

NANTYCREIAU AND BODCOLL MINES, PONTARFYRNACH, CEREDIGION: HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT



Prepared by Heneb – Dyfed Archaeology
For: Coal Authority



Heneb

HENEB – DYFED ARCHAEOLOGY

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by

Philip Poucher MCIfA



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Heneb – Archaeoleg Dyfed
Gynt Ymddiriedolaeth Archaeolegol Dyfed Cyf
Corner House, 6 Stryd Caerfyrddin, Llandeilo, Sir
Gaerfyrddin SA19 6AE
Ffon: Ymholiadau Cyffredinol 01558 823121
Adran Rheoli Treftadaeth 01558 823131
Ebost: info@dyfedarchaeology.org.uk
Gwefan: www.archaeolegdyfed.org.uk

Heneb – Dyfed Archaeology
Formerly Dyfed Archaeological Trust Limited
Corner House, 6 Carmarthen Street, Llandeilo,
Carmarthenshire SA19 6AE
Tel: General Enquiries 01558 823121
Heritage Management Section 01558 823131
Email: info@dyfedarchaeology.org.uk
Website: www.dyfedarchaeology.org.uk

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NANTYCREIAU AND BODCOLL MINES, PONTARFYRNACH, CEREDIGION:

HISTORIC ENVIRONMENT DESK BASED ASSESSMENT

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NANTYCREIAU AND BODCOLL MINES, PONTARFYRNACH, CEREDIGION: HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT

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NANTYCREIAU AND BODCOLL MINES, PONTARFYRNACH, CEREDIGION

HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT

EXECUTIVE SUMMARY

Heneb – Dyfed Archaeology were commissioned by the Coal Authority (CA) on behalf of the joint Metal (Non-Coal) Mine Programme between Natural Resources Wales (NRW) and the CA to provide an historic environment desk-based assessment to inform proposed environmental remediation works, initially comprising the installation of monitoring structures, at Nantycreiau Mine, Nantycreiau West Mine and Bodcoll Mine, near Pontarfyrnach Ceredigion.

The assessment has identified and mapped known and visible archaeological remains within the study areas, assessed their significance and highlighted the potential for further remains to exist. Outline mitigation measures to protect the historic environment are also suggested.

CRYNODEB GWEITHREDOL

Comisiynwyd Heneb – Archaeoleg Dyfed gan yr Awdurdod Glo ar ran y Rhaglen Mwyngloddiau Metel (Heb Glo) ar y cyd rhwng Cyfoeth Naturiol Cymru (CNC) a'r Awdurdod Cymwys i ddarparu Asesiad Desg Amgylchedd Hanesyddol i hysbysu gwaith adfer amgylcheddol arfaethedig, yn cynnwys gosod strwythurau monitro i ddechrau, ym Mwynglawdd Nantycreiau, Mwynglawdd Gorllewin Nantycreiau a Mwynglawdd Bodcoll, ger Pontarfyrnach Ceredigion.

Mae'r asesiad wedi nodi a mapio olion archeolegol hysbys a gweladwy o fewn ardal yr astudiaeth, wedi asesu eu harwyddocâd, ac wedi amlygu'r potensial i olion pellach fodoli. Awgrymir hefyd fesurau lliniaru amlinellol i warchod yr amgylchedd hanesyddol.

1. INTRODUCTION

1.1 Project Proposals and Commission

- 1.1.1 Heneb – Dyfed Archaeology (formerly Dyfed Archaeological Trust - Archaeological Services) were commissioned by the Coal Authority (CA) on behalf of the joint Metal (Non-Coal) Mine Programme between Natural Resources Wales (NRW) and the CA, to prepare a historic environment desk-based assessment on the former Nantycreiau Mine, including Nantycreiau and Nantycreiau West, and Bodcoll Mine, to the east of Pontarfynach, Ceredigion (Figs 1 to 3, SN 7886 8008, SN 7849 7959 and SN 7592 7680 respectively), ahead of proposed remediation works at the site.
- 1.1.2 The assessment covers three separate metal mine sites, all lying on watercourses that feed into the Afon Rheidol at Pontarfynach:
- Nantycreiau Mine (PRN 9178) lies towards the head of the Nant y Creuau Valley. It was worked in the 18th century and whilst there are references to earlier 'ancient' mining at the site, it was worked most intensively from the mid to late 19th century. Mine levels, quarries and an extensive spoil tip survive, along with the remains of several buildings including the crushing house.
 - Nantycreiau West Mine (PRN 25904) lies a few hundred metres further down the valley and comprises some remains of 19th century metal mining, including mine levels and spoil tips. Both Nantycreiau sites lie in an area of forestry plantation.
 - Bodcoll Mine (PRN 5476) lies around 4km to the southwest in the slightly more open Mynach Valley. This metal mine appears to have largely been worked in the 1850s and 1870s, with scattered remnants of mine levels, leats, spoil tips and some building remains. The site currently lies in private farmland.
- 1.1.3 The CA are investigating potential remediation works to reduce metals entering local rivers, in the first instance through the installation of flow monitoring structures and scour protection works.
- 1.1.4 Further sites of interest lie within the vicinity of the three mines and the area falls within a registered historic landscape. As a result, the CA have requested that an archaeological desk-based assessment of the sites be undertaken so as to better assess the potential impact upon the historic environment and inform potential future works.
- 1.1.5 The assessment has been a primarily desk-based study of the proposed work areas and their environs, identifying the following:
- any known archaeological or historical sites within the localities
 - potential setting impacts on designated archaeological assets in the vicinity
 - any historic landscape areas that might be affected by the proposals

The report also assesses the potential for hitherto unknown archaeological remains to be present within the project areas.

1.2 Scope of the Project and Methodology

- 1.2.1 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.

1.2.2 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.

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

1.2.4 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).

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

- Historic Environment Record data from the regional Archaeological Trust;
- 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 project team;
- Identification of any scheduled monuments, listed buildings, registered parks and gardens, registered historic landscapes, historic landscape character areas or conservation areas within or in the vicinity of the site area (Cadw, DAT, NRW);
- Assessment of the archaeological potential of the area; and
- Assessment of potential impacts on any identified remains within the project sites (or possible remains) and likely requirements, if any, for further stages of archaeological work.

- 1.2.6 The assessment focusses on the mine remains but also includes an initial search area of 1km from the centre of the site to identify sites recorded on the Historic Environment Record and other sources, including the potential impact on the setting of high status, designated, historic assets in the surrounding landscape.
- 1.2.7 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

- 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, 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 in Table 1 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*	1536 – 1750	
Modern	20th century onwards	

* Note: The post-medieval and Industrial periods are combined as the post-medieval period on the regional HER, as held by Heneb

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 more recently 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 new Act also amends the *Planning (Listed Buildings and Conservation Areas) Act 1990* and 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.12, 2024) 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 the 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 historic environment is subject to the relevant policies and procedures as laid out in the Ceredigion County Council (CCC) Local Development Plan (LDP) 2007 – 2022. It is referenced throughout the document in numerous policies, emphasising its significance to the county. The main policy references to the Historic Environment are outlined in the strategic policy DM19:

DM19: Historic and Cultural Landscape

Development affecting landscapes or buildings which are of historical or cultural importance and make an important contribution to the character and interest of the local area, will be permitted where the distinctive appearance, architectural integrity or their settings will not be significantly adversely affected. Where possible development should enhance these qualities and special character.

8.167 Policy DM19 recognises that although conserving and enhancing the landscape in general (Policy DM17) is important, certain historic and cultural elements need specific mention because the Ceredigion landscape is rich in evidence from the past. Many of these features are protected as Scheduled Ancient Monuments or included on the Sites and Monuments record [HER] maintained by Dyfed Archaeological Trust and the Royal Commission for Sites and Monuments Wales.

8.168 The Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales highlights what are considered to be the best examples of different types of historic landscape and gardens in Wales. Upland Ceredigion has been identified as a landscape of outstanding historic interest. A good practice guide explains how the Register should be used in assessing the effect of major developments on the historic landscape. Applicants should consult CADW, CCW or one of Wales' archaeological trusts to view this Register.

3 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1 This assessment covers three separate mine sites. The most northerly of the three is the Nantycreiau Mine (SN 7887 8006) which lies towards the northern end of the narrow Nant y Creuau valley. Nantycreiau West Mine is the next site (SN 7848 7959) and lies on the western valley slope a further 250m down the valley. The valley starts around 400m to the north of Nantycreiau as a series of small streams and springs on the southern side of Draws Drum that converge into the steep side valley. The valley sides fall from approx. 520mOD to 370mOD and the Nantycreiau Mine is located at about 350mOD. The valley runs south for around 1km before emptying into the Merin Valley (at approx. 315mOD) running west and south, itself filtering into the Mynach Valley which takes a westerly course to eventually empty into the Rheidol Valley at Pontarfynach, 5.5km to the southwest of the mine site.
- 3.2 The valley slopes are largely covered in coniferous forestry plantation, surrounded by open and semi-enclosed uplands across the higher ground. The site is accessed via forestry tracks through an otherwise sparsely populated landscape. Dispersed farmsteads occupy some of the lower valley slopes of the Mynach and Rheidol Valleys to the south and west, and the Castell Valley to the north. The closest settlement is Ponterwyd which lies 4km to the west, with Aberystwyth lying 20km to the west.
- 3.3 The third site is that of Bodcoll Mine (SN 7592 7681) which lies 4km to the southwest of the Nantycreiau Mine. This mine occupies a slightly more open landscape on the south side of the Mynach Valley, at around 250mOD, although still undulating with rocky outcrops and steep slopes. The mine site follows a short tributary stream which flows around 400m from Bryn Botgoll to the south, into the Afon Mynach to the north, with a steep craggy eastern slope and more undulating ground to the west. The Mynach flows generally westward where it meets the Rheidol at Pontarfynach, 1.7km to the west. The base of the valley is subdivided into small straight-sided field enclosures, with larger enclosures on the craggy higher ground to the south and coniferous forestry plantation to the east.
- 3.4 The farmstead of Botcoll lies around 700m to the southwest, alongside the B4574 which connects the Rheidol Valley to the west with the Ystwyth Valley to the southeast. Further farmsteads are dispersed around the lower valley slopes. Pontarfynach is the closest settlement.
- 3.5 The bedrock geology of this area comprises interbedded mudstones and sandstones of the Devil's Bridge Formation, with bands of mudstone of the Rhayader Mudstone Formation in the Bodcoll Mine area (BGS viewer).

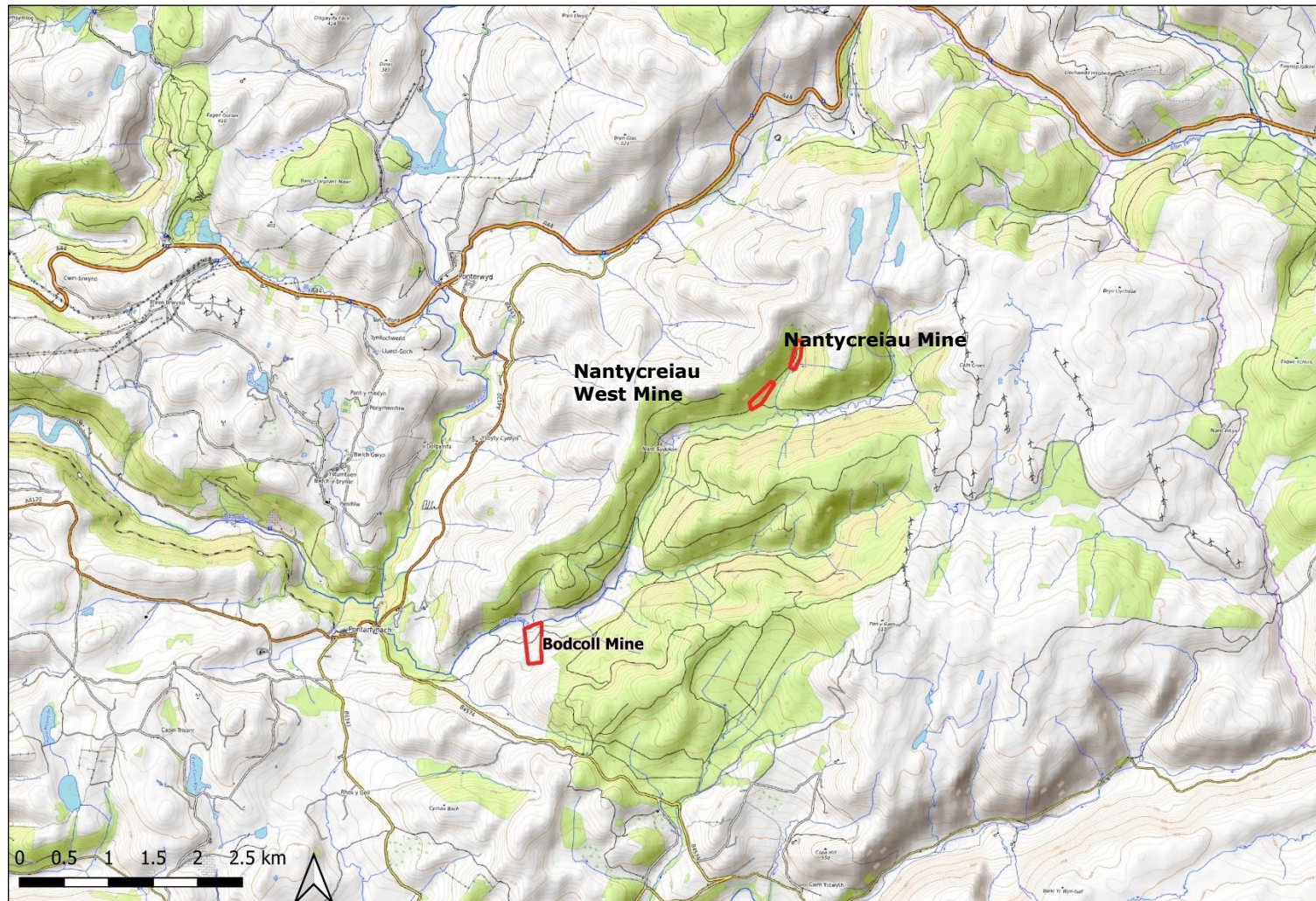


Figure 1: Location map, showing the three mine sites and the regional topography.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 12/03/24

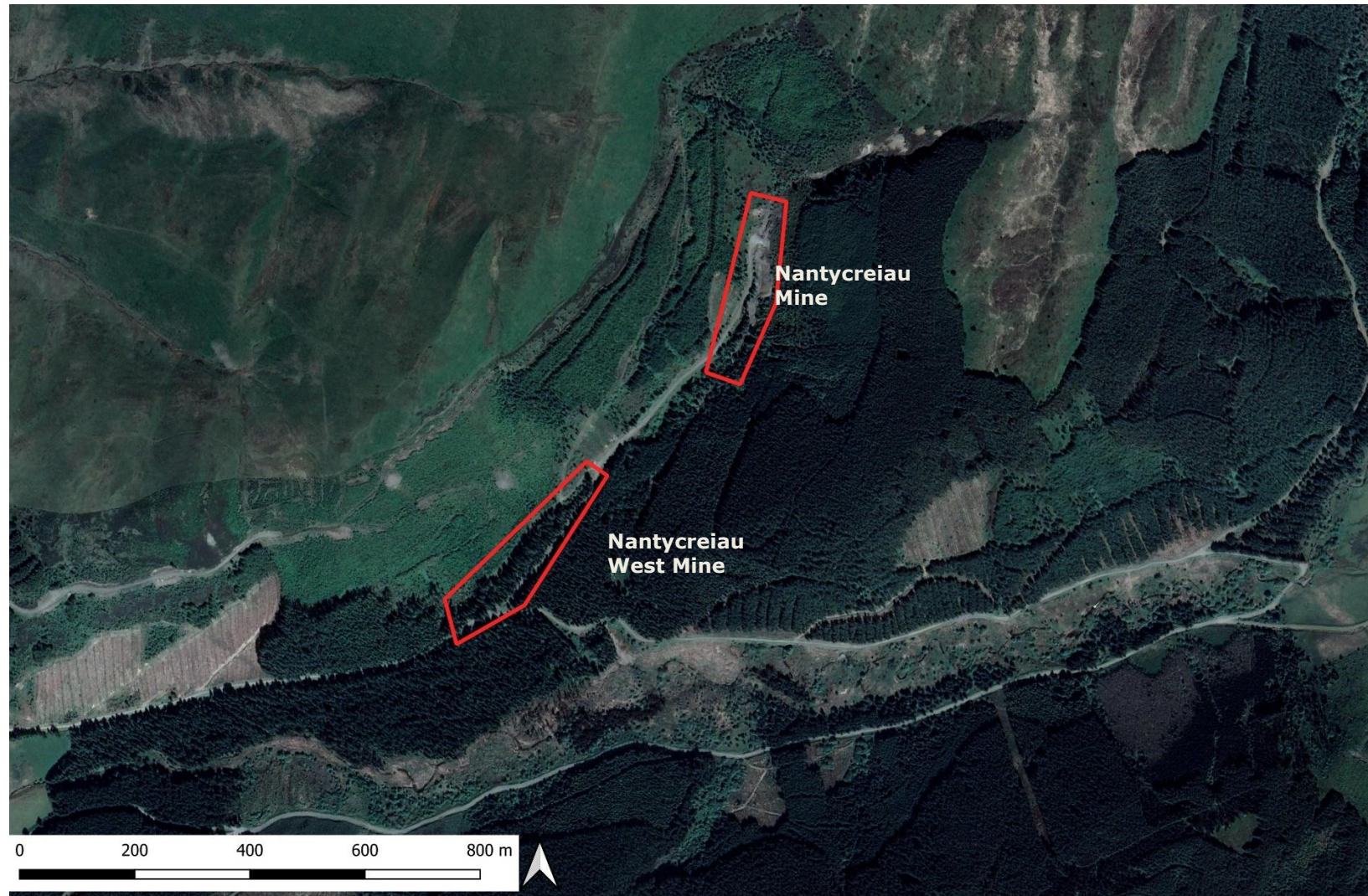


Figure 2: Location map in greater detail, showing Nantycreiau and Nantycreiau West Mines. © Google 2024.

