

LEVEL FAWR & GLOG FACH, PONT RHYD Y GROES, CEREDIGION: HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT



Prepared by DAT Archaeological Services
For: Coal Authority



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By

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LEVEL FAWR & GLOG FACH, PONT RHYD Y GROES, CEREDIGION

HISTORIC ENVIRONMENT DESK BASED ASSESSMENT

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LEVEL FAWR & GLOG FACH, PONT RHYD Y GROES, CEREDIGION HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT

EXECUTIVE SUMMARY

DAT Archaeological Services were commissioned by the Coal Authority 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 the Level Fawr adit in Pont-rhyd-y-groes, Ceredigion and the former Glog Fach metal mine site to the southeast.

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 Gwasanaethau Archaeolegol YAD 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 strwythyrau monitro i ddechrau, ar geuffordd Lefel Fawr ym Pot-rhyd-y-groes, Ceredigion a hen fwyngloddiau metel Glog Fach i'r de-ddwyrain.

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 DAT Archaeological Services were commissioned by the Coal Authority on behalf of the joint Metal (Non-Coal) Mine Programme between Natural Resources Wales (NRW) and the CA, to prepare an Historic Environment Desk-Based Assessment on the former Glog Fach Mine site and the Level Fawr adit portal at Pont-rhyd-y-groes, Ceredigion (SN 7455 7080 & SN 7393 7221), ahead of proposed remediation works at the site.
- 1.1.2 The former metal mining site of Glog Fach (PRN 25931) is located on a hill-top south of Pont-rhyd-y-groes. The mine was operational in the 19th and 20th centuries, and is comprised of seven shafts, two wheel-pits and an adit. Much of the site under assessment is comprised of large swathes of spoil and tip material surrounded by sloping hillside to the east and gently sloping fields to the west. This is currently used as grazing land. During rainfall events water currently drains across the spoil tips into the Western Shaft, where the water is then conveyed through the Level Fawr Adit to the portal at Pont-rhyd-y-groes.
- 1.1.3 The Level Fawr Adit portal (PRN 57523 / 96529) is located within the grounds of Count House, Pont-rhyd-y-groes. The adit discharges beneath the main highway and into a lined channel through the garden of the Count House. After exiting the Count House grounds the stream flows over a reinstated water wheel, under the road and into the Afon Ystwyth, where the input is believed to be a main factor in the waterbody failing to achieve WFD good status. Level Fawr Adit is the main drainage for five mine sites further up the catchment including Glog Fach. A case study published by NRW stated that Level Fawr discharges over one tonne of harmful metals into the Ystwyth River each year.
- 1.1.4 The Coal Authority are investigating potential remediation works in order to reduce metals entering the Ystwyth River, in the first instance through the installation of flow monitoring structures.
- 1.1.5 As well as being sites of archaeological interest in themselves, further sites of interest lie in the vicinity, along with listed buildings around the Level Fawr Adit (including the adit arch itself) and the area lies within a registered Historic Landscape. As a result, the Coal Authority have requested that an archaeological Desk-Based Assessment of the two sites and proposals be undertaken, in order to better assess the potential impact upon the historic environment and to inform potential future works.
- 1.1.6 The assessment has been a primarily desk-based study of the site areas, identifying any known archaeological or historical sites within the sites and their environs, identifying potential setting impacts on designated archaeological assets in the vicinity, identifying any historic landscape areas that may be affected by the proposals and assessing 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 sites 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:

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

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

1.4 Illustrations

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

1.5 Timeline

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

Table 1: Archaeological and Historical Timeline for Wales

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

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

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

2.2 Planning Policy Wales

- 2.2.1 Planning Policy Wales (Ed.11, 2021) sets out the Welsh Government's land use planning policies. Its primary objective is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.
- 2.2.2 Chapter 6, 'Distinctive and Natural Places', explains how planning systems must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the general well-being of present and future generations. It also sets out the planning policies for the sustainable management of specific categories of historic environment assets.

2.3 Technical Advice Note 24: The Historic Environment

- 2.3.1 This technical advice note provides guidance on how the planning system considers the historic environment during development plan preparation and decision making on planning and Listed Building consent applications. It also provides specific guidance on how the following historic environment assets should be considered:
- scheduled monuments
 - archaeological remains
 - listed buildings
 - conservation areas
 - historic parks and gardens
 - historic landscapes
 - historic assets of special local interest
 - World Heritage Sites
- 2.3.2 The technical advice note usefully gathers together the selection criteria employed in the designation of scheduled monuments and listed buildings and the registration of historic parks and gardens and historic landscapes.
- 2.3.3. Advice and decisions on planning applications affecting nationally significant historic environment features (or designated historic environment assets) is provided by Cadw acting on behalf of Welsh Government.
- 2.3.4 This report will also make reference to other guidance documents published by Cadw, namely: Conservation Principles (March 2011); Heritage Impact Assessment in Wales (May 2017); Managing Historic Character in Wales (May 2017); and Setting of Historic Assets in Wales (May 2017).

2.4 Local Development Plan

- 2.4.1 The 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.
- 2.4.2 The historic environment 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 The Level Fawr adit (SN 7393 7221 – Figures 1 & 2) is located in the gardens of Count House, itself a former mine office building located in Pont-rhyd-y-groes, Ceredigion. The adit is located below the road line (B4343) that surrounds the gardens, and discharges into a channel running through the gardens.
- 3.2 The village of Pont-rhyd-y-groes surrounds the site, lying largely on westerly facing slopes of the Ystwyth Valley. The river runs through a rocky course approximately 130m to the west of the site, and approximately 40m below the level. Dense woodland occupies the valley and upland slopes that surround the village on both sides of the valley.
- 3.3 The former Glog Fach mine is located roughly 1.6km to the southeast of Pont-rhyd-y-groes (SN 7455 7080 – Figures 1 & 2). The mine lies in close proximity to the former Glog Fawr mine, and the two were operated in tandem at various points in their history, but the two mines drain into different hydrometric catchments. The mine remains comprises shafts, adits, some tumbled building remains including wheel pits, terraced tramways and leats, large areas of both coarse and fine spoil, and a reservoir. The two sites cover a total surface area of around 19.5 hectares, although the study area is focussed on an area of approximately 8.4 hectares around the Glog Fach site.
- 3.4 The surrounding landscape is a semi-enclosed upland area, surrounded by post-and-wire fencing. The ground falls generally from east to west, although the eastern half of the site is steeper, the high point being Pen Glog-fawr at 394mOD immediately southeast of the study area. A trackway traverses the site, giving access to farm site along a ridge to the southwest, with the main road access to the north, which drops down to the village of Ysbyty Ystwyth 1.4km to the northwest.
- 3.5 The superficial geology of the Glog Fach area largely comprises the mine waste, but some pockets of peat are noted to the east and Devensian Till to the west. The area is underlain by mudstones of the Rhayader Mudstone and Devil's Bridge Formations. The Rhayader Mudstones are described as pale grey to green turbidite mudstones, the Devil's Bridge Formation

comprises thinly interbedded turbidite sandstone with green mudstones at the base. Mineralisation has taken place along fault planes in the geology, which has been exploited at Glog Fach and Glog Fawr.

- 3.6 The Level Fawr adit lies close to the boundary between the Cwmere Formation and the Derwenlas Formation. The Cwmere Formation comprised grey turbidite mudstone, the Derwenlas a light grey mudstone (BGS viewer).

Level Fawr & Glog Fach, Ceredigion: Historic Environment Desk-Based Assessment

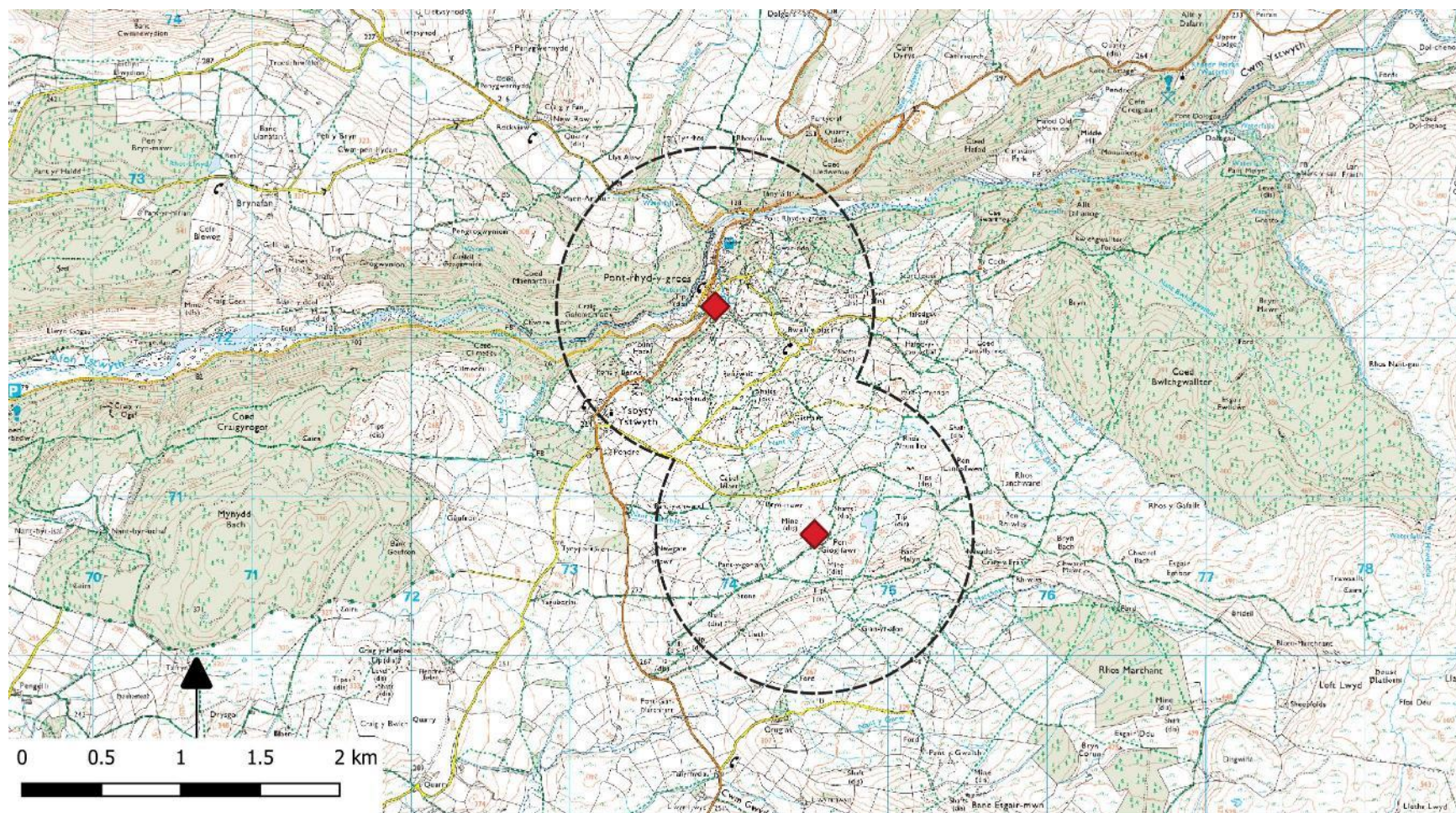


Figure 1: Location map, showing Level Fawr to the north, and Glog Fach to the south.

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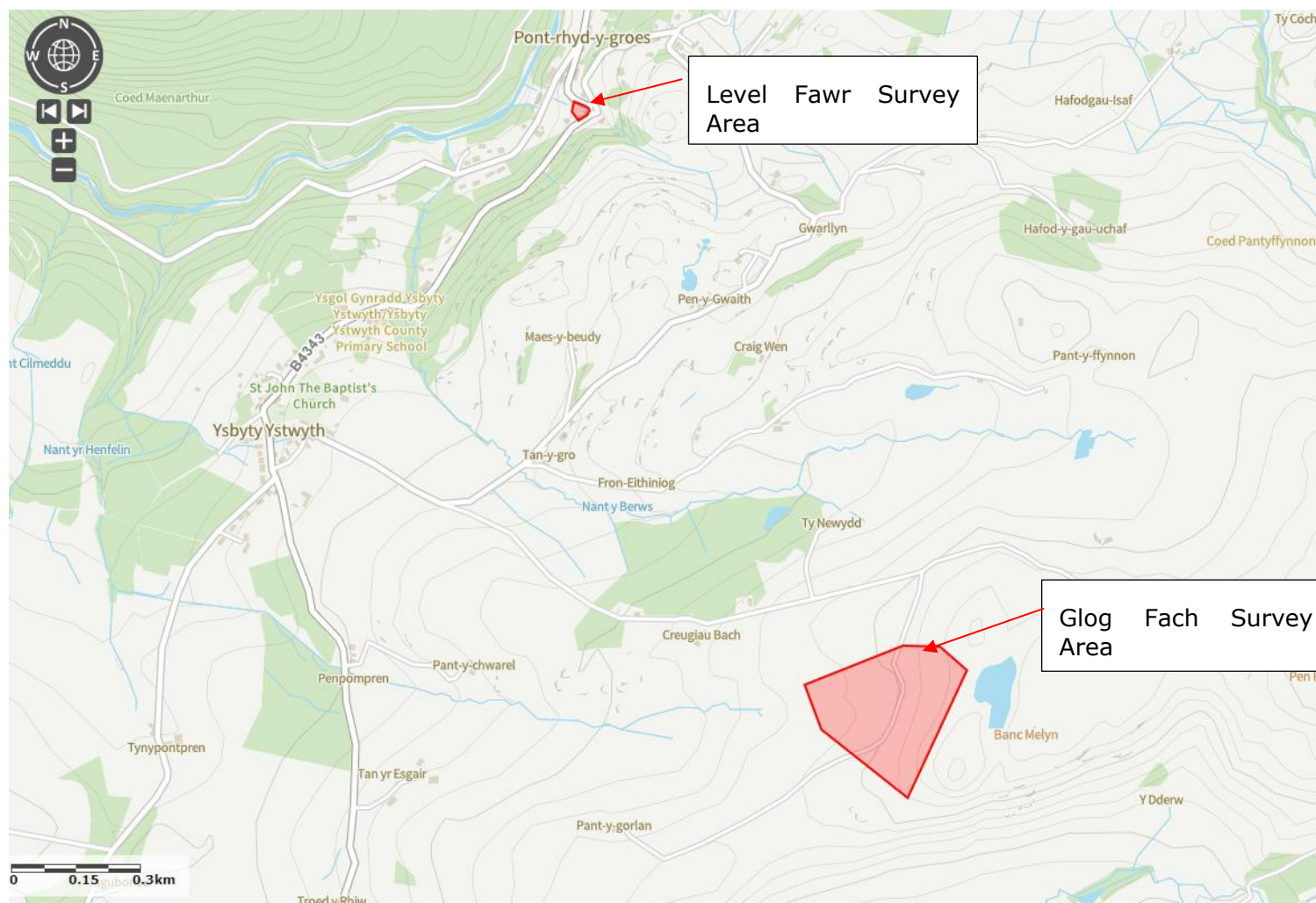


Figure 2: Location map in greater detail, showing the two site areas.

4 DESIGNATED HISTORIC ASSETS (Figures 3 & 4)

4.1 General

- 4.1.1 A search of data held on several databases was made of historic assets within the 1km radius search area. Designated assets beyond this search area 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. These sites are given legal protection, and consideration of the impact of development upon these sites and their settings are considerations of the planning process.
- 4.2.2 There is only one Scheduled Monument (SM) within the 1km radius study area: **CD235 Standing Stone c.250m NNE of Llethr**. This site lies around 500m to the southwest of Glog Fach mine, situated on the summit of area of high ground. The site is recorded on the Dyfed Historic Environment Record as PRN 5480. The following is the SM description:

The monument, also known as Carreg Samson, comprises a standing stone, probably dating to the Bronze Age (c. 2300 - 800 BC). It is located on a ridge crest overlooking the Marchnant valley to the SE. The standing stone measures 1.1m in height, 1.2m in length and 0.34m in width. It is oriented NE-SW. The stone is slab-like in shape and rectangular in cross-section.

The monument is of national importance for its potential to enhance our knowledge of prehistoric ritual and ceremonial practices. The monument is well preserved and is an important relic of a prehistoric funerary and ritual landscape. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits.

- 4.2.3 No further Scheduled Monument lie within the search area, and no further sites in the surrounding landscape that may be of relevance to the study site have been identified.

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 to help ensure that the historic character of the landscape is sustained, and that where change is contemplated, it is well-informed.
- 4.3.2 The site area lies within the **Upland Ceredigion Landscape of Outstanding Historic Interest (HLW (D) 2)**. This area is important for prehistoric and mining features. The area 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 Level Fawr adit lies within **HLCA 42 Ysbyty Ystwyth and Pont-rhyd-y-groes**, and the Gloch Fach mine site lies within **HLCA 36 Banc Esgair – Mwyn/Rhos Tanchwarel**.
- 4.3.4 **HLCA 42** includes two largely industrial villages, the spread of settlement largely springing up due to metal mining industry of the late 18th to early 20th century. Ysbyty Ystwyth may have its origins as a medieval hospice within the grange of Strata Florida Abbey, and appears to have developed as an agricultural settlement, demonstrated by the farmsteads around the periphery of the village. The centre of the village contained many dwellings seemingly built by and for mine workers. Pont-rhyd-y-groes is more clearly an industrial settlement, largely of the 19th century. A dense scatter of dispersed settlement on the higher ground above the villages likely originated as squatter settlements housing mine workers. Settlement lies on steep rocky slopes covered with small fields, unenclosed land and woodland, intermixed with mining remains.
- 4.3.5 **HLCA 36** was part of the medieval granges of Strata Florida Abbey, which became part of the Crosswood estate in the early 17th century. The area largely appears to have been unenclosed for much of its history, with some dispersed later post-medieval agricultural settlement and industrial squatter settlement. Many of these settlements have been abandoned, some derelict banked enclosures are visible, but current boundaries are largely of post-and-wire fencing. Old lead mines are a particularly distinct element of this area, spoil heaps being particularly prominent.

