805 4352, presumably sited to keep it away from the contaminated spoil tips to the south. At the southern end of the site stands a small farmstead complex of Blaen-y-waun PRN 113771, now occupied by the sewage farm, and to the east the cottage of Pen-y-gorof has been built.

- 4.5.7 At the Pannau Level a single disused mine level is shown (PRN 99375), accessed via a trackway from Pannau Street. Downslope to the southwest lies the associated spoil heap (PRN 99376) which appears to have been spread over the line of the stream and extends to the south of the project area.

Ordnance Survey 2nd edition 25" published in 1905 (Figure 7)

- 4.5.8 By 1905 the mine was not being actively worked, and would not resume until 1914. At the Deep Boat Level it does depict some expansion since 1888, with a mine shaft (disused by 1905) at the northern end of the project area (PRN 29692). The mining feature to the south is marked (PRN 99383), of uncertain function but a similar size to the adjacent shaft.
- 4.5.9 The processing area to the south also appears abandoned, and the tramway is no longer marked. The main building complex retains some buildings along the northeast side, but some of the main structures on the southwest side appear to have been replaced with a single detached building. The associated spoil tips have expanded to the west and south in the intervening period.
- 4.5.10 At the Pannau Level a further mine shaft (PRN 99377) had been sunk at the southern end of the spoil heap (outside the project area), and further shafts are also depicted in the hillside above the level, but these works are also out of use by the time the map was published in 1905.

Plan and Section of Nantymwyn Mine 1932 (Figure 8)

- 4.5.11 A plan and section of the mine workings at the time of its final closure also survives. As with the previous map showing underground workings, although of great interest for the location and layout of tunnels, it does not show any surface-level features within the project areas.

Historic aerial photographs (Photo 1)

- 4.5.12 There are few historic aerial images that capture the Deep Boat and Pannau Level sites in any great detail. Aerial coverage by the RAF in 1946 (Photo 1) provides some of the best images but do not record any new features. At the Deep Boat Level no mining feature can be picked out, although remnants of the northern end of the tramway PRN 29693 may survive. To

the south the main processing area is shown largely as an open area of spoil tips. Only one building is visible from the main complex (PRN 99902), which would appear to be the structure built at some point between the 1888 and 1905 OS maps on the southwest side of the complex, and this is clearly roofless and ruinous. The Pannau Level area is shown prior to afforestation, but it is difficult to pick out any specific features other than the cutting for level PRN 99375 and nearby spoil heap spread PRN 99376. Development at the western end of Argall Street (PRN 29690) had been established by this date.

LIDAR

- 4.5.13 The previous assessment was able to take advantage of detailed 25cm LiDAR data covering the Upper Boat Level area of Nantymwyn mine. This data is not available for the current project areas, which is only covered by 2m DTM modelling, and 1m DSM modelling. Due to the tree cover across all sites nothing of note is visible on the DSM modelling. At 2m resolution no new sites of interest are visible on the DTM model. What the latter does show however is that the Deep Boat Level processing site is set within a former river channel which has carved an area of level ground into the eastern side of the valley, so the project area is surrounded by steeply rising ground on all but the west side.

4.6 Site Walkover

- 4.6.1 A site walkover of all project areas was undertaken on the 16th May 2023. Access was provided with private landowner permission to both the Deep Boat Level and Depp Boat Level processing site. The Pannau Level area lies in publicly accessible woodland. Weather conditions were sunny and dry, with ground conditions suitable to access the entirety of the site. Due to the time of year however vegetation growth was quite dense, which hampered the visibility of some areas of the Deep Boat Level processing site.

Deep Boat Level

- 4.6.2 The Deep Boat Level lies in private gardens to the north of Dray Cottages (PRN 29691). At the southern end of the project area lies the level entrance (PRN 99382), which is partially blocked by stone, but the upper part of the entrance remains open, topped by a low arch of masonry voussoirs (Photos 2 & 3). A rock cut channel extends to the southeast. The depth of material part-blocking the entrance suggests the original mine working surface, and potential tramway (PRN 29693), or even earlier canal remains may survive below a thick layer of tumbled and dumped stonework. The level entrance was not examined closely, but water appears to issue from it, as well as entering the channel in front from workings a short distance upslope. There was no indication of the marker stone NM01 visible on early Ordnance Survey maps.
- 4.6.3 Further upslope lies a water-filled pond with squared, somewhat undercut, edges, representing mining feature PRN 99383 (Photo 4). It has been described as a resurgence pool, presumably where water has forced its way back up a former mine or air shaft. The pool currently has the appearance of being largely silted but holding water, albeit not fast-flowing at the time of visit.
- 4.6.4 Towards the northern end of the project area lies a flooded mine shaft/air shaft PRN 29692 (Photos 5 & 6). The shaft is not currently visible, lying

beneath the water surface, but it lies in a semi-circular rock cutting with clearly defined edges. Water still emerges from this opening and provides the main flow of water down through the project area (Photo 7), emptying into the channel in front of the original mine level.

- 4.6.5 No further features of note were visible around these mine entrances and associated water channels. There was no clear indication of surviving working surfaces, buildings or trackways around mining feature PRN 99383 and shaft PRN 29692.

Deep Boat Level Processing Site

- 4.6.6 This site is approached via a tarmac road which runs partly along the course of the former tramway PRN 29693 (Photo 8). There are no clear remains of the tramway along this route. The embankment on which the tramway ran around the east edge of the site still remains, but no surface remains were visible amongst the dense scrub. The site itself is accessed via a curving trackway (NM05) from the east (Photo 9). This trackway is marked on the early Ordnance Survey mapping and therefore appears original, comprising stone-packed ground, 2.5m to 3m wide.
- 4.6.7 The trackway directly accessed the main building complex PRN 99902 within the site. There are currently no above-ground remains of this site, other than one small block of cement-mortared masonry at surface level, and a cutting back into the rising ground suggested a possible building platform (Photos 10 – 12). This cutting would appear to correspond to a building on the northeast side of the complex, visible on the 1888 Ordnance Survey map (Figure 6). The ground is generally uneven and largely scrub-covered at this location, with surface piles of collected masonry and concrete structures demonstrating the former presence of structures in this area and the potential for buried remains. Small-scale machine-excavations into the rising ground to the northeast reached a hard level surface buried beneath the current ground level (M.Crane, pers.comm), indicating further potential for the survival of buried remains. There was no indication of the former well NM04, or tramlines NM02.
- 4.6.8 The site largely comprises spread mining spoil PRNs 99304 & 99384, which extends from the northern end of the site to the southern end and appears spread and re-worked from the extent depicted on the 1905 Ordnance Survey map (Photos 13 & 14). The line of the original drainage channel NM03 is now largely buried beneath the spoil, with a new channel cutting along the base of the rising ground to the southeast. The area of the former channel does still apparently flood in wet weather, before eventually draining out along the original course at the southern end of the site (Photos 15 & 16). The line of the channel is still traceable at the southern end of the site, with an embankment along the western edge, but now largely hidden amongst scrub and trees. The trees extend across the sloping ground surrounding the site and along the margins of the spread spoil tips. Along the southeast edge of the lower ground lies a new pond, and a pile of loose spoil with dumped ironwork and machine parts (possibly a tractor), indications of more recent activity within the site (Photo 17), but no further features of archaeological interest were identified.

Pannau Levels

- 4.6.9 At the top of Pannau Street, where it meets Argall Avenue, a small, levelled area lies on the east side of the road used for car parking. This appears to be partly excavated into the former spoil heap PRN 99376, lying outside the project area. The mine shaft PRN 99377 lies within the steep-sided stream valley adjacent to this, currently not easily accessible but still

apparently partly open, although it also lies outside the project area. A stone-packed trackway enters the area from the top of Pannau Street, potentially representing the bed of a former tramway (NM06) although possibly just a cart track, but as it leads to the former mine level it is likely to have been laid down to facilitate the mine workings (Photo 18). The former spoil tip PRN 99376 lies to the east, spread and levelled (Photo 19). The current stream runs to the southeast and at a lower level to this spoil.

- 4.7.10 The level PRN 99375 lies at the end of the track, clearly visible as a cutting into the hillside (Photos 20 & 21). The level entrance itself is buried and blocked and the site is turf and scrub covered. Alongside the trackway as it approaches the level the bank is revetted by a stone wall (NM07), 1.6m high and built of roughly faced random rubble (Photo 22). As a built feature this may be connected with the mine workings in the area, possibly to provide a working area or space for buildings. Two huts (NM08) currently stand in front of this wall, both timber framed and clad in corrugated tin sheeting (Photos 21 & 23). Both appear unused, the larger, southernmost, is partly collapsed. The huts appear 20th century in origin and are probably of limited archaeological interest, but it is unclear if they are associated with mine workings or later forestry works. No further features of archaeological interest were identified along this trackway, around the level entrance, or along the stream banks that rise up into the forested hillside to the northeast and east.
- 4.7.11 A second trackway, stone-packed and approximately 2m wide, heads off northward into the forestry. Although initially roughly following the line of a track marked on early Ordnance Survey mapping connecting with mining activity on higher ground, this track diverges from that line and has the appearance of a more recent forestry track. On lower ground to the west runs a narrow (0.4m wide) linear drainage trench (NM09) (Photo 24). This line appears to be marked on the 1st edition Ordnance Survey map of 1888, possibly as a field boundary. Within the woodland at approximately SN 7868 4386 a stream channel emerges from amongst some stonework (NM10) (Photos 25 & 26). Roots have grown over the point the stream emerges, but a possible vertical face of stonework is visible, the stream itself is linear, and ironwork is visible amongst the stones in the stream, which suggest this is an artificial feature, and may be related to an unrecorded mining feature. No further features of archaeological interest were identified within this forestry area.

4.8 Previous Archaeological Work

- 4.8.1 Nantymwyn lead mine was briefly assessed in 1993 by Jennifer Protheroe Jones, Curator of Heavy Industries at the National Museum of Wales, on behalf of Dyfed Archaeological Trust (Protheroe Jones, 1993). The results of this survey constitute the baseline for the heritage assets now recorded on the HER and included in this assessment.
- 4.8.2 No recorded intrusive archaeological investigations or detailed archaeological surveys have been undertaken within the study area.

5. ASSESMENT OF ARCHAEOLOGICAL POTENTIAL

5.1 Calculating Areas of Archaeological Potential

- 5.1.1 In keeping with the previous assessment of Nantymwyn Lead Mine (Bell 2021) maps of the study area have been created to illustrate zones of probable archaeological potential. These maps (Figures 13 to 15) identify areas of low, medium or high archaeological potential, with areas coloured red, amber and green respectively.
- 5.1.2 The previous assessment used Weighted Kernel Density Estimation to produce a heatmap visualization of the differing areas of potential using GIS software. The current project areas however contain fewer individual features and more discrete areas of potential from a more limited timeframe which would likely not be captured by such a process, the resultant areas of potential illustrated in Figures 12 to 14 has therefore been drawn around identified areas of potential and using professional judgment. It is important to note that these areas are intended to be used as guidance to enable a pragmatic and informed approach to any remediation scheme. Their parameters are not to be taken literally; rather they ought to indicate appropriate levels of mitigation and due caution.
- 5.1.3 The risk criteria are as follows:
- **High areas** are those where there is the greatest density of known archaeological features.
 - **Medium areas** are those where there is a lower density of known archaeological features and/or a large number of features evidenced by documentary sources.
 - **Low areas** comprise areas where there is a sparsity of recorded archaeological features within the proximity of the mine workings but is considerate of the potential for undocumented workings to exist within the area.

5.2 Areas of High Archaeological Potential

Deep Boat Level – Areas 1, 2 & 3 (Figure 13)

- 5.2.1 Within the Deep Boat Level these areas are drawn around the identified remains of the late 18th century mine level PRN 99382 entrance and approach (Area 1), and the late 19th century mine shaft PRN 29692 (area 2) and mining feature PRN 99383 (Area 3). These areas are readily identifiable at ground level and contained within distinct cuttings. There is good potential within these discrete areas for buried remains associated with late 18th to late 19th century mining remains to survive, and in an area less likely to have been affected by clearance works in the 1960s and 1970s.

Deep Boat Level Processing Site – Area 4 (Figure 14)

- 5.2.2 Within the processing site the area of high potential is drawn around the complex of buildings marked on the 1888 and 1905 Ordnance Survey maps PRN 99902 (Area 4). It is possible initial processing works began when the Deep Boat Level was first started in the late 18th century, but there is no clear evidence that processing started here until the later 19th century and therefore the mapped remains of the buildings may reasonably be assumed to cover the main focus of processing, including the crushing mill and dressing floors. The buildings do not survive above-ground, but there is the potential for remains to be buried beneath spoil deposits and disturbed

ground. The good survival of important mining features beneath reprocessed spoil deposits has been demonstrated at other mining sites, such as Frongoch (Murphy et al 2015).

Pannau Level – Area 5 (Figure 15)

- 5.2.3 At the Pannau Level site the area of high potential is drawn around the level entrance itself PRN 99375 and the approach to it. The level entrance is buried beneath tumbled ground and vegetation, but it is possible that this preserves buried 18th and 19th century mining remains including the level entrance and possible canal, tramway or track approach. The level cutting provides a distinct boundary to the area of archaeological potential.