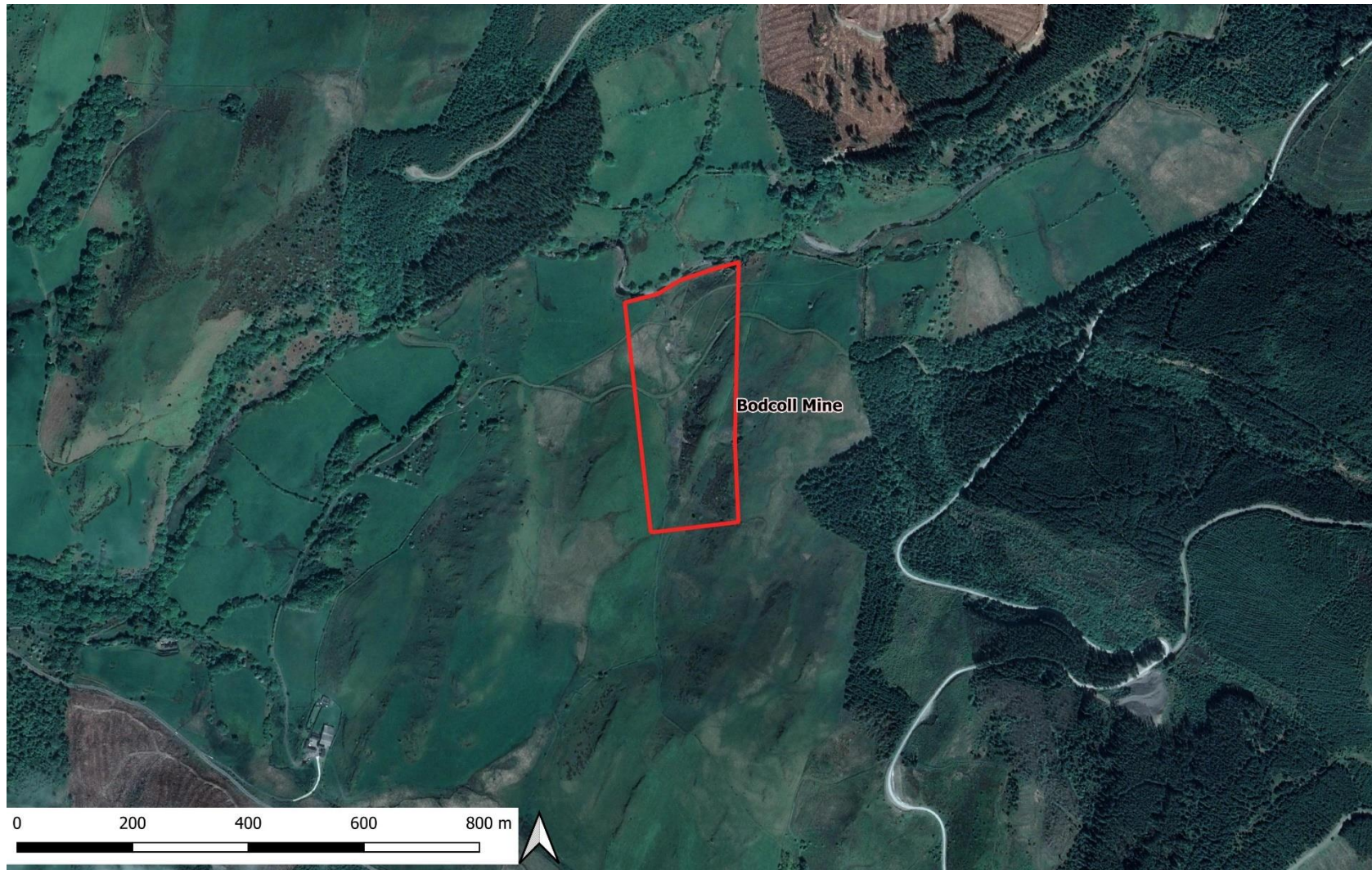


Figure 3: Location map in greater detail, showing Bodcoll Mine. © Google 2024.

4 DESIGNATED HISTORIC ASSETS (Fig 4)

4.1 General

- 4.1.1 A review of several databases was made of historic assets within the 1km radius search area. Designated assets beyond 1km were also considered for potential wider-ranging impacts. These designated assets are described first, as they largely comprise assets with some form of statutory protection.

4.2 Scheduled Monuments

- 4.2.1 Scheduled monuments are historic and archaeological sites considered to be of national importance. They are given legal protection, and consideration of the impact of development upon these sites and their settings are considerations of the planning process.
- 4.2.2 In considering the Nantycreiau Mines there are three scheduled monuments (SM) within the 1km radius study area: **CD180 Esgair Naint Deserted Rural Settlement**, **CD181 Nant yr Helygen Deserted Rural Settlement** and **CD188 Lliest Nantycreuau Deserted Rural Settlement**. The latter is the closest, lying in the lower valley, 120m to the southeast of the Nantycreiau West site. The remaining two both lie on high uplands, 650m to 800m to the northwest of the mine sites.
- 4.2.3 **CD180 Esgair Naint Deserted Rural Settlement** is also recorded on the regional HER as PRN 34903, and individually as PRNs 9423 and 34904 to 34909. The following is the SM description:

The deserted settlement site at Nant yr Helygen comprises a large deserted dwelling constructed on an earthen platform close to the edge of the Nant Helygen. This was either stone walled or at least partially stone walled and has associated with it a small earth banked enclosure, probably used for small scale cultivation. Also present are five earthen platforms of varying sizes and forms which have been built on the slopes overlooking the stream. It is likely that these were constructed in order to support structures built from perishable materials, however a lack of disturbance to the site combined with conditions conducive to preservation could have resulted in survival of buried archaeological evidence concerning the forms of such structures. This settlement may have had several phases of development. Although the main dwelling by the Nant Helygen is likely to have been occupied during the later 17th and early 18th century it is possible that the associated platforms could indicate much earlier habitation of this prime sheltered location. Other platforms are situated to the west, at Esgair Neint.

The site has archaeological importance because of the variety of features present, possibly representing several phases. The monument is of national importance for its potential to enhance our knowledge of settlement organisation. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structure itself may be expected to contain archaeological information concerning chronology and building techniques. A platform house may be part of a larger cluster of monuments and their importance can be further enhanced by their group value. The significance of the site is enhanced by the presence of other platforms at Esgair Neint, which together make this area one in which a remarkably complete historic landscape has apparently survived.

- 4.2.4 **CD181 Nant yr Helygen Deserted Rural Settlement** is also recorded on the regional HER as PRNs 9424 and 34911 to 34919. The following is the SM description:

The deserted settlement site at Nant yr Helygen comprises a large deserted dwelling constructed on an earthen platform close to the edge of the Nant Helygen. This was either stone walled or at least partially stone walled and has associated with it a small earth banked enclosure, probably used for small scale cultivation. Also present are five earthen platforms of varying sizes and forms which have been built on the slopes overlooking the stream. It is likely that these were constructed in order to support structures built from perishable materials, however a lack of disturbance to the site combined with conditions conducive to preservation could have resulted in survival of buried archaeological evidence concerning the forms of such structures. This settlement may have had several phases of development. Although the main dwelling by the Nant Helygen is likely to have been occupied during the later 17th and early 18th century it is possible that the associated platforms could indicate much earlier habitation of this prime sheltered location. Other platforms are situated to the west, at Esgair Neint.

The site has archaeological importance because of the variety of features present, possibly representing several phases. The monument is of national importance for its potential to enhance our knowledge of settlement organisation. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structure itself may be expected to contain archaeological information concerning chronology and building techniques. A platform house may be part of a larger cluster of monuments and their importance can be further enhanced by their group value. The significance of the site is enhanced by the presence of other platforms at Esgair Neint, which together make this area one in which a remarkably complete historic landscape has apparently survived.

- 4.2.5 **CD188 Lliest Nantycreuau Deserted Rural Settlement** is recorded on the regional HER as well, as PRNs 35259 and 35260. The following is the SM description:

The monument comprises the well preserved remains of a deserted rural settlement at Nantycreuau, consisting of a single dwelling house resting on an earthen platform near a stream and associated field or garden plots. The house, of drystone construction, measures c.7.5m x 4.8m and runs east-west across the local contour, with a drainage hood at its eastern, upslope, end and a single entrance on the south. About 4m to the south of the house is a garden plot measuring c.10m square. About 100m further to the south, linked to the house by a trackway which appears to pass above the upper edge of the field boundary, an associated field system contains two or possibly three plots at the foot of a slope which rises to the north-east. The largest field measures c.44m x 20m and shows traces of ridge-and-furrow cultivation. One or perhaps two smaller fields are appended to the west of this parcel, each c.10m x 15m in size. Nantycreuau is a small upland farmstead which could have enjoyed a long period of occupation, potentially beginning in the medieval period. Documents record occupation of the site in 1601 but by the mid 18th century it had been abandoned. The remains survive largely intact and undisturbed.

The monument is of national importance for its potential to enhance our knowledge of medieval settlement. The monument forms an important element within the wider medieval context and the scheduled area may be

expected to contain a wide range of archaeological information, including structural and environmental remains, chronological detail and evidence in regard to construction techniques and agricultural methods. Rectangular huts may be part of a larger cluster of settlements and their importance can be further enhanced by their group value.

- 4.2.6 No further scheduled monuments lie within the 1km search area around the Nantycreiau Mines, and although numerous such remains lie within the larger landscape around the site, it is not considered that any of these are of relevance to the Nantycreiau study site.
- 4.2.7 There are no scheduled monuments within 1km of the Bodcoll Mine site. Whilst others do lie in the wider surrounding landscape, no further scheduled sites are considered to be of relevance to the Bodcoll study area.

4.3 Registered Historic Landscapes

- 4.3.1 Registered historic landscapes are landscapes of historic interest included on the Register of Landscapes of Historic Interest in Wales (Cadw 1998). The landscape boundaries and associated details have been created as non-statutory advice to assist decision makers and landscape managers ensure that the historic character of the landscape is sustained, and that where change is contemplated, it is well-informed.
- 4.3.2 The Nantycreiau and Bodcoll mine sites all lie within the **Upland Ceredigion Landscape of Outstanding Historic Interest (HLW (D) 2)**. This area is important for prehistoric archaeology and mining features. It includes the rocky summits of Plynlimon and is a remote, wild, expansive area of rugged moorland and blanket bog with dramatic scarp slopes along western fringes. It extends from Nant-y-moch reservoir in the north to the Tywi Forest in the south, and from the head of the Ystwyth and Teifi rivers in the east to Trawscoed and Penrhyn-coch in the west. The whole area is rich in diverse and often visually dramatic evidence of land use and the exploitation of natural resources, from the prehistoric period to the present, and it also includes several sites with important historic artistic associations. The Ystwyth valley provides one major east – west route, with mountain scenery, open upland moors, rivers and waterfalls that inspired many 18th century travellers and artists. The post-medieval metal mining industry forms one of the major historic components of this landscape.
- 4.3.3 In order to better characterise the historic environment of the historic landscape it has been sub-divided into a number of historic landscape character areas (HLCA). The Nantycreiau mines lie within **HLCA 6 Mynydd y Ffynnon**, and the Bodcoll mine lies within **HLCA 57 Mynach Valley** along the base of the valley, and **HLCA 129 Brignant** on the rising ground to the south.
- 4.3.4 **HLCA 6 Mynydd y Ffynnon** is an extensive tract of upland coniferous plantation established over open moorland during the second half of the 20th century. There are a few open areas, including Gelmast, an early 19th century farm built by Thomas Johnes of Hafod. During the medieval period this area would have lain within the extensive Cwmystwyth Grange of Strata Florida Abbey. After the Dissolution (1536-1541) much of the area likely passed to the Herbert family, and subsequently to Thomas Johnes who enclosed areas of upland and established large tracks of forestry in the early to mid-19th century, which survived until World War I. A few metal mines lie on the northern periphery of this area, including Nantycreiau. In the 1950s the Forestry Commission purchased the Hafod Estate and began an extensive programme of upland afforestation. The coniferous forest now forms the main visible characteristic of this area, with archaeological remains focussing on post-medieval deserted rural settlements and metal mines.

- 4.3.5 **HLCA 57 Cwm Mynach** historic landscape character area lies across the floor and spreads up the lower valley sides of a steep-sided upland valley. Hedges of the small, irregular fields and stands of deciduous trees lend a wooded aspect to the landscape. The settlement pattern is of dispersed, upland farms. This area shares the same history as the previous area but by the end of the medieval period it is likely to have been subdivided into farms and enclosed fields within the Cwmystwyth Grange.
- 4.3.6 **HLCA 129 Brignant** includes upland rough grazing and peaty hollows with improved grazing on lower-lying flanks, and small coniferous plantations as the main components. Abandoned farms and cottages and the remains of lead mines testify to a once much more actively populated landscape. As with the other areas this was once part of the medieval Cwmystwyth Grange, acquired by the Herbert family after the Dissolution, whereupon the land was divided into farms leased out and farmed on an individual basis. Hafod estate maps of the 1830s demonstrate that all the farms in this area had been established by then. Bodcoll Mine is the main mining feature.

4.4 Listed Buildings

- 4.4.1 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* and II), Grade I being the highest. A listed building may not be demolished, extended or altered without special permission from the local planning authority.
- 4.4.2 There are no listed buildings with the Nantycreiau Mine study site, and no listed building within the surrounding landscape that may be affected.
- 4.4.3 Within the Bodcoll Mine study site there is a collection of listed buildings centred on the Bodcoll farmstead, 700m to the southwest of the mine. They include the following Grade II listings:
- The early 19th century farmhouse (**ref.85284**)
 - The mid to late 19th century large haybarn (**ref.85285**)
 - The mid to late 19th century cartshed and stable (**ref.82586**)
 - The mid to late 19th century cowshed range (**ref. 82587**)
 - The early to mid 19th century corn barn and stable (**ref. 82588**)
 - The mid to late 19th century pigsties (**ref.85289**).
- 4.4.4 No further listed buildings lie within the Bodcoll Mine study area.

4.5 Conservation Areas

- 4.5.1 Conservation areas are designated to preserve and enhance the special character of areas of architectural or historic interest. The purpose of designating a conservation area is to provide the local planning authority with an additional measure of control over an area that they consider to be of special historic and/or architectural value.
- 4.5.2 There are no conservation areas within the study area, the nearest being over 12km to the east.

4.6 Registered Historic Parks and Gardens

- 4.6.1 Parks and gardens of special historic interest in Wales are included on a Register of Historic Parks and Gardens, designed to provide comprehensive information to

assist decision makers protect and preserve essential features of these parks and gardens, and enable their significance and character to be protected through the planning system.

- 4.6.2 There are no registered parks and gardens within the study areas the mines. The closest such site lies 3km to the south of Bodcoll Mine and comprises the extensive Hafod estate (PGW (Dy) 50 (CER)), a Grade I picturesque landscape with walks and a kitchen garden. It is described as one of the most important and influential picturesque landscapes of the late 18th century in Britain. Both sites would once have lain within the extensive lands that constituted the Hafod Estate of the 18th and 19th centuries but the current registered parkland area is unlikely to be affected by any works within the mine sites.