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* & 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 19 listed buildings within 1km search area, all Grade II listed and largely clustered within Pont-rhyd-y-groes or along the Ystwyth valley (Figure 4).
- 4.4.3 The Level Fawr adit itself is Grade II listed (ref.10694). The adjacent Count House is also Grade II listed, as Gwynfryn and Isfryn (ref.10693), as is the nearby Bronheulog (ref.83407) on the opposite side of the road, and Lisburne House 100m to the north (ref.25603). These buildings may share some link to the Level Fawr adit and mining activity associated with it, the remaining listed buildings within the search area share no clear links to the site.
- 4.4.4 **The Entrance arch to the Level Fawr (ref.10694)** is described in the Cadw Listed Building description (abridged) as:

Entrance arch to the 'Level Fawr' the most extensive mine drainage tunnel in central Wales. The Lefel Fawr was commenced in 1785 by John Probert to drain the Logaulas mine, one of the most ancient workings of the region. The level eventually also drained the Penygist and Glog mines.

The tunnel intended to run 360 fathoms (648 metres) to cut the seam [at Logaulas Mine] though still 17 fathoms (30.6 metres) above the bottom level. It did not reach the vein and after 30 years the project was abandoned before being extended the last few feet after 1824 by the Williams family, engineers. The dressing floors were at the Lefel Fawr entry, where the accounting house survives (now Gwynfryn/Isfryn). The dressing floors were powered by water brought down via the mines. The Lefel Fawr was probably extended from Logaulas after 1856, by 1863 it was 700 fathoms (1260 metres) long, 242 fathoms (435.6 metres) past Penygist [Mine] but 140 fathoms (252 metres) short of Glog Fawr [Mine] which it reached only in 1872. The level is said to be still passable up to Pengwaith Eof Ysbyty Ystwyth.

It is not certain that the arch itself dates from 1785, it may be a refacing of the entry in the earlier C19, but the late C18 date seems more probable.

Arch at entrance to the Lefel Fawr. Rubble stone jambs and ashlar segmental arch with finely cut radiating blocks and large keystone inscribed: 'This level was commenced AD. 1785' over crossed pick-axes. Arch is base of high rubble retaining wall carrying road.

Included as a remarkable surviving architectural relic of one of the most ambitious lead-mining engineering works of the region.

4.4.5 **Gwynfryn and Isfryn (ref.10693)**, now known as Count House, is described in the Cadw Listed Building description (abridged) as:

The former 'count house' to the Lisburne Mines, probably dating from after 1834, extended mid C19, sited just by the entrance to the Lefel Fawr, the great level that connected the various mines on high ground to the S. An old photograph shows the accounting house facing over a platform with rail track to a crushing-house set below the terrace to W, a lofted outbuilding opposite, and a house or office backing onto the bank by the entry to the level. Since the end of the lead mining, the building has been converted into flats, in single ownership.

A building on the Tithe map of 1843 is marked house and smithy, occupied by John Taylor, owned by the Earl of Lisburne, but appears to be much smaller than the present day structure; it may be the W end which appears, from a masonry joint on rear, to be earlier than the E half. The adjacent land is marked as 'Level Fawr and mine works and sheds'. The Lefel Fawr was commenced in 1785 by John Probert to drain the Logaulas mine [described above].

Whitewashed rubble stone with slate hipped eaves roof. Flat boarded eaves, renewed in C20. Two storeys, four-window range, upper windows under eaves with slate sills, concrete sills to ground floor. South front left half (Gwynfryn) has roof and first floor canted at SW angle with one first floor 16-pane sash. S front has two similar sashes to first floor left and one to ground floor aligned between upper windows, inserted narrow door to right of right window. An old stone door lintel visible to left of window. Right half (Isfryn) has

two-window range of horned 4-pane sashes, brick chimney on stone base on E end wall. E end roof is carried down over 2-storey 3-bay veranda with two turned posts at first floor, the right bay weatherboarded, and two iron posts below, the second bay infilled. Within, a doorway and first floor 16-pane sash with brick repair work on left side.

N rear elevation to road has double flight of rubble stone and slate steps to right, to double three-panel doors of former pay office, with 9-pane sash window to left, and large rendered stone chimney on roof verge to right, with smaller rendered brick shaft. Masonry joint between left and right parts, suggesting W half is earlier. The right half is windowless with added raking buttress and projection to left (the end wall of the veranda).

Included as a rare example of a Cornish-style accounting house at a Welsh lead mining site, the building of good late Georgian architectural character.

4.4.6 **Bronheulog (ref.83407)** is described in the Cadw Listed Building description (abridged) as:

House, with facade canted to follow line of road. Possibly late C18 or early C19. A C20 plaque 'c. 1785' relates to the Lefel Fawr mine drain, across the road. Apparently marked but not named on 1843 Tithe map.

House, whitewashed rubble stone with slate close-eaved roof and large rubble stone end stacks with dripstones and capstones. Two storeys, double fronted, the facade canted such that the one-window left section appears to be earlier than the right half with the door and other window bay. Two small first-floor windows, over ground floor larger and wider renewed two-pane windows. Large wooden door with stone lintel to right of centre. Old slates to roof and thick slate window sills. Left end wall has external chimney-breast. Rear of house is built into rock.

Listed as a traditional house of unusual form, possibly built related to the mineworks across the road.

4.4.7 **Lisburne House (ref.25603)** is described in the Cadw Listed Building description (abridged) as:

Warehouse building, probably mid-C19, the loft said to have been used as a mining apprentices school associated with the Lisburne Mining Company, the principal mining company of the area.

Storehouse range, long whitewashed rubble stone building with close-eaved slate roof. Built into bank to rear. Two storeys, four first floor big 16-pane windows, renewed in C20. In the two to left only the outer panes on the top tier open; in the other two the whole top tier opens. Stone voussoirs, slate sills. Ground floor has two large arched openings with slightly pointed tops to arches, with stone voussoirs and three small square windows with slab lintels and no sills. The arched openings are set between each pair of upper windows, and the blocked square windows are alternate. Modern boarded sliding doors.

Right gable end is rendered with large window to first floor. Left gable has very small square window above 16-pane window (later small window to right); steps up. Rear has openings at upper level only, and 2 large rectangular stone chimneys. Doorway at right end,

16-pane window to left, and to left of this a modern flat-roofed extension.

Listed as a rare industrial building associated with the lead mines of the area around Pontrhydygroes.

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 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 southwest.

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 to help 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 To the northeast of Pont-rhyd-y-groes lies the extensive Hafod estate (PGW (Dy) 50 (CER)), a Grade I picturesque landscape, with walks and a kitchen garden. The estate largely lies beyond the 1km search area but extends down the Ystwyth valley to within 1km of the Level Fawr adit. It is described as one of the most important and influential picturesque landscapes of the late 18th century in Britain, but is unlikely to be affected by any proposed works to Level Fawr or Glog Fach.

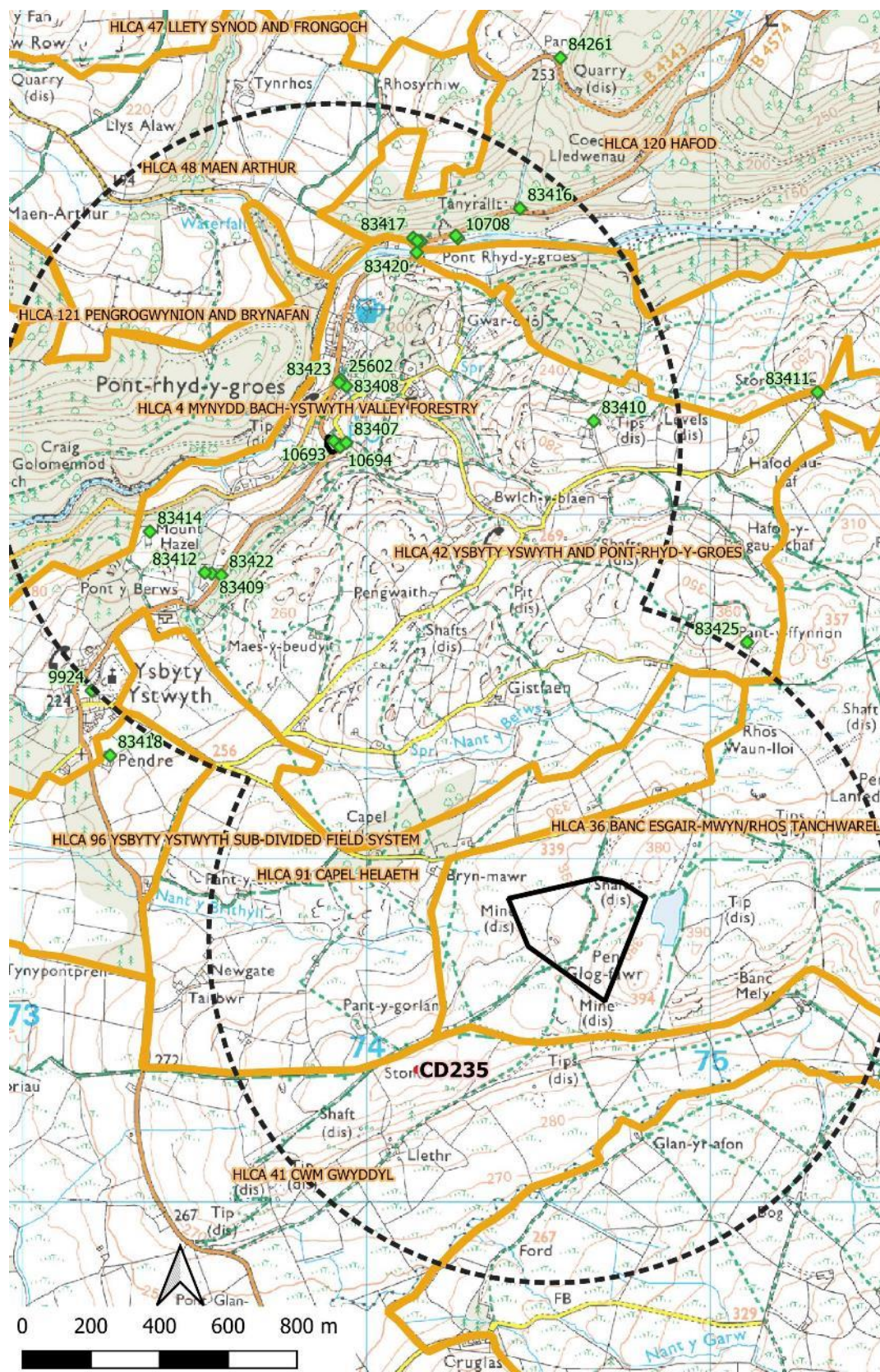


Figure 3: Location map showing Designated assets mentioned above. Scheduled Monuments in red, Listed Buildings in green and HLCA in orange.

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Figure 4: Detail map of the Level Fawr area, showing listed buildings (green) in the vicinity overlaid on 2006 aerial image.

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5 NON-DESIGNATED HISTORIC ASSETS (Table 2 and Figure 7)

5.1 General

- 5.1.1 A search of the regional Historic Environment Record (HER) and other databases was made within the 1km search area around the proposed project areas.
- 5.1.2 The HER records 215 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 Level Fawr adit and Glog Fach mine sites. These sites 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 & Neolithic

- 5.2.1 There are no sites of these periods recorded within the 1km study area. Evidence of activity during these periods is also scarce in the wider landscape with only one record of a possible Mesolithic mace-head (PRN 11421) some 3.5k to the northeast. The potential for archaeological remains of these periods in the immediate area therefore appears very low.

5.3 Bronze Age

- 5.3.1 Distributed widely across the landscape are artefacts and features of a Bronze Age date, four recorded within the search area. The closest positive remains being the Carreg Samson standing stone (PRN 5480, see also Scheduled Monuments section 4.2, CD235) which lies around 500m to the southwest of Glog Fach mine. 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, with Carreg Samson standing on the summit of a low ridge with extensive westerly and southern views. The site was supposedly created by St Samson during a game of quoits, hence the name, although its origins likely go back much further than the Christian era. A similar possible site has been located near Pont-rhyd-y-groes, the name 'Maen Arthur' (PRN 2065) potentially referring to a now vanished stone.
- 5.3.2 In between Level Fawr in Pont-rhyd-y-groes and Glog Fach lies Gistfaen (PRN 5483), another placename that may be a reference to a now vanished Bronze Age burial cist. No such feature has been recorded, although a Bronze Age halberd-blade (PRN 8325) has been recovered from the area in the early 20th century. A series of Bronze Age standing stones, burial mounds, burnt mounds and artefacts are dotted throughout the wider landscape, largely from the hills and valleys to the west.

5.4 Iron Age & Roman

- 5.4.1 There are no recorded sites of Iron Age or Roman date within the study area. The impressive Iron Age hillfort of Castell Grogwynion (PRN 2066) lies another 2km down the Ystwyth valley to show there was settlement and exploitation of the landscape during this period, but few further finds have come to light closer to the study area. There is little indication of activity in the landscape during the Roman period.

5.5 Early Medieval & Medieval Period

- 5.5.1 There are no Early Medieval sites recorded within the study area, and the occupation and use of this area during this period is unknown.
- 5.5.2 There are four potential sites of a medieval date within the study area, and a greater indication of settlement and activity in the wider landscape during this period. Throughout much of the medieval period the area was part of the extensive Cwmystwyth grange (PRN 12453) belonging to Strata Florida Abbey. The grange would largely have been managed as grazing and settlement may have been small-scale and dispersed, but other activities such as mineral extraction may have taken place. On the south side of the Ystwyth valley, further upriver from Pont-rhyd-y-groes, lie the tumbled remains of two long huts (PRNs 13301 & 26546). These may be simple agricultural dwellings that could date to the medieval or early post-medieval period. Towards the top of the valley nearby lie a series of pillow mounds (PRN 105467), artificial rabbit warrens that were used to farm rabbit during the medieval and earlier post-medieval periods until the advent of agricultural improvements in the 18th and 19th centuries allowed rabbits to spread more widely through the landscape. It is tempting to see the long huts and pillow mounds as connected features and part of a managed landscape.
- 5.5.3 The nearby settlement of Ysbyty Ystwyth may have medieval origins, possibly as a grange centre with the Cwmystwyth grange of Strata Florida abbey, including a hospice (hence the 'ysbyty' element), and respite on the pilgrimage route to the abbey.

5.6 Post Medieval & Modern Period

- 5.6.1 It is likely upland farming and open grazing continued throughout much of the post-medieval period, based around small dispersed settlements and farmsteads. By the later post-medieval period these dispersed farmsteads make up many of the recorded archaeological sites in the area (PRNs 95096, 98787, 107248, 107250, 125265 – 8, 125340 – 3, 125348 – 52, 125356 & 125357). Although dispersed these sites were often located along the border zone between the enclosed farmland in the more sheltered and fertile lower valley slopes, and the exposed open upland grazing, to allow access to both types of agriculture. Around Glog Fach these farmsteads include places like Bryn Mawr (PRN 125343) to the northwest, Pant-y-gorlan (PRN 125341) to the southwest, and Derw (PRN 98787) to the southeast. It is unlikely to find similar examples within the upland area of Glog Fach itself, although outlying agricultural features such as sheepfolds (eg PRNs 38018, 38032 & 100325), enclosures (eg PRN 38019) and temporarily occupied shepherds cottages, or hafodau (eg PRN 19781) may be more common. Pont-rhyd-y-groes is unlikely to have provided the accessibility to these differing farmland elements to attract farmsteads, and those recorded closest to the village

(PRN 125350 & 125357) both contain 'Hafod' elements, suggesting they may have originated as seasonal shepherd huts.

- 5.6.2 The landscape of this area began to change dramatically during the 18th and 19th centuries, driven primarily by the exploitation of mineral reserves, which largely began in the 18th century, intensified during the 19th century, and began to decline in the early 20th century. Lead was the main mineral being mined, although zinc and silver were also being extracted. This part of Ceredigion lies on the Central Wales orefield and subsequently there are a great number of mine complexes in this landscape, with the main complexes in the study area being Glog Fach (PRN 25931), Glog Fawr (PRN 25932), Logaulas (PRN 24586) and Penygist (PRN 25922), with additional small complexes at Pant-y-gwaith (PRN 25923) and Maen-Arthur (PRN 25919).
- 5.6.3 A large number of HER records describe individual features associated with these mines, resulting from site surveys undertaken in 1993 (Protheroe-Jones 1993) and subsequent re-assessments. Mine shafts, levels, dressing floors, leats, culverts, wheelpits, tramways, buildings and spoil tips are recorded as individual features at Glog Fach (PRNs 53138, 53140, 97524 – 8, 97535 – 56). This is repeated for the other mines in the area and includes mining features around the Level Fawr mine (PRNs 8748, 57523, 96529 – 31). These are described in more detail later in the report (Section 7), but an outline history of the sites are 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. It is possible there were workings at Logaulas mine (PRN 24586) during this period, although the extent of these works is not clear. In the late 17th century this royal monopoly was challenged by prominent local landowners and Sir Carberry Pryse and others obtained an Act of Parliament in 1693 to allow them to exploit their lands more systematically, opening up the private development of mining in the area. Pryse exploited his Gogerddan Estate to the north, whilst this area was part of Lord Lisburne's estate, and all of the mines mentioned previously were part of a large collection of 18th to early 20th century metal mines in the area known collectively as the Lisburne mines. The history of these mines is often interlinked, using the same network of features across the landscape and sharing a management and workforce.
- 5.6.5 Logaulas (PRN 24586) may be the oldest of the mines, located halfway between Glog Fach and Level Fawr. There may have been workings here prior to the 18th century (PRN description), but it is known to have been worked during the 18th century, although early 18th century workings in the area are ill-defined. Lewis (1967) records the mine under the management of Chauncey Townsend in the 1760s and 70s, yielding 847 tons of lead ore. In 1785 the lease was passed to John Probert, who had previously been jointly operating mines in Shropshire. At this time the mine reached a depth of around 140m (Bick 1974;22) and was being drained via pumps, operated manually or by horse whims, both laborious processes. To combat flooding issues a new level was cut from Pont-rhyd-y-groes, the Level Fawr adit (PRN 96529), to drain the mine, although it was some years before the adit reached the mine. Initially the ore vein at Logaulas appeared poor at this time, and works were abandoned but in 1824 the mine lease passed to the Williams family, whose initial exploitation appears to have met with great

success (Smyth 1848). However, these workings also soon faded as they lost the main lode, and with falling lead prices they were forced to abandon the mine. In 1834 the lease for the Lisburne mines passed to John Taylor. He was a mining engineer of some renown, having managed mines in Cornwall, Devon and Cumbria since the late 18th century. It was under the management of Taylor (and subsequent to 1845, Taylor & Sons), that the Lisburne mines reached their peak. They took over Logaulas at a time of rising prices and discovered a new rich lode. By 1860 the mine had been driven down to the 130 fathom (around 240m) level from the surface, from which water and ore had to be pumped and wound back up to the Level Fawr adit. Between 1834 and 1891 the mine yielded 39,000 tons of lead ore, second only to Frongoch in the Lisburne mines.