5.3 Areas of Medium Archaeological Potential

Deep Boat Level – Area 6 (Figure 13)

- 5.3.1 This area is largely drawn around the approach to the late 19th century mine shaft and mining feature. 1905 Ordnance Survey mapping suggests the approach to these features may have been designed in some way, the water channel above the original level may also be in part an artificial feature, and there is a greater potential for ephemeral remains and associated artefact in this area, but there is little clear indication on the ground of any substantial mining remains.

Deep Boat Level Processing Site – Areas 7, 8, 9, 10 & 11 (Figure 14)

- 5.3.2 These areas are drawn around features that are marked on historic maps but are of more limited archaeological value with no surface remains evident. There is the potential for buried remains to survive, although subsequent development and clearance works are likely to have adversely affected such remains.
- 5.3.3 Area 7 includes the former tramway PRN 29693 as it approaches and enters the site. The line of this tramway is now a tarmac road which is likely to have adversely affected potential buried remains, but some evidence may survive within the heavily overgrown area at the northern end of the site.
- 5.3.4 Area 8 includes the former tramway embankment along the eastern edge of the site, which still survives although evidence of the tramway itself is not visible at surface level. The embankment may be constructed of mine waste and consist of some of the initial late 18th and early 19th century waste material from the Deep Boat Level workings.
- 5.4.5 Area 9 includes the periphery of the building complex and initial area of processed spoil, including tramlines NM02. These tram routes are likely to have been temporary features, changing course as the spoil was deposited. There is currently no surface remains, and the area is likely to have been subject to early 20th century reprocessing and later 20th century clearance.
- 5.4.6 Area 10 includes the original drain along the southern edge of the site. Areas of flooding and vegetation suggest buried remains are likely to survive, but the feature is of limited archaeological interest.
- 5.4.7 Area 11 is a relatively discrete area drawn around the site of a former well. There are no obvious surface indications of such a feature, which is likely 19th century in date, but it lies in an area that may have avoided 20th century clearance works.

Pannau Level – Areas 12 & 13 (Figure 15)

- 5.4.8 Area 12 is drawn around the track NM06 approaching Pannau Level and the associated spoil heap PRN 99376. Both features could potential be later 18th century in date associated with the initial mine workings in this area, although the track appears relatively featureless at present and the spoil heap has been levelled. This area also includes the level area in front of the mine workings that could house associated structural elements. At present the built elements include a stone wall NM07 and timber-framed huts NM08 that are likely more recent and of more limited archaeological interest but could potentially be related to mining activity. An extant drainage feature NM09 is also included in this area.
- 5.4.9 Area 13 is a discrete area drawn around a potential mining feature NM10 in the forestry to the west of the site.

5.4 Areas of Low Archaeological Potential

Deep Boat Level – Area 14 (Figure 13)

- 5.4.1 This area is peripheral to the main mining remains, with no indication on mapped sources or at ground level of features of interest. The area forms part of a private garden on rising, uneven ground. The general archaeological potential for the area is also relatively low for this location.

Deep Boat Level Processing Site – Area 15 (Figure 14)

- 5.4.2 This area lies within the bounds of the general processing site associated with the Deep Boat Level workings, but contains no mapped features of archaeological interest, and no visible surface features. Much of the lower ground contains remains of mining spoil, but this area has likely been reprocessed in the early 20th century, and subject to later 20th century clearance works and ground disturbance. Steeper ground to the east and south may contain some access paths but nothing of archaeological interest has been identified cutting into these slopes. Along the eastern edge of the site runs the current tarmac road and sewage farm access track, and areas redeveloped in association with Pen-y-gorof cottage. An area of higher, level ground stands at the southeast end, which may have functioned as a conifer nursery providing timber for the mines (M.Crane, pers.comm), but no features of archaeological interest have been identified in this area.
- 5.4.3 Topographically the site appears to have formed part of the ancient river channels down the valley, but the pre-mining archaeological potential of this area appears low.

Pannau Level – Area 16 (Figure 15)

- 5.4.4 This area is sub-divided by the stream valley that runs northeast – southwest through the area. Further mining activity is recorded on the west side, to the north of the project area, but there is no indication of further features within this area. On the east side of the stream the ground is more uneven, cut by further streams, but no features of interest were identified in this area, and there is considered to be less of a potential for mining remains on this side of the stream.
- 5.4.5 The general archaeological potential on such sloping ground is likely to be concentrated mainly on mining remains.

6 CONCLUSIONS AND MITIGATION PROPOSALS

6.1 Archaeological Constraints

- 6.1.1 This assessment has produced a baseline dataset quantifying the archaeological potential and sensitivity of the resource at the Deep Boat Level and processing site, and Pannau Level area of Nantymwyn lead mine.
- 6.1.2 The archaeological potential of the project areas clearly rests largely in the metal mining activity of the late 18th to early 20th century. Work on the Pannau Level may have commenced in the 1770s, with work on the Deep Boat Level starting in 1785. Prior to this the archaeological potential of the project areas appears limited, with the earlier mining activity concentrated on the higher ground around Pen Cerrig-mwyn. Some prehistoric activity is noted in the wider landscape, with some significant sites such as the Bronze Age barrows and standing stone on high ground to the east, and an Iron Age defended enclosure on high ground to the west, but at present there is little indication of potential Prehistoric activity within the project areas themselves.
- 6.1.3 Areas of greatest archaeological potential are therefore relatable either to cuttings visible at ground level or features marked on historic mapping.
- 6.1.4 Within the Deep Boat Level area the greatest potential is associated with cut mine entrances of late 18th and late 19th century date. Although largely infilled there is a good potential for buried features to survive in this area. Nantymwyn mine has already been identified as a mine site of archaeological importance, in part highlighted by the scheduling of remains on Pen Cerrig-mwyn, and elements in this area are an integral and identifiable part of the mine complex. Clearly all identifiable features are also however potentially problematic water sources, draining the water from the extensive underground workings.
- 6.1.5 The Deep Boat Level processing site is of reduced archaeological importance largely due to the later 20th century clearance works carried out across the site, which has left spread of mining spoil as the only clearly visible evidence of its association with Nantymwyn mine. The area of greatest potential on this site is linked to the mapped location of the main building complex, where the crushing mill, dressing floor, and other mine buildings and offices would have been located. The site has been cleared of standing remains, but cuttings, fragments of masonry, and suggestions of buried floor levels all indicate a potential for buried remains to survive. Work on other lead mines has shown that structural features can remain relatively well-preserved below-ground, which could provide important evidence of 19th century mining activity that has otherwise been cleared from this part of the mine.
- 6.1.6 At the Pannau Level site the location of the level is clearly identifiable within a cutting into the hillside, even if the entrance itself has become buried and obscured. This level appears to be one of the lesser understood elements of the mine but may date to the expansion of mining activity in the 1770s and therefore buried remains are of particular significance. The focus of archaeological potential is within this cutting and the approach to it. Further remains of mining activity may survive on the approach to it and level ground around this, but at present the significance of identified features in this area is reduced.

6.2 Archaeological Mitigation

- 6.2.1 Due to the archaeological sensitivity and importance of Nantymwyn lead mine it is clear that any future remediation scheme will require archaeological mitigation. It is hoped that this assessment will help inform the design of any remediation scheme, as well as decisions on archaeological mitigation. The mapping of archaeological potential is intended to provide a baseline understanding of the resource and identify opportunities where further work may be required.
- 6.2.3 Invasive solutions such as reprofiling of tailings or the diversion of water runoff, and indeed any ground-breaking activity, could adversely impact the archaeological resource.
- 6.2.4 It is generally advised that any identified archaeological remains should be avoided and left in situ and undisturbed where possible. The current understanding of the likelihood of encountering such remains is highlighted by the areas of potential described in the report. However, as this resource is largely buried across all project areas proposed ground-breaking activity may require intrusive archaeological investigation and/or recording prior to a final design scheme being agreed or work commencing. Such work would seek to establish a more accurate picture of the true character, extent and significance of archaeological remains that could be disturbed by proposed works. The potential requirement for such works is increased in areas of Medium and High potential.
- 6.2.5 Given the archaeological sensitivity of the area it is likely any ground-breaking activity will also require archaeological monitoring.
- 6.2.6 Ultimately, decisions on the requirement and scope of any future programme of archaeological mitigation lies with the archaeological advisor to the Local Planning Authority (Dyfed Archaeological Trust-Development Management).

7. SOURCES

Cartographic

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Database

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Websites

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Mine exploration, exploring disused mines and quarries, mining history, photographs and information for explorers, historians and industrial archaeologists (aditnow.co.uk)
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British Geological Survey:

BGS Viewer <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> Accessed 19/05/23.

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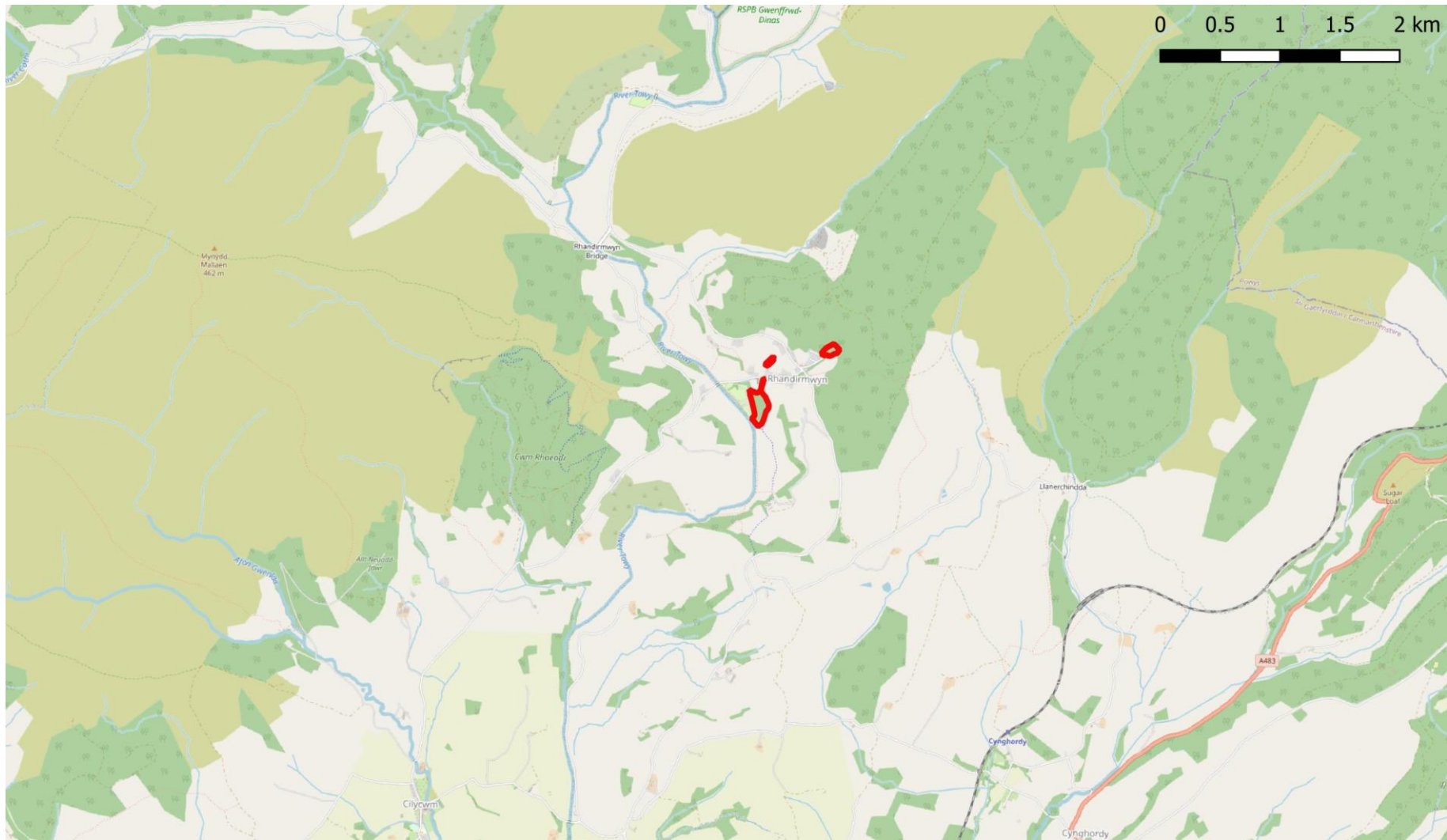


Figure 1: Location map showing project areas outlined in red.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 22/05/2023