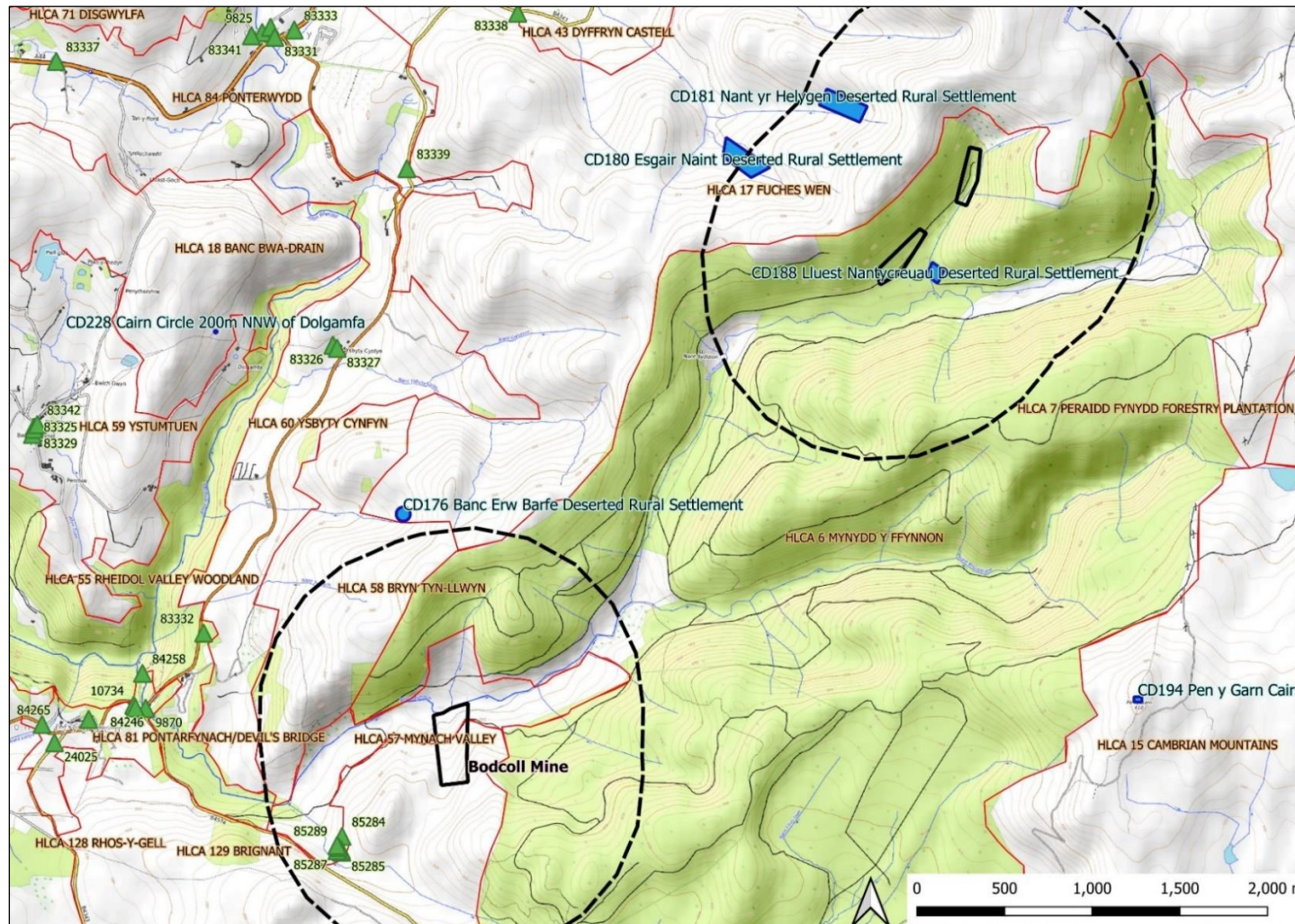


Figure 4: Location map with the mine sites and 1km study areas represented by the dotted lines. The map shows designated assets mentioned in Section 4 above. Scheduled monuments in blue, listed buildings in green and HLCA in red.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 12/03/24

5 NON-DESIGNATED HISTORIC ASSETS (Tables 2 and 3, Figs 5 and 6)

5.1 General

- 5.1.1 A search of the regional HER and other databases was made for the 1km study area around the proposed project sites.
- 5.1.2 The HER records 148 assets within the search area. The vast majority of these records relate to individual features of the post-medieval metal mining landscape and include the Nantycreiau and Bodcoll mine sites. They serve to highlight the importance of the archaeological remains of the post-medieval mining landscape.
- 5.1.3 The following information is laid out chronologically to provide a brief archaeological and historical background for the area for each period, along with the relevant HER entries pertaining to that period. The historical development of the mines are included, but a detailed description of individual features is outlined later in the report (Section 7).

5.2 Palaeolithic, Mesolithic and Neolithic

- 5.2.1 There are no sites of these periods recorded within the 1km study area, and even in the wider landscape evidence of activity during these periods is relatively scarce. Around 1.2km to the south of Bodcoll Mine there is a record of a possible Mesolithic mace-head (PRN 11421). Some evidence of potential activity during the Neolithic period is recorded to the west, with stone circles recorded at Ysbyty Cynfyn in the Rheidol Valley and near Dyffryn Castell 2 to 2.5km to the west, but generally within the current known archaeological record the potential for archaeological remains of these periods in the immediate vicinity appears very low.

5.3 Bronze Age

- 5.3.1 During the Bronze Age there is a significant increase in the number of archaeological sites recorded across the wider landscape, with a broad range of activities including burial mounds, ritual sites, burnt mounds, hut circles, artefacts and even copper mining in the Cwmystwyth Valley area to the south. This would suggest an increase in local populations and a more intensive use of the local landscape.
- 5.3.2 There are however only three sites that lie within the 1km search areas and all are concentrated around Bodcoll Mine. Around 300m to the southwest of the mine lies a possible round barrow (PRN 42132), a low circular mound approximately 10m in diameter on elevated ground that may mark the site of Bronze Age burials. There is some degree of uncertainty surrounding this site however, given the prevalence of later mining remains and the potential for it to be linked to that instead, but a possible standing stone (PRN 48407) lies nearby. Standing stones are somewhat enigmatic features and many are likely to have changed function and significance through time. During the Bronze Age many appear to have been part of a funerary and ritual landscape, and excavation has shown some to be just one element of a series of buried associated remains. Such stones are often sited in prominent locations, this one is situated on the high point of a local saddle of land. A similar possible standing stone is recorded around 150m to the northeast of Bodcoll Mine at Llaneithyr (PRN 42134), although this may also be associated with a later medieval religious site.

5.4 Iron Age and Roman

- 5.4.1 There is an unusual paucity of recorded Iron Age sites within the local landscape which would suggest a dramatic shift in local populations from the preceding Bronze Age and a very low potential for Iron Age remains within the mine sites.
- 5.4.2 There is also little evidence of activity during the Roman period within the local area, however 3.8km to the northwest of Nantycreiau lies Cae Gaer Roman fort and 9.5km to the southwest of Bodcoll lies Trawscoed Roman fort. The most direct route between these two forts runs along the Merin and Mynach Valleys, with sections of existing bridleways and farm tracks suggested as the possible route of a connecting Roman road (PRN 106535). This course runs to the south of the Nantycreiau Mines but includes the track that passes through the lower end of the Bodcoll Mine site, increasing the potential for Roman-era archaeological remains within the Bodcoll area.
- 5.4.3 Mining in Cwmystwyth, around 5km to the southeast of Bodcoll, may also have restarted during the Roman period, and it is possible the route between the forts took a slightly less direct route to run to the south, down the Ystwyth Valley (which is also generally easier to traverse) and connecting to this mining activity.

5.5 Early Medieval and Medieval Periods

- 5.5.1 There is a suggestion that an area on the north bank of the river, opposite Bodcoll Mine, may be the location of an early medieval ecclesiastical site (PRN 33255), based on the farm name 'Llaneithyr'. The Llan element suggests there was an ecclesiastical origin to the name and a nearby holy well is recorded (PRN 33256) called 'Cae Ffynnon Saint', with a possible cemetery site (PRN 33257) 1km downstream. There is no direct or historical evidence to link this to an early medieval ecclesiastical centre but the cemetery site, as suggested by its name 'Cae'r Fynwent Fach' and a local tradition of slab or cist burials, does lie within a former sub-circular field reminiscent of other early medieval ecclesiastical sites.
- 5.5.2 Throughout much of the medieval period the area was part of the extensive Cwmystwyth grange (PRN 12453) belonging to Strata Florida Abbey, reflected in names such as the Afon Mynach. The grange would largely have been managed as grazing and settlement may have been small-scale and dispersed but evidence of potentially contemporary small rural settlements, dwellings and platforms are a relatively common feature of the local landscape.
- 5.5.3 The scheduled settlement sites (CD180, CD181) in the small stream valleys to the west of the Nantycreiau Mines may have their origins in the medieval period, although many of the deserted rural settlements are thought to be slightly later.
- 5.5.4 There are similar platform sites dotted around the Bodcoll Mine area, although generally seemingly more dispersed (PRNs 34890, 35283, 42119, 42123, 42125, 42126, 42127 and 42128). These sites have not been investigated archaeologically and so their true dates are uncertain; as previously noted, some are thought to be post-medieval features. However, pottery found in the vicinity of PRN 42119 appeared to be medieval in date and these sites could relate to the management of the monastic lands.
- 5.5.5 Although generally the potential for medieval archaeological remains is increasing there is still little positive indication for medieval activity within the Nantycreiau Mines area. Within and around Bodcoll however the potential appears increased, due to both the spread of possible building platforms, and the potential ecclesiastic site of Llaneithyr on the opposite banks of the river.

5.6 Post Medieval and Modern Periods

- 5.6.1 It is likely that upland farming and open grazing continued in the Nantycreiau area throughout much of the post-medieval period. The recorded post-medieval archaeological record in this area is almost exclusively split between the deserted rural settlement sites, of which the scheduled sites (CD180, CD181 and CD188) represent the best preserved collections, and the metal mining sites.
- 5.6.2 These archaeological remains are also prevalent in the Bodcoll area, with platforms, shelters, enclosures, mounds, middens and charcoal burning sites all recorded across the landscape. By the early post-medieval period this area had been subdivided into individual farms (HLCA description) and it is likely therefore that places such as Bodcoll Farm (PRN 33200) were established during this period, even if the current visible (and listed) remains of the farmstead are generally 19th century in date. Other farmsteads (PRNs 9150, 33198 and 125362) and mills (PRNs 5477, 19816 and 34892) illustrate a continued agricultural use of the landscape throughout the post-medieval period and through to the present day.
- 5.6.3 Remains of the metal mining industry are a very prominent component of the local archaeological record. This part of Ceredigion lies on the Central Wales Orefield and consequently there are a great number of mine complexes in the landscape. Lead was the main mineral being mined, although zinc and silver were also being extracted, zinc being particularly prominent in the Nant y Creiau valley. A large number of HER records describe individual features associated with these mines, resulting from previous site surveys around Bodcoll (Protheroe-Jones 1993) and Nantycreiau (Sambrook 1997, Protheroe-Jones 2011). Mine shafts, levels, tramways, spoil heaps, a crushing mill, quarries, dressing floor and various buildings are recorded at Nantycreiau Mine (PRNs 36755 to 36765, 102697 and 102702), with further remains extending up the valley to the northeast but outside the proposed development area. At Nantycreiau West several mine levels are recorded (PRNs 36805 to 36807) but all generally lying just above the proposed development area. At Bodcoll individually described features include mine levels, buildings, ore bins, leats and spoil tips (PRNs 42124, 93857 to 93868), all largely within the proposed development area. These features are described in more detail later in the report (Section 7) but an outline history of the sites is provided below.
- 5.6.4 From the late 16th century and during much of the 17th century the Crown laid claim to all mineral deposits yielding silver or gold, and silver had been identified within the hills of Ceredigion. In the late 1560s Queen Elizabeth established the Society of Mines Royal, one of two mining monopolies in England and Wales. By the early 17th century Ceredigion was becoming one of its main centres of operation with characters such as Sir Hugh Myddleton and Thomas Bushell heavily involved in the mining operations. By the end of the 17th century this monopoly was being challenged by prominent local landowners wanting to exploit the mineral resources across their vast estates, leading to the 'Mines Royal' Acts of 1688 and 1693 which restored mineral rights to the land owner, although the Crown retained many of its rights to the minerals of this particular area.
- 5.6.5 Nantycreiau Mine (PRN 9178) is thought to be one of the earliest mines in the area. It was worked in the mid-18th century by Lewis Morris, at which point earlier 'ancient' workings were noted. These earlier workings were described as being in the bed of the valley, drowned, and about 40 to 50m long, following a vein both east and west. The full nature and location of these 'ancient' workings is unclear however as their remains have not been located, and such an epithet has been used in these early mining records to refer to everything from Roman mining remains to shallow medieval mines, and the initial royal and private mines

of the 17th and earlier 18th centuries. However, Hughes (1990) suggests that these workings are indeed ancient, potentially Roman, as the site was not known to the Society of Mines Royal nor the subsequent Company of Mine Adventurers of the 16th and 17th centuries. It is likely much of these workings were lost to subsequent developments.

- 5.6.6 In the 1740s these 'ancient' workings were revived by Lewis Morris, the Deputy Crown Steward for Cardiganshire. Morris subsequently leased the mine to a London merchant called John Vaughan. By the early 1750s however one of the major local landowners, Thomas Powell of Nanteos, had instructed some of his miners to start working the mine, prompting Morris to threaten Powell with legal action if he did not stop. This dispute illustrates that there was still much dispute between the Crown and local landowners about who could profit from these mines, but also serves to have restricted workings at the mine during this period. At Nantycreiau it would appear lead and zinc (calamine) were the main ores being mined at this time, with zinc continuing to be the prominent ore extracted.
- 5.6.7 The mine is mentioned briefly by Meyrick in 1810, who states the lode was yielding 25% blende (zinc) and 2% galena (lead), the rest being quartz. At this time Lord Powys held the grant from the Crown but leased the mine to Job Sheldon of Aberystwyth. It does not appear to have been intensively worked at this time however, as shortly after Walter Davies records the mine as being under water (Hughes 1990).
- 5.6.8 Around 1840 the mine lease was taken up by Crockford and Salmon who ran the mine until 1859 when the lease was transferred to T a H Jones & Co. H.C.Salmon was a mining engineer and he likely took on the lease of the mine in the late 1830s, bringing onboard William Crockford as a financier. In the early 1840s the mine appears to have been profitably selling many tons of blende, and Bick (1974) suggests the mine was employing around 50 people at this time, however a dispute between Salmon and Crockford appears to have left Crockford with Nantycreiau Mine, considered the least profitable of their holdings, and the loss of large sums of money which apparently contributed to his death in 1844 (Hughes 1990). The mine production appears relatively good in 1845 however, with 120 tons of ore listed (Burt et al, 71); this dropped to 17 tons by 1848. The mine was examined in 1849 by the Cardiganshire Crown Mines Co. Ltd which recorded the mine sunk to 15 fathoms. Although the mine was considered to be potentially profitable it appears there was little interest in working it, with the focus shifting to the more accessible Bodcoll Mine to the southwest (Hughes 1990).
- 5.6.9 Work appears to have restarted in 1855, with good returns of lead and zinc recorded by the time the Joneses took over in 1859. The greatest annual output was recorded in their first year, after which it gradually diminished until they relinquished their lease in 1865. After this date the mine appears to have been idle (Burt et al, 71), despite still containing a rich zinc lode (Spargo 1870). During this period the mines were being fed by a series of leats, many kilometres long, from a number of lakes in the Llynoedd Ieuan area to the northeast. The leat feeding the Nantycreiau Mine would eventually discharge into the Castell catchment area to the west.
- 5.6.10 In 1880/81 the Nantycreiau Mining Company, under Captain Robert Uren, started production at Nantycreiau once more. With the exception of 1886, regular production continued until 1895, typically employing around 10 to 12 men (Hughes 1990), although peaking at 20 in 1882 (Burt et al, 72). In 1883 the lease was taken over by George Green of Aberystwyth Foundry, who had also been running Bodcoll to the southwest, in partnership with T.S.G. Kirkpatrick. It would appear the mine just about covered its cost during the 1880s (Hughes

1990). Output was falling by the early 1890s, with the number of employees down to seven in 1890-91, of which only two actually worked underground. In 1895 George Green died and his son William Green took over. William attempted to revive fortunes at the mine in 1899 but was unsuccessful. In 1900 he went into partnership with Captain John Owen but work at Nantycreiau was confined to 1901-02 and 1905-09 when Alf Jenkins and his uncle worked there (Hughes 1990). The machinery described at the site by Alf Jenkins appeared relatively basic. Two waterwheels are recorded, one pumping from the 30 fathom level, possibly using a rag and chain pump, the other likely to have been a kehrrad type of reversing wheel. Timber ladders were used and transport was via a mix of barrows and front tipping waggons running along iron or timber rails. Flash flooding was an issue for the site, capable of washing machinery away.

5.6.11 Jones (1922) indicates that plans of the mine show four adits driven east and one west from the valley:

- No.1 (Deep Adit) is located at about 375mOD and about 350m long.
- No.2 Adit extends around 20m
- No.3 Adit extends around 45m
- No.4 Adit, located above Deep Adit, extends about 60m
- The western adit extends around 90m with a shaft sunk close to its mouth

A pumping shaft was sunk round 260m east of Deep Adit, with a drawing shaft a little further west, but these apparently do not reach the surface.

5.6.12 The 1845 Geological Survey map notes lodes to the south of Nantycreiau (Hughes 1990), which may be an indication of the opening up of the Nantycreiau West Mine. The mine was operated alongside the main Nantycreiau Mine, therefore records of its operation are difficult to establish. In 1869 the workings to the west of Nantycreiau were formed into a separate legal arrangement and let by the Crown to Captain James Lester (Hughes 1990) for 21 years but there appears to be little record as to how extensive these workings were and when work came to a close.

5.6.13 Bodcoll Mine (PRN 5476) is also said to have been opened up in the 18th century (HLCA description) but details of these early workings appear scant. The main period of workings date from the 19th century.