- 5.6.7 A short distance to the southeast of Logaulas mine lay Penygist mine (PRN 25922). Little appears to be recorded about this mine (Bick 1974;28), its output and sales may have been included along with that of Logaulas, but it was being worked in the 1840s and was connected to and drained by Level Fawr.
- 5.6.8 Glog Fach/Fawr (PRN 25931 & 25932) lay further to the southeast and was a more extensive complex than Penygist, the two mines often working in conjunction on the same mineral lode. It is possible that early workings are present at Glog Fach. Liscombe (c.1869-70) stated that at Glog Fach there 'presented certain indications of ancient works at and near the surface', and Spargo (1870) was more definite, stating 'Undoubtedly, from a remote period, mining had been carried out at and near the surface'. A letter from John Sheldon, dated 1824, in the National Library describes the seemingly sporadic excavation of ore from Glog Fach common and Llethr Bank between 8 and 18 years previously (c.1806 – 1816), with 'trenches' described on Glog Fach common suggesting surface mining. More systematic mining appears to have started when the Williams took over the lease of the Lisburne mines in 1824. A report from 1835, reproduced by Bick (1974;25) states that Glog Fach was a mine from which the Williams 'derived their principal returns', possibly reaching a depth of around 50 fathoms (c.90m) (Jones 1922;120).
- 5.6.9 When the Taylors took over in 1834 they constructed a long leat from Llyn Fyrddon 5km to the east and established a reservoir (PRN 97599) at Glog Fach/Fawr. The nature of the intervening topography meant this leat was ultimately 14.6km long by the time it reached the reservoir in 1835 ready to power a new wheel-pit at Glog Fach (Hughes 2004). The 1835 report reproduced by Bick (1974;25) states 'at Glogfach the wheel-pit has been made, and pullies are fixing to carry a long line of flat rods to the engine shaft. The expectations from this mine are very great'. There are two wheel-pits at Glog Fach/Fawr with associated flat rods connecting to engine shafts. One lies to the northeast (Wheelpit PRN 97535, Engine Shaft PRN 97540) around 100m north of the reservoir and adjacent to the leat from Llyn Fyrddon, and it is assumed this may be the initial Taylor workings. However, another wheel-pit (PRN 97553) with associated winder house (PRN 97554) and flat rods (PRNs 97555 & 97585) connecting to an engine shaft (PRN 97580) does largely lie within the study area. A further system of leats would have been required to power these features however, so this may be a subsequent development to the initial 1834/5 workings.
- 5.6.10 Both Glog Fach and Glog Fawr were soon productive after the commencement of the Taylor-era works, but by 1840 a steam engine either located at, or destined for Glog Fach, was sent to Cwmsymlog mine instead, and both Glog Fach and Fawr were closed down shortly after (Bick 1974;25). Work at Glog Fach recommenced in 1856, coming into production in 1859 and producing regular returns for the next 30 years. Bick (1974;28) considers it likely that

the Level Fawr adit was only extended as far as Glog Fach subsequent to the recommencement of mining in 1856, and it would appear likely most of the remains visible within the study area date to this post 1856 period. Descriptions by Moissenet in 1860 suggest the deepest levels reached 73 and 88 fathoms (133m & 160m), with the undressed ore being carted by road to the dressing floors (PRN 9153) at the Level Fawr adit. By 1863 the dressing was being carried out at Glog Fach, and deepest workings eventually reached 130 fathoms (238m). Lisburne (c.1869-70) remarks that this mine was remarkable for the large percentage of silver included in the lead ore, four times greater than any other mine in the area. The reported returns of ore at Glog Fach over three periods between 1838 and 1889 totalled c.7400 tons of lead and an estimated 169000 troy ounces of silver (data from the HER). Glog Fawr returned double the lead between 1862 and 1917, but only 2/5 of the silver. This however is somewhat contradicted by Spargo (1870) who states that generally these Lisburne mines (including Glog Fach) produced very little silver, with Glog Fach ore containing 33 ounces of silver to the ton.

- 5.6.11 At neighbouring Glog Fawr works were restarted in 1860, returning ore in 1864 through until 1893. Initially the mine was served by adits from the Marchnant valley to the south, and the Engine Shaft (PRN 97580) provided the main access to the mine where the main lode and north branch were worked. In 1907 the lease passed to the Lisburne Development Syndicate who sank a new deep shaft to the east of the reservoir and cut a branch to meet it from Level Fawr. This early 20th century mine was powered by a turbine generating electricity, accompanied by oil engines, with the 20th century workings providing some of the clearest surviving evidence from the swansong of metal mining in the mid-Wales orefield (Protheroe-Jones 1993). This mine finally closed in 1920.
- 5.6.12 The Level Fawr adit (PRN 96529) which connected all these mines, was started by Probert in 1785 but took around 100 years to reach its full extent. It was tied in to the 90 fathoms level (c.165mOD). Initial work was slow, hampered by hard strata and rising costs. By 1788 James Lowe, the mine manager, reported that only 100 fathoms (c.180m) had been cut (Bick 1974;28) and it appears to have taken some 30 years to reach the first of the mines at Logaulas (*ibid*;24). The level had been extended to Penygist by the 1840s. As stated, it is thought that work may not have begun on extending Level Fawr further until work began in earnest at Glog Fach in 1856. By mid-1863 Level Fawr extended 700 fathoms (c.1.3km), which took it 400m beyond Penygist, but still around 250m short of Glog Fach, which it finally reached in 1872 (Bick 1974;28), becoming the longest drainage adit in mid Wales. As stated above, a final connection was also made from the early-20th century workings at Glog Fawr sometime between 1907 and 1920.
- 5.6.13 A complex of offices, workshops and ore dressing plant (PRNs 9153, 96530-3) grew up around the mouth of the Level Fawr adit (PRN 57523 / 96529), along with the counting house (PRNs 8748 / 57522) where the miners received their wages. When the Taylors arrived in the 1830s the main road through the area was the 18th century toll road (PRN 109002) that winds through Pont-rhyd-y-groes immediately above the Level Fawr adit. To carry ore and supplies the Taylors extended the road along the south bank of the Ystwyth, below the Level Fawr adit. This divided the dressing floors. Above, and in front of the adit lay the 27inch diameter dressing rolls for coarse crushing, with stamps for fine crushing on the lower ground to the west. As well as being fed by the Level Fawr adit, surface leats also carried water from the reservoir (PRN 97599) at Glog Fach, where it also powered the water wheels at Logaulas mine and a sawmill above Level Fawr, where Crud yr Awel currently stands. In 1859 between 70 to 80 men, women and children were

employed above ground on the dressing floors at Level Fawr and another Lisburne mine at Frongoch. In addition, 324 men were employed underground across all the Lisburne mines (Bick 1974;28).

- 5.6.14 Many of the remaining sites recorded on the HER are as a consequence of the extensive metal mining industry of the 18th and 19th century. Much of the settlement of Pont-rhyd-y-groes formed to accommodate incoming workers at the mines. As evidenced in a Government Commission into working conditions in the mine in 1863 (Bick 1974; 29-30) the workers cottages were generally small, dark and dirty, with ill-fitting windows and doors and large draughty chimneys. Numerous cottages are recorded in the surrounding landscape (PRNs 9384 – 94, 10006, 19780, 19781, 58243, 58244, 58250, 96526 & 104937 – 9), only some of which still survive, but all likely representing dispersed dwellings occupied by miners and agricultural works and their families. Some larger houses were also built, such as Bronheulog (PRN 58241), Bronygraig (PRN 58242), Glyn Berws (PRN 58246), Mount Hazel (PRN 58248) and Tan Gelli (PRN 58256) that may also have links to the mining industry. To serve the spiritual needs of a growing population chapels were also built, such as Capel Bethel (PRN 19731), Capel Heleth (PRN 19778) and Methodist chapels near Pant y Dail (PRN 19730) and Waen Lloi (PRN 19745) and a new church was built in Ysbyty Ystwyth (PRN 50164) adjacent to the smaller original church (PRN 5489). The mines also provided for new schools, including one for mining apprentices (PRN 43815 / 58027) built in the mid-19th century, and a later general school (PRN 19775) built in the late 19th century. Also built in the mid-19th century was the town post office (PRN 43816).
- 5.6.15 Other industries are also recorded, such as the 19th century woollen mill at Gwar-felin (PRN 19729), the earlier 16th to 18th century mill at Maenarthur (PRN 42469), and quarries (PRNs 19732, 19733, 19746, 19776, 19779 & 100324).
- 5.6.16 The final remaining group of records recorded on the HER relate to the Hafod Estate, an extensive and renowned 18th and 19th century picturesque estate to the north and northeast of the study area. Outlying elements, such as lodges (PRNs 24591, 35906 & 103477) and other estate housing (PRN 58247 & 58260) lie within the study area, but the main estate features are largely confined to landscape beyond the study area.

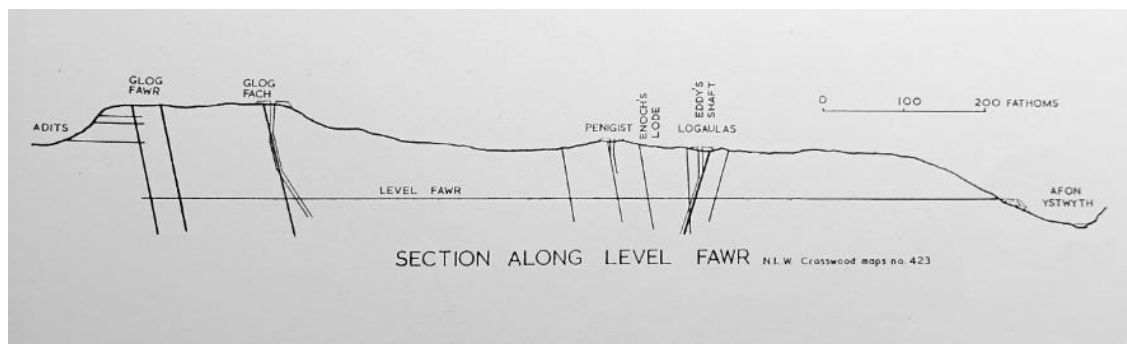


Figure 5: Section of the Level Fawr adit, taken from Bick 1974;31.

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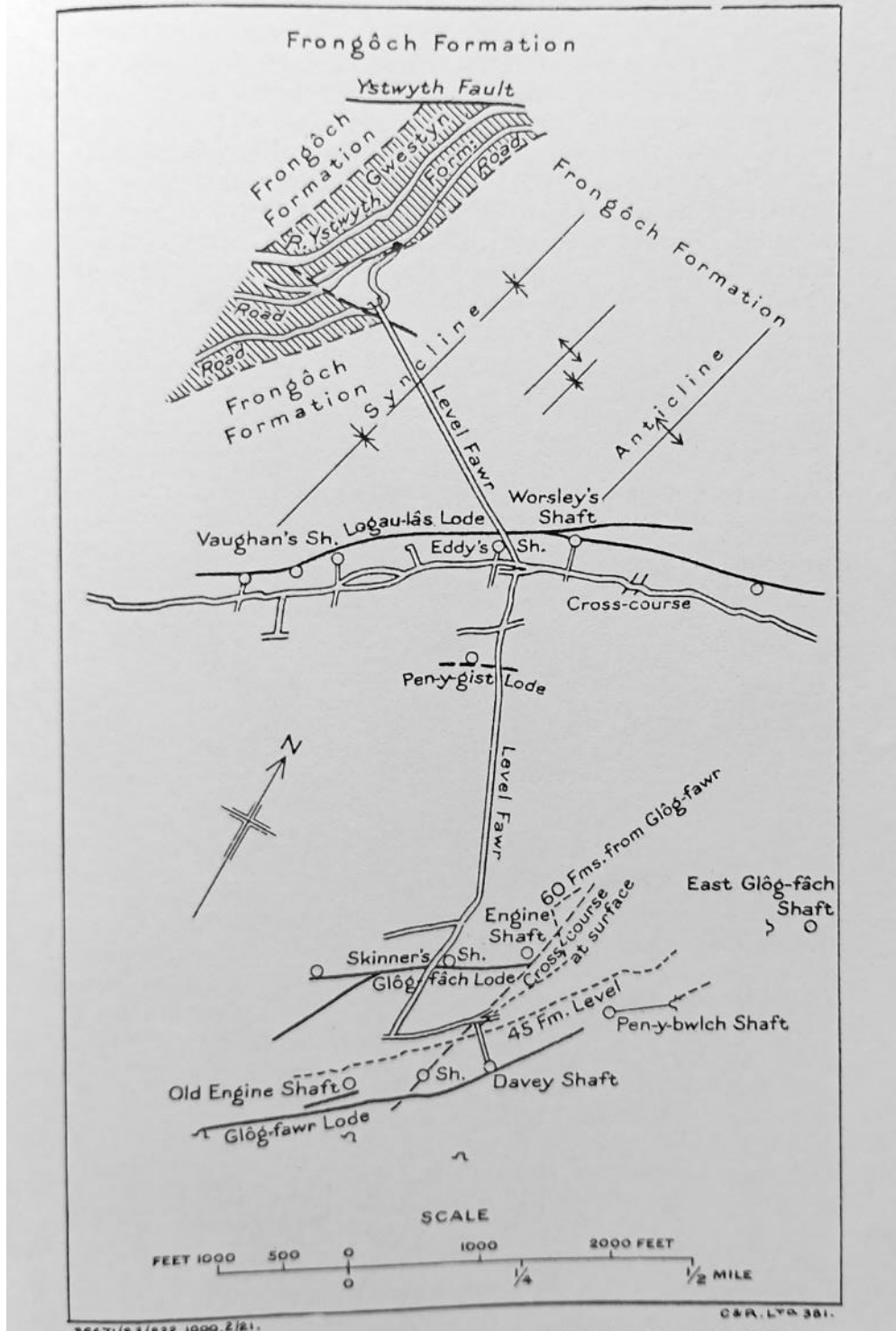


Figure 6: Plan of the Level Fawr adit, and location of main mines and lodes. Taken from Jones 1922;120.

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

Table 2: All sites recorded on the HER

Prn	Site Name	Type	Period	NGR
2065	Maen Arthur	Standing Stone	Bronze Age	SN73547246
5480	Carreg Samson	Standing Stone	Bronze Age	SN7414970381
5483	Gistfaen	Cist	Bronze Age	SN74357155
8325	Pontrhydygroes	Finds	Bronze Age	SN7400073000
8748	Mine Pay Office	Counting House	Post Medieval	SN73917222
9153	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine	Lead Mine	Post Medieval	SN739722
9384	Pant-y-ddafad	Cottage	Post Medieval	SN74497260
9385	Pen-glog-isaf	Cottage	Post Medieval	SN74657172
9386	Bryn-mawr	Cottage	Post Medieval	SN7414370876
9387	Blaen-waen	Cottage	Post Medieval	SN74957122
9388	Blaen-waen	Cottage	Post Medieval	SN74857119
9389	Glog-fach	Cottage	Post Medieval	SN74737111
9390	Pant-y-gorlan	Cottage	Post Medieval	SN74317053
9391	Pant-y-gorlan	Cottage	Post Medieval	SN74317053
9392	Pant-y-gorlan	Cottage	Post Medieval	SN74027040
9393	Ty-newydd	Cottage	Post Medieval	SN73827061
9394	Cefn-yr-esgair	Cottage	Post Medieval	SN73667047
10006	Maenarthur Cottage	Cottage	Post Medieval	SN73547246
12453	Ledwennau; Cwmystwyth Grange	Grange; Monastic Land	Medieval	SN7300072000
13301	Banc Pant Y Rhedyn	Longhouse	Medieval; Post Medieval	SN74737262
17433	Pont Rhyd Y Groes	Bridge	Post Medieval	SN74127274
19728	Gwar-felin	Dwelling	Post Medieval	SN73857272
19729	Gwar-felin	Factory; Woollen Mill	Post Medieval	SN73877267
19730	Ysgol Maenarthur	Chapel; Dwelling	Post Medieval	SN73447288
19731	Capel Bethel	Chapel	Post Medieval	SN73967244
19732		Quarry	Post Medieval	SN7383272046

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

19733	Lower Lodge Quarry	Lead Mine; Quarry	Post Medieval	SN7423072845
19737	Pont Y Berws	Bridge	Post Medieval	SN73507174
19745		Chapel	Post Medieval	SN75017154
19746		Quarry	Post Medieval	SN75137120
19775	Ysbyty Ystwyth School	School	Post Medieval	SN73437170
19776	Ysbyty Ystwyth Quarry	Quarry	Post Medieval	SN73237160
19778	Capel Heleth	Chapel	Post Medieval	SN74057102
19779		Quarry	Post Medieval	SN73767134
19780	Hafod Edward	Cottage	Post Medieval	SN74207216
19781	Hafotty	Cottage	Post Medieval	SN74207237
24586	Logaulas; Lisburne; Logylas; Logylas East	Metal Mine	Post Medieval	SN743717
24587	Banc Yr Hafodgau	Deserted Rural Settlement	Post Medieval	SN74807260
24591	Hafod Lower Lodge	Lodge	Post Medieval	SN7427072806
24592	Hafod Lower Lodge	Gate	Post Medieval	SN7426372814
25919	Pontrhydygroes; Maenarthur; Pont- rhydygroes	Lead Mine	Post Medieval	SN7368372801
25922	Penygist; Lisburne; Logaulas	Lead Mine	Post Medieval	SN7451471579
25923	Pant-y-gwaith	Lead Mine	Post Medieval	SN747723
25931	Glogfach; Gogfawr; Lisburne; Pen Glog Fach	Lead Mine	Post Medieval	SN746708
25932	Glogfawr; Lisburne; Pen Glog Fawr	Lead Mine	Post Medieval	SN746708
26546	Banc Pant Y Rhedyn	Long Hut	Medieval; Post Medieval	SN7433272648
33538	Hafod	Boundary Wall	Post Medieval	SN74717276
35906	Hafod Old Lower Lodge	Lodge	Post Medieval	SN7430172816
38018	Maen Arthur Sheepfold	Sheep Fold	Post Medieval	SN7327072166
38019	Maen Arthur Enclosure	Enclosure	Post Medieval	SN7328572164
38020	Maen Arthur Quarry I	Quarry	Modern	SN7331772184
38032	Graig Golomenod	Sheep Fold	Post Medieval	SN7324272165
42469	Maenarthur Mill	Mill	Post Medieval	SN7377072610
43815	Mining School	School	Post Medieval	SN73807223