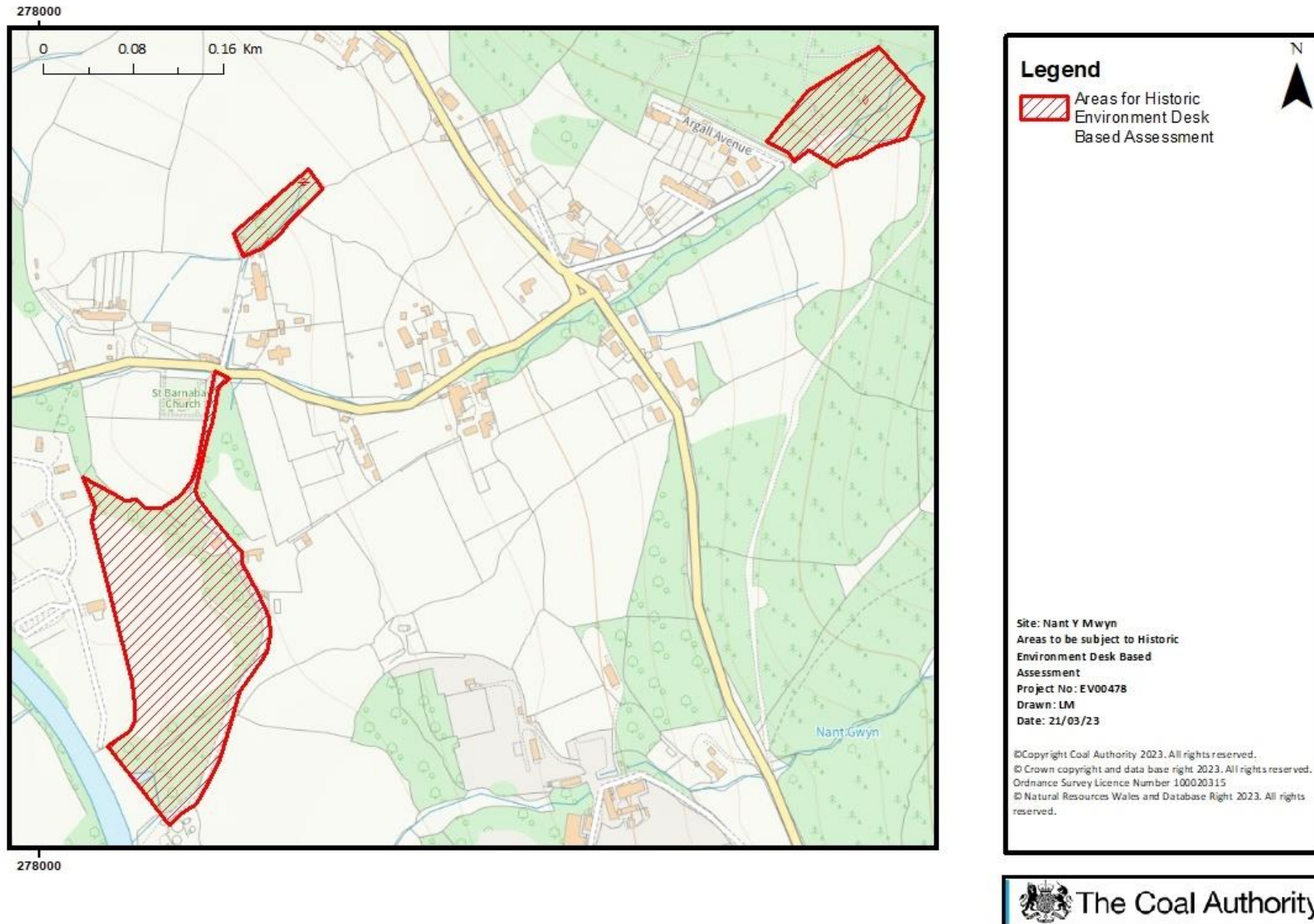


Figure 2: Detailed site location plan. Plan provided by the client.

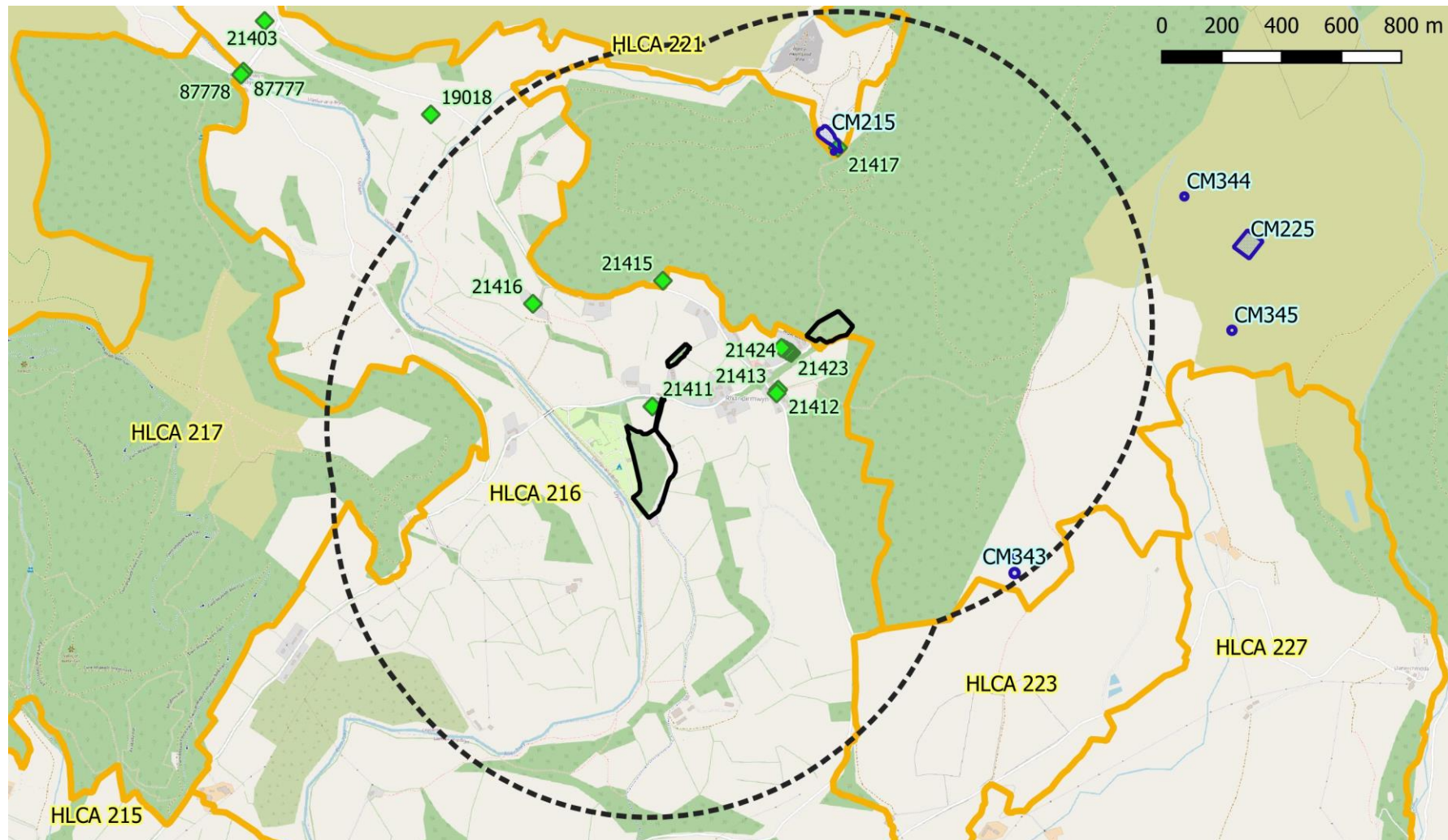


Figure 3: Map showing the locations of designated assets in the surrounding landscape, including scheduled monuments (in blue), listed buildings (in green) and historic landscape areas (in orange). The project areas are shown in black, with a 1km buffer zone depicted by the dotted line.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 22/05/2023



Figure 4: Extract from the parish tithe map, 1843. Approximate project areas shown in red, Deep Boat Level PRN 99382 shown in blue.

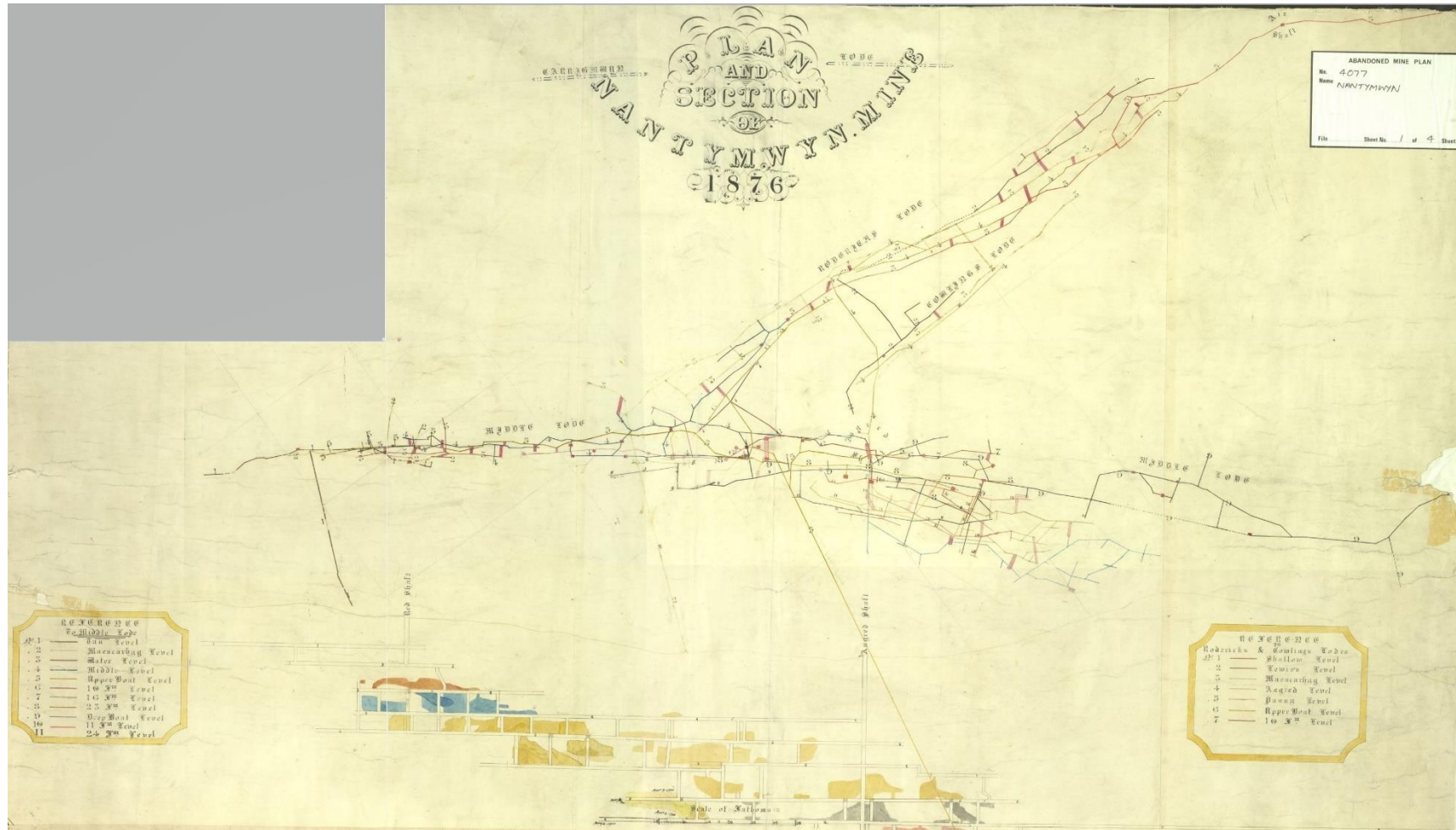


Figure 5: Plan and section of the Nantymwyn mine workings, 1876.

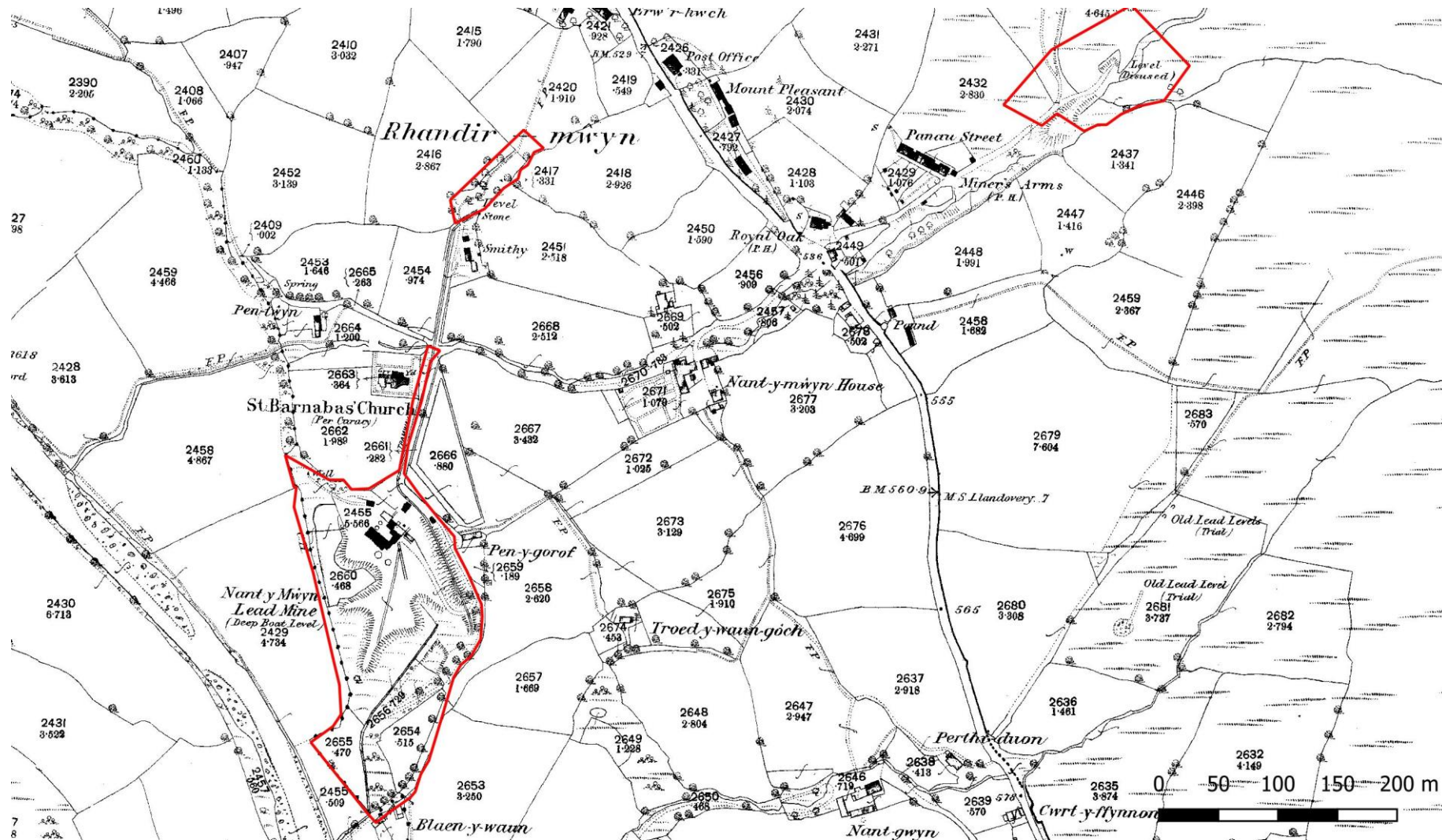


Figure 6: Extract from the 1888 Ordnance Survey map. Outline of project areas shown in red.