5.6.14 There are references to work at the mine by Evan Richards at some point prior to 1836 (County Archives H/A/12/10) but the nature and extent of these workings is unclear. In 1849 the South Wales Mining Company bought Bodcoll from Vaughan Prance. They began operations within the small stream valley, possibly around PRNs 93866/93867, driving in both shallow and deep adits but apparently with little success, ending their explorations here by the end of 1849 (Hall 2003, 22). In the meantime, they were also working the Mynach Vale mine, around 1.5km to the northeast, and in 1850 Lewis Pugh started work on the Llaneithr Mine (PRN 25911) between the two. The South Wales Mining Co. sank a shaft close to the Llaneithr Mine to try and find the same lode but this too was unsuccessful. In 1853 the South Wales Mining Co. changed its name to the Bodcoll Mining Company but during this time they mainly worked the Dolwen Mine further to the northeast, on the north side of the river. In 1856 the company split, with the Dolwen Lead Mining Company Ltd now operating Dolwen as a separate venture to Bodcoll.

5.6.15 By the late 1860s the area around Bodcoll was owned by John Barton Balcombe, who owned several mines in the area. In around 1868-69 he granted a licence to a party of working miners to explore the mine. They were successful in finding

some good ore and sold their rights to Robert Girdwood (Hall 2003, 25). He developed the mine fairly extensively throughout the early 1870s, under the name Gertrude, and engaged George Green of Aberystwyth to put up one of the latest dressing plants. Green also supervised the driving of a cross cut, deep adit at the mine in 1870, which measured 3m by 2.5m, with a fine masonry portal, later destroyed by the Forestry Commission in the late 1950s (Hughes 1987). Green took over the management of the site in 1871 from Robert Northey and became joint owner in 1874 (Burt et al, 5, 50). Wide lodes of lead ore were observed, with lead ore returns reaching a peak in 1873. The following year the mine also produced 84 tons of silver ore, the only year in which silver is listed. The lodes did not however prove to be extensive and work came to an end after 1876. Some small-scale work was carried out in subsequent years but this appears to have been negligible. In 1890-92 the mine was owned by Cardigan Consolidated Lead Mining Co. In 1890 two employees are recorded, both on the surface. The following year the two employees are recorded working underground, but presumably the return was negligible. In 1893 the mine was owned by Thomas Ward (Burt et al, 5) but returns are not noted.

Table 2: All sites recorded on the HER in the Nantycreiau Area

PRN	Name	Type	Period	NGR
9178	Nant Y Creiau; Nantcria; Nantcriau	Lead Mine; Zinc Mine	Post Medieval	SN791801
9423	Nant Helygen	Long Hut	Medieval; Post Medieval	SN78108045
25902	Nant-syddion	Lead Mine	Post Medieval	SN7739478935
25903	Nant-syddion North	Lead Mine	Post Medieval	SN7774579220
25904	Nantycreiau West; Nantycria West	Lead Mine; Zinc Mine	Post Medieval	SN782797
25905	Esgair Gwinion; Esgair Wnion	Lead Mine	Post Medieval	SN780799
25907	Dolwen; Dolwen Consols	Lead Mine	Post Medieval	SN7813278396
25908	Dolwen East	Lead Mine	Post Medieval	SN784784
33169	Lluest Yr Ochr	Deserted Rural Settlement	Post Medieval	SN787808
33191	Dolwen	Farmstead	Post Medieval	SN777786
34903	Nant Yr Helygen	Deserted Rural Settlement	Medieval; Post Medieval	SN78248043
34904	Nant Yr Helygen	Platform	Medieval; Post Medieval	SN78058050

Nantycreiau and Bodcoll Mines, Pontarfyrnach:
Historic Environment Desk-Based Assessment

PRN	Name	Type	Period	NGR
34905	Nant Yr Helygen	Platform	Medieval; Post Medieval	SN78118052
34906	Nant Yr Helygen	Enclosure	Medieval; Post Medieval	SN78138058
34907	Nant Yr Helygen	Platform	Medieval; Post Medieval	SN78208043
34908	Nant Yr Helygen	Platform	Medieval; Post Medieval	SN78228043
34909	Nant Yr Helygen	Platform	Medieval; Post Medieval	SN78248043
34914	Neint	Platform	Medieval; Post Medieval	SN77648015
34915	Neint	Platform	Medieval; Post Medieval	SN77618008
34916	Neint	Platform	Medieval; Post Medieval	SN77598012
34917	Neint	Platform	Medieval; Post Medieval	SN77688011
34918	Neint	Platform	Medieval; Post Medieval	SN77698010
34919	Neint	Platform	Medieval; Post Medieval	SN77608015
35259	Nantycreiau	Deserted Rural Settlement	Post Medieval	SN78657953
35260	Nantycreu	Field System	Post Medieval	SN78687951
35924	Nantycreiau Trials	Trial Mine	Post Medieval	SN7940080400
36746	Nantycreiau	Spoil Heap	Post Medieval	SN7928580340
36747	Nantycreiau	Level	Post Medieval	SN7923480338
36748	Nantycreiau	Spoil Heap	Post Medieval	SN7917080330
36749	Nantycreiau	Level	Post Medieval	SN7914080330
36750	Nantycreiau	Level	Post Medieval	SN7913080280
36751	Nantycreiau	Engine Shaft; Mining Feature	Post Medieval	SN7908080250
36752	Nantycreiau	Level	Post Medieval	SN7907980240

Nantycreiau and Bodcoll Mines, Pontarfyrnach:
Historic Environment Desk-Based Assessment

PRN	Name	Type	Period	NGR
36753	Nantycreiau	Level	Post Medieval	SN7894080230
36754	Nantycreiau	Tramway	Post Medieval	SN7903080230
36755	Nantycreiau	Tramway	Post Medieval	SN7892580016
36756	Nantycreiau	Spoil Heap	Post Medieval	SN7892080012
36757	Nantycreiau	Shaft	Post Medieval	SN7890580180
36758	Nantycreiau	Crushing Mill	Post Medieval	SN7891080140
36759	Nantycreiau	Quarry	Post Medieval	SN7890580015
36760	Nantycreiau	Dressing Floor	Post Medieval	SN7887080120
36761	Nantycreiau	Drain	Post Medieval	SN78878008
36762	Nantycreiau	Mine Building	Post Medieval	SN78868007
36763	Nantycreiau	Spoil Heap	Post Medieval	SN78918007
36764	Nantycreiau	Shaft	Post Medieval	SN7896080240
36765	Nantycreiau	Mining Feature	Post Medieval	SN7887080009
36766	Nantycreiau	Level	Post Medieval	SN7900080021
36805	West Nantycreiau	Mining Feature	Post Medieval	SN7819079725
36806	West Nantycreiau	Level	Post Medieval	SN7827079730
36807	West Nantycreiau	Level	Post Medieval	SN7845879734
97831	Nant Y Creiau; Nantcraia; Nantcraiau	Leat	Post Medieval	SN79218048
97832	Nant Y Creiau; Nantcraia; Nantcraiau	Leat	Post Medieval	SN79168043
97834	Nantycreiau West; Nantycraia West	Level	Post Medieval	SN78707975
102696	Nantycreiau	Level	Post Medieval	SN79288036
102697	Nantycreiau	Magazine	Post Medieval	SN78908016
102698	Nantycreiau	Platform	Post Medieval	SN78988026

PRN	Name	Type	Period	NGR
102699	Nantycreiau	Wall	Post Medieval	SN79038027
102700	Nantycreiau	Bench	Post Medieval	SN79128034
102701	Nantycreiau	Bench	Post Medieval	SN79178034
102702	Nantycreiau	Bridge	Post Medieval	SN78928018
129517	Nant y Creiau	Sheep Fold	Post Medieval	SN7865479555

Table 3: All sites recorded on the HER in the Bodcoll Area

PRN	Name	Type	Period	NGR
5476	Bodcoll Mine; South Wales Mine; Gertrude; Bodcote; Devil's Bridge	Lead Mine	Post Medieval	SN75937691
5477	Bridge Mill	Mill	Post Medieval	SN757771
9150	Aberhirnant; Aber Rhuddnant	Farmstead	Post Medieval	SN76467710
9377	Gwar-rhos	Cottage	Post Medieval	SN75707581
19816	Bodcoll Mill	Woollen Mill	Post Medieval	SN74917650
25911	Llaneither Mine; Aber Rhuddnant; Llaneithyr	Lead Mine	Post Medieval	SN76557702
25912	Bodcoll West	Metal Mine	Post Medieval	SN756767
25985	Llaneithyr North	Metal Mine	Post Medieval	SN759777
25988	Gwar-rhos	Metal Mine	Post Medieval	SN758763
33198	Llaneithyr	Farmstead	Post Medieval	SN761772
33200	Bodcoll	Farmstead	Post Medieval	SN752762
33255	Llaneithyr	Ecclesiastical Establishment	Early Medieval; Medieval	SN761772
33256	Cae Ffynnon Saint	Holy Well	Medieval	SN76087715
33257	Mynwent Fach	Cemetery	Early Medieval; Medieval	SN75107655

PRN	Name	Type	Period	NGR
34878	Coed Ty'n Llwyn	Charcoal Burners Site	Post Medieval	SN74837713
34879	Coed Bryn Ty'n Llwyn	Charcoal Burners Site	Post Medieval	SN74907712
34884	Bryn Ty'n Llwyn	Deserted Rural Settlement	Medieval; Post Medieval	SN75387750
34885	Bryn Ty'n Llwyn	Boundary Bank	Post Medieval	SN75387750
34886	Bryn Ty'n Llwyn	Platform	Medieval; Post Medieval	SN75387750
34887	Bryn Ty'n Llwyn	Platform	Medieval; Post Medieval	SN75387750
34888	Bryn Ty'n Llwyn	Platform	Medieval; Post Medieval	SN75387750
34889	Bryn Ty'n Llwyn	Spring	Not Applicable	SN75387750
34890	Bryn Ty'n Llwyn	Platform	Medieval; Post Medieval	SN75347745
34892	Felin Bodcoll; Felin Ty'n Llwyn	Corn Mill	Post Medieval	SN74927651
35248	Llaneithyr	Field System	Post Medieval	SN759775
35249	Llaneithyr	Pillow Mound	Unknown	SN76007747
35256	Rhosygell	Quarry	Post Medieval	SN756757
35275	Hafod Plantations	Boundary Bank	Post Medieval	SN7600076000
35283	Brignant Uchaf	Shelter	Medieval; Post Medieval	SN75587566
36813	Llaneithyr	Shaft	Post Medieval	SN7660276998
36814	Llaneithyr	Quarry	Post Medieval	SN7669377043
36815	Llaneithyr	Level	Post Medieval	SN7673077070
36816	Llaneithyr	Shaft	Post Medieval	SN7664676949
36817	Llaneithyr	Shaft	Post Medieval	SN7663976928
36818	Llaneithyr	Level	Post Medieval	SN7654876865
42114	Bodcoll	Platform	Post Medieval	SN75247631
42115	Bodcoll	Kiln	Post Medieval	SN75247627

Nantycreiau and Bodcoll Mines, Pontarfyrnach:
Historic Environment Desk-Based Assessment

PRN	Name	Type	Period	NGR
42116	Bodcoll	Leat	Post Medieval	SN7575277618
42118	Bodcoll	Charcoal Burning Platform	Post Medieval	SN75297655
42119	Bodcoll	Long Hut	Medieval; Post Medieval	SN75637691
42120	Bodcoll	Root Vegetable Store	Post Medieval	SN75607685
42121	Bodcoll	Long Hut; Shelter	Post Medieval	SN75617667
42122	Bodcoll	Trial Mine	Post Medieval	SN75867652
42123	Bodcoll	Platform	Medieval; Post Medieval	SN76207703
42124	Bodcoll	Trial Mine	Post Medieval	SN7604276770
42125	Bodcoll	Shelter	Medieval; Post Medieval	SN75967644
42126	Bodcoll	Enclosure	Medieval; Post Medieval	SN76037588
42127	Bodcoll	Platform	Medieval; Post Medieval	SN75687607
42128	Bodcoll	Longhouse	Medieval; Post Medieval	SN75607625
42129	Bodcoll	Midden	Medieval; Post Medieval	SN75607625
42130	Bodcoll	Mound	Medieval; Post Medieval	SN75597624
42131	Bodcoll	Mound	Medieval; Post Medieval	SN75637624
42132	Bodcoll	Round Barrow	Bronze Age	SN75677635
42133		Deserted Rural Settlement	Post Medieval	SN75827713
42134	Llaneithyr	Standing Stone	Bronze Age	SN76107715
48407	Bodcoll	Standing Stone	Bronze Age	SN7565176380
58294	Bodcoll	Farmhouse	Post Medieval	SN7529476296

Nantycreiau and Bodcoll Mines, Pontarfyrnach:
Historic Environment Desk-Based Assessment

PRN	Name	Type	Period	NGR
58295	Hay Barn to E of Farmyard at Bodcoll	Hay Barn	Post Medieval	SN7529276206
58296	Former Cartshed and Stable or Bull-house at Bodcoll	Former Cartshed	Post Medieval	SN7529076218
58297	Cowshed to SW of Farmyard Including Pitched Walkway	Cowshed	Post Medieval	SN7526576214
58298	Former Corn Barn and Stable at Bodcoll	Former Corn Barn	Post Medieval	SN7527676232
58299	Pigsties at Bodcoll	Pigsties	Post Medieval	SN7526576244
93857		Explosives Store	Post Medieval	SN75937680
93858		Level	Post Medieval	SN75937684
93859		Building	Post Medieval	SN75947688
93860	Bodcoll Mine	Ore Bins	Post Medieval	SN75927689
93861		Leat	Post Medieval	SN75987697
93862	Bodcoll Mine	Leat	Post Medieval	SN75977701
93863		Mine Building	Post Medieval	SN75917691
93864	Bodcoll Mine	Spoil Tip	Post Medieval	SN75907689
93865		Level	Post Medieval	SN76007674
93866		Level	Post Medieval	SN75887674
93867	Bodcoll Mine	Level	Post Medieval	SN75917671
93868	Bodcoll Mine	Level	Post Medieval	SN75977660
93869	Llaneither	Spoil Tip	Post Medieval	SN76587700
93870	Bodcoll Mine	Level	Post Medieval	SN75777633
93871	Llan-eithyr	Boundary Wall	Post Medieval	SN76207719
96402	Llaneither Mine; Aber Rhuddnant; Llaneithyr	Wheel Pit	Post Medieval	SN76647691

PRN	Name	Type	Period	NGR
105311	Hawker Hunter T.7 Xj576	Air Crash Site	Modern	SN7600076000
106535		Road	Roman	SN751764
110694		Building	Post Medieval	SN7644976449
114117	Bryn Tyn-Ilwyn	Landscape	Not Applicable	SN753776
114118	Mynach Valley	Landscape	Not Applicable	SN753768
125362		Farmstead	Post Medieval	SN7569575816

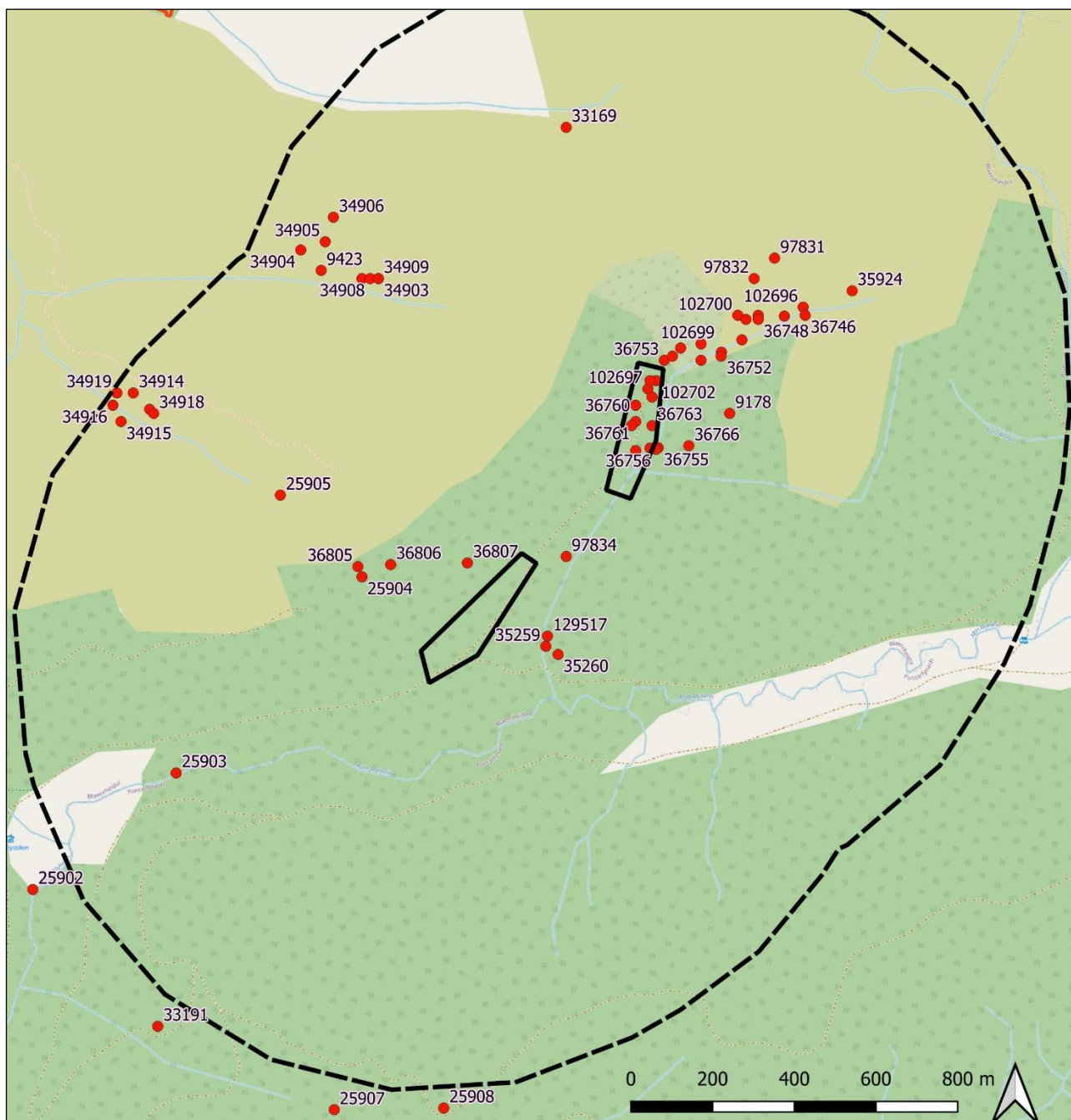


Figure 5: Map showing the assets recorded on the regional HER within 1km (dotted line) of the Nantycreiau and Nantycreiau West Mine site, labelled by PRN. More detailed site-specific maps are included in Section 7.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 12/03/24