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

43816	Former Post Office	Post Office	Post Medieval	SN7392672394
50164	Ysbyty Ystwyth Parish Church; St John the Baptist	Church	Post Medieval	SN73267152
53137		Aqueduct	Post Medieval	SN7473971031
53138	Glogfach	Mining Remains	Post Medieval	SN7518771008
53139	Glogfawr; Pen Bwlch-dderw	Adit	Post Medieval	SN7531771106
53140	Glogfach; Glogfawr	Dam	Post Medieval	SN7490970906
53141		Shaft	Post Medieval	SN7425570451
53142		Clearance Cairn	Post Medieval	SN7415170357
53143	Pen Lan-fach	Aqueduct	Post Medieval	SN7377070160
57522	Gwynfryn and Isfryn	Counting House	Post Medieval	SN7390672215
57523	Entrance Arch to the Lefel Fawr	Arch	Post Medieval	SN7392472198
58027	Lisburne House	Mining School	Post Medieval	SN7387172301
58241	Bronheulog	House	Post Medieval	SN7394072211
58242	Bronygraig	House	Post Medieval	SN7394172376
58243	Cottage and Outbuilding at Glyn Berws	Cottage	Post Medieval	SN7355071830
58244	Cottage to SE of Pantyrhedyn	House	Post Medieval	SN7466672274
58246	Glyn Berws	Villa	Post Medieval	SN7353071833
58247	Hafod House	House	Post Medieval	SN7415972798
58248	Mount Hazel	Villa	Post Medieval	SN7337171954
58250	Nos 1 and 2 Smiths Cottages	Cottage	Post Medieval	SN7445072892
58251	Outbuilding at Ystwyth Villa	Barn	Post Medieval	SN7413772805
58254	Pont Rhydygroes	Bridge	Post Medieval	SN7414772765
58256	Tan Gelli	Villa	Post Medieval	SN7357571826
58257	Telephone Call-box Outside the Old Post Office	Telephone Call-Box	Post Medieval	SN7391872381
58260	Ystwyth Villa	House	Post Medieval	SN7414972799
95096	Maes-y-beudy	Farmstead	Post Medieval	SN73857164
96516	Pant-y-gwaith	Wheel Pit	Post Medieval	SN74787231
96517	Pant-y-gwaith	Spoil Heap	Post Medieval	SN74807233
96518	Pant-y-gwaith	Shaft	Post Medieval	SN74747230

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

96519	Pant-y-gwaith	Wheel Pit	Post Medieval	SN74777234
96520	Pant-y-gwaith	Level	Post Medieval	SN74767234
96521	Pant-y-gwaith	Retaining Wall	Post Medieval	SN74777235
96522	Pant-y-gwaith	Mine Building	Post Medieval	SN74757235
96523	Pant-y-gwaith	Spoil Heap	Post Medieval	SN74767236
96524	Pant-y-gwaith	Spoil Heap	Post Medieval	SN74727228
96525	Pant-y-gwaith	Level	Post Medieval	SN74717225
96526	Pant-y-gwaith	Cottage	Post Medieval	SN74727225
96527	Penygist; Lisburne; Logaulas	Shaft	Post Medieval	SN74517157
96528	Penygist; Lisburne; Logaulas	Spoil Heap	Post Medieval	SN74517156
96529	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine	Level	Post Medieval	SN73917219
96530	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine	Mine Office	Post Medieval	SN73907221
96531	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine	Mine Building	Post Medieval	SN73897218
96532	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine Mine	Mine Building	Post Medieval	SN73847222
96533	Maen Arthur; Logaulas; Level Fawr; Lisburne Mine	Spoil Heap	Post Medieval	SN73837219
97524	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Winding Gear	Post Medieval	SN75047108
97525	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Leat	Post Medieval	SN75077100
97526	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Leat	Post Medieval	SN74917112
97527	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Tramway	Post Medieval	SN74897107
97528	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Winder House	Post Medieval	SN74967103
97535	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Wheelpit	Post Medieval	SN74967103
97536	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Balance Pit	Post Medieval	SN74977103
97537	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Shaft	Post Medieval	SN74957102
97538	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Spoil Heap	Post Medieval	SN74977104

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

97539	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Building	Post Medieval	SN74927093
97540	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Shaft	Post Medieval	SN74907099
97541	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Gulley	Post Medieval	SN74847095
97542	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Shaft	Post Medieval	SN74817093
97543	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Level	Post Medieval	SN74787092
97544	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Waste Tips	Post Medieval	SN74847091
97545	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Ore Bin; Retaining Walls	Post Medieval	SN74717090
97546	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Magazine	Post Medieval	SN74777085
97547	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Workings	Post Medieval	SN74637083
97548	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Cobbled Surface	Post Medieval	SN74667085
97549	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Tramway	Post Medieval	SN74687077
97550	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Leat	Post Medieval	SN74717080
97551	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Waste Tips	Post Medieval	SN74567085
97552	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Mine Shaft	Post Medieval	SN74547077
97553	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Wheelpit	Post Medieval	SN74557075
97554	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Winder House	Post Medieval	SN74567075
97555	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Flat Rods	Post Medieval	SN74597072
97556	Glogfach; Glogfawr; Lisburne; Pen Glog Fach	Wooden Structure	Post Medieval	SN74597071
97557	Glogfawr; Lisburne; Pen Glog Fawr	Level	Post Medieval	SN75317109
97558	Glogfawr; Lisburne; Pen Glog Fawr	Mine Shaft	Post Medieval	SN75207099
97559	Glogfawr; Lisburne; Pen Glog Fawr	Waste Tips	Post Medieval	SN74597071
97560	Glogfawr; Lisburne; Pen Glog Fawr	Mine Shaft	Post Medieval	SN75057080

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

97561	Glogfawr; Lisburne; Pen Glog Fawr	Loading Bay	Post Medieval	SN75047080
97562	Glogfawr; Lisburne; Pen Glog Fawr	Gulley; Tramway	Post Medieval	SN75017074
97563	Glogfawr; Lisburne; Pen Glog Fawr	Stone Upright	Post Medieval	SN74917072
97564	Glogfawr; Lisburne; Pen Glog Fawr	Stone Upright	Post Medieval	SN74947067
97565	Glogfawr; Lisburne; Pen Glog Fawr	Spoil Heap	Post Medieval	SN74937065
97566	Glogfawr; Lisburne; Pen Glog Fawr	Gulley	Post Medieval	SN74967064
97567	Glogfawr; Lisburne; Pen Glog Fawr	Trial Level	Post Medieval	SN75057054
97568	Glogfawr; Lisburne; Pen Glog Fawr	Mine Structure	Post Medieval	SN74857072
97569	Glogfawr; Lisburne; Pen Glog Fawr	Pipeline	Post Medieval	SN74877072
97570	Glogfawr; Lisburne; Pen Glog Fawr	Mine Shaft	Post Medieval	SN74887067
97571	Glogfawr; Lisburne; Pen Glog Fawr	Dump	Post Medieval	SN74907058
97572	Glogfawr; Lisburne; Pen Glog Fawr	Tramway	Post Medieval	SN74867057
97573	Glogfawr; Lisburne; Pen Glog Fawr	Retaining Wall	Post Medieval	SN74817055
97574	Glogfawr; Lisburne; Pen Glog Fawr	Mine Shaft	Post Medieval	SN74817057
97575	Glogfawr; Lisburne; Pen Glog Fawr	Level	Post Medieval	SN74797049
97576	Glogfawr; Lisburne; Pen Glog Fawr	Level	Post Medieval	SN74677047
97577	Glogfawr; Lisburne; Pen Glog Fawr	Waste Tips	Post Medieval	SN74727052
97578	Glogfawr; Lisburne; Pen Glog Fawr	Mine Shaft	Post Medieval	SN74707055
97579	Glogfawr; Lisburne; Pen Glog Fawr	Waste Tips	Post Medieval	SN74757057
97580	Glogfawr; Lisburne; Pen Glog Fawr	Engine Shaft	Post Medieval	SN74737057
97581	Glogfawr; Lisburne; Pen Glog Fawr	Balance Pit	Post Medieval	SN74737057
97582	Glogfawr; Lisburne; Pen Glog Fawr	Balance Pit	Post Medieval	SN74737057
97583	Glogfawr; Lisburne; Pen Glog Fawr	Tramway	Post Medieval	SN74697059
97584	Glogfawr; Lisburne; Pen Glog Fawr	Ore Bin	Post Medieval	SN74667062
97585	Glogfawr; Lisburne; Pen Glog Fawr	Flat Culvert Rod	Post Medieval	SN74697062
97586	Glogfawr; Lisburne; Pen Glog Fawr	Gulley	Post Medieval	SN74667064
97587	Glogfawr; Lisburne; Pen Glog Fawr	Retaining Walls	Post Medieval	SN74907064
97588	Glogfawr; Lisburne; Pen Glog Fawr	Tank	Post Medieval	SN74897064
97589	Glogfawr; Lisburne; Pen Glog Fawr	Buddle	Post Medieval	SN74897062
97590	Glogfawr; Lisburne; Pen Glog Fawr	Retaining Wall	Post Medieval	SN74907062

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

97591	Glogfawr; Lisburne; Pen Glog Fawr	Culvert	Post Medieval	SN74657066
97592	Glogfawr; Lisburne; Pen Glog Fawr	Culvert	Post Medieval	SN74637068
97593	Glogfawr; Lisburne; Pen Glog Fawr	Waste Tips	Post Medieval	SN74647070
97594	Glogfawr; Lisburne; Pen Glog Fawr	Mine Building	Post Medieval	SN74577067
97595	Glogfawr; Lisburne; Pen Glog Fawr	Tramway Embankment	Post Medieval	SN74647061
97596	Glogfawr; Lisburne; Pen Glog Fawr	Cobbled Surface	Post Medieval	SN74647063
97597	Glogfawr; Lisburne; Pen Glog Fawr	Mine Building	Post Medieval	SN74657063
97598	Glogfawr; Lisburne; Pen Glog Fawr	Waste Tips	Post Medieval	SN74627066
97599	Glogfawr; Lisburne; Pen Glog Fawr	Reservoir	Post Medieval	SN74897083
97813	Logaulas; Lisburne; Logylas; Logylas East	Spoil Heap	Post Medieval	SN74387184
97814	Logaulas; Lisburne; Logylas; Logylas East	Wheel Pit	Post Medieval	SN74417181
97815	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74437183
97816	Logaulas; Lisburne; Logylas; Logylas East	Mining Feature	Post Medieval	SN74447186
97817	Logaulas; Lisburne; Logylas; Logylas East	Wheel Pit	Post Medieval	SN74547193
97818	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74497198
97819	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74597193
97821	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN73967148
97822	Logaulas; Lisburne; Logylas; Logylas East	Opencast Lead Working	Post Medieval	SN74097162
97823	Logaulas; Lisburne; Logylas; Logylas East	Spoil Tips	Post Medieval	SN74117167
97824	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74057156
97825	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74067155
97826	Logaulas; Lisburne; Logylas; Logylas East	Spoil Heap	Post Medieval	SN74067155
97827	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74087160

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

97828	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74127163
97829	Logaulas; Lisburne; Logylas; Logylas East	Level	Post Medieval	SN74157170
97830	Logaulas; Lisburne; Logylas; Logylas East	Shaft	Post Medieval	SN74327177
98787	Derw	Farmstead	Post Medieval	SN75267059
100324		Quarry	Post Medieval	SN74477272
100325		Sheepfold	Post Medieval	SN74497260
103477	Arch Isaf	Lodge	Post Medieval	SN74517282
104937		Cottage	Post Medieval	SN73317184
104938		Cottage	Post Medieval	SN74237101
104939	Ty-newydd	Cottage	Post Medieval	SN74507122
105467	Storehouse	Pillow Mound	Medieval; Post Medieval	SN74877245
107248	Gistfaen	Farmstead	Post Medieval	SN74387147
107250	Maes-y-beudy	Farmstead	Post Medieval	SN73867164
107252	Gwar-ddol	Smallholding	Post Medieval	SN74277254
109002		Toll Road	Post Medieval	SN73807190
116392	Glogfawr; Pen Bwlch-dderw	Mining Remains	Post Medieval	SN7518771008
125265	Pant-y-chwarel	Farmstead	Post Medieval	SN7364370900
125266	Ty Mawr	Farmstead	Post Medieval	SN7321371600
125267	Pen-y-Ffynnon; Mount Hazel	Farmstead	Post Medieval	SN7336071937
125268	Maen Arthur Cottage	Farmstead	Post Medieval	SN7354672473
125340	Llethr	Farmstead	Post Medieval	SN7409070147
125341	Pant-y-gorlan	Farmstead	Post Medieval	SN7399570509
125343	Bryn Mawr; Crugiau Bach	Farmstead	Post Medieval	SN7420270963
125348	Waen-lloi	Farmstead	Post Medieval	SN7486071561
125349	Maes-y-beudy	Farmstead	Post Medieval	SN7386771654
125350	Hafod Edward	Farmstead	Post Medieval	SN7420472147
125351	Bwlch-y-blaen	Farmstead	Post Medieval	SN7436372029
125352	Ochr-y-glog	Farmstead	Post Medieval	SN7470872058
125356	Gwar-ddol	Farmstead	Post Medieval	SN7427172536

Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

125357	Tan-y-graig; Bod Hedd	Farmstead	Post Medieval	SN7414272338
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Level Fawr & Glog Fach, Ceredigion:
Historic Environment Desk-Based Assessment

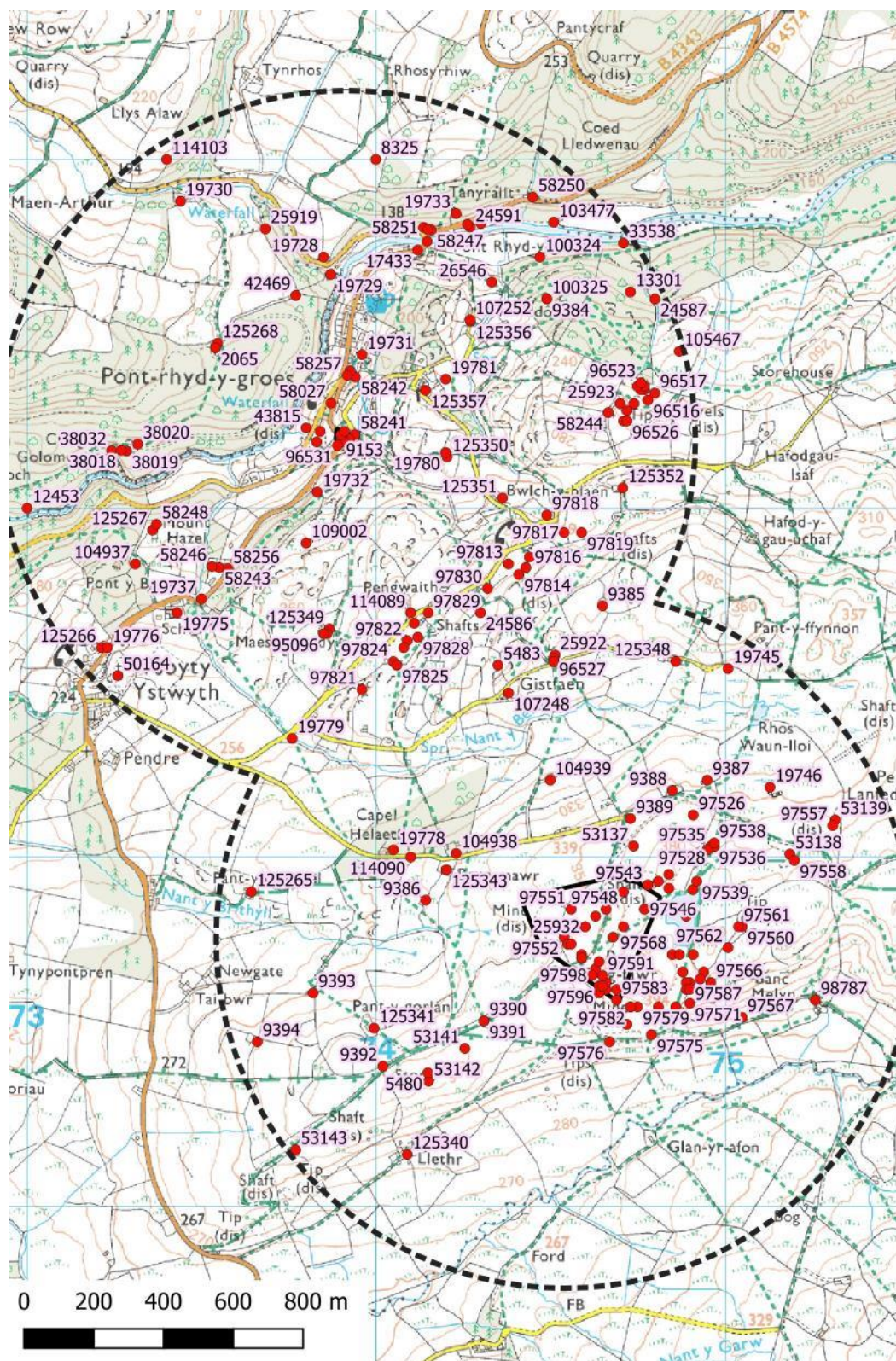


Figure 7: Map showing the assets recorded on the regional HER within 1km (dotted line), labelled by PRN. More detailed site-specific maps are included in Section 7.

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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 the 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 Archaeological investigations associated with both Level Fawr and Glog Fach are linked to an initial survey undertaken in 1993 by Protheroe-Jones, the current Principal Curator of Industry at the National Museum of Wales, as part of a survey of Ceredigion Metal Mines. In 2002 Cambria Archaeology (now Dyfed Archaeological Trust) carried out a Metal Mines Project with the intention of addressing some of the issues raised in the 1993 survey (Sambrook 2002), which included a brief visit to both sites. Subsequent to this a further site visit was undertaken at Glog Fach as part of the Tir Gofal agri-environmental scheme (Pyper 2004). The records from these visits have formed the basis of the current HER records recorded above.
- 6.2.3 Other surveys in the area include a general assessment as part of the designation of the registered historic landscape, a survey of medieval and later deserted rural settlements (Sambrook & Ramsey 1998 & 1999) and upland survey of the Cwmystwyth region (Hall & Sambrook 2012). These surveys provide background information but are of little direct relevance to the sites in question.