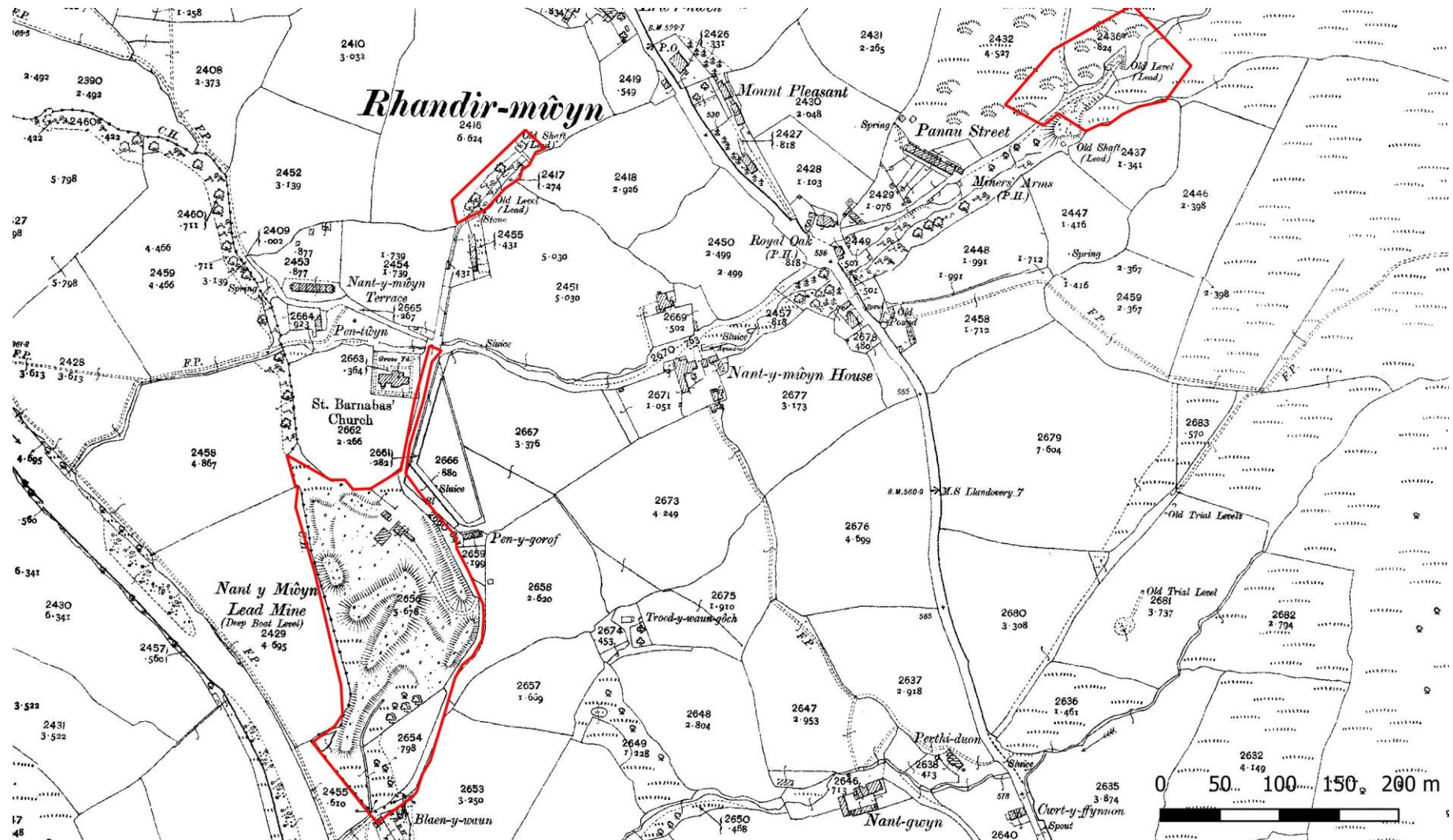


Figure 7: Extract from the 1905 Ordnance Survey map. Outline of project areas shown in red.

Nantymwyn Lead Mine (Deep Boat & Pannau Levels): Historic Environment Desk-Based Assessment

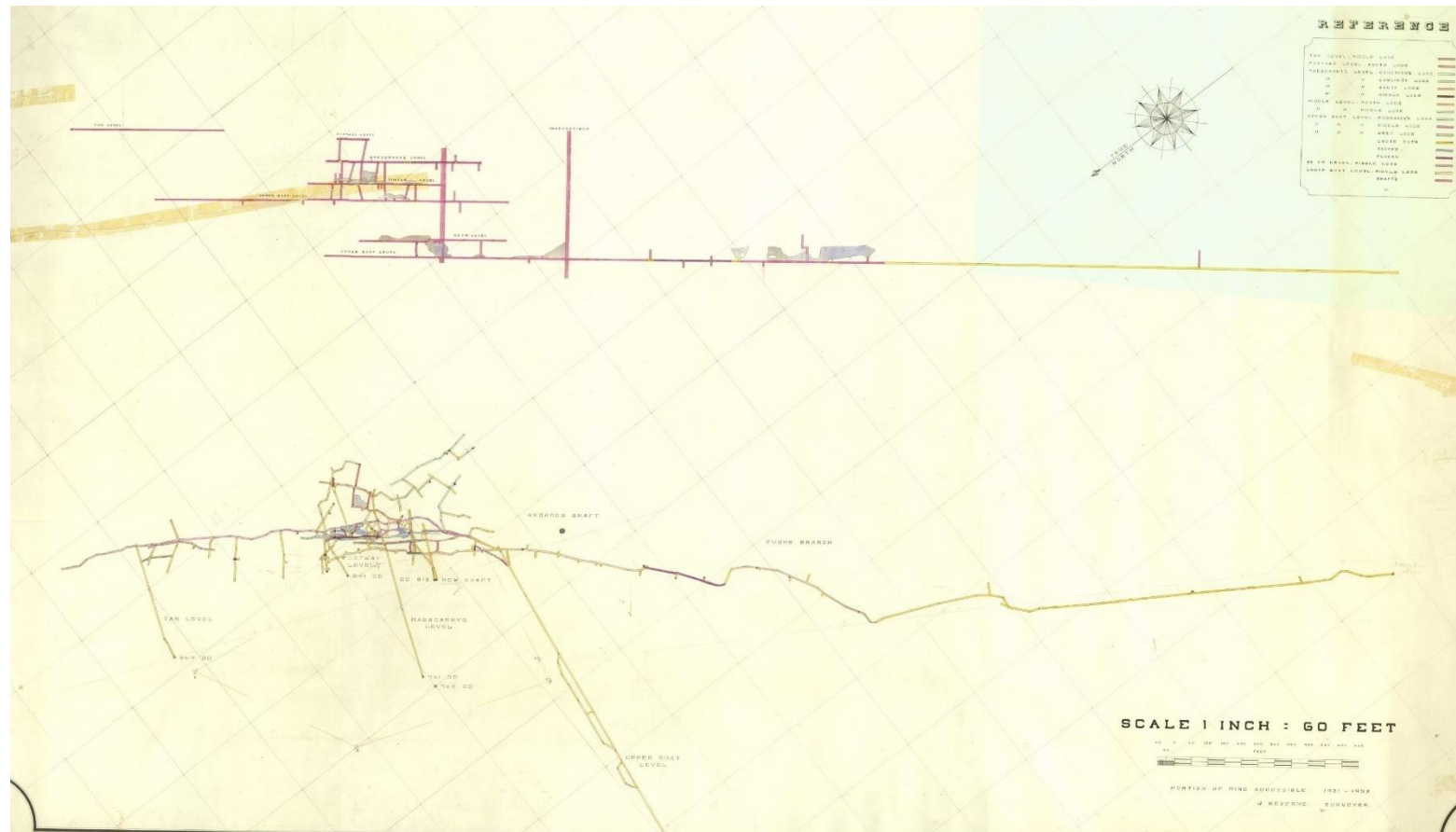
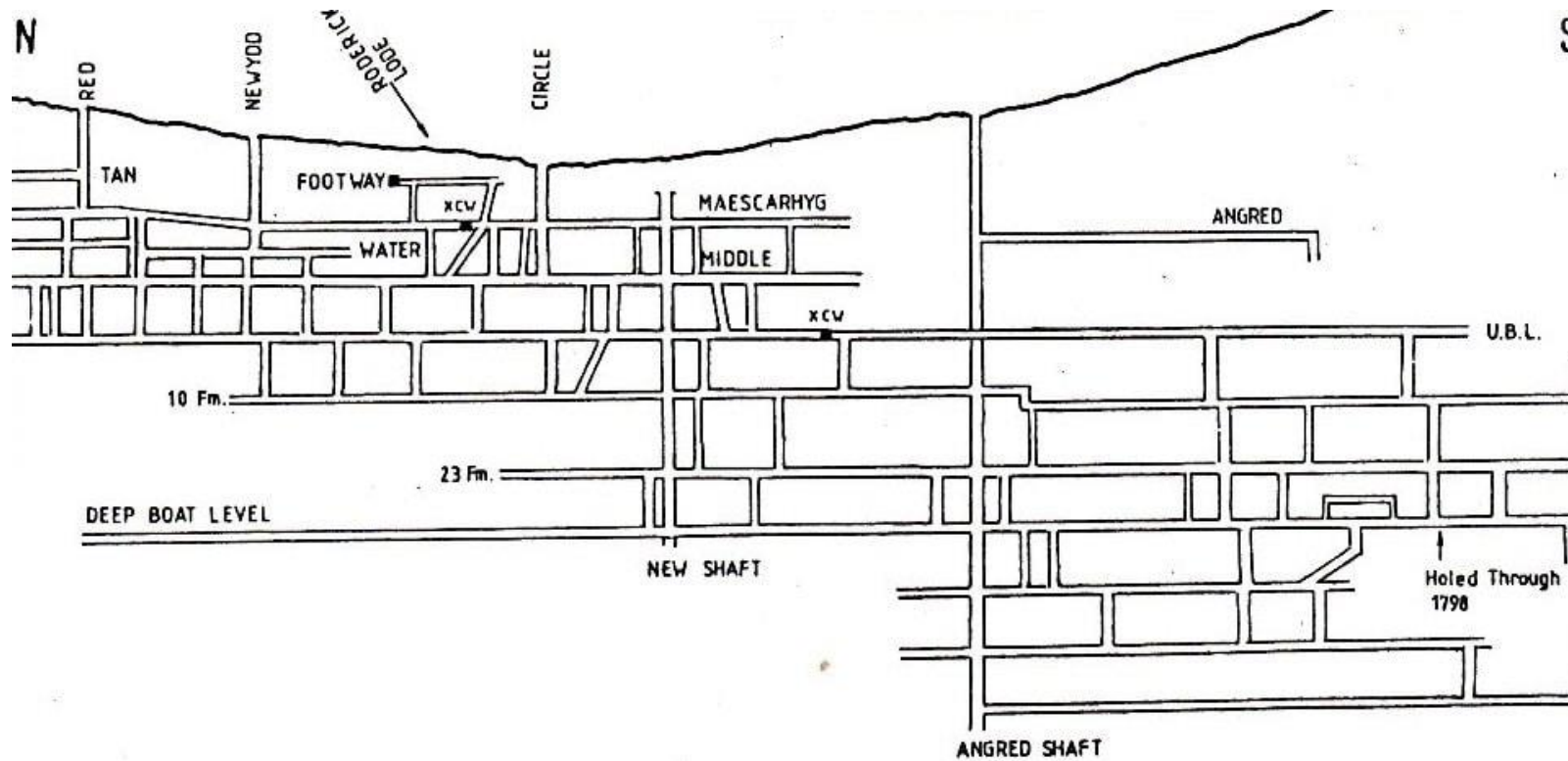


Figure 8: Section and plan of Nantymwyn Mine, 1932.