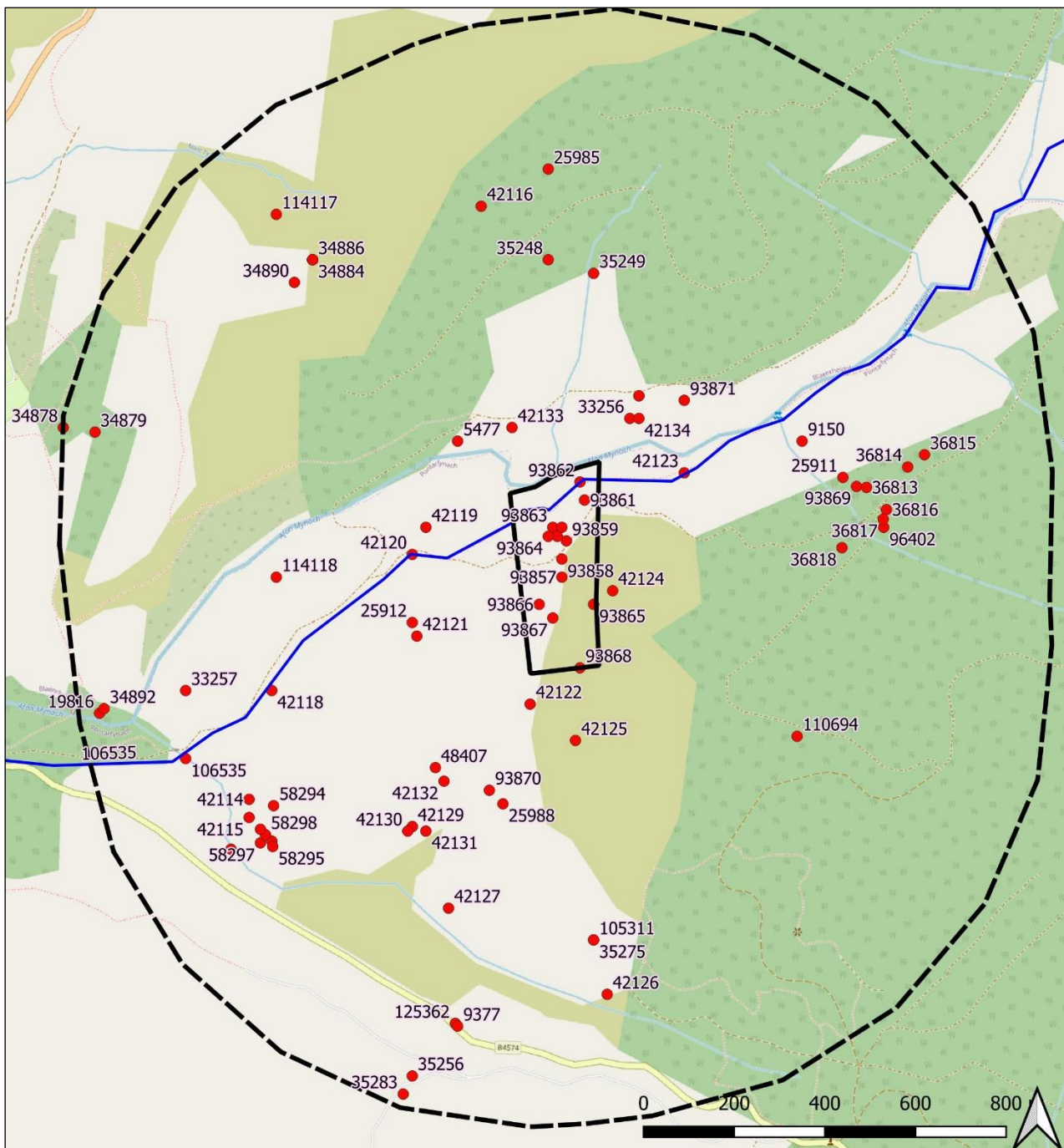


Figure 6: Map showing the assets recorded on the regional HER within 1km (dotted line) of the Bodcoll Mine site, labelled by PRN. More detailed site-specific maps are included in Section 7.

Map data from OpenStreetMap (OSM) <https://www.openstreetmap.org/copyright> 12/03/24

6 ASSESSMENT OF EVIDENCE

6.1 General

- 6.1.1 Sections 4 and 5 have laid out the known archaeological resource for the area, recorded on the regional databases of historic assets. The following section examines some of the main sources of information that could expand our current understanding of the archaeological resource and highlight previously unrecorded historic assets.

6.2 Previous Archaeological Work

- 6.2.1 No intrusive archaeological investigations (excavations, evaluations or watching briefs) have previously been undertaken at the sites.
- 6.2.2 The mine sites have been subject to a number of visits recording the visible features since the 1990s. An initial survey was undertaken of Bodcoll Mine in 1992 by Protheroe-Jones, the current Principal Curator of Industry at the National Museum of Wales, as part of a survey of Ceredigion Metal Mines. A resurvey of this work was carried out in 2011 which also included the Nantycreiau Mine sites.
- 6.2.3 A desk-based assessment was carried out in 1997 on the Mynydd y Ffynnon area which included the landscape around the Nantycreiau and Bodcoll mines (Sambrook and Silvester 1997). This was followed up by site surveys (Sambrook et al 1997) which included visits to the Nantycreiau and Nantycreiau West mines, recording the visible remains of the mines, and a further desk-based study that included the Bodcoll area (Sambrook and Hankinson 2001). At a similar time a study was undertaken into deserted rural settlements across the region (Sambrook 1997) which also included follow up site visits to both the Nantycreiau and Bodcoll areas (Sambrook and Ramsey 1998). These were less focussed on the mine sites but recorded many of the abandoned settlement sites prevalent across this area. More recently the Bodcoll Mine area was visited as part of the Tir Gofal agri-environmental scheme in 2009 (Steele 2009). The records from these studies have been incorporated into the HER and have provided background for the known archaeological resource outlined previously.

6.3 Historic Mapping

Early – mid 19th century maps

- 6.3.1 Somewhat unusually the mine sites do not appear on any of the typical early map sources for this area. Documents such as Emmanuel Bowen's map of south Wales in 1729, the original Ordnance Survey drawings of the 1810-20s and the tithe maps of the 1840s show no mining features in either the Nantycreiau or Bodcoll areas. The former is shown as largely open land, labelled as a sheepwalk on the tithe map. The latter is part of Bodcoll farm on the tithe map but only the land along the river's edge appears enclosed in fields with much of the mine site lying in what appears to be largely open unenclosed or semi-enclosed pasture.

Estate maps mid-19th century

- 6.3.2 The national archives (National Library of Wales) contain a series of estate maps for the Hafod Estate, dating to 1855, 1864 and 1870 that include the lands around both Nantycreiau and Bodcoll. It is assumed however that these maps are focused on the centre of the Hafod estate and are unlikely to contain detail regarding the mine sites. The County Archives hold some earlier estate maps of 1790 (H/B2/15). They have not been examined as part of this assessment.

Mining maps

- 6.3.3 Although some secondary documentary sources about the mines appear to mention some mine plans, few have come to light during the assessment. The County Archives holds one plan of Bodcoll Mine (H/D4/17) and one ground plan of Nantycreiau Mine (H/D4/16). Both are undated but it is assumed they are relatively late plans and have not been examined during this assessment.

Ordnance Survey 1:2500 maps 1886-7, 1905-6, 1953- (Figs 7, 8 and 9).

- 6.3.4 The Ordnance Survey map of 1886-8 provides the most detailed record of the layout of the mine workings at both Nantycreiau and Bodcoll Mines during the most productive parts of their operational lives.
- 6.3.5 Multiple features are marked and these maps have been used as the base map for many subsequent surveys of the site (e.g. Protheroe-Jones 1992, 2011) and will therefore not be repeated in detail here. At Nantycreiau the map labels a shaft, magazine and sluice within the proposed development area but also shows other mining features including buddle pits, mine buildings, spoil tips, quarries, trackways and leats, not all of which are included in the current HER records (Fig 7).
- 6.3.6 Further down the valley a dispersed line of mine levels appears to mark the Nantycreiau West Mine site (Fig 8). These levels are all included in the HER records and all lie outside the proposed development area. However, adjacent to the nearest level (PRN 36807) a series of features appear to follow the valley side, passing through the proposed development area. It is not immediately clear what they represent but they appear to denote wet ground and may indicate a channel watercourse or some form of further mining activity.
- 3.6.7 The subsequent map of 1906 shows mine sites at Nantycreiau that have been largely abandoned with few features still marked. At Nantycreiau, levels PRN 36752 and 36753 are marked to the north, as is shaft PRN 36757, magazine PRN 102697, crushing mill PRN 36758 and mine building PRN 36762 within the proposed development area, all disused. Further south no features are shown within the Nantycreiau West proposed development area. By 1953 a similar arrangement of remaining features is marked, with the surrounding valley sides now full of forestry plantation.
- 3.6.8 At Bodcoll the 1887 Ordnance Survey map (Fig 9) shows a series of mine levels (PRNs 93858, 93866 and 93865) within the site, and two further disused levels (PRNs 93867 and 93868). The magazine (PRN 93857) is shown, as are the ore bins (PRN 93860), an adjacent building (PRN 93859) and a building complex (PRN 93863), and two leats (PRNs 93861 and 93862) to the northeast. Further spoil tips are marked other than the single one recorded (PRN 93864), as are tramways, trackways and a small pond within the site. The subsequent map of 1906 shows a similar layout of buildings and features but the site is labelled as disused. The remains are shown until the Ordnance Survey maps of 1964.

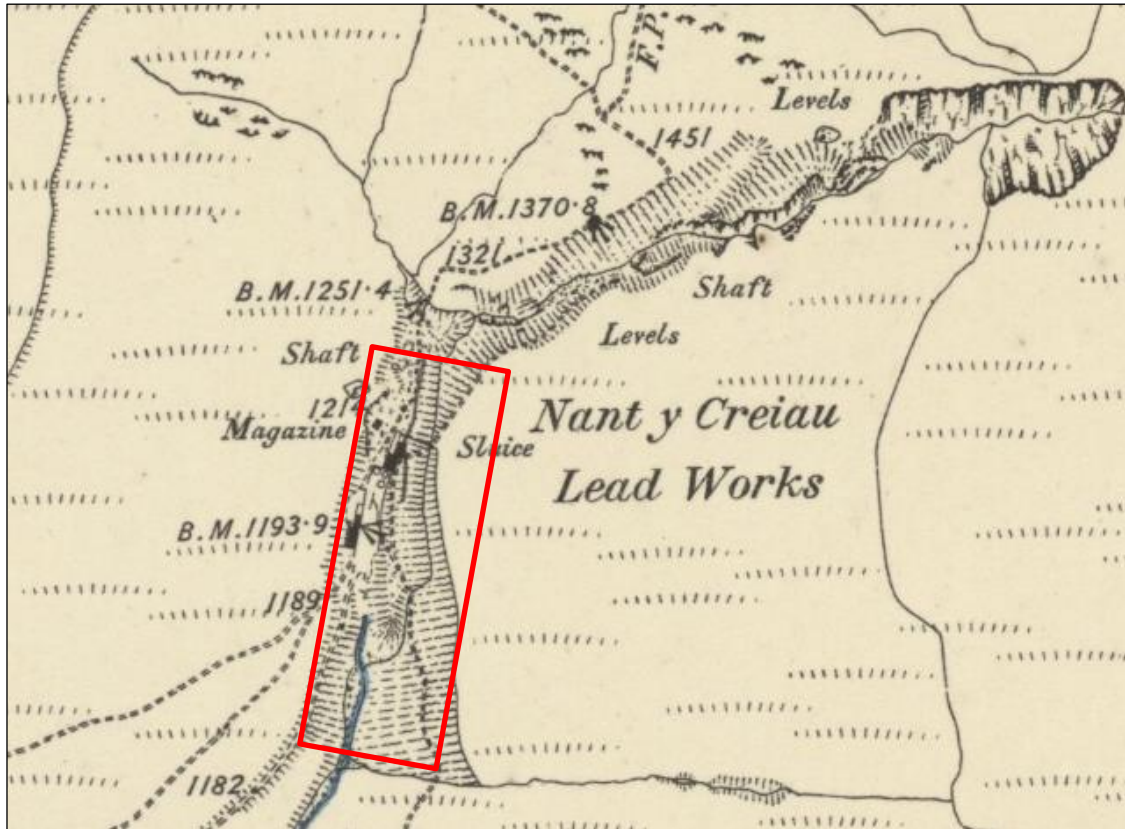


Figure 7: Extract from the Ordnance Survey map of 1886 showing elements of the Nantycreiau Mine site. Approximate study area outlined in red.

(Reproduced with the permission of the National Library of Scotland).

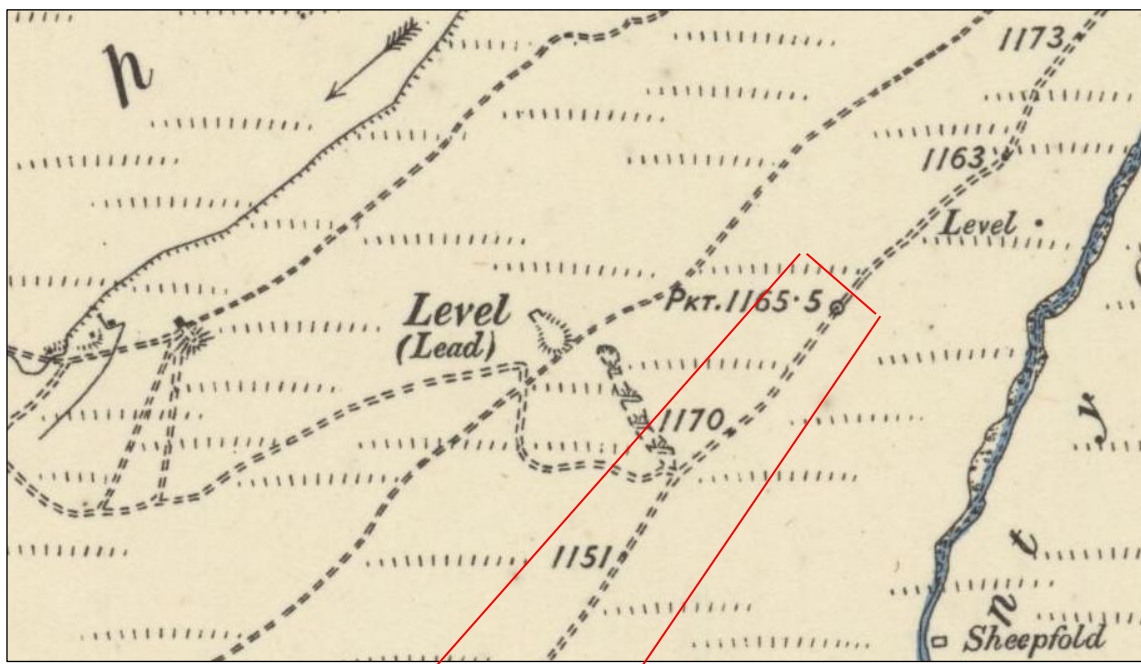


Figure 8: Extract from the Ordnance Survey map of 1886 showing the layout around the Nantycreiau West Mine site. Approximate study area outlined in red.

(Reproduced with the permission of the National Library of Scotland).