6.3 Historic Mapping

Early – mid 19th century maps

- 6.3.1 The earliest identified map of the area is the Ordnance Survey drawing of 1820 (Dawson 1820) that shows a landscape of dispersed settlement and some mining activity but provides little detail on the study area. The mines themselves are not labelled.
- 6.3.2 The Ysbyty Ystwyth tithe map of 1849 (Figures 8 & 9) provide a relatively detailed record of the Level Fawr area in the mid-19th century. The mouth of the adit itself is clearly marked and labelled, with two buildings adjacent, the counting house (PRN 8748 / 57522) and a building to the south (PRN 96531) described as a smithy, currently surviving as garages/stores. A level area lies in front of these buildings, with a slope to the west and buildings at the base of the slope. This area is labelled as 'Level Fawr Mine Works & Sheds'. The surrounding village is a dispersed collection of dwellings along the main road and up the hillside towards Penygraig.
- 6.3.3 The site of Glog Fach is less detailed, possibly a reflection of the hiatus in mining at the site in 1849. The reservoir PRN 97599 is marked, and a collection of buildings to the north appears to mark the site of Glog Fawr mine. The NE-SW trackway down the hillside between Glog Fawr and Glog Fach is marked, but no features at Glog Fach are shown.



Figure 8: Extract from the 1849 tithe map showing the Level Fawr adit (arrow), with the count house below to the left, and a smithy below to the right. North is to the left.

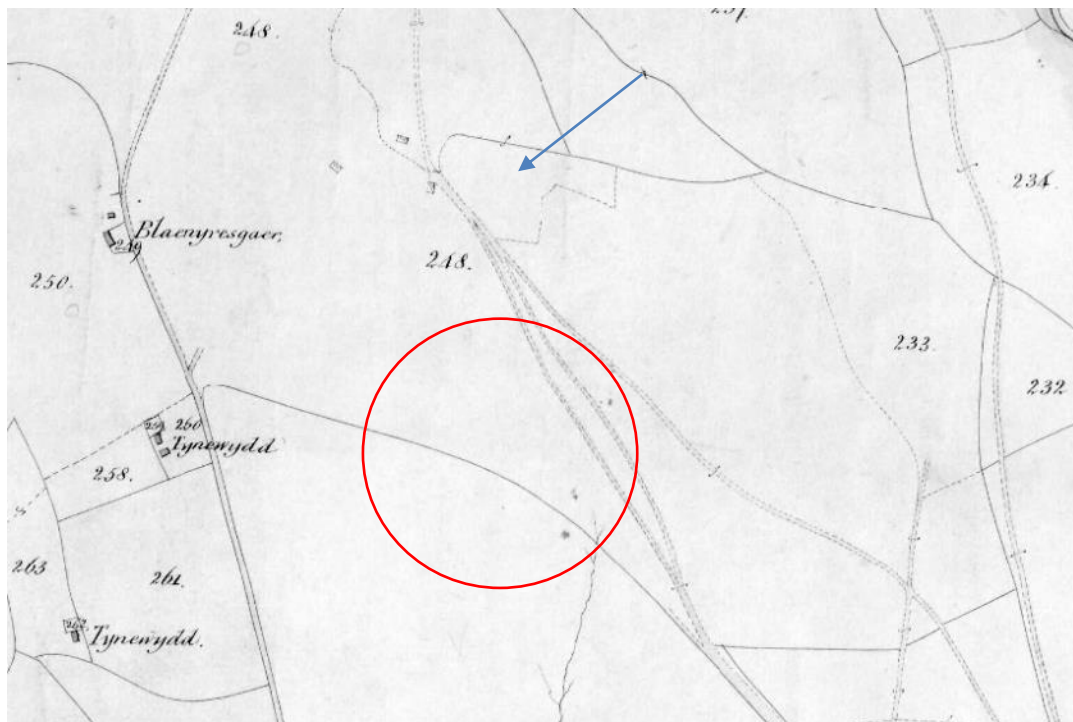


Figure 9: Extract from the tithe map of 1849 showing the Glog Fach site (approximate location - red circle). No mine structures are shown, but the nearby reservoir is marked (blue arrow) with adjacent mining structures. North is to the left.

Mining maps 1860s-1870s

- 6.3.4 A series of plans and sections of the mine workings at Glog Fach/Fawr survive within the county and national archives in Aberystwyth. There are two plans in the county archives, one undated and one dated to 1871, but both largely showing the same detail. They map the network of tunnels underground and mark the locations of the main shafts giving access, along with underground shafts (winzes) between levels. The access shafts are named as Western Shaft (PRN 97552), Skinner's Shaft (PRN 97542), Footway (lying within 25m of Skinner's Shaft, not individually numbered) and Engine Shaft (PRN 97540, but more correctly located at PRN 97537). The mine workings clearly show the main mineral lode followed a north-easterly course from Western Shaft (PRN 97552). Other than the locations of the shafts, the only surface features noted is the wheel pit (PRN 97553) adjacent to Western Shaft (PRN 97552). The dated plan also marks some 'old workings' (GF16) approximately 105m due east of Western Shaft, not marked on any subsequent mapping.
- 6.3.5 Two sections are also contained in the county archives, one undated and one dated to 1861, but again showing very similar detail. They mark the location of the worked lodes and the depth of the various shafts and workings throughout the mine. The only surface features noted are the four shafts previously described (Western, Skinner's, Footway and Engine), along with one additional shaft on the hillside behind (to the southeast) Western Shaft. This is named as 'Hardy's Shaft', and it is not entirely clear which shaft it is referring to, possibly either the engine shaft (PRN 97580) or a now infilled shaft to the east (PRN 97574).
- 6.3.6 These maps are also contained with the national archives, along with additional maps of 'East Glogfach', although these cover an area outside the study area, to the east of the reservoir, and are of little direct relevance.
- 6.3.7 The national archive does however contain a large plan of Level Fawr, which traces the route of the adit from the Ystwyth as far as Glog Fach/Fawr. Intriguingly, the adit is clearly shown extending as far as Glog Fach, roughly in line with the south side of the reservoir (PRN 97599), but the plan is dated to 1863, whereas the adit was not thought to reach Glog Fach until 1872 (Bick 1974). Later annotations are marked on the plan, including a level to the north of the reservoir, but this is a clear addition and is dated to 1877, where the line of the Level Fawr adit appears original. No surface detail of Glog Fach mine within the study area is shown, although the reservoir (PRN 97599), Skinner's Shaft (PRN 97542) and the second Engine Shaft (PRN 97580) are marked. The route of the Level Fawr adit runs in a north-south direction under the eastern edge of the study area, 30m to the west of Skinner's Shaft. Surface cottages and watercourses are shown, allowing the location of the Level Fawr adit to be traced for its full length. No detail is given around the Level Fawr adit itself, but from this point the level runs in a straight line for approximately 640m to 'Eddy's Shaft', at which point it turns southward to run through Pen y Gist mine to a point just beyond the trackway between Ty-Newydd and Blaen-waen to the north of Glog Fach, where the route takes a slightly more vacillating line through Glog Fach.

Ordnance Survey 1:2500 map 1888 (Fig 10 & 11).

- 6.3.8 The Ordnance Survey map of 1888 provides the most detailed record of the layout of the mine workings at Glog Fach and Level Fawr during their operational life.
- 6.3.9 Multiple features are marked, and this map has been used as the base map for many subsequent surveys of the site (Protheroe-Jones 1993) and will therefore not be repeated in detail here. Both Glog Fach and Glog Fawr are marked, but the distinction between is not defined, emphasising the fact that they often worked in tandem, and shared facilities. Shafts, winding house, flat rods and ore bins are visible at the southern end of the complex, buddle pits, slime pits and settling tanks across the centre, and dressing floors and mine buildings at the north end, with further shafts extending along the vein to the northeast. Leats and tramways run north – south across the site, the trackway to the reservoir and beyond runs off to the northeast, and spoil tips line the western side of the site. Along with the links to Glog Fawr, trackways link the site to farmsteads and cottages to the southwest, and the Penlan Fach mine, with the main road beyond, and more circuitous trackways northward to a further spread of cottages, small farmsteads and outlying chapels. Water courses drain off the site to the southwest, one course then continuing west as the Nant yr Brithyll, another course, which also drains Penlan Fach mine, runs north around the hillside to feed into the Nant yr Berws.
- 6.3.10 At the Level Fawr site quite a complex of buildings are shown, labelled as 'Lisburne Mine'. The Level Fawr adit is marked, with a straight leat in front feeding a wheel pit further down the hill. The counting house is marked, as is a walled enclosure and building to the south, which still survive in the grounds of Count House. Further buildings are attached to the south and west of this, surrounding the level ground that would have been used as a dressing floor, but only one of these buildings survive, since converted into the neighbouring residence of Y Wern. To the west the leat continues through a series of small enclosures or steps, with unlabelled mine buildings to either side both down the slope and at the base of the slope. South of these lie spoil tips. On the opposite side of the lower road lies a series of buddle pits and settling tanks, along with other mining features along the south banks of the river. Above Level Fawr to the east lies Ysbyty Saw Mill (now occupied by the site of Crud yr Awel), which is fed by water draining from the former Logaulas mine to the east, which may then subsequently have fed into Level Fawr.

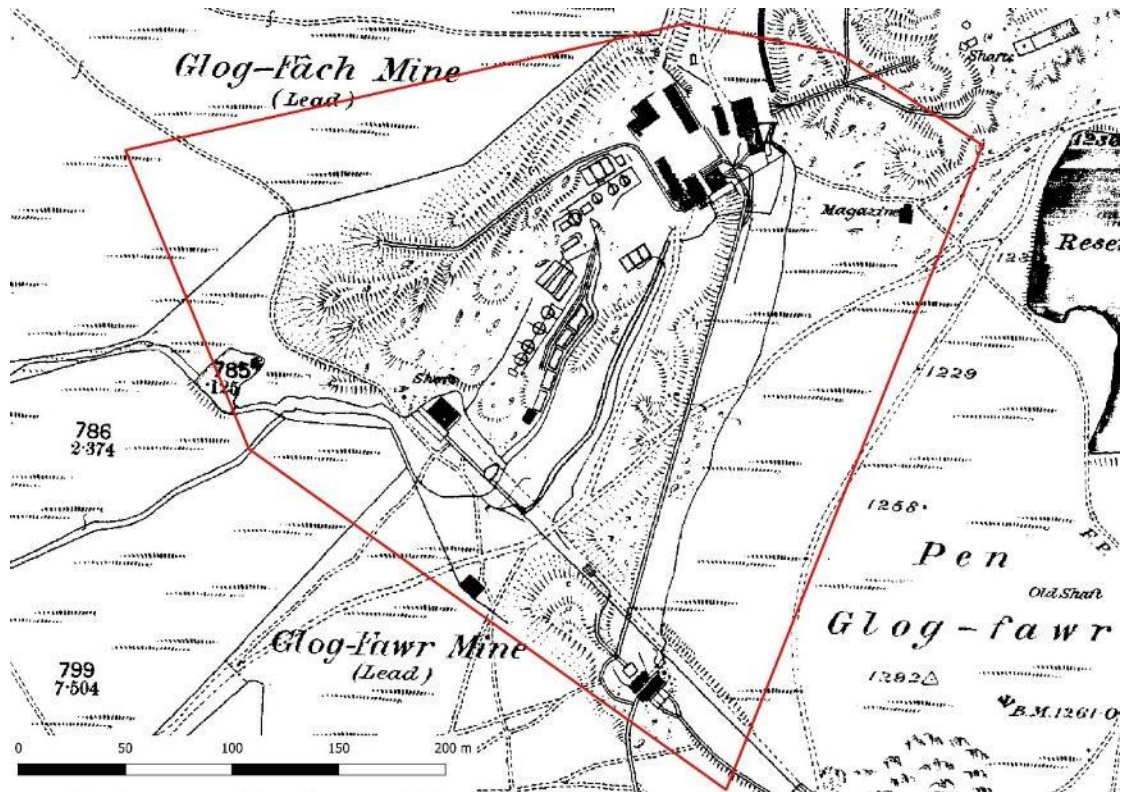


Figure 10: Extract from the Ordnance Survey map of 1888 showing elements of the Glog Fach mine within the study area (outlined in red).

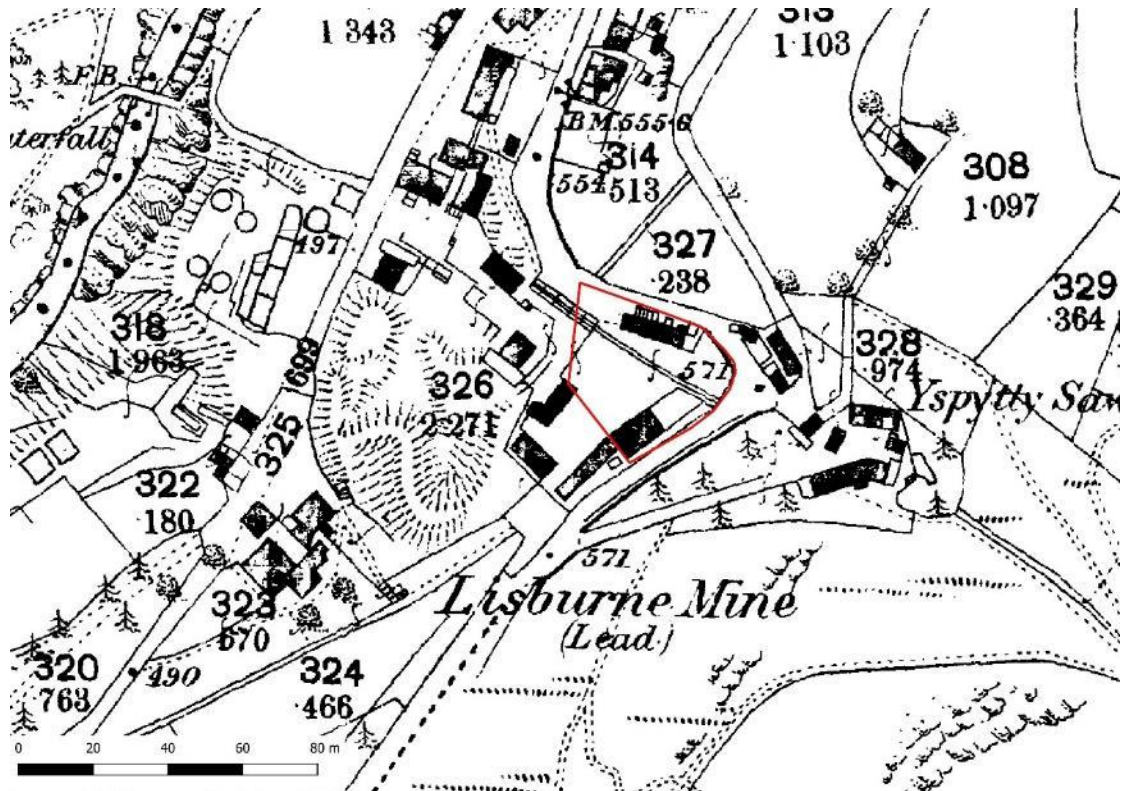


Figure 11: Extract from the Ordnance Survey map of 1888 showing the layout around the Level Fawr adit. Study area outlined in red.

Ordnance Survey 1:2500 map 1905.

- 6.3.11 The subsequent Ordnance Survey map captures Glog Fach after it has fallen out of use. Some buildings still remain, including the crusher/winder house and adjacent wheel pit (PRNs 97553 & 97554) and three buildings around the main dressing floor to the northeast. Many of the other features, such as the buddle pits, settling tanks, slime pits and hitching tubs are no longer marked. A slight expansion in the spoil tips is the only indication of continued mine workings following the previous map. The only other change of note is the apparent abandonment of a water course to the west, that ran north to feed Nant yr Berws. This was a prominent watercourse on the previous map, but now appears only as a footpath, with the surface water instead draining west along the Nant yr Brithyll.
- 6.3.12 At Level Fawr Lisburne Mines is now labelled as disused, but the layout of the site appears unchanged.

Ordnance Survey 1:10560 map 1948.

- 6.3.13 By the mid-20th century the map shows the Glog Fach site much as it appears today, with most of the buildings cleared other than the crusher/winder house. The general layout of the site can still be inferred from the marked earthworks however. A similar picture is present at Level Fawr, with the layout appearing in plan much as it does today. The mine buildings to the south have largely gone, with the exception of the converted dwelling.

6.4 Aerial & Historic Photography

- 6.4.1 A search was made of available historic aerial photographs and modern aerial photographs. The Glog Fach area was covered by an RAF sortie in 1946 and 1947, the latter capturing the site in slightly more detail (Photo 1). The Glog Fach site is clearly visible as an abandoned mine, with workings following the vein to the north, and an extensive spoil tip along the western edge, possibly more prominent than at present. Several structures are still visible, though all roofless and clearly at different stages of ruin. The crusher/winder house (PRN 97554) remains the most prominent, with partial remains of the outlying building (PRN 97594) and ore bins (PRN 97584) at the southern end, and one building (PRN 97547 (g)) in the main complex, nearby structure (PRN 97545) and magazine (PRN 97546) at the northern end. Other features are discernible as earthworks, but largely appear in their current state. The current trackway that runs through the site had been established by this time.
- 6.4.2 The Level Fawr area was only covered in the 1947 photo, but the layout of the site appears much as it does today, with the Count House boundaries established. Much of the hillside and riverside to the west appears to have been cleared of many of the associated mining structures.
- 6.4.3 In 1975 the Glog Fach site was visited by D.L. Thomas who took a number of photographs, many of which are annotated, and are now housed in the National Archives in Aberystwyth. The photographs focus primarily on the one remaining structure, that of the crusher/winder house (PRN 97554), which appears much as it does today. Various interpretations of the visible openings and the layout of the building are given, including a suggestion that it may have an infilled basement as a crusher house would have collected material underneath the crusher wheel.

- 6.4.4 Two further things are noted in these photographs. The adjacent wheel-pit (PRN 97553) is photographed and described as 15.9m long, 1.8m wide, rubble filled but clearly extending the full length of the adjacent building and beyond. An accompanying plan marks the pit as extending a further 3m beyond the NW wall of the building. The second feature of note is a prominent depression in the spoil tip to the rear (GF03). This is still visible in the spoil, but in 1975 appeared more prominent, and was described by the photographer as a probable collapsed run-in shaft, one that is not marked on any mapping.
- 6.4.5 Satellite imagery is available from 2006 to the present day, but these show both areas much as they appear today, with no significant changes or additional features noted.