SECTION ALONG MAIN LODES AT NANT Y MWYN LEAD MINE

Figure 9: Schematic section of the mine workings, showing the Deep Boat Level, taken from Hughes 1992.

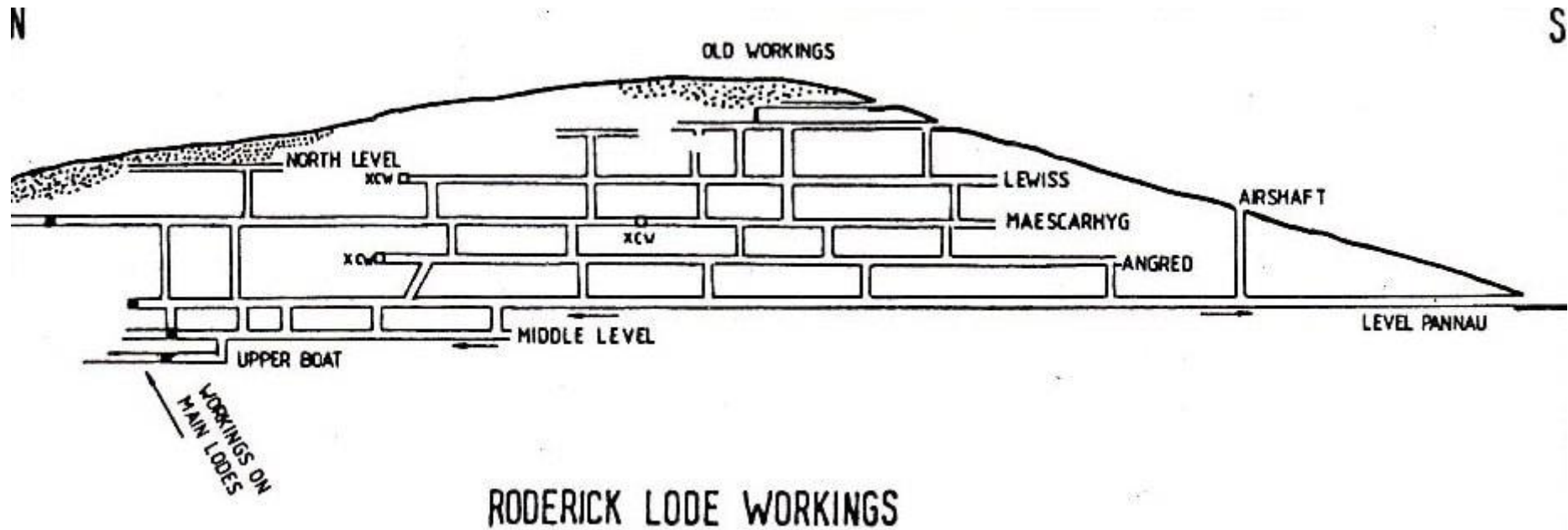


Figure 10: Schematic section of the mine workings, showing the Pannau Level, taken from Hughes 1992.

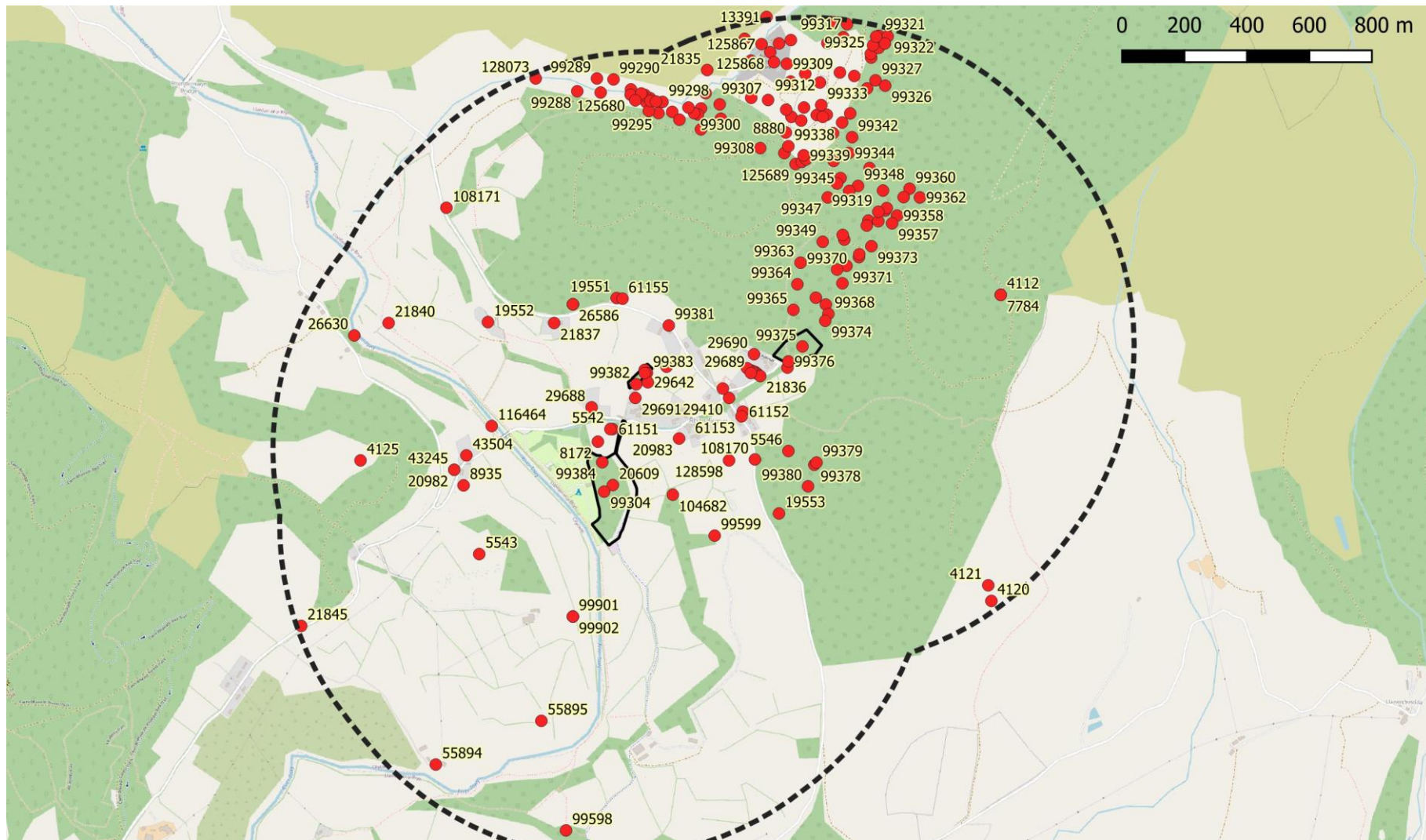


Figure 11: All sites recorded on the HER within a 1km buffer zone around the project areas. Labelled by PRN.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 23/05/2023



Figure 12: All sites as currently recorded on the HER within 100m (dotted line) of the project areas. Labelled by PRN.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 23/05/2023

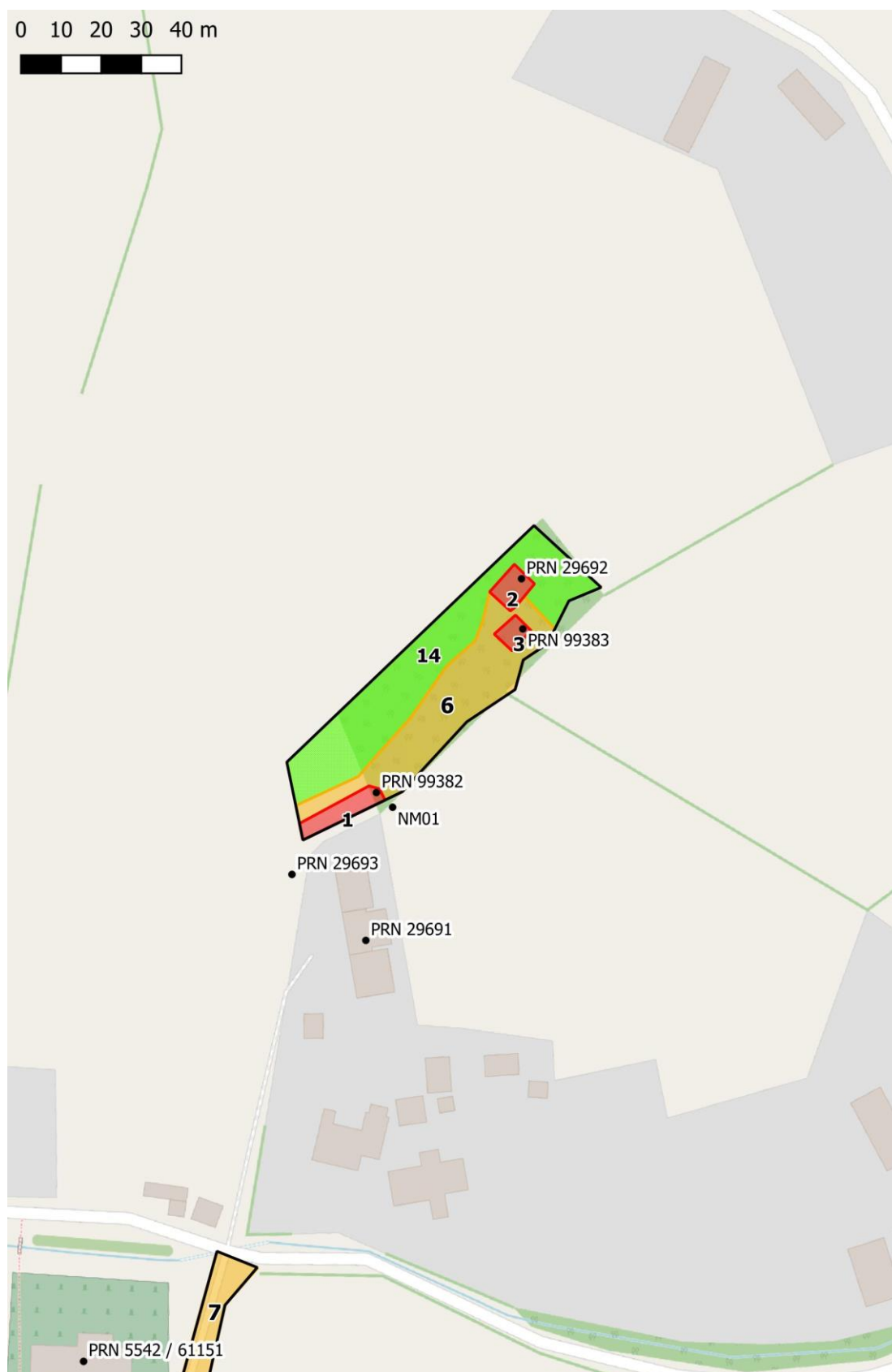


Figure 13: Map of the Deep Boat Level project area, showing areas of archaeological potential from high (red), medium (orange) to low (green) and identified archaeological features.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 24/05/23