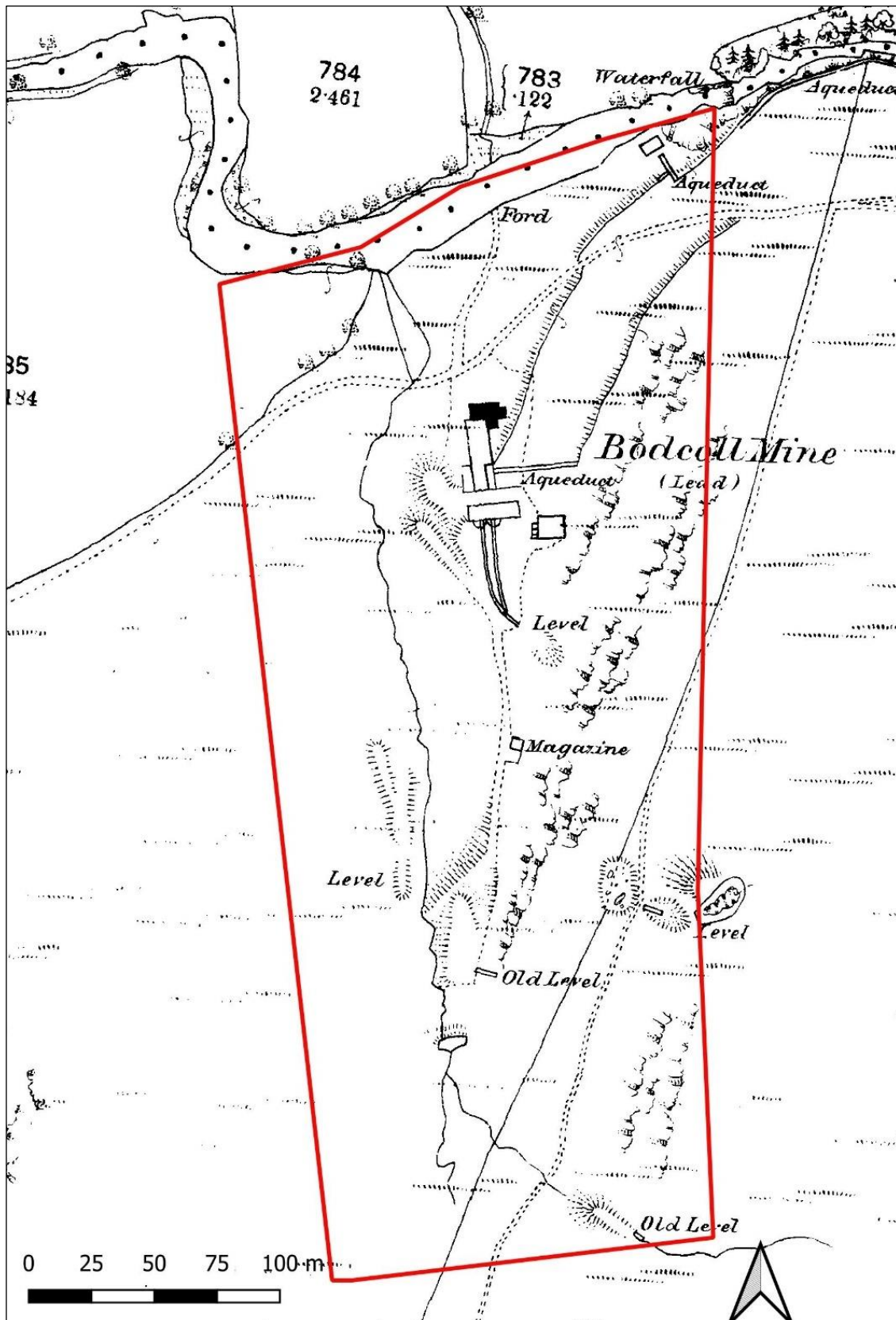


Figure 9: Extract from the Ordnance Survey map of 1887 showing the layout around the Bodcoll Mine site. Study area outlined in red.

6.4 Aerial and Historic Photography

- 6.4.1 A search was made of available historic and modern aerial photographs, although due to their isolated locations few aerial photographs were available. The Nantycreiau Mine area was covered by some RAF images from the late 1940s and modern satellite imagery. Bodcoll was photographed in slightly more detail between 1946 and 1950.
- 6.4.2 Although the images of Nantycreiau from 1947 and 1948 (Photo 1) capture the area prior to large scale afforestation it is difficult to identify any specific features within the study areas. Much of the base of the Nant y Creuau valley appears to be devoid of vegetation, with deposits of spoil towards the northern end, all presumably as a result of the mining activity. One linear feature is visible in the Nantycreiau Mine area which may potentially be the wheel pit associated with crushing mill PRN 36758. Modern satellite imagery is clearer but only depicts the site in its current condition from 2006 onwards. For Nantycreiau West the satellite imagery shows a track extending up the hillside to connect to the mine level above (PRN 36807) and also shows the site cleared of trees in 2014. No further features of note are visible however and the site subsequently becomes afforested, covering the former trackway to the mine level.
- 6.4.3 For the Bodcoll area the complex of mine buildings are depicted on the RAF aerial photographs of 1947 (Photo 2). The buildings (PRNs 93857, 93859, 93860 and 93863) are still intact and appear to have roofs with the exception of the magazine PRN 93857, but the site appears abandoned. The leats to the northeast (PRNs 93861 and 93862) remain prominent features, as do the original trackways depicted on earlier maps to the north of the main building complex. A spread of bare ground to the north of the buildings suggests mining waste but otherwise the spoil tips around the site appear largely overgrown. At some point between aerial photographs of 1950 and the earliest satellite imagery of 2006 the buildings were cleared and spoil spreads (PRN 93864) become apparent in this area. The trackway down to and across the river also appears to have been abandoned, with the original track re-laid across the line of the leats and a new track created to the south. No further features of archaeological significance are noted.



Photo 1: Extract from the 1948 RAF aerial photograph, showing the Nantycreiau Mine area. Approximate study areas are marked in red.



Photo 2: Extract from the 1947 RAF aerial photograph of the Bodcoll Mine site.
Approximate study area is marked in red.

6.5 LiDAR

- 6.5.1 LiDAR data at 1mDSM is available for the Nantycreiau area but the nature of the valley slopes and surrounding woodland covers means individual features within the study areas are difficult to identify. The Bodcoll area is clearer and many of the mining remains can be identified, particularly cut features such as leats and trackways, but no new features are identifiable.

6.6 Site Visit

- 6.6.1 A site visit was undertaken on the 28th February 2024. The weather conditions were wet with low cloud but generally all round views were possible if not extensive. Access to the entire site was possible, although mine openings were not entered.

- 6.6.2 The visit allowed all known sites to be re-examined, updating descriptions, conditions and interpretations. Some recorded sites no longer appear visible but potential new sites were noted. Records were made in note form, photographs were taken of each identified feature with a high-definition digital camera and locations were recorded using a hand-held Garmin GPS Map unit.
- 6.6.3 Full descriptions, photos and a plan of all identified features are laid out in Section 7.

7 MINE FEATURES

7.1 Nantycreiau Mine

- 7.1.1 The following section details features within the study area around the Nantycreiau Mine. It does not include all related mining features that lie outside the study area.
- 7.1.2 A written description of these sites is included in Table 4 which is laid out in numerical order according to the PRN. Additional sites are included at the end of the table, given the prefix NM and then numbered sequentially.
- 7.1.3 Pictures of the sites are included in Photos 3 - 23. A plan of the mine features is provided in Figure 10. These locations can also be provided in GIS file formats to accompany this report.
- 7.1.4 The mine site is reached via a modern forestry track along the west side of the valley. This ends in a turning platform that has been created by infilling the base of the valley, with the watercourse passing through a large buried metal pipe underneath (Photo 3). A smaller, non-vehicle track then rises up the eastern valley side. To the north of this platform lies a series of visible and relatively well-preserved, albeit buried, mining remains. To the south of the platform the area is dominated by a large spoil tip.
- 7.1.5 Immediately to the north of the turning platform, on the east side of the valley, lie the remains of the crushing mill (PRN 36758) (Photos 4 to 6). A masonry wheel pit, approximately 15m by 4m (the pit itself 12.5m by 1.5m), lies at the west end, fronting the watercourse. The pit is largely infilled with tumbled masonry and dumped rubbish but upright timberwork survives. To the east lies a large square building, approximately 7m square internally with 1.3m thick drystone masonry walling and some internal timberwork, but largely covered by tumbled masonry. The timberwork and height of visible walling suggests a good potential for preserved buried remains to survive.
- 7.1.6 On the south side of the crushing mill some large horizontal timbers are exposed along the streamside, along with a wooden chute (Photos 7 and 8). This area, approximately 13m by 9m, is covered in fallen masonry and crushed stone but represents part of the former dressing floor (PRN 36760). The visible timber includes a box launder but also suggests timber buddle pits are likely to survive in this area, marked as they are on the 1886 Ordnance Survey map (Fig 7). The area is backed by a drystone rubble wall.
- 7.1.7 To the north, narrow gauge bridge rails (PRN 102702) were noted in 2011 protruding from the river bank. These were not noted during the current assessment although recent topographical surveys record a fragment of wall in this general area.
- 7.1.8 On the west side of the watercourse lie mine levels, quarries, spoil tips and building remnants. Opposite the crusher house a fragment of masonry wall (NM01) protrudes from the crushed and fragmented stone spread across much of the west bank (Photo 9). The wall is largely buried and it is unclear whether this is part of a boundary or a building. To the north lies a quarried rock face (PRN 36759), around 23m long, quarried back into the valley side by around 6m (Photo 10). In the southern corner of this quarried area lie the remains of the mine magazine (PRN 102697) (Photo 11). The magazine is marked on the 1886 Ordnance Survey map and survives as a depression in the surrounding stone spoil with remains of walling partially visible. In the northwest corner of the quarry lies a partially open rock-cut level (NM02) (Photos 12 and 13). When visited in 1992 it was described as accessible for around 20m before becoming blocked with infilled workings. This level does not appear to have been recorded

on the HER previously. To the north the site of the Western Shaft PRN 36757 lies just outside the study area (Photo 14). The shaft entrance itself is buried by spoil but a vertical rock-cut west edge is visible, with the spoil heap extending to the south and covering the remains of a stone wall that presumably represents an angle bob pit mentioned during the 1992 survey (Protheroe-Jones 1992). Further mining features extend along the valley to the north but these were not examined during this assessment.

- 7.1.9 The area to the south of the turning platform is dominated by a large spoil heap (PRN 36763) which extends for around 90m along the eastern side of the valley, 20m wide, 9m high (Photos 15 to 17). The watercourse washes along the base of the spoil heap. As it developed, the spoil heap appears to have buried mining remains, with some walling visible in exposed sections. Approximately 20m along the heap lies an L-shaped wall of random rubble, clay bonded (NM03) (Photo 18), which suggests it was part of a former mine building but much of the interior has presumably collapsed into the river. A further 20m to the south, lying higher up in the spoil heap section, is a very roughly-built linear section of walling (NM04) (Photo 19). The rough nature suggests this was not part of a building but possibly some form of boundary or support structure. A nearby H-frame of rough timbers may be associated. On top of the spoil heap some timbers survive (NM05), presumably part of the tramway (Photo 20) from the crushing mill to the north.
- 7.1.10 On the opposite side of the valley are the remains of a better constructed building (PRN 36762) (Photo 21) although only a fragment of wall now survives, the rest either collapsed into the river or removed by the adjacent forestry track. The wall is roughly coursed and mortared, and in appearance is contemporary with the crushing house to the north. It also appears to be marked on the 1886 Ordnance Survey map. Below this building the western edge of the watercourse is revetted/lined with a low stone wall (PRN 36761), built in three distinct styles (Photos 22 and 23). The earliest lies downstream, comprising a wall of random rubble embedded in clay. Abutting this to the north is a wall of thin stone laid horizontally and roughly coursed. This is then partly overlaid by a wall of large, unworked stones laid vertically in loose rows. Fragmentary remains of walling also lie on its west side, which may be evidence of further revetting or part of a stone-lined channel, largely lost to spoil and erosion.
- 7.1.11 Other features have previously been recorded in or close to this area that can no longer be accurately located. To the east lies mine level PRN 36766, associated with which is an area of quarrying (PRN 36759), a spoil heap (PRN 36756) and tramway PRN 36755, but the extent of these was not established during the current assessment. Similarly, a large opencut (PRN 36765) is recorded on the east side of the river running for around 100m in a northeasterly direction. It was suggested that this may be an early mine level. It was recorded in 1992, but the precision of the given grid reference is uncertain and it was not relocated during the current assessment. Exposed walls within the spoil tips, protruding rails and reports of early mine workings on the site are all indicators that further mining remains could easily be buried within the spoil tips and spread across the site.

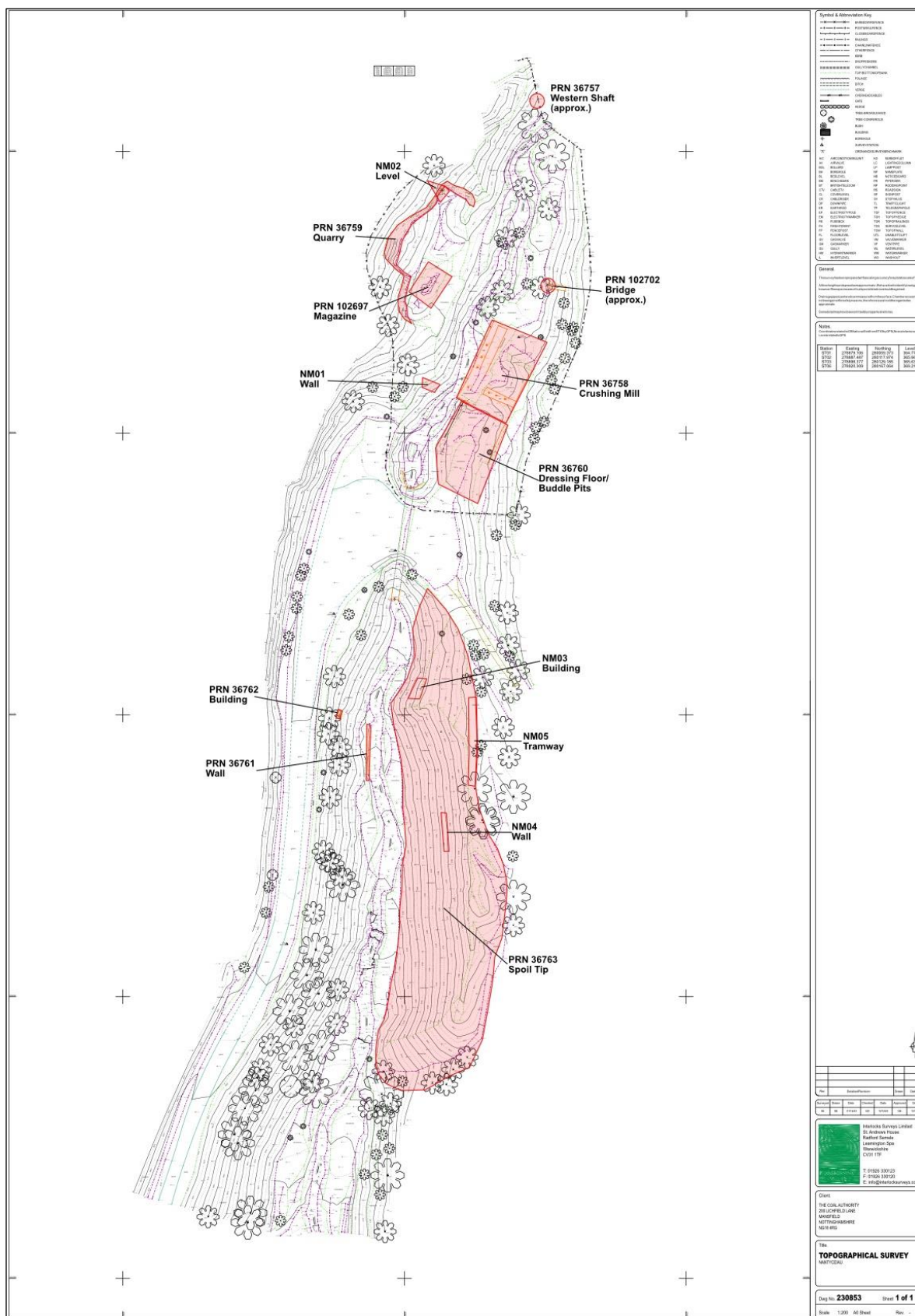


Figure 10: Mine features (in red) identified at Nantycreiau Mine, overlaid on a recent topographical survey. Not reproduced to scale.