Photo 1: Extract from the 1947 RAF aerial photograph, showing the remains of Glog Fach mine at that time.

6.5 LiDAR

- 6.5.1 LiDAR data for this area does not capture the study areas.

6.6 Site Visit

- 6.6.1 A site visit was undertaken on the 20th February 2023. The weather conditions were damp with low cloud, occasional obscuring all views but with breaks. Access to the entire site was possible, although known mine openings were enclosed in fencing and not examined closely.
- 6.6.2 The site 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 also 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 Level Fawr

- 7.1.1 The following section details features within the study area around the Level Fawr adit. 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 3, laid out in numerical order according to the PRN, with additional sites included at the end of the table.
- 7.1.3 Photos of the sites are included in Photos 2 - 12. A plan of the mine features is provided in Figure 12. These locations can also be provided in GIS file formats to accompany this report.
- 7.1.4 The Level Fawr adit (PRN 57523 / 96529) lies in the private gardens of Count House (PRN 8748 / 57522 / 96530) (the PRN numbers have been duplicated for both these features). The adit entrance is stone built, under a dressed stone arch bearing the date 1785. It is open, with a constant stream of water emptying into a stone-lined channel (LF01). To one side lies a modern concrete culvert housed in a brick and concrete structure, believed at present to convey surface drainage. This empties into the same channel which is then largely directed into a buried concrete culvert. Adjacent to this the original line of the channel survives as a stone-built leat (LF01), which has been preserved as a garden feature. Where the concrete culvert and stone leat meet, the leat has been rebuilt, but water still drains along both routes.
- 7.1.5 Above the adit entrance lies a vertical rubble-stone wall, a further 2m high, which forms the revetment under the road (B4343) that curves around above the adit entrance and encloses a garden area to the north. The leat continues through a turf-covered garden area in front of the Count House to the northwest of the adit entrance, before being covered over and running underneath the entrance drive to the Count House grounds. In the adjacent property to the northwest the leat (LF02) remains buried, emerging from a concrete culvert into an open stream down the slope to the northwest.
- 7.1.6 To the south of the adit entrance lies a mortared rubble-stone wall, forming the northern remains of a former enclosure (LF03). Adjacent to this lies a garage/store, rubble-stone built and 19th century in appearance, representing a former mining building and smithy (PRN 96531). In front lies a level gravel-covered drive/yard over the former dressing floor (LF04). Adjacent mining buildings to the southwest, now in the neighbouring property boundary, have been removed with the exception of Y Wern itself, which has been converted into a dwelling.

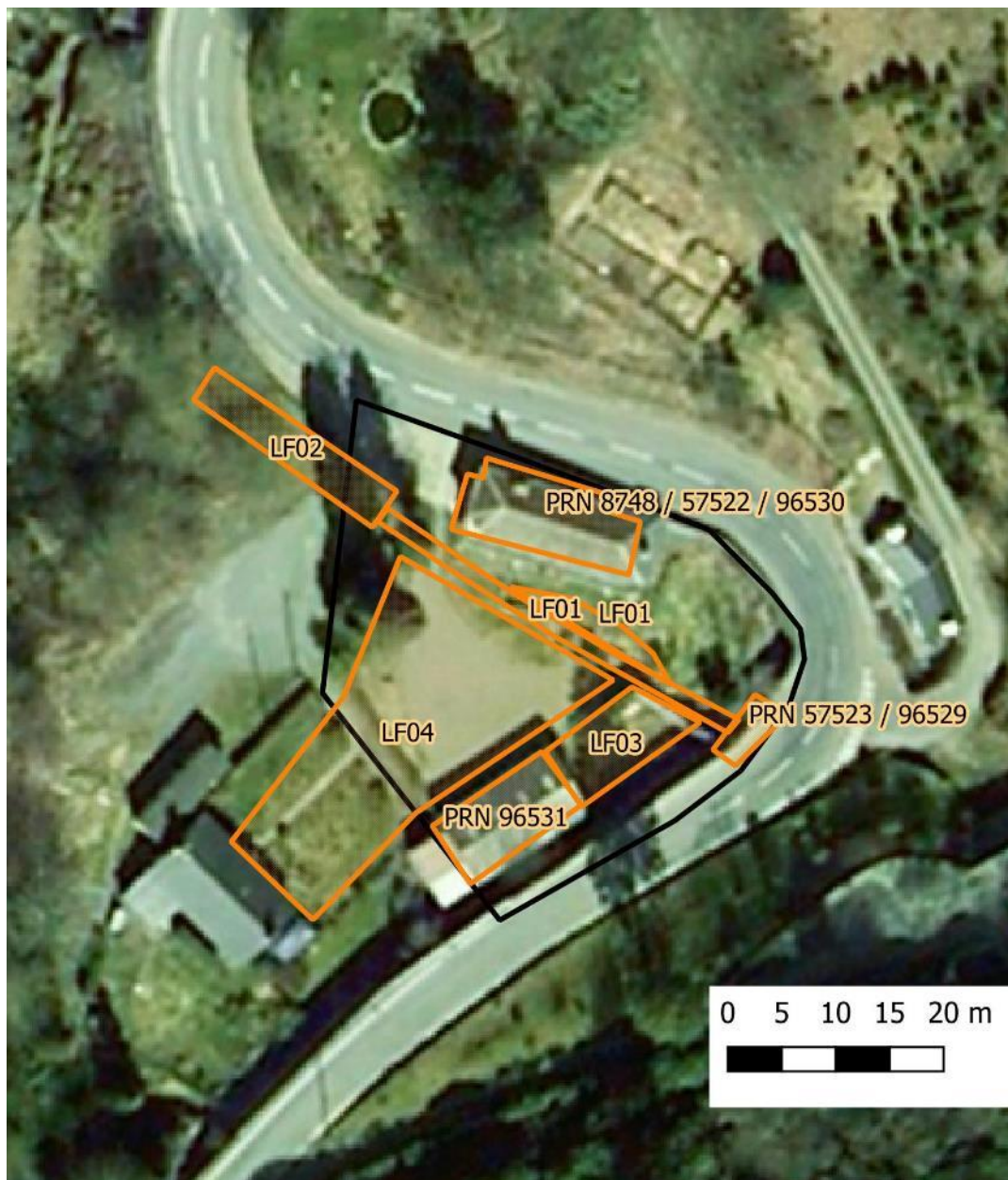


Figure 12: Mine features identified at Level Fawr.

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Table 3: Level Fawr Mine Features

PRN / Ref.No	NGR	Type	Description	Photos
PRN 8748 / 57522 / 96530	SN73917222	Offices, counting house	The Count House. Mine offices and where the miners picked up their wages. The building still stands, converted into a residence, and is Grade II listed. Further description provided in Section 4.4.	2
PRN 57523 / 96529	SN73937220	Adit entrance	<p>Entrance to the Level Fawr adit, c.1.2m wide, 1.4m high. Stone built, presumably mortared but largely washed out, topped by a dressed stone arch with engraved keystone bearing crossed picks and 1785 date. The structure is in good condition and is Grade II listed, further description provided in Section 4.4.</p> <p>The level still drains water, the interior continues as an arched stone-built tunnel, part blocked after a short distance by wooden planks, with a later broken iron pipe running along the base, the origin of which is unknown.</p> <p>A mid-20th century culvert lies alongside the entrance, in a brick and concrete structure, diverting some of the flow in front. A stone enclosure wall lies to the other side (LF03). The entrance is topped by c.0.6m of roughly coursed faced stone, which could potentially be contemporary, and then another c.1.5m of presumably later random rubble masonry forming the boundary to the road above.</p>	3 - 5
PRN 96531	SN73907219	Mine building, Smithy	<p>One of a former series of 19th century mine buildings arranged around the dressing floor. Labelled on the 1849 tithe as a smithy.</p> <p>Still in use as a garage/store, built of random rubble with large slate quoins, corrugated gable roof, and a large central doorway in the north wall flanked by large window openings with arched brick voussoirs.</p>	6
LF01	SN73917221	Leat	Stone-built open leat carrying the water from the Level Fawr adit. The 1888 OS map shows is travelling in a straight line, but the present course curves slightly to the north, but in built form appears original. Appears to be drystone, random rubble, 0.5m deep, c.0.6m wide with a rough stone base. Now used as a garden feature, it has been capped at the northwest end where the drive runs across it.	7-9

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			The route is crossed by a modern concrete culvert close to the adit, which carries surface drainage and diverts much of the flow from the leat into a modern buried culvert. The section of leat at this interface has been rebuilt.	
LF02	SN73397222	Leat	A continuation of the leat, shown on the 1888 OS map running through a series of small square enclosures, possibly tanks or steps. This section has now been buried and may have been replaced by modern culverts.	10
LF03	SN73917292	Enclosure	A walled enclosure marked on the 1888 OS map, exact function unknown. The northeast wall partly survives lining the leat and adit entrance and appears to be tied into the wall adjacent to the adit entrance, which may suggest a late 18 th century date, although it is not marked on the 1849 tithe. Built of random rubble, repointed, with upright stone capping, partly tumbled. Encloses modern oil tanks.	11, 12
LF04	SN73907220	Dressing floor	Level area surrounded by mine buildings. This would have been the upper dressing floor, where the ore would have sorted and crushed. From the mid-19 th century 27inch dressing rolls were brought in for coarse crushing, it is not clear where this would have been located. The finer processing was carried out at the base of the hillslope to the west. The area is currently used as a gravel-covered drive, with turf-covered lawns around the Count House, bounded by low stone walls, possible from re-used building stone.	6 & 12

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Photo 2: View north of The Count House (PRN 8748 / 57522 / 96530, Listed Building ref. 10692). The line of leat LF01 is visible in the foreground.



Photo 3: View east of the entrance to Level Fawr adit (PRN 57523 / 96529, Listed Building ref.10694). The later culvert lies on the left, and enclosure wall LF03 on the right.



Photo 4: View east showing the Level Fawr adit in more detail. 1m scale.



Photo 5: View east showing the interior of the Level Fawr adit.



Photo 6: View southeast showing mine building/smithy (PRN 96531), with former dressing floor LF04 in front.



Photo 7: View southeast showing the line of the open leat LF01 through the garden in front of the Count House on the left.



Photo 8: View northwest along the line of leat LF01. 1m scale.



Photo 9: View northwest along the line of leat LF01 as it emerges from Level Fawr adit. On the right the brick built modern culvert intrudes, with the diverted water course heading to the left, the original line lies to the right (arrow). 1m scale.

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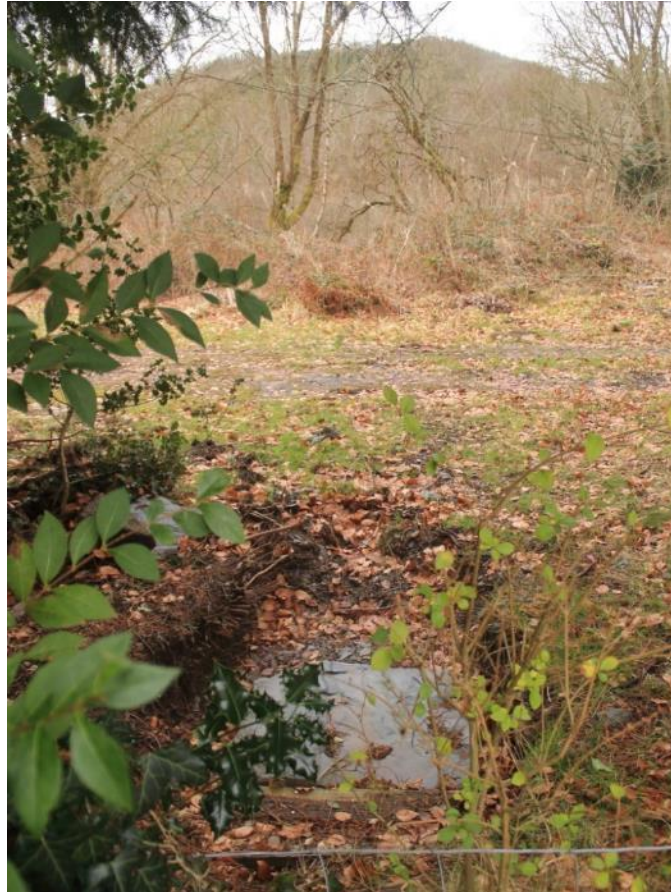


Photo 10: View northwest looking along the line of the buried leat LF02 in the adjacent property, with modern access hatch/covering in the foreground.



Photo 11: View northeast showing the northeast wall of enclosure LF03.



Photo 12: View northeast showing the enclosure walling LF03 (arrow), with turf and gravel-covered dressing floor LF04 in front.

7.2 Glog Fach

- 7.2.1 The following section details features within the study area around the Glog Fach mine site. It does not include all related mining features that lie outside the study area.
- 7.2.2 A written description of these sites is included in Table 4, laid out in numerical order according to the PRN, with additional sites included at the end of the table.
- 7.2.3 Photos of the sites are included in Photos 13 - 56. A plan of the mine features are provided in Figures 13 to 16. These locations can also be provided in GIS file formats to accompany this report.
- 7.2.4 The Glog Fach mine site (PRN 25931) lies in a relatively open upland landscape, overlooked by Pen Glog Fawr to the southeast. A single track road traverse the site from north to south, and the ground generally falls from east to west, the land being steeper to the east of the track. At the northern end lies a series of stepped coarse spoil tips to the east of the track, with remnants of stone-built walling amongst the loose stone. A level area at the base of this slope is informally used for car parking and would formerly have been part of the dressing floor. On the hillside above to the northeast lie a series of fenced mine shafts following the mineral lode to the northeast, with a mine reservoir at the summit of the hillslope above. Below the track to the southwest lies a large spread of processed finer spoil, partly piled up in tips, and partly spread across the gently falling hillside to the southwest. This area appears to have been used as an off-road racing track, with vehicle tracks and obstacles laid out around it, but despite the obvious disturbance of material, areas of levelled ground suggest buried remains may survive.
- 7.2.5 As the track continues southward through the mine site the ground rises to the east, with two visible steps accommodating a former tramline and leat. Exposures of tipped spoil are visible below the tramline. At the southern end of the tramline/leat lies another area of coarse spoil with some linear channels cutting into the rising hillside represent the former lines of flat rods and culverts, at the eastern end of which lies a mine shaft with surviving stone-built head.
- 7.2.6 On the west side of the track a series of terraced platforms survive, part scrub-covered, but representing areas of former hotching tubs, settling tanks, sludge pits and buddle pits, with more finely processed spoil beyond.
- 7.2.7 At the western end of the site lies the only remaining standing building, a crusher/winder house (PRN 97554). The walls are part-tumbled, but generally stand to their full height. Former water courses surround the building, with surface remains of a wheel-pit (PRN 97553) on the south side of the building, with possible balance pit adjacent. To the west lies the 'Western Shaft' (PRN 97552), a fenced off mine shaft. Further processed spoil lies to the west, separated from the site by a modern post-and-wire fence.
- 7.2.8 At present the water runs through the processed spoil at the western end of the site and drains into the western shaft. Further watercourses continue down the hillside to the west, and the trackway continues along the ridgeline to the southwest.
- 7.2.9 The standing stone of Carreg Samson (PRN5480, Scheduled Monument CD235), is visible on the ridgeline to the southwest, standing within a field of pasture. This monument was not visited during the survey but was viewed from the mine site (Photos 55 & 56).

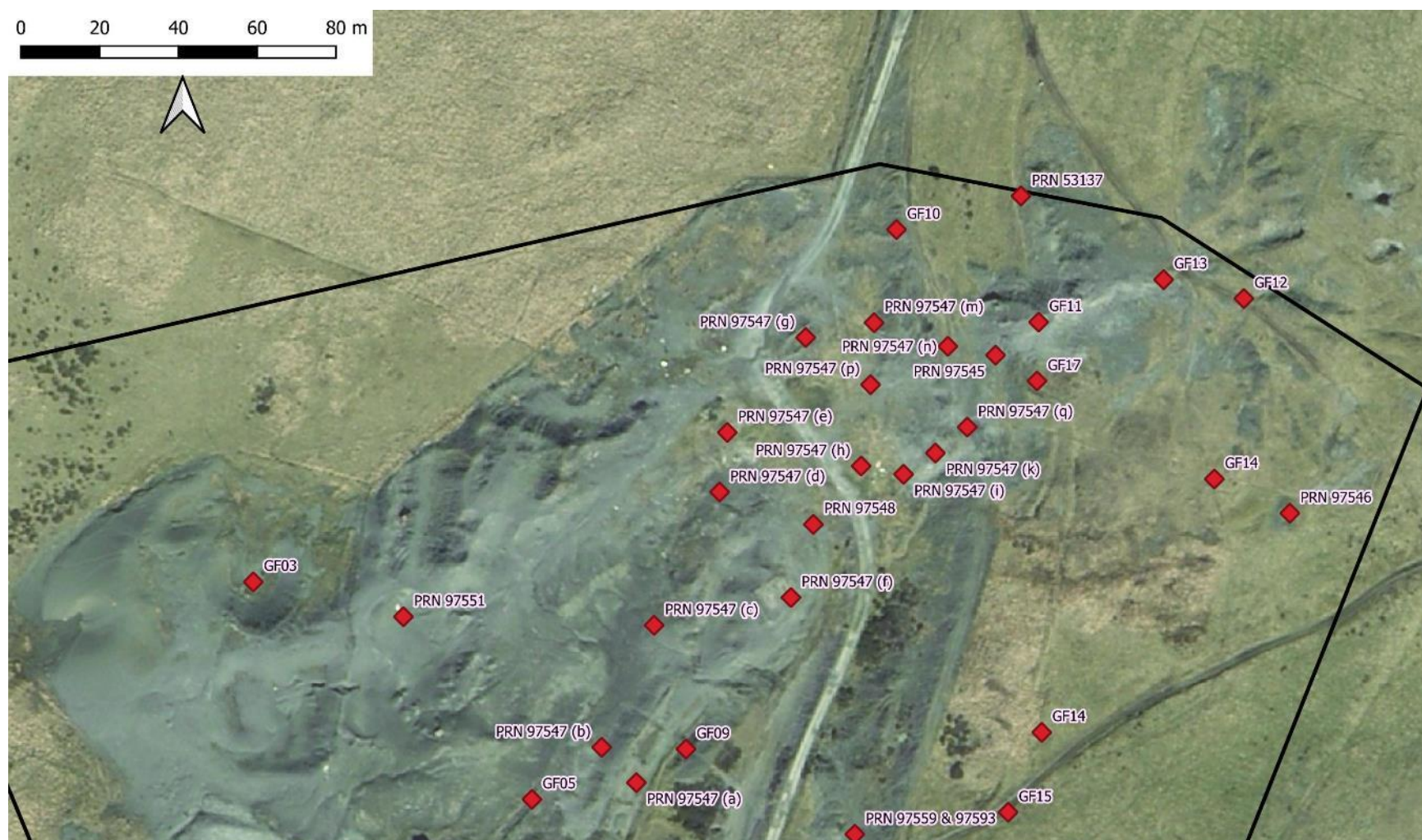


Figure 13: Mine features identified at Glog Fach, presented as point data, showing the northern half of the study area.