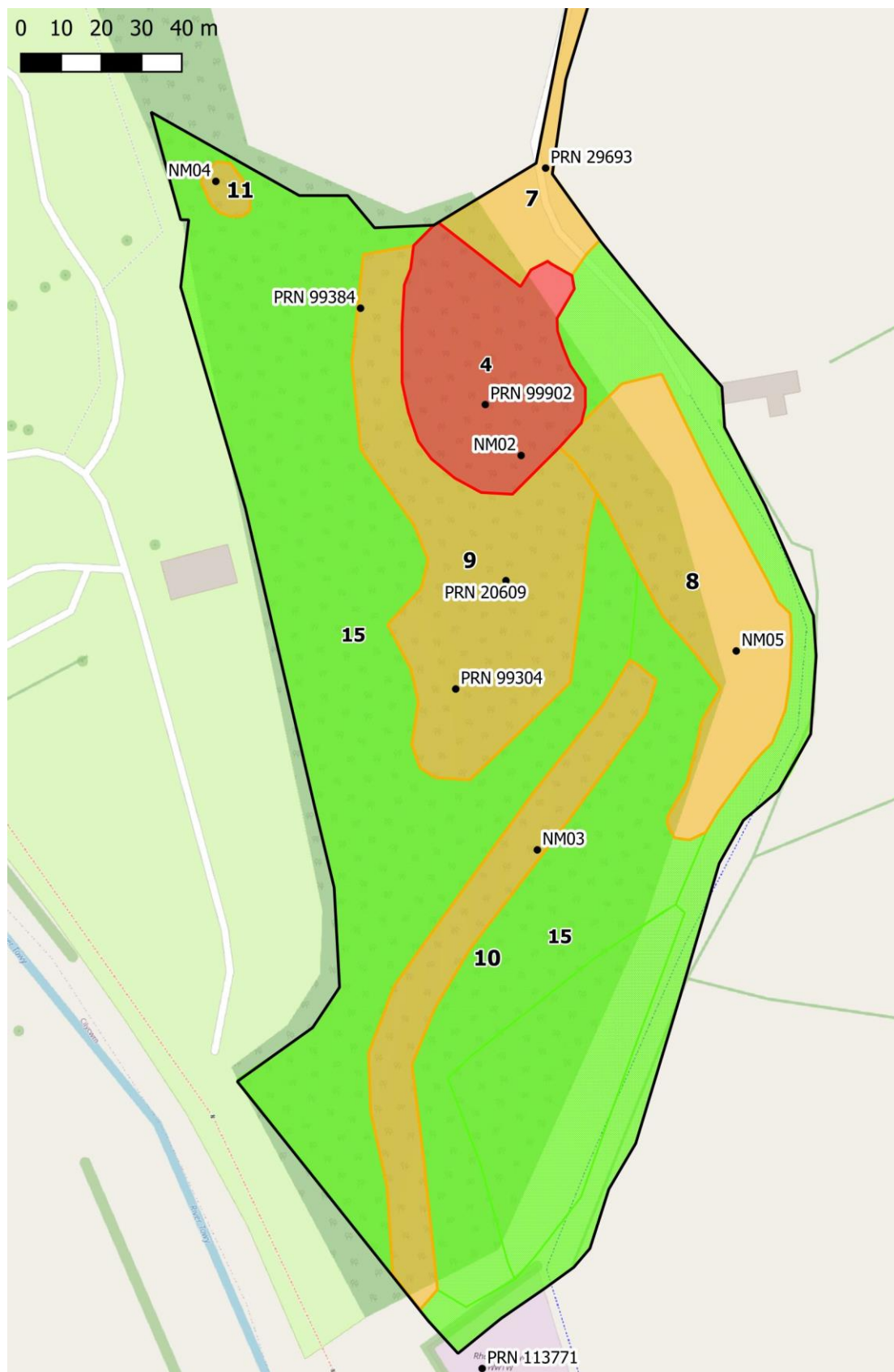


Figure 14: Map of the Deep Boat Level Processing Site project area, showing areas of archaeological potential from high (red), medium (orange) to low (green) and identified archaeological features.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 24/05/23

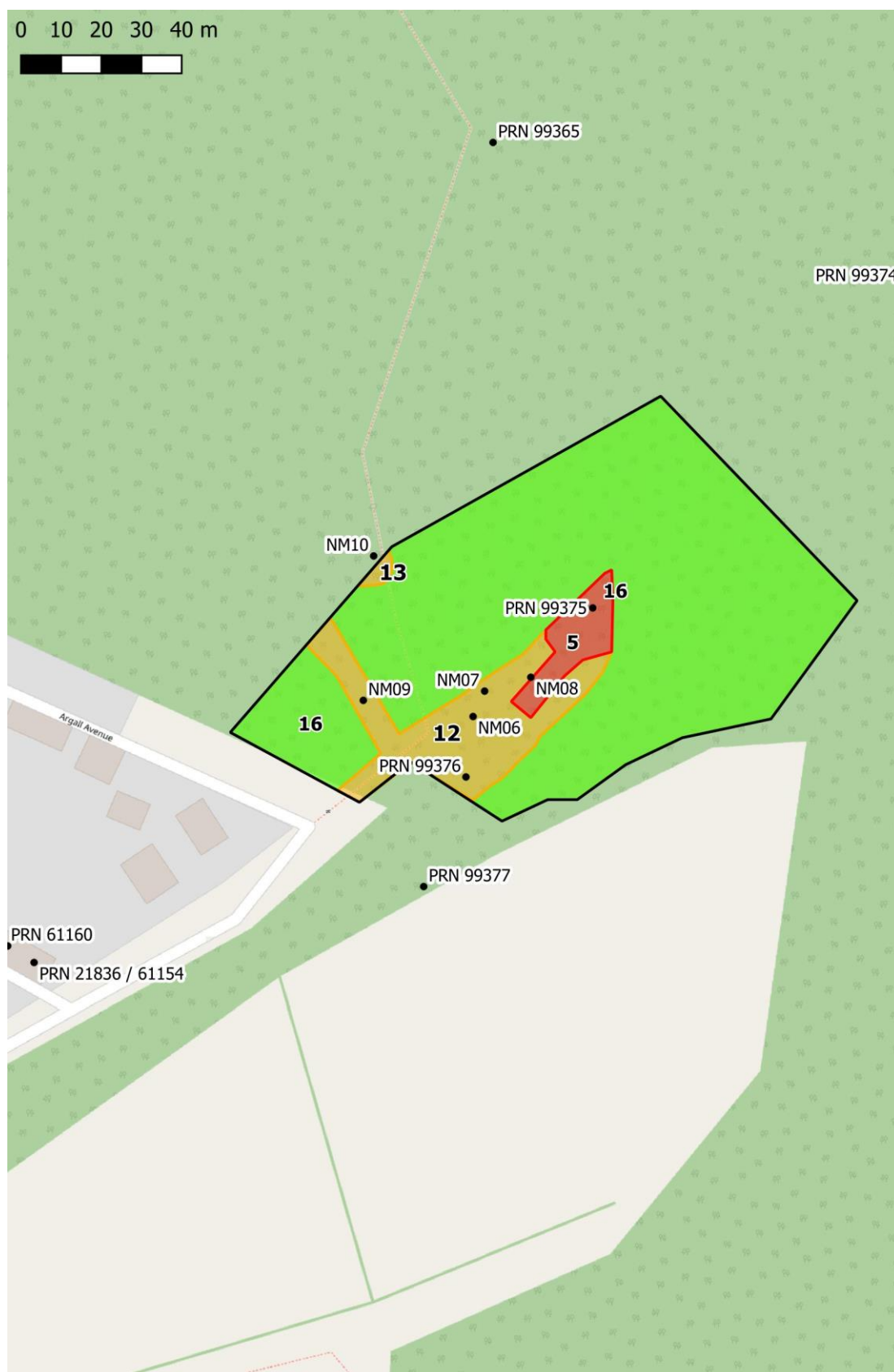


Figure 15: Map of the Pannau Level project area, showing areas of archaeological potential from high (red), medium (orange) to low (green) and identified archaeological features.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 24/05/23

Photographs



Photo 1: RAF vertical aerial photograph from 1946. Approximate project area locations marked in red, north is to the top.

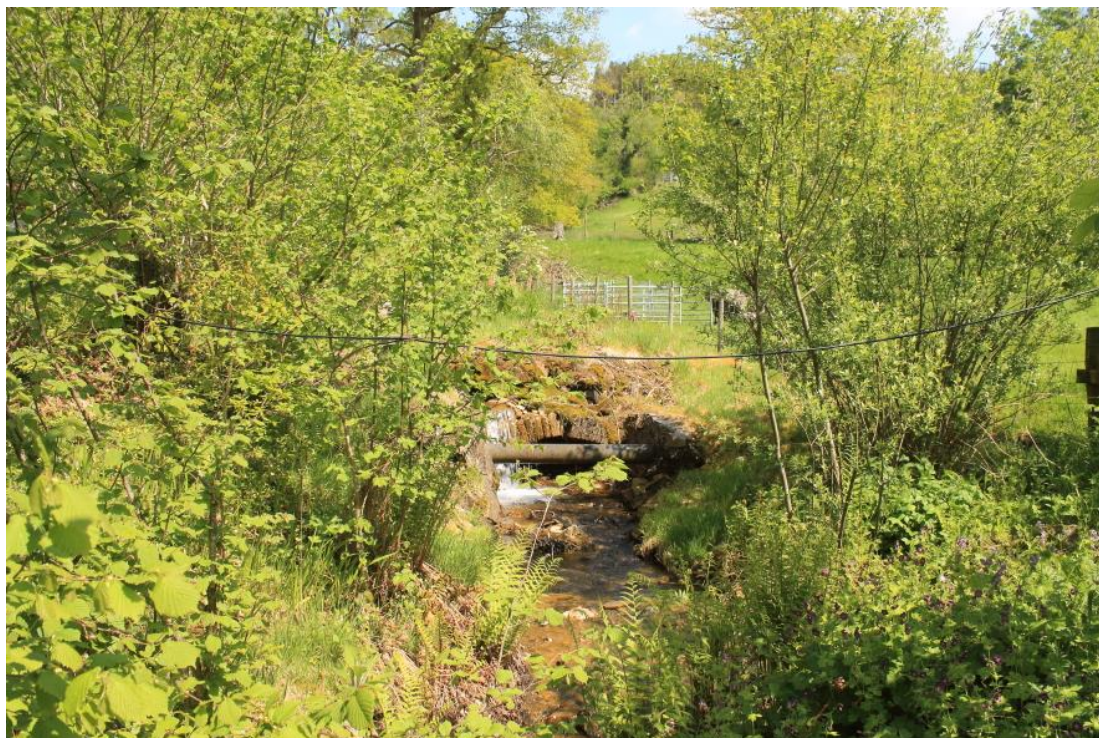


Photo 2: View northeast of the Deep Boat Level entrance PRN 99382.



Photo 3: More detailed view of the Deep Boat Level entrance PRN 99382.



Photo 4: View northeast of the mining feature PRN 99383.



Photo 5: View northeast of the flooded mine shaft PRN 29692.



Photo 6: The flooded mine shaft PRN 29692 in more detail.

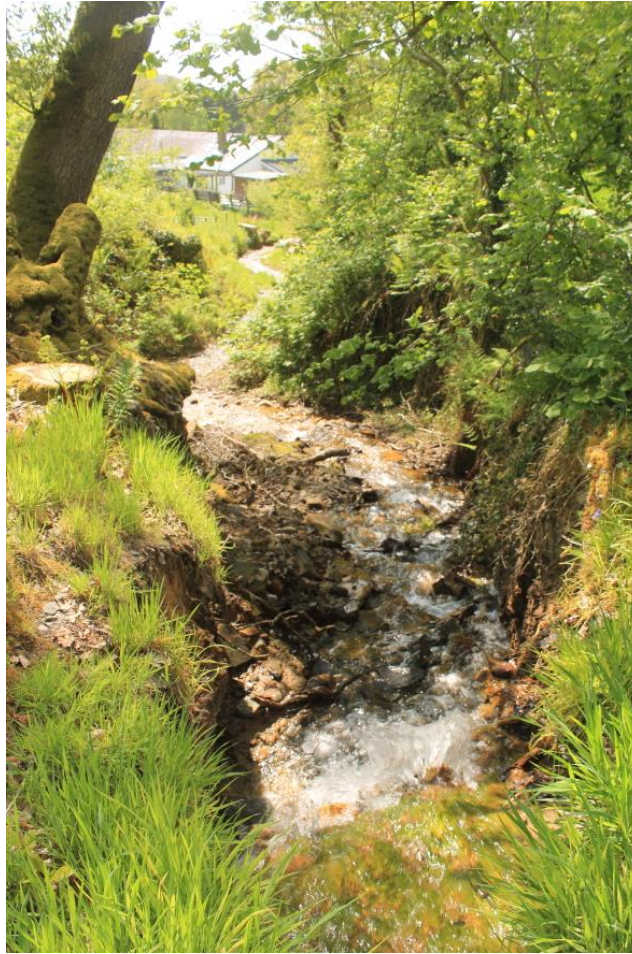


Photo 7: View south down the water channel emerging from mine shaft PRN 29692.



Photo 8: View south down the line of former tramway PRN 29693.



Photo 9: View northwest along the former trackway entrance (NM05) into the Deep Boat Level processing site. 1m scale.



Photo 10: View southwest across the general area of the main building complex PRN 99902 within the Deep Boat Level processing site.



Photo 11: View east as some potential structural remains, part of the building complex PRN 99902. 1m scale.



Photo 12: View north across some loose concrete structural remains within the Deep Boat Level processing site. 1m scale.



Photo 13: View north across some of the spread spoil heaps PRNs 99304/99384 at the Deep Boat Level processing site.



Photo 14: View south across some of the spread spoil heaps PRNs 99304/99384 at the Deep Boat Level processing site.



Photo 15: View northeast across the southern end of the Deep Boat Level processing site. The line of drainage channel NM03 passes through the browner areas on the right.



Photo 16: View south along drainage channel NM03 as it leaves the southern end of the site.



Photo 17: Disturbed spoil and dumped vehicle parts within the Deep Boat Level processing site.



Photo 18: View southwest down trackway NM06 leading to the Pannau Level.



Photo 19: View south across the levelled former spoil tip PRN 99376 associated with Pannau Level. 1m scale.



Photo 20: View north of the cutting for the Pannau Level PRN 99375.



Photo 21: View southwest from the entrance to the cutting for the Pannau Level PRN 99375, looking along trackway NM06, with hut NM08 on the right.



Photo 22: View northwest of the stone wall NM07 on the approach to Pannau Level. 1m scale.



Photo 23: View west of the westernmost of the two huts NM08 on the approach to Pannau Level. The adjacent hut is visible in Photo 21. 1m scale.



Photo 24: View north along drainage channel NM09 within the forestry near Pannau Level. 1m scale.



Photo 25: View northeast of possible mining feature NM10 amongst the tree roots. 1m scale.