Table 4: Nantycreiau Mine Features

PRN/Ref No	NGR	Type	Description	Photo
36757	SN 78924 80217	Shaft	The 'Western Shaft', now largely buried in spoil with the shaft opening not visible but the site marked by a vertical rock cut face to the west and the spoil heap extending to the south. A stone wall protrudes from the spoil on the east side, presumably part of the angle bob pit mentioned in 1992.	14
36758	SN 78919 80161	Crushing Mill	19 th century wheel pit and crusher house. Masonry remains and timberwork still visible.	4, 5, 6
36759	SN 78898 80192	Quarry	Quarry, approximately 23m long, 6m deep, with a rock cut level open in north-western corner.	10, 11
36760	SN 78908 80148	Dressing Floor	Part of the dressing floor surviving to the south of the crushing mill. Well preserved timbers are exposed by the water course, including a box launder, also suggesting buddle pits (marked on the 1886 OS map) may be preserved beneath the surface spoil.	7, 8
36761	SN 78893 80089	Drain	A low revetting wall along the west side of the stream, built in three distinct styles.	22, 23
36762	SN 78888 80101	Mine Building	Fragment of a former building marked on the 1886 Ordnance Survey map. The wall is roughly coursed and mortared but largely collapsed into the river or destroyed by the adjacent forestry track.	21
36763	SN 7891 8007	Spoil Heap	An extensive spoil heap along the east side of the valley, approximately 90m long. Originated from the crusher house and tip to the north.	15, 16, 17
36765	SN 78870 80009 (unverified)	Mining Feature	Large opencut running northeast, approximately 100m long. Not identified during current assessment.	-

PRN/Ref No	NGR	Type	Description	Photo
102697	SN 78902 80181	Magazine	A magazine marked on the 1886 Ordnance Survey map, survive as a ruinous, largely buried, square structure.	11
102702	SN 7892 8018	Bridge	Narrow gauge bridge rails protruding from the eastern river bank, noted in 2011. Not identified during current survey.	-
NM01	SN 78896 80163	Wall	Fragmentary remains of a masonry wall on the west side of the river opposite the crushing mill. Largely covered in spoil.	9
NM02	SN 78904 80199	Level	Open mine level in the northern corner of quarry PRN 36759. Apparently continues for c.20m before becoming block.	12, 13
NM03	SN 78901 80098	Building	L-shaped wall of random rubble buried in spoil heap PRN 36763.	18
NM04	SN 78907 80076	Wall	Linear wall largely buried in spoil heap PRN 36763.	19
NM05	SN 78911 80110	Tramway	Tramway running across the top of spoil heap PRN 36763. Some timber sleepers are visible.	20



Photo 3: General view north of Nantycreiau Mine (PRN 9178) from the infilled section of the valley.



Photo 4: View northeast, showing the structural remains of the crushing mill and wheel pit PRN 36758.



Photo 5: View north of the partly infilled wheel pit PRN 36758.



Photo 6: View northeast of the crushing mill PRN 36758 with partially buried internal timbers visible.



Photo 7: View southeast of the dressing floor PRN 36760 with timberwork of launder visible.



Photo 8: View east of the dressing floor PRN 36760.



Photo 9: View west. Showing buried remains of wall NM01 opposite the crushing mill.



Photo 10: View northwest showing quarry face PRN 36759.



Photo 11: View southwest showing depression in the foreground marking the site of magazine PRN 10269.



Photo 12: View west showing mine level opening NM02 in the corner of the quarry.



Photo 13: View west into mine level NM02.



Photo 14: View south of the Western Shaft PRN 36757. The shaft lies on the right with spoil heap adjacent, and fragmentary wall remains on the left emerging from the spoil.



Photo 15: View south down the valley with spoil heap PRN 36763 forming the left side.



Photo 16: View south looking along spoil heap PRN 36763.



Photo 17: View north looking up the valley with spoil heap PRN 36763 on the right.



Photo 18: View east, showing fragmentary and buried remains of building PRN NM03.
1m scale.



Photo 19: View east, showing buried remains of rough wall NM04.



Photo 20: View south, showing a buried tramway sleeper NM05 running along the top of spoil heap PRN 36763. 1m scale.



Photo 21: View west, showing remnants of building PRN 36762.



Photo 22: View northwest, showing the low wall along the watercourse PRN 36761. 1m scale.



Photo 23: View west of wall PRN 36761, showing some of the changes from the horizontal masonry on the left to vertical masonry in the centre.

7.2 Nantycreiau West Mine

- 7.2.1 The following section details features within the study area around the Nantycreiau West Mine study area. The main mining features related to this mine actually lie outside the study area and are therefore not included in detail in the following description. Pictures of the study area are shown in Photos 24 - 30.
- 7.2.2 The Nantycreiau West Mine (PRN 25904) comprises three mine levels spread east – west across the west side of the valley. Adit PRN 36806 lies around 200m to the west of the study area and is possibly a drainage adit associated with a shaft, now infilled. Level PRN 36807 is the main 'Deep Adit', which lies around 60m above the study area to the west. The level is open, with tramlines remaining in situ and a large undisturbed spoil tip. This site was not readily accessible through the forestry plantation at the time of assessment. Further down the valley slope, 70m to the east of the study area, lies trial level PRN 97834, marked on the 1886 Ordnance Survey map.
- 7.2.3 The study area occupies a region of densely wooded valley slope, traversed by a narrow track through the centre and bounded by the larger vehicular forestry track on the lower slopes to the east. Towards the northern end of the area a further track doglegs back to the north to climb the valley side. A watercourse runs down the valley slope through the centre of the site. This emerges from mine workings PRN 36807 above but appears to follow a natural course to the central trackway, culverted beneath the track and then taking a more southerly route down the valley slope to emerge adjacent to the main track to the east.
- 7.2.4 No previously identified archaeological sites have been identified within this study area. Comparisons with historical maps suggest the central trackway may have originated as an access track for the 18th and 19th century mines but in its current form it appears to be a typical mid-20th century forestry trail with a ditch along the western edge. The 1886 Ordnance Survey map suggested possible mining features along the watercourse to the north, however the current watercourse flowing down the hillside does not appear to run along any visible built structure. No further potential archaeological features were noted within the study area. A scheduled monument (CD1888) lies around 130m to the east of the study area but was not identifiable, lying as it does on the opposite side of the valley and separated by dense woodland.



Photo 24: View northeast, looking up the central trackway through the Nantycreiau West study area. 1m scale.



Photo 25: View southwest, looking down the central trackway. 1m scale.



Photo 26: View north, looking up the trackway as it climbs the valley side to the north.
1m scale.



Photo 27: View northeast, looking up the main forestry trackway to the east. The watercourse emerges from the valley slope on the left.



Photo 28: View northwest, looking up the watercourse and location of proposed monitoring structure.



Photo 29: View southeast, looking at the point the watercourse meets the trackway, and the location of the proposed monitoring structure.



Photo 30: View northwest showing the watercourse emerging from underneath the trackway.

7.1 Bodcoll Mine

- 7.1.1 The following section details features within the study area around Bodcoll Mine (PRN 5476). It does not include all related mining features that lie outside the study area.
- 7.1.2 A written description of these sites is included in Table 5 which is laid out in numerical order according to the PRN. Additional sites are included at the end of the table, given the prefix BM and then numbered sequentially.
- 7.1.3 Photos of the sites are included in Photos 31 - 58. A plan of the mine features is provided in Figure 11. These locations can also be provided in GIS file formats to accompany this report.
- 7.1.4 The mine site lies on private farmland and is laid out on the southern side of the Afon Mynach, following the line of a small stream into rising ground to the south (Photo 31). The landscape is undulating craggy ground to the west with a steep craggy rock face to the east. The mining remains extend onto the higher ground to the east but this lies outside the main study area. A well-established farm track approaches the site from Bodcoll Farm to the west, splitting into two as it passes through the site, the original path running close to the river with a modern terraced track cutting through the centre of the site. The area is sub-divided with post-and-wire fencing and used mainly for pasture. Many of the mine buildings have been cleared from the site but some structural remains such as spoil tips, leats and mine entrances survive.
- 7.1.5 On higher ground to the east lie two mine levels but these were not examined closely during the assessment. To the southeast lies PRN 93868, described as an 'old level' on the 1887 Ordnance Survey map. The level is still clearly identifiable,

cutting into a small stream crevice with a prominent spoil tip in front. To the north lies PRN 93865 (Photo 32), a mine level surrounded by prominent spoil tips, enclosed in fencing.

- 7.1.6 A series of mine features then follow the line of a small stream that flows northward into the main processing area and on into the river. At the southern end a small cutting lies in the undergrowth (BM01) (Photo 33), around 1m wide and 3m long. Whilst vegetation obscured all detail, the size suggests it is not a main mine opening but possibly a drain or ventilation shaft. A short distance to the north a small holding pond (BM02) has been created on the line of the stream (Photo 34). This is visible on the 1887 Ordnance Survey map and is formed by a large, turf-covered bank on the lower north side of the stream. The pond has largely silted up, with the watercourse now running alongside. On the east side of the stream beyond this point lies an open level (PRN 93867), approached by a 1.5m wide cutting (Photos 35 and 36). Water flows across the base of the level which is otherwise open for several metres. This mine level is fronted by an extensive spoil tip (BM03) that extends for around 50m, 20m across and up to 5m high (Photos 37 and 38). The spoil tip is larger than it appears on the 1887 Ordnance Survey map which may suggest the nearby mine levels were worked in the 1890s or the spoil has been reprocessed at a later date. The northern end of the spoil tip partly covers a laid stone surface (BM04), of which an area around 3m by 4m is exposed as a level area of roughly compacted stone (Photos 39 and 40). Turf covers the area to the south but a level platform appears to extend for another 3 to 4m. This appears to be a working platform of some form; loose spoil on the steep slope to the east, which stops at this platform, appears to have come from level PRN 93865 on the high ground overlooking the site. A lack of vegetation also suggests the slope above may have been quarried or landscaped, indicating a possible link between the two sites. To the west lies another mine level (PRN 93866) located on the west side of the stream, just beyond a current field boundary (Photos 41 and 42). The level opening appears to be infilled but the approach is still visible, as is a spoil tip extending to the north, along which the field boundary runs.
- 7.1.7 As the small stream valley begins to open out, the remains of the mine magazine (PRN 93857) become visible at the base of the eastern slopes (Photos 43 and 44). Drystone walls, 0.7m wide, 1m high mark out a two-cell structure measuring around 10m by 5m. To the north lie the infilled remains of a final mine level (PRN 93858) (Photo 45). This level is marked in the 1887 Ordnance Survey map, with tramlines emerging from it connecting to ore bins (PRN 93860) to the north. The level is visible as a stone-filled depression but the tramlines appear to have been removed with the creation of the new trackway that passes in front. This trackway now separates the mine levels from the main processing area to the north.
- 7.1.8 The 1887 Ordnance Survey map and early aerial photographs show a complex of buildings at the main processing site to the north of the trackway, but only one building currently has standing remains. The east wall of a large square building (PRN 93859) stands just below the track, 9m long and reaching up to 2m high in roughly coursed local stone and with two openings (Photo 46). Tumbled, turf-covered masonry marks the remaining walls. Adjacent to this lies the site of the ore bins (PRN 93860), although this is now only visible as a stony terrace cut into the falling ground (Photos 47 and 48). An extensive range of buildings (PRN 93863) was previously laid out in front (north) of the ore bins (Photos 49 and 50) but they have been comprehensively removed with little above-ground evidence of their existence. The area also appears to have been levelled, with some piles of stonework and brick visible, presumably from these buildings. To the west lie the turf covered remnants of spoil tips (PRN 93864), presumably originating from the

adjacent processing activities (Photo 51). These spoil tips were described as 'substantially intact' in 1992 but since appear to have been reduced and moved.

- 7.1.9 To the northeast extend two lines of leats. The higher, eastern leat (PRN 93861) is a V-shaped cutting 1 to 2m wide, terraced on its eastern side, embanked on its western side (Photo 52). It runs in a slightly curvilinear line, northeast to southwest for around 120m, before turning west for around 8m to head toward the former building complex PRN 93863. The line of the leat is lost at this point, although the 1887 Ordnance Survey map marks an aqueduct here, presumably carrying the water above ground. The northern end of the leat is lost where a farm track crosses it. 30m to the west, at a lower level, lies a second leat (PRN 93862) of similar size and design (Photos 53 and 54) which extends from the site of mine buildings PRN 93863 and runs to the northeast for 80m where it is crossed by a farm track. It then continues on for another 80m before it becomes lost in the undergrowth. Towards the northeast end of the study area the 1887 Ordnance survey map suggests the leat ran along a short aqueduct that also connected to a riverside building of unknown function. No clear evidence of this building or aqueduct was visible amongst the thick undergrowth. The trackway that crosses the leat has been recorded as a possible Roman road (PRN 106535) (Photo 55). In its current form it is a curvilinear farm track following the natural contours of the land along the more easily traversed areas of the lower valley. When the ground slope increases the track is terraced into the ground but there is little to indicate any particular antiquity to the route.
- 7.1.10 The 1887 Ordnance Survey map and early aerial photographs record a trackway running north and crossing the river at a ford. To the west the local watercourse along which many of the mine levels were cut enters the river, with a straightened course on the 1887 map suggesting it may have been partially channelled at this point. The trackway and ford are now difficult to locate on this low-lying, slightly boggy area (Photo 56) but where the stream cutting is visible, a large curving piece of worked timber is deeply embedded in the ground (BM05) (Photo 57) and the stream appears to, at least in part, emerge from a modern buried culvert (Photo 58). There is therefore the suggestion of buried timber structures in this area. No further features of archaeological interest were noted.

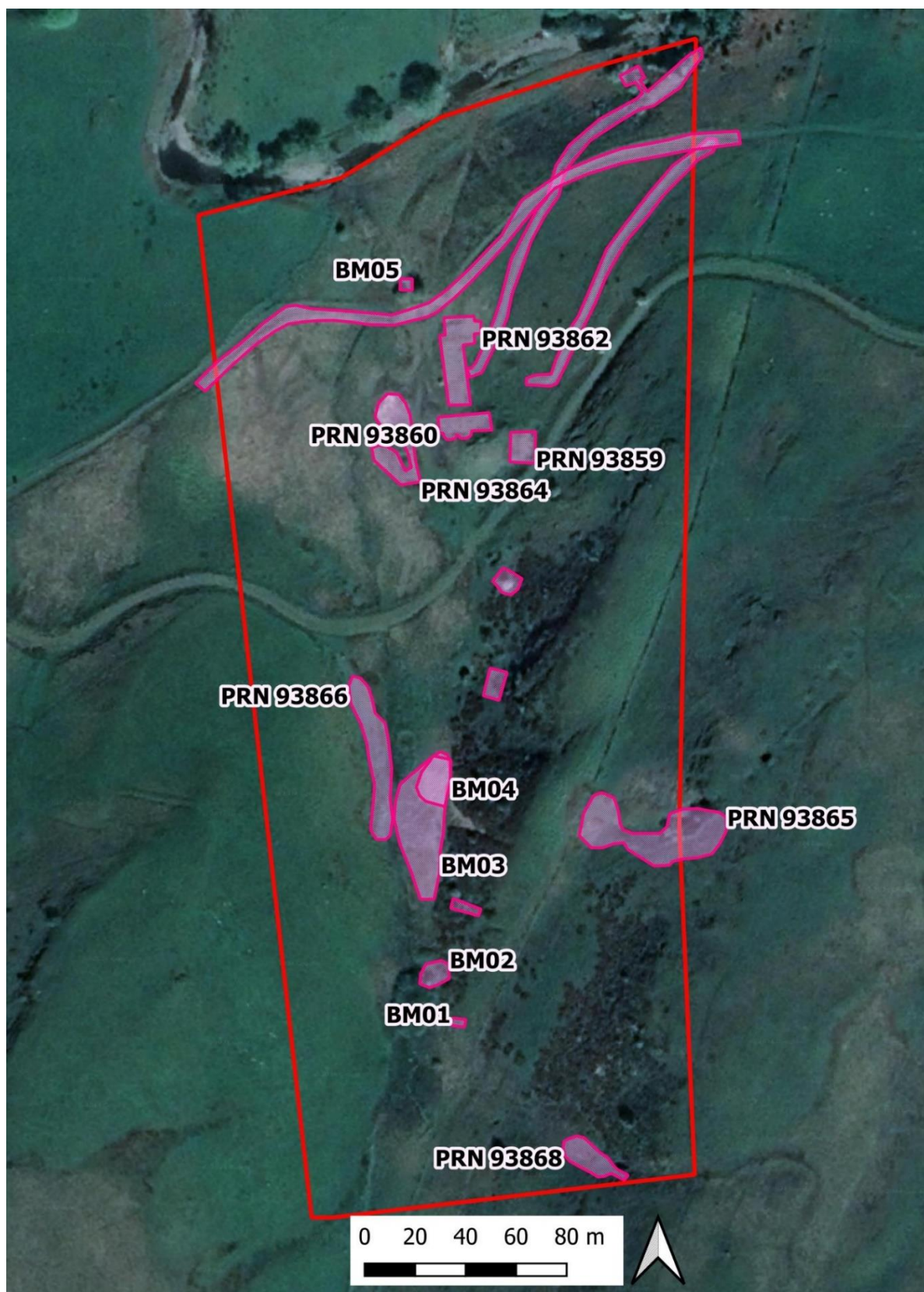


Figure 11: Mine features (in red) identified at Bodcoll Mine, overlaid on a recent satellite imagery. © Google Earth.