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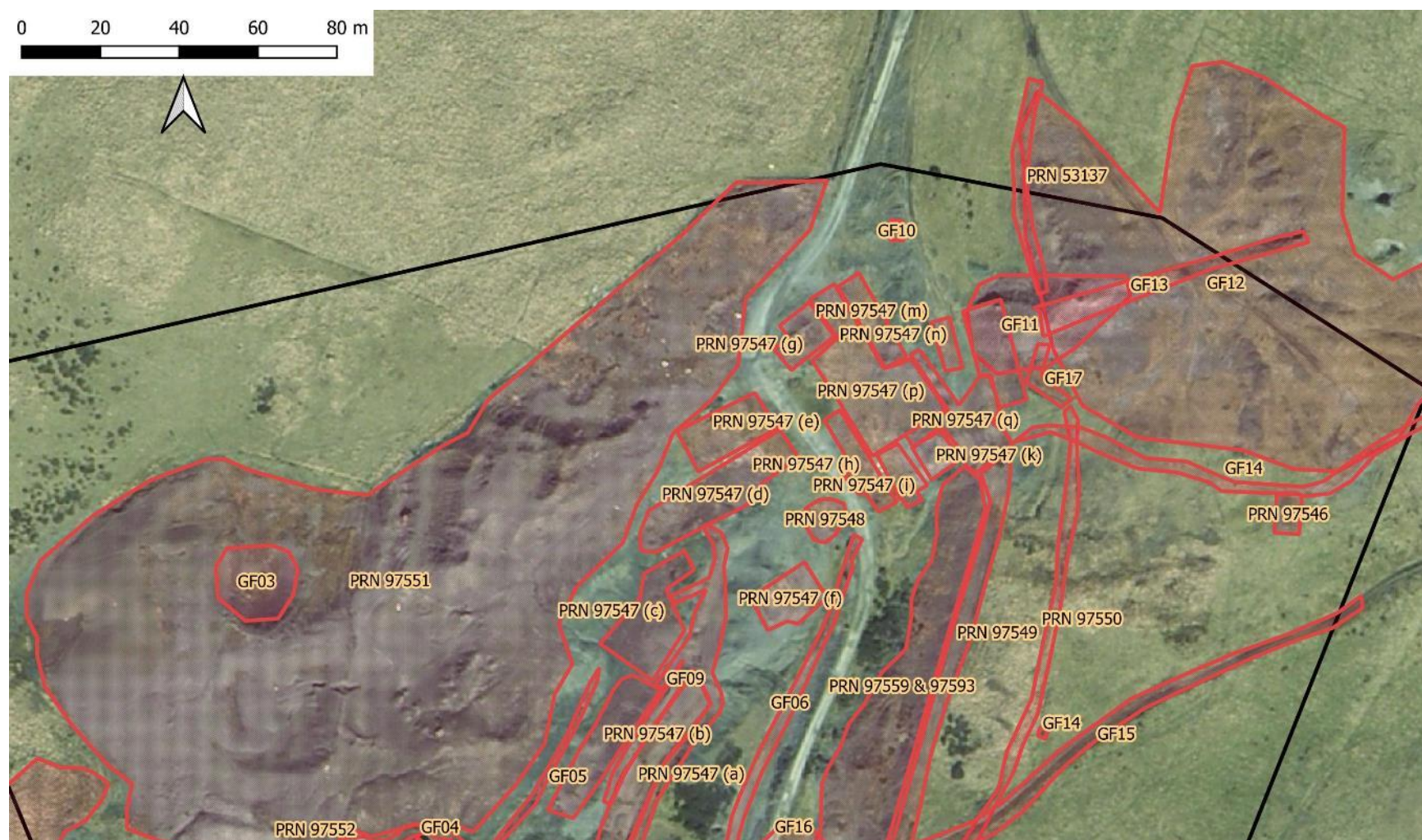


Figure 14: Mine features identified at Glog Fach, presented as area data, showing the northern half of the study area.

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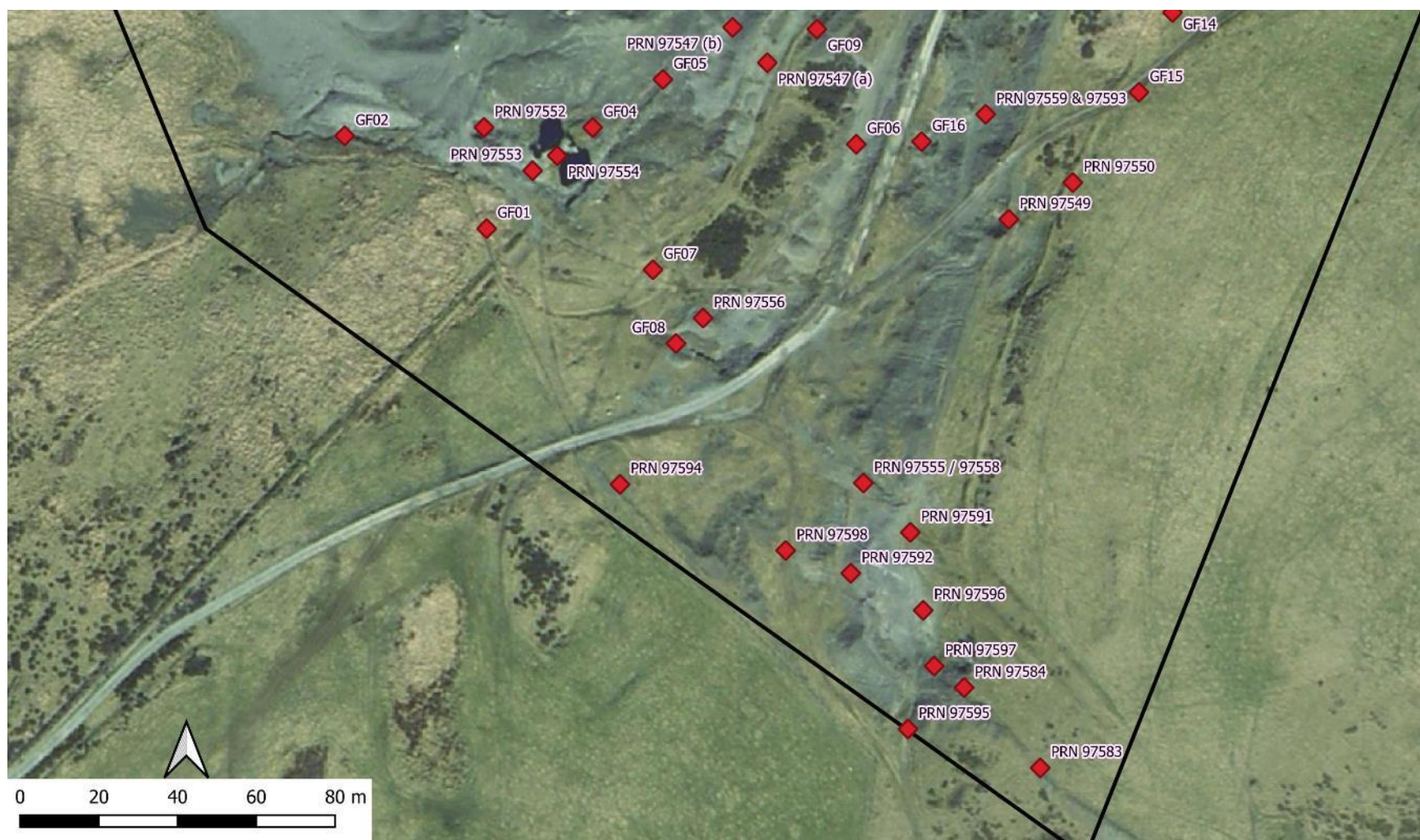


Figure 15: Mine features identified at Glog Fach, presented as point data, showing the southern half of the study area.

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Table 4: Glog Fach Mine Features

PRN / Ref.No	NGR	Type	Description	Photos
PRN 53137	SN74717094	Aqueduct	Part of the main aqueduct bringing water into the Glog Fach site from the reservoir to the east, potentially one of the earlier Taylor-era (1834 onwards) features. Still visible as a prominent earthwork channel but becomes buried under a spoil heap.	16
PRN 97545	SN74717089	Building / Retaining wall	A part buried stone wall, with iron brace pins visible. Originally recorded in 1993 survey as part of the ore bins, but 1888 mapping indicates it is one of the main mine buildings, used as a retaining wall by 1905. Only the east and north walls are visible, but more of the building may remain buried beneath the spoil.	17, 18
PRN 97546	SN74787085	Magazine	The magazine for storage of hazardous materials associated with the mining. Potentially built as part of the early Taylor workings in the 1830s, or even the previous Williams workings of the 1820s. Currently visible as low tumbled stone walls of a rectangular structure.	19
PRN 97547 (a)	SN74617078	Tank	Settling tank/slime pit/hotching tub. Marked on the 1888 OS map, likely established in the early 1860s when dressing works were transferred from Level Fawr. There are no above ground remains but the outline of the tanks are clearly visible along a levelled terrace, so buried remains are likely.	20, 21
PRN 97547 (b)	SN74617080	Buddle Pits	A series of four buddle pits marked on the 1888 OS map, likely established in the early 1860s. No above-ground remains are visible, but a level shelf is visible with good potential for below-ground remains.	22
PRN 97547 (c)	SN74627083	Slime Pits?	A series of rectangular tanks marked on the 1888 OS map, possibly slime pits, settling tanks or hotching tubs associated with the processing works established in the early 1860s. There are no above ground remains, and the area appears heavily disturbed by an informal off-road racing track, survival is likely limited.	23
PRN 97547 (d)	SN74647086	Buddle Pits	A series of four circular buddle pits and two rectangular tanks marked on the 1888 OS map, likely part of the early 1860s processing works.	24, 25

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			There are no above ground remains, it lies on the edge of the parking area. The ground seems relatively disturbed here, with no indication that remains would survive well.	
PRN 97547 (e)	SN74647087	Settling Tanks?	A series of possible settling tanks set above the buddle pits. There are no above ground remains, this area is now used for car parking.	24, 25
PRN 97547 (f)	SN74657083	Tanks	A set of three adjoining water-fed tanks. There are no above-ground remains, and lies in an area of off-road racing disturbance, but the outline of the tanks are visible on 1947 aerial photos, and partly on current satellite images, so there is a potential for survival of buried remains.	23
PRN 97547 (g)	SN74667090	Building	A mine building around the dressing floor, possibly established early 1860s, still marked on the 1905 OS map. Partial upright walling is still visible, largely tumbled but further buried remains are likely. It appears more prominent than suggested in 1993.	25
PRN 97547 (h)	SN74677087	Building	A long linear building adjacent to the dressing floor, likely established in the early 1860s, but gone by 1905. No above ground remains identified.	27
PRN 97547 (i)	SN74687086	Building	A building adjacent to the dressing floor, likely established in the early 1860s, but gone by 1905. No above ground remains identified.	
PRN 97547 (k)	SN74697087	Building crusher -	A building on the southern edge of the dressing floor, part of the early 1860s establishment. Bick (1974) suggests this contained crushing rolls. Partial wall remains visible, largely buried beneath spoil but it is likely further remains survive below the spoil.	26
PRN 97547 (m)	SN74677090	Building	A long rectangular building adjacent to the dressing floor. Likely part of the early 1860s establishment, still standing in 1905, but no above ground remains identified.	27
PRN 97547 (n)	SN74697090	Building	A building at the end of a trackway/tramway, possibly an engine shed, marked on the 1888 OS map. No above ground remains identified.	27

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PRN 97547 (p)	SN74677089	Dressing Floor	Dressing floor established in the early 1860s, surrounded by several buildings. Currently visible as a terraced platform, part obscured by sloping bank to the northeast and southwest. Recorded in 1993 as completely razed, but features likely buried beneath spoil and demolition rubble.	27
PRN 97547 (q)	SN74707088	Tramway	An area of inter-connecting tramlines in amongst the mine buildings, marked on the 1888 OS map. Areas of cobbled surface remain, suggesting the floor may be largely intact but buried.	28
PRN 97548	SN74667085	Cobbled Surface	A small area of cobbled surface noted in the 1993 survey. Part of the dressing floors, established in the early 1860s. The flooring is no longer visible, and the trackway cuts through much of this area.	-
PRN 97549	SN74687075	Tramway	Well-preserved earthwork remains of a tramway, forming a level shelf with embanked west edge, and cut east edge. Tramway leads to crusher and dressing floors to the north, presumably therefore post early 1860s when dressing at the mine started. Good potential for buried remains to survive.	28, 29, 30, 41, 43
PRN 97550	SN74697075	Leat	The well-preserved earthwork remains of a leat, visible as a channel and banks cutting across the hillside. Presumably connected with the main aqueduct PRN 53137 to the north, feeding a complex of buildings to the south and potentially feeding the majority of the Glog Fach site.	29, 31, 32
PRN 97551	SN74557083	Tips	An extensive area of fine tips along the western side of the mine site. Comprises largely finely crushed and processed material, tipped from the northeast. High tips remain on the northern side, but much of the western edge has gradually spread downslope. The tip itself is of limited interest, but there is the potential for buried remains within it.	33
PRN 97552	SN74547077	Mine Shaft	'Western Shaft', possibly opened in the 1830s but more likely worked from 1856 to the late 19 th century. A rock cut shaft, with some timbers still in place across the top. The shaft is still open, although fenced, some scrap remains around the entrance.	34, 37, 48
PRN 97553	SN74567076	Wheel pit	A wheel pit lying alongside the winder house, possibly also part of the initial Taylor workings of the 1830s but more likely dating from 1856 on. The main pit lies alongside the crusher/winder house and is 1.8m wide, potentially up to c.20m long. Currently rubble filled, and more visible towards the NW end, but defined by large cut stone	35, 36, 37

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			blocks, with some internal timberwork visible. A right-angle turn at the NW end may indicate a balance pit at this end. The water channel runs alongside it to the SW.	
PRN 97554	SN74567076	Winder House. Crusher House	<p>Standing remains of a winder house, probably converted from a crusher house. Potentially dates from the initial Taylor workings in the 1830s but more likely a feature of the 1856 to late 19th century workings.</p> <p>Substantial walls survive, although tumbled and roofless. Beam slots, windows, fireplace and other openings visible in the gable walls, a cross wall lies buried. Potential for at least part of the structure to be basemented during its use as a crusher house.</p> <p>Historic mapping indicates water was channelled both to the northwest and southeast.</p>	34, 36, 38, 39, 48, 49
PRN 97555 & 97585	SN74647068	Flat Rods	<p>Flat rod structure running up the incline. Visible as a pair of channels cut into the steeper ground to the southeast, the westerly of which appears to have been a drainage culvert. It connected the winder house PRN 97554 to the engine shaft PRN 97580.</p> <p>The structure was largely above-ground, so post holes may remain, but buried features may be limited.</p>	39, 40, 43
PRN 97556	SN74607072	Wooden Stand	Remains of a wooden dolly wheel stand for the flat rods, noted in 1993. No longer visible.	-
PRN 97559 & 97593	SN74677077	Spoil Tips	<p>A bank of fine spoil tipped alongside and downslope from the tramway.</p> <p>Likely of limited archaeological interest but may hide earlier features.</p>	41
PRN 97583	SN74687061	Tramway	A 19 th century tramway route, leading from the engine shaft (PRN 97580) to the dressing floor. It survives as a distinct grass-covered levelled platform.	42
PRN 97584	SN74667063	Ore Bins	A pair of rock-cut ore bins, lacking their masonry front walls. One appears to have a masonry-reveted curving rear wall.	44, 45
PRN 97591	SN74657067	Culvert	Stone-built culvert for the flat rod gulley to pass under the tramline. Still visible.	43
PRN 97592	SN74647066	Leat / Culvert	<p>Line of leat/culvert marked on the 1888 OS map, taking the waste water from dressing works to the southeast and depositing them in the culvert for the flat rod.</p> <p>The upper southern part is not clearly visible, possibly buried, but the northern end is visible as a rock-cut culvert along the line of the flat rod cables.</p>	-

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PRN 97594	SN74587068	Building	A mine building of unknown function. Likely part of the mid to late 19 th century workings, marked on the 1888 OS map. Only fragments remained when visited in 1993, no visible above ground remains noted during the current survey.	-
PRN 97595	SN74657062	Tramway Cutting	A section of tramway line running south from the dressing area and curving round the hillside. Still visible as a part embanked, part cut earthwork, buttressed with masonry walling.	-
PRN 97596	SN74657065	Cobbled Surface	Area of cobbled surface. A masonry retaining wall was noted on the southwest edge in 1993. During current survey it looked like the cobbled surface may be confined to a tramline base running N-S through the middle.	44
PRN 97597	SN74667063	Mine Building / Picking tables	Two adjacent mine buildings, with ore bins behind and a leat below, fed by a tramline. The buildings are shown on the 1888 OS map but had gone by the 1905 map. They may have been built against a quarried rock face, with cobbled flooring remains in front that may be associated. Bick (1974) marks these as picking tables, for the hand separation of waste rock.	44, 45
PRN 97598	SN74627066	Waste Tips	Area of coarse spoil, partly turfed over. Appears to be largely waste material from the nearby dressing floor. Possibly reworked from the extent visible on the 1888 OS map.	46
GF01	SN74547075	Water Channel	Water channel marked on the 1888 OS map. The southeast end at least has been deliberately cut, possibly as an overflow for the leat. The site was dry at the time of the visit, but is visible on modern aerial photos.	-
GF02	SN74517077	Water Channel	A water channel marked on the 1888 OS map, seemingly taking drainage from the site and feeding into a pond to the west. The current channel has altered course slightly, and now largely appears to drain into the Western Shaft, although modern aerial photography suggests it does still continue along this line	-
GF03	SN74527084	Mine Shaft?	Currently visible as a depression within the fine spoil, occasionally water-filled. Appeared more distinct on photographs from the 1970s, suggesting the spoil may be falling into a collapsed mine shaft below, but one that is not marked on any mapping.	47
GF04	SN74577077	Water Channel	A water channel shown on the 1888 OS map, so possibly partly cut, currently only partly visible as an earthwork feature. Appears originally to have drained into the lower end of wheel pit PRN 97553, and part of channel GF02, but now largely drains into Western Shaft PRN 97552, and in part forms one of the main polluting channels.	48