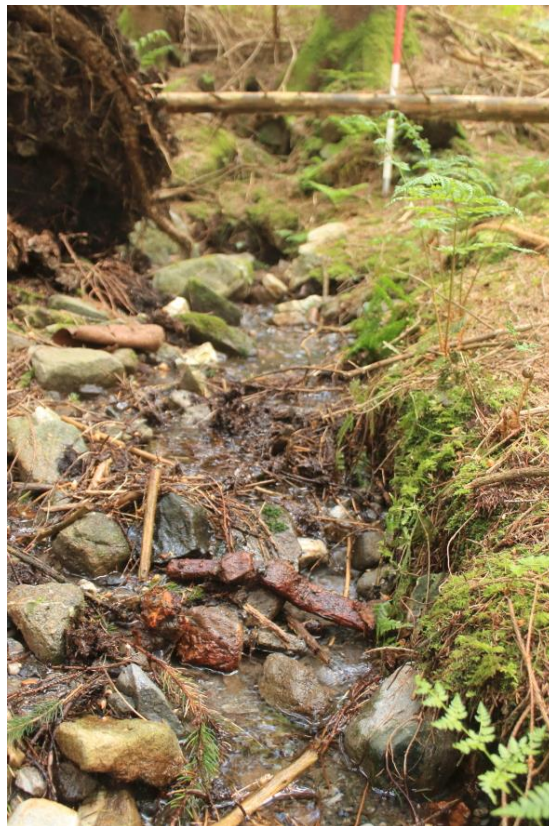


Photo 26: As photo 25 but showing some of the ironwork within the drainage channel in front of the potential mining feature.

Appendix I – Assets within the project areas

Project Area	PRN / Ref. Number	Name	Period	Site Type	Brief description	NGR
Deep Boat Level	20609	Nantymwyn Deep Boat Level	Post-medieval	Lead Mine	Lead mining complex. Initial level commenced in 1785, last worked in 1932.	SN7812843421
	29642	Rhandirmwyn Old Dray Cottages	Post-medieval	Level [Replaced by PRN 99382]		
	29691	The Old Dray Cottages	Post-medieval	Terrace; Blacksmiths Workshop	Terraced row of 19 th century former mine smithy and store.	SN78204370
	29692	Nantymwyn Deep Boat Level Air Shaft	Post-medieval	Air Shaft	Late 19 th century shaft, sunk either for ventilation or to repair the main level entrance below.	SN78234379
	29693	Nantymwyn Deep Boat Level Tramway	Post-medieval	Tramway	19 th century tramway linking the Deep Boat Level with the processing site to the south.	SN78184372
	99382	Nantymwyn Deep Boat Level	Post-medieval	Level	Mine level started in 1785. Last used in 1932, now largely blocked.	SN7820343744
	99383	Nantymwyn Deep Boat Level	Post-medieval	Mining Feature	Late 19 th century mining feature of unknown function. Currently forming a resurgence pool.	SN7823743780

		Resurgence Pool				
	NM01	Nantymwyn Deep Boat Level	Post-medieval	Stone	Stone marked on late 19 th century OS map at the mine level entrance	SN78204374
Deep Boat Level Processing Site	20609	Nantymwyn Deep Boat Level	Post-medieval	Lead Mine	Lead mining complex. Initial level commenced in 1785, last worked in 1932.	SN7812843421
	29693	Nantymwyn Deep Boat Level Tramway	Post-medieval	Tramway	19 th century tramway linking the Deep Boat Level with the processing site to the south.	SN7823043780
	99304	Nantymwyn Upper Boat Spoil Tip	Post-medieval	Spoil Heap	Spoil heap associated with 19 th century mine workings, possibly reprocessed in the early 20 th century.	SN781434
	99384	Nantymwyn Deep Boat Level Spoil Tip	Post-medieval	Spoil Heap	Spoil heap associated with 19 th century mine workings, possibly reprocessed in the early 20 th century.	SN7809443494
	99900	Nantymwyn Deep Boat Level Spoil Tip	Post-medieval	Spoil Heap [Duplicate of 99304 & 99384]		SN7800043000 (general NGR)
	99901	Nantymwyn Deep Boat Level Spoil Tip	Post-medieval	Spoil Heap [Duplicate of 99304 & 99384]		SN7800043000 (general NGR)
	99902	Nantymwyn Deep Boat Level Crushing Mill	Post-medieval	Crushing Mill (including dressing floors)	Collection of 19 th century mine buildings processing material from the Deep Boat Level. Includes a crushing mill, possibly dismantled	SN78124346

					in the early 20 th century. No above-ground remains.	
	NM02	Nantymwyn Deep Boat Level	Post-medieval	Tramway	19 th century tramway to transport processed spoil.	SN78134345
	NM03	Nantymwyn Deep Boat Level	Post-medieval	Drainage Channel	19 th century drainage channel associated with mine complex	SN78144335
	NM04	Nantymwyn Deep Boat Level	Post-medieval	Well	19 th century well associated with PRN 99902	SN78064352
	NM05	Nantymwyn Deep Boat Level	Post-medieval	Trackway	19 th century trackway accessing PRN 99902.	SN78184340
Pannau Level	99375	Pannau Street Level	Post-medieval	Level	Mine level, possibly originating in the late 18 th century. Currently blocked.	SN7873543865
	99376	Pannau Street Tip	Post-medieval	Spoil Heap	Spoil associated with PRN 99375. Levelled, and partly removed.	SN7869043817
	99377	Pannau Street Shaft	Post-medieval	Mine Shaft	19 th century mine shaft.	SN7868743797
	NM06	Pannau Level	Post-medieval	Trackway	Trackway approaching mine level PRN 99375	SN78704384
	NM07	Pannau Level	Post-medieval	Wall	Stone revetment wall alongside approach to mine level PRN 99375	SN78714385
	NM08	Pannau Level	Post-medieval	Hut	Two 20 th century timber-framed, corrugated tin sheet huts on the approach to mine level PRN 99375.	SN78714385

	NM09		Post-medieval	Drain	19 th century drainage channel	SN78684384
	NM10	Nantymwyn	Post-medieval	Mining feature	Possible undated mining feature or drain.	SN78674387

Appendix II – All sites recorded on the HER within 1km of the project areas.

Prn	Site_name	Period	Type	Ngr
4112	Bryn Poeth Uchaf	Bronze Age	Round Barrow	SN79374403
4113	Bryn Poeth Uchaf	Bronze Age	Round Barrow	SN79374403
4120	Garn Fawr; Garn Fair	Bronze Age	Round Barrow	SN79344305
4121	Carreg Garn Fair	Bronze Age	Standing Stone	SN79334310
4125	Dinas Fawr	Prehistoric?; Iron Age?	Defended Enclosure?	SN77324350
5542	St Barnabas'	Post Medieval	Church	SN78124360
5543	Dinas Bach	Iron Age	Defended Enclosure	SN77764318
5546	Cae Carnau	Bronze Age; Unknown	Place Name; Round Barrow	SN78694353
7784	Bryn-poeth-uchaf	Bronze Age	Round Barrow	SN79374403
8172	Cae Clwnyr Eglwys	Post Medieval	Unknown	SN78084356
8880	Nantymwyn;pen Cerrig Mwyn Lead Mine	Post Medieval	Lead Mine	SN7870044600
8935	Pwll Priddog Level	Post Medieval	Lead Mine	SN77654342
13389	White Hall Uchaf	Post Medieval	Farmstead	SN78554485
13391	White Hall Uchaf	Post Medieval	Cultivation Ridges; Lazy Beds; Pillow Mound	SN78624492
13394	Pen-y-darren	Post Medieval	Shaft	SN7866044835
17443	Nantymwyn;pen Cerrig Mwyn Lead Mine	Post Medieval	Lead Mine	SN7857144661
19551		Post Medieval	School	SN78144402
19552	Capel Salem	Post Medieval	Chapel	SN7772843943
19553	Cwrt-y-ffynnon	Post Medieval	Well	SN78664333
20609	Nantymwyn Deep Boat Level	Post Medieval	Lead Mine	SN7812843421
20982	Pwll-priddog;pwl Pradog	Medieval; Post Medieval	Mansion	SN77624347
20983	Nant Y Mwyn House	Post Medieval	Mansion	SN78344357
21835	White-hall-isaf	Post Medieval	Cottage	SN78434475
21836	Miners Arms	Post Medieval	Public House	SN78604377
21837	Vicarage	Post Medieval	Vicarage	SN77944394
21840	Gwern-hirion	Post Medieval	Cottage	SN77414394
21845	Pen-corn-hwrdd	Post Medieval	Cottage	SN77134297
26586	Nantymwyn	Post Medieval	Hush	SN7800044000
26587	Pen-cerrig-mwyn	Post Medieval?	Hush	SN7800044000
26630	Nantymwyn West	Post Medieval	Lead Mine	SN773439

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29410	Rhandirmwyn	Post Medieval	Village	SN785437
29642	Rhandirmwyn Old Dray Cottages	Post Medieval	Level	SN78244375
29687	Royal Oak Inn	Post Medieval	Inn	SN78484373
29688	Nantymwyn Terrace	Post Medieval	Terrace	SN78064367
29689	Pannau Street	Post Medieval	Terrace	SN78574378
29690	Argall Avenue	Post Medieval	Housing Estate	SN78584384
29691	The Old Dray Cottages	Post Medieval	Blacksmiths Workshop; Terrace	SN78204370
29692	Nantymwyn Deep Boat Level Air Shaft; Rhandirmwyn Mine; Nantylai Mine;	Post Medieval	Air Shaft	SN78234379
29693	Rhandirmwyn Mine; Nantylai Mine; Nantymwyn Deep Boat Level Tramway	Post Medieval	Tramway	SN7823043780
29783	Grove Cottage Rhandirmwyn	Post Medieval	Post Office	SN783438
43245	Pwll-priddog	Post Medieval	Barn	SN77624347
43504	Pwllpriddog Barns	Post Medieval	Barn	SN7765943516
55894	Penrhyn	Post Medieval	Farmstead	SN7756142526
55895		Post Medieval	Cottage	SN7789942666
61151	Church of St Barnabas	Post Medieval	Church	SN7812743600
61152	Gorof Melyn	Post Medieval	Cottage	SN7854443656
61153	The Pound	Post Medieval	Pound	SN7854043641
61154	1, Pannau Street	Post Medieval	Terraced Cottage	SN7859043778
61155	Ty'r Ysgol	Post Medieval	School-house	SN7815944018
61156	Nantymwyn Engine House; Pen Cerrig Mwyn Lead Mine Engine House	Post Medieval	Engine House	SN7874744464
61160	2, Pannau Street	Post Medieval	Terraced Cottage	SN7858543782
61161	3, Pannau Street	Post Medieval	Terraced Cottage	SN7857843785
61162	5, Pannau Street	Post Medieval	Terraced Cottage	SN7857343787
61163	7, Pannau Street	Post Medieval	Terraced Cottage	SN7856443791
61164	8, Pannau Street	Post Medieval	Terraced Cottage	SN7855843795
99287	Nantymwyn Upper Boat	Post Medieval	Lead Mine	SN78204466
99288	Nantymwyn Upper Boat Spoil Tip	Post Medieval	Spoil Heap	SN7801444682
99289	Nantymwyn Upper Boat Spoil Tip	Post Medieval	Spoil Heap	SN7807744723
99290	Nantymwyn Upper Boat Spoil Tip	Post Medieval	Spoil Heap	SN7813044720
99291	Nantymwyn Upper Boat Buddles	Post Medieval	Buddle	SN7818644688
99292	Nantymwyn Upper Boat Waterwheel	Post Medieval	Water Wheel	SN7821944675
99293	Nantymwyn Upper Boat Mine Shaft	Post Medieval	Mine Shaft	SN7818544671

Nantymwyn Lead Mine (Deep Boat & Pannau Levels):
Historic Environment Desk-Based Assessment