Table 5: Bodcoll Mine features

PRN/Ref No	NGR	Type	Description	Photo
93857	SN 7593 7680	Explosives Store; Magazine	Former mine magazine, marked on the 1887 OS map. Walls 1m high mark a two-cell structure, 10m by 5m.	43, 44
93858	SN 7593 7684	Level	Infilled mine level, marked on the 1887 OS map with tramlines connecting to ore bins to the north.	45
93859	SN 75944 76893	Building	A mine building marked on the 1887 OS map. The east wall survives to 2m high, the rest of the building is tumbled.	46
93860	SN 75919 76902	Ore Bins	Former ore bins, now only visible as a stony terrace.	47, 48
93861	SN 7598 7697	Leat	Leat, V-shaped, running northeast-southwest. 120m long, 1m to 2m wide. Northeast end lost, southwest end connected to mine buildings PRN 93863.	52
93862	SN 7597 7701	Leat	Leat, V-shaped, running northeas-southwest. 1m to 2m wide, in excess of 200m long, possibly connects to Hirnant stream to the east, feeds into PRN 93863.	53, 54
93863	SN 75918 76924	Mine Building	Extensive range of former mine buildings, now cleared.	49, 50
93864	SN 7590 7689	Spoil Tip	Areas of disturbed spoil tips, presumably from the processing works.	51
93865	SN 7600 7674	Level	Mine level worked in the late 19 th century, surrounded by prominent spoil tip, and potentially a collapsed stope. Fenced off.	32

PRN/Ref No	NGR	Type	Description	Photo
93866	SN 75888 76743	Level	Mine level, infilled but still identifiable, with a linear spoil tip extending to the north.	41, 42
93867	SN 75921 76710	Level	Open level, marked as 'old' on the 1887 Ordnance Survey maps, therefore possibly part of the mid-19 th century, or potentially 18 th century workings. Extensive spoil tip in front.	35, 36
93868	SN 75980 76605	Level	Mine level cutting into a stream crevice with spoil tip in front. Marked as 'old' on the 1887 Ordnance Survey map.	-
106535	SN 7593 7697	Road	Possible route of a Roman road, currently a farm track with no dateable elements visible.	55
BM01	SN 7592 7666 (approximate)	Cutting	Small cutting, c.1m by 3m, possibly a drain or ventilation shaft.	33
BM02	SN 75908 76684	Pond	Small holding pond, marked on the 1887 OS map, still visible with a prominent bank on the northern side.	34
BM03	SN 7590 7674	Spoil Tip	Extensive spoil tip, presumably associated with level PRN 93867.	37, 38
BM04	SN 75910 76764	Platform	A levelled platform of compacted stone. Function unknown.	39, 40
BM05	SN 7590 7696	Timbers	Part buried timberwork exposed by the stream.	57



Photo 31: View north, looking over the Bodcoll Mine site PRN 5476.



Photo 32: View northeast of mine level PRN 93865.



Photo 33: View east, looking at the overgrown mine cutting BM01. 1m scale.



Photo 34: View south, looking at the embanked northern edge of pond BM02.



Photo 35: View east, showing mine level cutting PRN 93867.



Photo 36: View east, looking into mine level PRN 93867.



Photo 37: View north, looking along spoil tip BM03.



Photo 38: View southeast, looking back at spoil tip BM03.



Photo 39: View north, looking over level stone surface BM04. 1m scale.



Photo 40: View east, looking across levelled surface BM04 (turf covered area in the foreground) at stone spoil and quarried surface above.



Photo 41: View south, looking down the cutting for level PRN 93866.



Photo 42: View northwest, looking over the spoil heap of mine level PRN 93866.



Photo 43: View north, remains of magazine PRN 93857. 1m scale.



Photo 44: View east, remains of magazine PRN 93857. 1m scale.



Photo 45: View east, infilled site of mine level PRN 93858. 1m scale.



Photo 46: View east, the east wall of mine building PRN 93859. 1m scale.



Photo 47: View west across the site of the former ore bins PRN 93860.



Photo 48: View east across the site of the former ore bins PRN 93860, showing some remnant walling.



Photo 49: View north, looking across the site of the former mine building complex PRN 93863.



Photo 50: View west across piles of stone and brick in the rough location of mine buildings PRN 93863.



Photo 51: View southeast across spoil tips PRN93864.



Photo 52: View northeast along leat PRN 93861, showing the point at which it turns to access an aqueduct to buildings PRN 93863. 1m scale.



Photo 53: View northeast along the line of leat PRN 93862. 1m scale.



Photo 54: View southwest along leat PRN 93863 as it curves around the hillside to head towards Bodcoll Mine.



Photo 55: View west along the farm trackway across the lower end of the site and potential line of Roman road PRN 106535. 1m scale.



Photo 56: View north across the low-lying river's edge and approximate location of a ford shown on the 1887 Ordnance Survey map.



Photo 57: View south showing the embedded timber exposed in the stream edge. 1m scale.



Photo 58: View south, showing the stream emerging from a buried culvert.

8 CONCLUSIONS

8.1 Development Details

- 8.1.1 Planned remediation work at the mine sites are currently in the early stages of development, therefore current outline proposals comprise the initial installation of flow monitoring structures and possible scour protection works.
- 8.1.2 Flow monitoring structures will be placed along the main watercourses, the approximate locations of which are indicated in Figures 13 to 15. Water will flow over a V-shaped channel which will be secured in place with gabion baskets or sandbags, or potentially with a built concrete structure (example structure illustrated in Figure 12). Clearance and levelling works may be required prior to installation and a monitoring device will be set up nearby. It is anticipated that these structures will be in place for between 18 months to five years and will therefore have some degree of durability about them.
- 8.1.3 Future works, including scour protection works, may require more extensive excavations to control the flow of water, along with enabling works such as the construction of access routes, parking and storage areas. The design, location and extent of these works has not yet been discussed but are likely to require ground-disturbing activities that could have a physical impact upon historic assets by potentially exposing, damaging or destroying archaeological remains.
- 8.1.4 The flow monitoring structures will be placed as follows:
- Nantycreiau Mine - to the south of the large spoil tip PRN 36763, with possible scour protection works required along the base of this spoil which is currently washed by the water course.
 - Nantycreiau West Mine - on the watercourse on the north side of the trackway, in an area of rough ground and forestry.
 - Bodcoll Mine site - on the lower-lying ground at the northern end of the site once the watercourse has passed through the mining remains.



Figure 12: Example of the flume to be used in the flow monitoring structure.

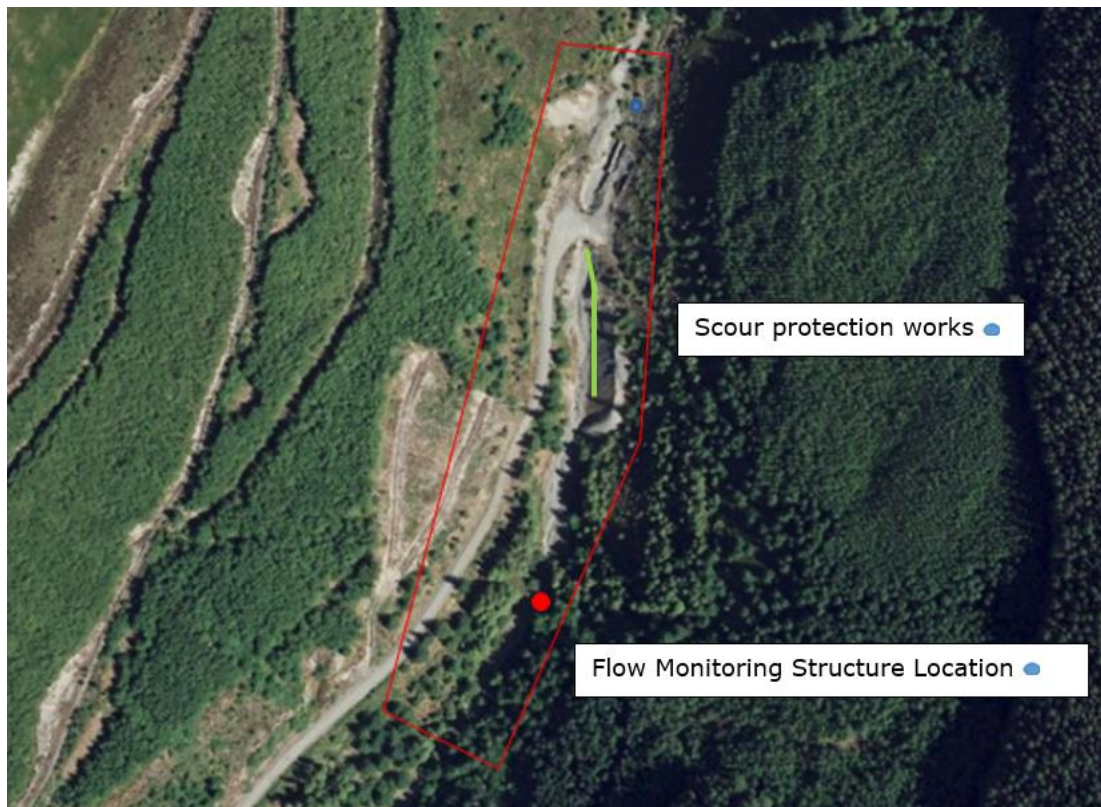


Figure 13: Location of Nantycreiau Mine monitoring structure and scour protection.

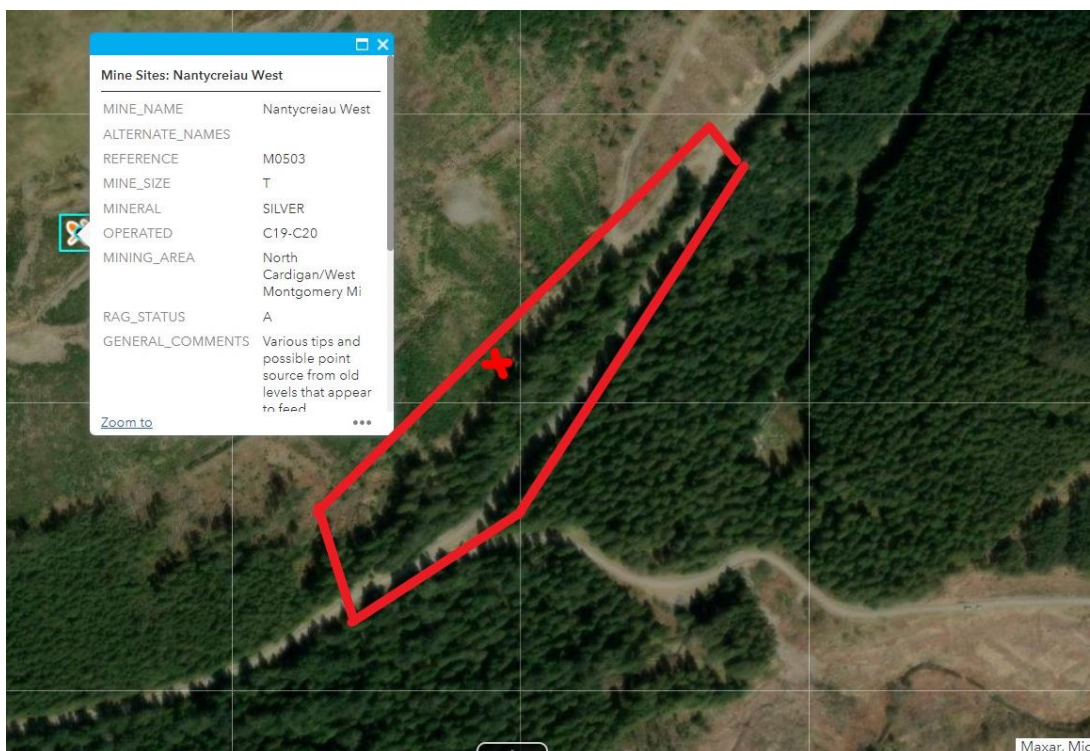


Figure 14: Approximate location of flow monitoring structure (red x) at the Nantycreiau West Mine site.



Figure 15: Approximate location of flow monitoring structure (red dot) at the Bodcoll Mine site.

8.2 Archaeological Constraints

- 8.2.1 The assessment has examined and detailed the historical and archaeological background to the site, identified the archaeological potential, and detailed specific features and areas of archaeological interest to allow a greater understanding of the archaeological importance and sensitivity of the site. This in turn can help inform appropriate remediation work proposals.

Pre-mining archaeology

- 8.2.2 The archaeological potential of all these sites clearly rests largely in the metal mining activity that was largely established in the 18th and 19th centuries and continued through into the early 20th century. Prior to this period the archaeological potential of these sites appears very limited, although there is the suggestion of some very early mining remains at the Nantycreiau Mine site, possibly Roman in origin. No physical evidence of these remains have been located and it assumed that they have largely been lost to subsequent mining and flooding events.

- 8.2.3 There is a suggestion that the original track passing through the Bodcoll Mine site may also have Roman origins, increasing the potential for Roman activity in this area. However, there is little to indicate that this track is Roman and the potential for Roman activity here remains low. There is increased evidence of activity in the area during the medieval period, although this is largely focussed on the Bodcoll Mine area with a potential ecclesiastical site across the river and a number of possible early settlement and farmstead sites in the surrounding landscape. Earlier post-medieval settlement sites are also recorded in the hills around Nantycreiau, the best preserved of which have since been scheduled. However, given the extent of subsequent mining activity on these sites, the potential for earlier archaeological remains to have survived appears minimal.

Nantycreiau Mine

- 8.2.4 The Nantycreiau Mine (PRN 9178) has early origins, with the potential for both Roman and some initial 18th century mining. The main period of works however was during the 19th century and visible remains of this activity survive. Although standing remains may not appear particularly prominent on this site there are plenty of indications that buried archaeological remains could survive from different periods of use. Substantial wall remains are visible at the crushing mill site (PRN 36758) and exposed timberwork suggests buried remains may be relatively well-preserved. Due largely to the confined nature of the valley setting, the extensive spoil tip (PRN 36763) is also likely to have covered earlier mine structures and potential mine openings. The potential early origins and remote location of this mine suggest buried archaeological remains could be of some significance.
- 8.2.5 The proposed location of the flow monitoring structure is in a less archaeologically sensitive area of the site, with no clear archaeological remains identified in the illustrated area. Scour protection works may however be located in an area of greater archaeological potential given the possibility of spoil having covered early elements of mining activity.

Nantycreiau West

- 8.2.6 In contrast to the other sites the archaeological potential of the Nantycreiau West study area appears far more limited. Mining activity in this area appears to have been shorter-lived and mining remains appear to be well illustrated. The primary locations for this mining activity lie outside the study area and no features of specific archaeological interest were identified in this locale. The proposed location for the flow monitoring structure appears to lie on a natural watercourse, albeit one that originates from mining activity further upslope, and the archaeological potential of this site appears negligible.

Bodcoll Mine

- 8.2.7 The Bodcoll Mine site (PRN 5476) has some early archaeological potential with a possible Roman road (PRN 106535) passing through the site and a likely medieval ecclesiastical site (PRN 33255) on the opposite side of the river, although the extent to which that affects the archaeological potential of the study area is uncertain. Mining at this site may have originated in the 18th century but the focus of activity was in the later 19th century and these remains appear relatively well located. Mine levels to the south and east may be relatively well-preserved but the bulk of the mine buildings on this site have been substantially cleared. Mine leats are clearly visible (PRNs 93861 and 93862) and the management of water flows across the site could be an important feature of this mine.

- 8.2.8 The proposed location of the flow monitoring structure is located to the north of the main documented areas of mining remains and therefore the archaeological significance of this area may be reduced. However, there remains an associated archaeological potential, with a former trackway passing nearby, buried timberwork exposed by the stream and possible culverted elements to the stream itself.

Designated historic assets

- 8.2.9 Although these mines are sites of some archaeological significance they are not designated as scheduled monuments, listed buildings or conservation areas and no such site lies within the potential development areas.
- 8.2.10 Scheduled monuments lie close to the Nantycreiau Mine site, however these sites should remain unaffected by the proposed works. These scheduled sites (CD180, CD181 and CD188) all represent deserted rural settlement and no direct or visual links to the mine sites have been established. Proposed works are unlikely to alter their settings.
- 8.2.11 Bodcoll Farm contains a number of Grade II listed buildings. Other than being located on the Bodcoll farm lands, there is no direct or visual link to the Bodcoll mine site and the listed buildings should remain unaffected by proposed works.
- 8.2.12 All three mine sites lie within the Upland Ceredigion Landscape of Outstanding Historic Interest (HLW (D) 2), subdivided into individual historic landscape areas. The main characteristics of these landscape areas are outlined in Section 4.3 and although the metal mine sites form important character elements within the landscapes it is unlikely that the scale of works proposed will be significant enough to impact upon this character.

8.3 Mitigation

- 8.3.1 Due to the archaeological sensitivity of both the Nantycreiau and Bodcoll Mine areas there is likely to be some form of archaeological mitigation required, both during the initial installation of monitoring structures and for any future remediation works.
- 8.3.2 For the initial monitoring structure installation no archaeological features have been clearly identified that require the locations to be adjusted. Visible archaeological remains have been mapped and should different locations for the monitoring structures be sought then it would be advisable to avoid these known features.
- 8.3.3 Archaeological potential exists at both the Nantycreiau and Bodcoll Mine sites however, therefore the archaeological monitoring of any ground breaking activity associated with the installation would be beneficial. Archaeological monitoring would require the presence of an archaeologist as groundworks are undertaken, with the opportunity and resources included within the development programme to allow any archaeological remains identified during this process to be sufficiently investigated and recorded. Provision should also be made in the possible but unlikely event that significant archaeological remains are uncovered requiring additional mitigation, such as additional time and resources.
- 8.3.4 Scour protection works and any future remediation works requiring ground-breaking activity at the Nantycreiau and Bodcoll Mine sites may need to be preceded by an intrusive archaeological evaluation to determine the nature of the buried archaeological resource and areas where archaeological remains may not be disturbed by subsequent works. As a minimum it is likely archaeological monitoring would be required on any future ground-breaking activity in these areas.

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