99294	Nantymwyn Upper Boat Structure	Post Medieval	Mine Structure	SN7822344669
99295	Nantymwyn Upper Boat Building	Post Medieval	Mine Building	SN7827444612
99296	Nantymwyn Upper Boat Structure	Post Medieval	Mine Structure	SN7824344619
99297	Nantymwyn Upper Boat Crushing Mill	Post Medieval	Crushing Mill	SN7823544647
99298	Nantymwyn Upper Boat Building	Post Medieval	Mine Building	SN7828744648
99299	Nantymwyn Upper Boat Building	Post Medieval	Mine Building	SN7831844616
99300	Nantymwyn Upper Boat Level	Post Medieval	Level	SN7838844612
99301	Nantymwyn Upper Boat Air Shaft	Post Medieval	Air Shaft	SN7840044608
99302	Nantymwyn Upper Boat Spoil Tip	Post Medieval	Spoil Heap	SN78374463
99303	Nantymwyn Upper Boat Air Shaft	Post Medieval	Air Shaft	SN7847444594
99304	Nantymwyn Upper Boat Spoil Tip			SN781434
99305	Nantymwyn Upper Boat Spoil Tip	Post Medieval	Spoil Heap	SN78574478
99306	Nantymwyn Upper Boat Crushing Mill	Post Medieval	Crushing Mill	SN7864444775
99307	Nantymwyn Upper Boat Slime Pits	Post Medieval	Slime Pit	SN7862544654
99308	Nantymwyn Upper Boat Mine Workings	Post Medieval	Mine Workings	SN786445
99309	Nantymwyn; Pen Cerrig Mwyn Lead Mine Reservoir	Post Medieval	Reservoir	SN7868544770
99310	Nantymwyn; Pen Cerrig Mwyn Lead Mine Reservoir	Post Medieval	Reservoir	SN7869844846
99311	Nantymwyn; Pen Cerrig Mwyn Lead Mine Spoil Tips	Post Medieval	Spoil Heap	SN788446
99312	Nantymwyn; Pen Cerrig Mwyn Lead Mine	Modern	Mine Building	SN7874444738
99313	Nantymwyn; Pen Cerrig Mwyn Lead Mine Maescarhyg Level	Post Medieval	Level	SN7869744713
99314	Nantymwyn; Pen Cerrig Mwyn Lead Mine Building	Modern	Mine Building	SN7879144710
99315	Nantymwyn; Pen Cerrig Mwyn Lead Mine Reservoir	Post Medieval	Reservoir	SN7881544836
99316	Nantymwyn; Pen Cerrig Mwyn Lead Mine Spoil Tip	Post Medieval	Spoil Heap	SN7883644903
99317	Nantymwyn; Pen Cerrig Mwyn Lead Mine Level Tan	Post Medieval	Level	SN7887844897
99319	Nantymwyn; Pen Cerrig Mwyn Lead Mine West Opencast	Post Medieval	Opencast Lead Working	SN7897844296
99321	Nantymwyn; Pen Cerrig Mwyn Lead Mine Conscience Shaft	Post Medieval	Mine Shaft; Spoil Heap	SN7898044860
99322	Nantymwyn; Pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7900844858
99323	Nantymwyn; Pen Cerrig Mwyn Lead Mine Workings	Post Medieval	Mine Working	SN7896144829

Nantymwyn Lead Mine (Deep Boat & Pannau Levels):
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99324	Nantymwyn; Pen Cerrig Mwyn Lead Mine Reed Shaft	Post Medieval	Mine Shaft	SN7897944821
99325	Nantymwyn; Pen Cerrig Mwyn Lead Mine Dressing Floor	Post Medieval	Dressing Floor	SN7895444802
99326	Nantymwyn; Pen Cerrig Mwyn Lead Mine Workings	Post Medieval	Mine Workings	SN790447
99327	Nantymwyn; Pen Cerrig Mwyn Lead Mine Level Goch	Post Medieval	Level	SN7896944717
99328	Nantymwyn; Pen Cerrig Mwyn Lead Mine Spoil Tip	Post Medieval	Mine Tip	SN7894244691
99329	Nantymwyn; Pen Cerrig Mwyn Lead Mine Footway Level	Post Medieval	Level	SN7885544742
99330	Nantymwyn; Pen Cerrig Mwyn Lead Mine Shaft Newydd	Post Medieval	Mine Shaft	SN7890144731
99331	Nantymwyn; Pen Cerrig Mwyn Lead Mine Circle Shaft	Post Medieval	Mine Shaft	SN7888844611
99332	Nantymwyn; Pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7881344607
99333	Nantymwyn; Pen Cerrig Mwyn Lead Mine New Shaft	Post Medieval	Mine Shaft	SN7879544638
99334	Nantymwyn; Pen Cerrig Mwyn Lead Mine Tip	Post Medieval	Spoil Heap	SN78744463
99335	Nantymwyn; Pen Cerrig Mwyn Lead Mine Crushing Mill	Modern	Crushing Mill	SN7873144588
99336	Nantymwyn; Pen Cerrig Mwyn Lead Mine Structure	Post Medieval	Mine Structure	SN7868344623
99337	Nantymwyn; Pen Cerrig Mwyn Lead Mine Angred North Level	Post Medieval	Level	SN7868244550
99338	Nantymwyn; Pen Cerrig Mwyn Lead Mine Tip	Post Medieval	Spoil Heap	SN7869044506
99339	Nantymwyn; pen Cerrig Mwyn Lead Mine Angred Shaft	Post Medieval	Mine Shaft	SN7873944477
99340	Nantymwyn; pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7886244582
99341	Nantymwyn; pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7883344548
99342	Nantymwyn; pen Cerrig Mwyn Lead Mine Tip	Post Medieval	Spoil Heap	SN7889444535
99343	Nantymwyn; pen Cerrig Mwyn Lead Mine Tip	Post Medieval	Spoil Heap	SN7883544459
99344	Nantymwyn; pen Cerrig Mwyn Lead Mine Lewis' Adit	Post Medieval	Adit	SN7888344484
99345	Nantymwyn; pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7885744404
99346	Nantymwyn ;pen Cerrig Mwyn Lead Mine Cowling's Shaft	Post Medieval	Mine Shaft	SN7884644387
99347	Nantymwyn; pen Cerrig Mwyn Lead Mine Shaft	Post Medieval	Mine Shaft	SN7881644342
99348	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7891344379

Nantymwyn Lead Mine (Deep Boat & Pannau Levels):
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99349	Nantymwyn; pen Cerrig Mwyn Lead Mine Workings	Post Medieval	Mine Workings	SN788442
99350	Nantymwyn; pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7895044436
99352	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7894644268
99353	Nantymwyn; pen Cerrig Mwyn Lead Mine Structure	Post Medieval	Mine Structure	SN7894144252
99354	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7897844266
99355	Nantymwyn; pen Cerrig Mwyn Lead Mine Hushing	Post Medieval	Hush	SN7900544308
99356	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7899344364
99357	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7902244259
99358	Nantymwyn; pen Cerrig Mwyn Lead Mine	Post Medieval	Mine Working	SN7903844284
99359	Nantymwyn; pen Cerrig Mwyn Lead Mine Level	Post Medieval	Level	SN7905944343
99360	Nantymwyn; pen Cerrig Mwyn Lead Mine East Opencast	Post Medieval	Opencast Mine	SN7907844370
99361	Nantymwyn; pen Cerrig Mwyn Lead Mine Hush	Post Medieval	Hush	SN790443
99362	Nantymwyn; pen Cerrig Mwyn Lead Mine Hush	Post Medieval	Hush	SN7911144342
99363	Nantymwyn; pen Cerrig Mwyn Lead Mine Shaft	Post Medieval	Mine Shaft	SN7872944133
99364	Nantymwyn; pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7871944064
99365	Nantymwyn;pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7870643982
99366	Nantymwyn;pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7877844021
99367	Nantymwyn;pen Cerrig Mwyn Lead Mine Shaft	Post Medieval	Spoil Heap	SN7881043999
99368	Nantymwyn;pen Cerrig Mwyn Lead Mine Tip	Post Medieval	Mine Shaft	SN7881843969
99369	Nantymwyn;pen Cerrig Mwyn Lead Mine;pannau Air Shaft	Post Medieval	Air Shaft	SN7886344067
99370	Nantymwyn;pen Cerrig Mwyn Lead Mine;angred South Adit	Post Medieval	Adit	SN7884644111
99371	Nantymwyn;pen Cerrig Mwyn Lead Mine Shallow Adit;level Cadno	Post Medieval	Adit	SN7887644123
99372	Nantymwyn;pen Cerrig Mwyn Lead Mine Old Adit	Post Medieval	Adit	SN7891644151
99373	Nantymwyn;pen Cerrig Mwyn Lead Mine Adit	Post Medieval	Adit	SN7895644186
99374	Nantymwyn;pen Cerrig Mwyn Lead Mine; Panau Street Tip	Post Medieval	Spoil Heap	SN7880843947

Nantymwyn Lead Mine (Deep Boat & Pannau Levels):
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99375	Nantymwyn;pen Cerrig Mwyn Lead Mine; Panau Street Level	Post Medieval	Level	SN7873543865
99376	Nantymwyn;pen Cerrig Mwyn Lead Mine; Panau Street Tip	Post Medieval	Spoil Heap	SN7869043817
99377	Nantymwyn;pen Cerrig Mwyn Lead Mine; Panau Street Shaft	Post Medieval	Mine Shaft	SN7868743797
99378	Nantymwyn	Post Medieval	Trial Level	SN7877343486
99379	Nantymwyn	Post Medieval	Trial Level	SN7878043493
99380	Nantymwyn	Post Medieval	Trial Level	SN7875343417
99381	Nantymwyn Deep Boat Level Air Shaft	Post Medieval	Air Shaft	SN7830743932
99382	Nantymwyn Deep Boat Level	Post Medieval	Level	SN7820343744
99383	Nantymwyn Deep Boat Level Resurgence Pool	Post Medieval	Mining Feature	SN7823743780
99384	Nantymwyn Deep Boat Level Spoil Tip	Post Medieval	Spoil Heap	SN7809443494
99598	Troed-y-rhiw-affallen	Post Medieval	Building	SN7797842315
99599		Post Medieval	Building	SN7845443259
99900	Nantymwyn Deep Boat Level Spoil Tip	Post Medieval	Spoil Heap	SN7800043000
99901	Nantymwyn Deep Boat Level Spoil Tip	Post Medieval	Spoil Heap	SN7800043000
99902	Nantymwyn Deep Boat Level Crushing Mill	Post Medieval	Crushing Mill	SN7800043000
104682	Troed-y-waun-goch	Post Medieval	Farmstead	SN78324339
104990		Post Medieval	Mining Feature	SN7800044000
108170		Post Medieval	Milestone	SN7858343503
108171		Post Medieval	Milestone	SN7759544309
113769	Gwern-pwll	Post Medieval	Farmstead	SN7824842607
113770	Dinas-bach	Post Medieval	Farmstead	SN7786643008
113771	Blaen-y-waun	Post Medieval	Farmstead	SN7812443228
113772	Nant-gwyn			SN7850043253
113773	Perthi-duon	Post Medieval	Farmstead	SN7859343277
113774	Nant-y-mwyn	Post Medieval	Farmstead	SN7838543598
113775		Post Medieval	Farmstead	SN7850843652
113776	Bryn-poeth-uchaf	Post Medieval	Farmstead	SN7967043933
113777		Post Medieval	Farmstead	SN7827143917
113778	Vicarage	Post Medieval	Farmstead	SN7791343945
113783	Fron-goch	Post Medieval	Farmstead	SN7763944554
113786	Pwll-priddog			SN7765843486
113787	Penrhyn	Post Medieval	Farmstead	SN7756142535

Nantymwyn Lead Mine (Deep Boat & Pannau Levels):
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116464		Post Medieval	Footbridge	SN77744361
118179	Anghred	Post Medieval	Farmstead	SN78414456
118180		Post Medieval	Enclosure	SN78474464
125678	Nant Y Mwyn, Pen Cerrig Mwyn Lead Mine	Post Medieval	Settling Tank	SN7873344456
125679	Nant Y Mwyn, Pen Cerrig Mwyn Lead Mine	Post Medieval	Mine Shaft	SN7895544790
125680	Nant Y Mwyn Upper Boat	Post Medieval	Launder	SN7818744672
125681	Nant Y Mwyn Upper Boat	Post Medieval	Building Platform	SN7821244664
125682	Nant Y Mwyn Upper Boat	Post Medieval	Mine Building	SN7823044661
125683	Nant Y Mwyn Upper Boat	Post Medieval	Mine Building	SN7824744660
125684	Nant Y Mwyn Upper Boat	Post Medieval	Mine Building	SN7841044627
125685	Nant Y Mwyn Upper Boat	Post Medieval	Mine Building	SN7842544676
125686	Nant Y Mwyn Upper Boat	Post Medieval	Mine Building	SN7823144670
125687	Nant Y Mwyn Upper Boat	Post Medieval	Bank (Earthwork)	SN7808944678
125688	Nant Y Mwyn, Pen Cerrig Mwyn Lead Mine	Post Medieval	Linear Earthwork	SN7886644855
125689	Angred Upper Adit	Post Medieval	Adit	SN7871344449
125690	Angred Lower Adit	Post Medieval	Adit	SN7867744484
125691	Top Level Roderick's Adit	Post Medieval	Adit	SN7888544363
125692	Roderick's Lower Adit	Post Medieval	Adit	SN7891744160
125693	Roderick's Lower Adit Subsidence Trough and Crown Hole	Post Medieval	Adit	SN7886444222
125694	Cadno Adit	Post Medieval	Adit	SN7886944207
125865	Nant Y Mwyn New Shaft Workings	Modern	Mining Industry Site	SN7878144606
125867	Maescarhyg Level Reservoir	Post Medieval	Reservoir	SN7860444833
125868	Maescarhyg Level Building	Post Medieval	Mine Building	SN7863244807
125869	Upper Boat Level Building 1	Post Medieval	Mine Building	SN7824844651
125870	Upper Boat Level Building 2	Post Medieval	Mine Building	SN7820044653
125871	Upper Boat Level Building 3	Post Medieval	Mine Building	SN7826644649
125872	Upper Boat Level Canal	Post Medieval	Canal	SN7834144591
125876	Pen Cerrig Mwyn Hushing 3	Post Medieval	Hush	SN7897144857
125877	Pen Cerrig Mwyn	Post Medieval	Mine Shaft	SN7899944835
128073		Post Medieval	Sluice	SN7788144723
128598	Rhandirmwyn	Unknown	Findspot	SN7850043500