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GF05	SN74597078	Water Channel	A linear water channel, part stone-built and part cut earthwork. Visible on the 1888 OS map, feeding into the wheel pit PRN 97553, presumably originally extending further to the northeast. The line is still traceable, and the western end now forms one of the main polluter channels.	49
GF06	SN74647076	Leat	A leat that runs across the site, feeding the water wheel PRN 97553, which in turn fed the flat rods PRN 97555 & 97585. Marked on the 1888 OS map, but now appears largely buried. Previously described as rock cut at the southern corner, but this section does not seem to line up with this particular leat, however the line is likely to be rock cut in places. The inlet now lies under the track and is presumably blocked.	-
GF07	SN74597073	Pond	A small pond marked on the 1888 OS map, fed by a couple of leats (GF06 & GF09). Still partly visible as an earthwork feature, may contain sluice/water management elements.	-
GF08	SN74597071	Leat	A short leat, visible on the 1888 OS map and still identifiable on the ground as a narrow rock-cut channel. Its function is unclear, possibly functioning as some sort of overflow or diversion for the wheel pit leat GF06.	50
GF09	SN74637079	Leat	A leat, possibly a drainage feature, marked on the 1888 OS map running past the settling tanks, slime pits and buddle pits, eventually feeding drains to the south. Much of the northern end is buried, but some elements are still visible as an earthwork feature and partly active, eventually draining into Western Shaft PRN 97552.	-
GF10	SN74687093	Building	A small building visible on the 1888 OS map alongside a trackway/tramway, unknown function. Likely to have been a relatively insubstantial structure, therefore the potential for buried remains is limited.	-
GF11	SN74727090	Spoil tip	A large spoil tip formed around the tipping head of tramway. It appears to have formed after the 1905 OS map, and partly covers 19 th century buildings to the west, therefore likely part of the early 20 th century working at Glog Fawr. The tip covers some buried walls to west, but also contains <i>in situ</i> tram floors and sleepers.	17, 18, 27, 30, 52, 54
GF12	SN74777091	Spoil Tip	An extensive area of slightly disturbed coarse tips. Marked on the 1888 OS map, likely upcast from Skinners Shaft to the east.	16
GF13	SN74757091	Tramline	A former tramline leading from mine level (PRN 97543) and Skinners Shaft to a large tip of spoil (GF11) that partly covers earlier buildings. Appears to be early 20 th century workings.	51, 52

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			<i>In situ</i> timber sleepers are visible.	
GF14	SN74727080	Shaft?	A stone lined and capped hole, roughly 1m square, on the upslope side of the leat. Function unknown, too small for an access shaft, not marked on any maps.	53
GF14	SN74767086	Trackway	A sinuous trackway linking mine features and likely established in the mid-19 th century. It connects the magazine (PRN 97546) to the main mine building complex (PRN 97547). Out of regular use now.	-
GF15	SN74717078	Trackway	A trackway linking the mine features, giving access up the hillslope to the reservoir. The track is marked on the 1849 tithe map when Glog Fach was not in use, and may pre-date the establishment of the 19 th century mining. Still in use.	-
GF16	SN74657077	Mine Workings	The approximate site of 'old working' marked on the 1861 map, not featuring on any other map source. The depiction suggests a shaft, but a lack of reference points makes the location uncertain, although it appears to be approximately 105m due east of Western Shaft (PRN 97552). No visible surface remains, this area is covered by later 19 th century spoil PRN 97559/97593.	-
GF17	SN74717089	Leat	A prominent V-shaped leat channel, visible as a rock-cut earthwork with partly embanked edges, partly buried. Forms part of leat PRN 97550, but its specific function at this point is unclear.	54



Photo 13: General view across Glog Fach mine, looking northwest.



Photo 14: General view across Glog Fach mine, looking north.



Photo 15: General view across Glog Fach, looking west.



Photo 16: Looking north along aqueduct **PRN 53137**, with spoil tip GF12 on the right.



Photo 17: Looking southeast at the remains of mine building **PRN 97545**, covered by spoil tip GF11. 1m scale.



Photo 18: Looking east as the pinned wall remains of mine building **PRN 97545**, covered by spoil tip GF11.



Photo 19: Looking north across the tumbled remains of magazine **PRN 97546**.
1m scale.



Photo 20: View north at former settling tanks/slime pits **PRN 97547 (a)**.



Photo 21: View southwest, showing the outline of some of the former settling tanks/slime pits on the bottom right (**PRN 97547 (a)**). 1m scale.



Photo 22: View north across area of former buddle pits **PRN 97547 (b)**.



Photo 23: View east across Glog Fach, with areas of former mining features **PRN 97547 (c)** and **PRN 97547 (f)** on the lower ground in the foreground.



Photo 24: View west looking out across areas of former buddle pits **PRN 97547 (d)** and settling tanks **PRN 97547 (e)**, with spoil tip PRN 97551 to the rear.



Photo 25: View southwest across building remains **PRN 97547 (g)** in the foreground, with cars parked in the area of settling tanks PRN 97547 (e) and buddle pits PRN 97547 (d). 1m scale.



Photo 26: View northeast showing fragmentary remains of mine building **PRN 97547 (k)**. 1m scale.



Photo 27: View northeast of former dressing floor **PRN 97547 (p)** and surrounding mine buildings, with spoil tip GF11 behind.

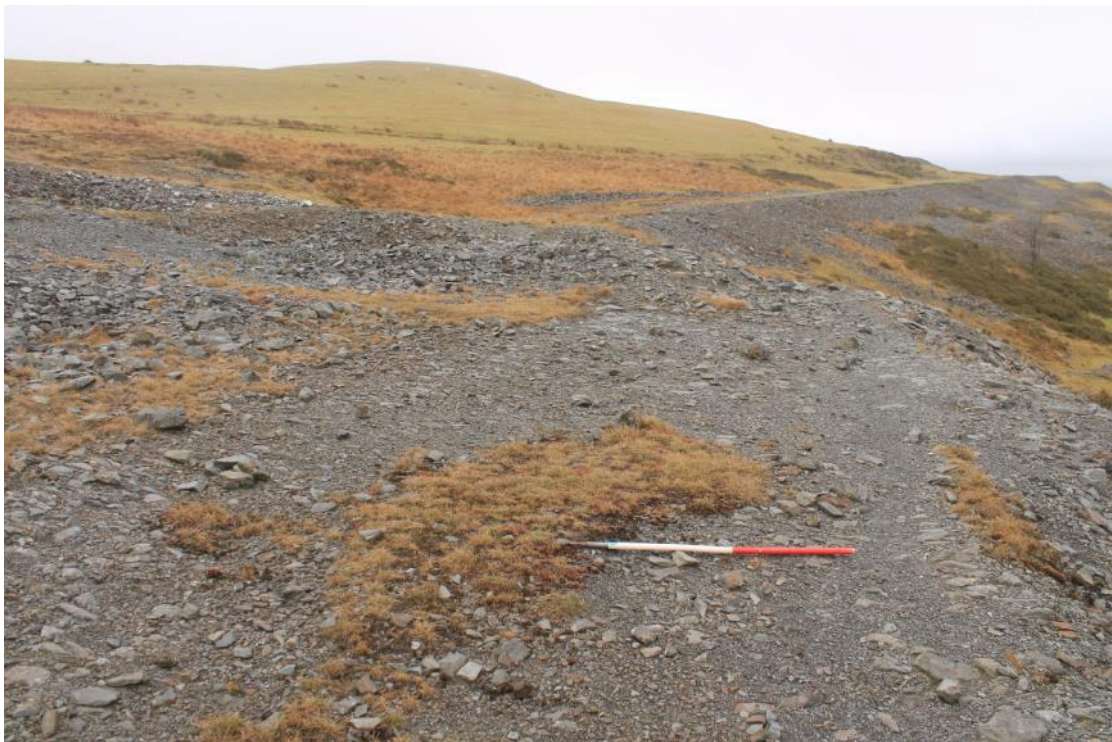


Photo 28: Looking south across cobbled surface remains within tramway area **PRN 97547 (q)**. The tramway embankment PRN 97549 is visible as the terrace in the hillside to the rear. 1m scale.



Photo 29: View north along tramway level **PRN 97549**. The embanked leat PRN 97550 lies to the right. 1m scale.



Photo 30: View north towards the northern end of tramway **PRN 97549**, with spoil tip GF11 in the background. 1m scale.



Photo 31: View north along the leat **PRN 97550**.



Photo 32: View south along leat **PRN 97550**, the small terrace just left of centre.



Photo 33: View north along a water channel cutting through spoil tip **PRN 97551**. Believed to be one of the main polluting channels, this is the approximate location for a proposed monitoring point. 1m scale.



Photo 34: View east with Western Shaft **PRN 97552** in the foreground, and Crusher/Winder House **PRN 97554** to the rear.



Photo 35: View southeast, showing the infilled remains of wheel-pit **PRN 97553**.
1m scale.



Photo 36: View southeast showing built masonry behind the Crusher/Winder House PRN 97554, marking the southeast end of wheel-pit **PRN 97553**.
1m scale resting on masonry.



Photo 37: View northwest looking down the water channel (with scale) running alongside the wheelpit **PRN 97553** (shaped blockwork on the right) draining into Western Shaft PRN 97552 (fenced to the rear). 1m scale.



Photo 38: View northwest showing the gable end of Crusher/Winder House **PRN 97554**. 1m scale.



Photo 39: View northwest down the flat rod channels **PRN 97555 & 97585**, with the Crusher/Winder House PRN 97554 in the background.



Photo 40: View southeast up the flat rod channels **PRN 97555 & 97585**.



Photo 41: View south across Glog Fach, showing the spoil tip **PRN 97559 & 97593** on the left, with the terrace level of tramway PRN 97549 running along the top.



Photo 42: View southeast along tramway **PRN 97583** leading towards engine shaft PRN 97580.



Photo 43: View southeast of stone-capped culvert **PRN 97591**, overlaid by tramway PRN 97549, with flat rod channels PRN 97555 & 97585 in the hill behind. 1m scale.



Photo 44: Looking south across cobbled surface **PRN 97596**, with site of buildings PRN 97597 and ore bins PRN 97584 to the rear. 1m scale.



Photo 45: Looking south at location of buildings **PRN 97597** and ore bins **PRN 97584**, with rock cutting on the left, and mortared masonry on the right. 1m scale.



Photo 46: Looking west across spoil tip **PRN 97598**, with cobbled surface PRN 97596 in the foreground.



Photo 47: Looking west across the depression that may represent a collapsed shaft **GF03**.



Photo 48: View northwest down water course **GF04** running around the NW end of Crusher/Winder House PRN 97554 and draining into Western Shaft PRN 97552 beyond (behind fence). 1m scale placed in water course.



Photo 49: Looking northeast along water channel **GF05** behind the Crusher/Winder House PRN 97554. 1m scale within watercourse.

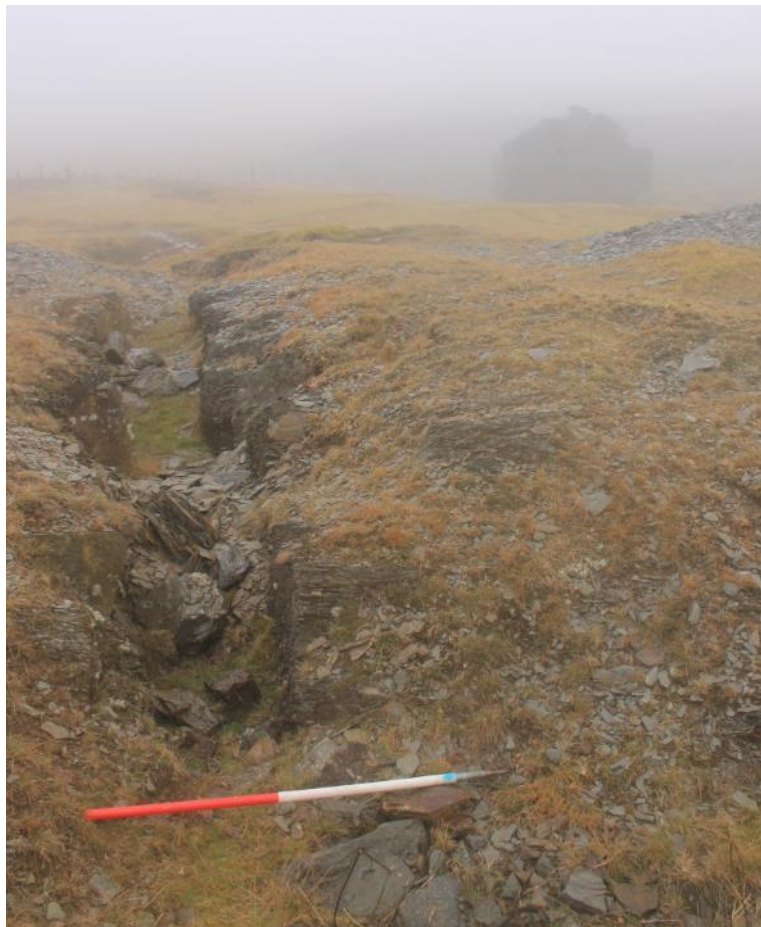


Photo 50: Looking west down the rock cut section of water channel **GF08**, with the Crusher/Winder House PRN 97554 in the background. 1m scale.



Photo 51: Looking ENE along tramway **GF13**, with Skinners Shaft PRN 97542 on the hill to the rear.



Photo 52: View WSW along tramway **GF13**, with some timber tramway sleepers in the foreground, and spoil tip GF11 beyond. 1m scale.



Photo 53: View south of stone-built feature **GF14**. 1m scale.



Photo 54: Looking north along leat **GF17**, with rock cut edge visible to the right. Blocked by spoil tip GF11. 1m scale.



Photo 55: View southwest from the high southern end of the study area towards Carreg Samson standing stone **PRN 5480/CD235** (arrow).



Photo 56: View southwest from the low western end of the study area towards Carreg Samson standing stone **PRN 5480/CD235** (arrow).

8 CONCLUSIONS

8.1 Development Details

- 8.1.1 Planned remediation work at Level Fawr and Glog Fach are currently in the early stages of development, therefore only preliminary monitoring proposals have been put forward at this stage.
- 8.1.2 Initial work will comprise the installation of water flow monitoring structures. One will be sited at the mouth of the Level Fawr Adit, and two to three will be placed within water channels at Glog Fach.
- 8.1.3 The design of these structures is currently unknown and can range from relatively simple free-standing structures fastened in place, to more substantial, part concrete-built structures, but all in proportion to the water courses they will be measuring. It is anticipated that these structures will be in place from between 18 months to 5 years, and will therefore have some degree of durability about them.
- 8.1.4 At Level Fawr the structure will be placed at the mouth of the adit (Figure 17) to ensure it monitors only the discharge from the adit itself, and not the adjacent modern culvert.

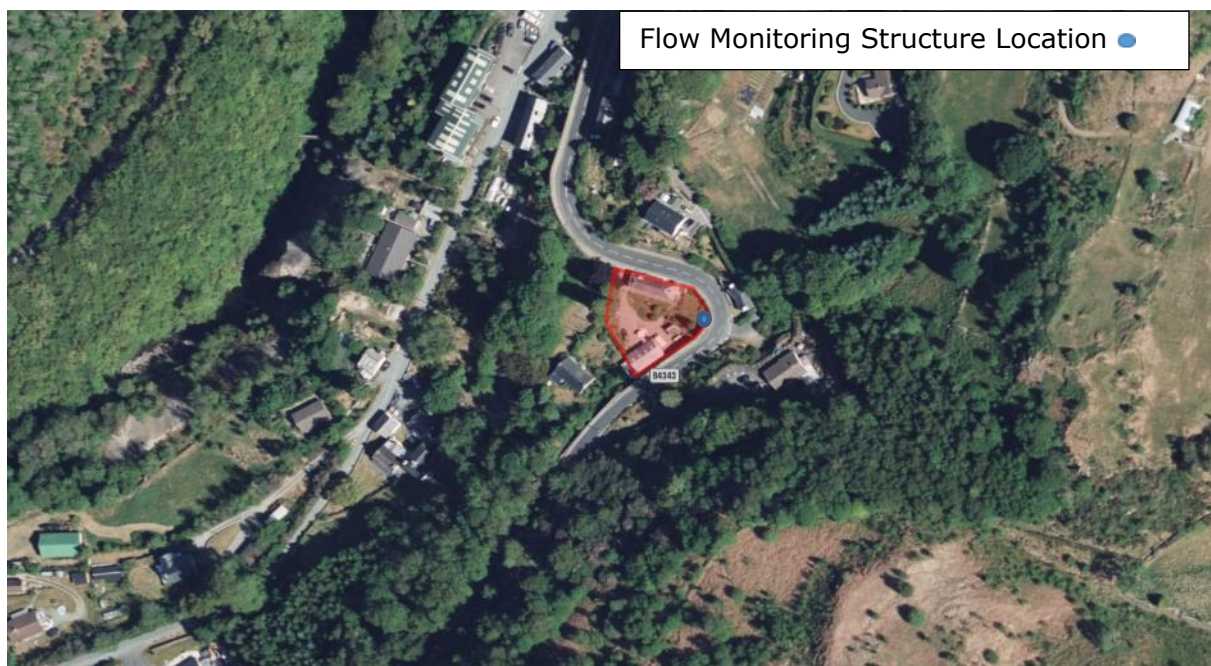


Figure 17: Location of Level Fawr monitoring structure.

- 8.1.5 At Glog Fach the structures will be placed on two water courses (Figure 18) that drain into the Western Shaft PRN 97552. One water course runs around the southeast and southwest sides of the Crusher/Winder House PRN 97554, alongside the wheelpit PRN 97553 (photo 57), before draining into the shaft on its south side. The other water course cuts through the processed spoil tips PRN 97551 to the north, running past the northwest side of the Crusher/Winder House PRN 97554 (photo 58), and draining into the shaft from the northeast.

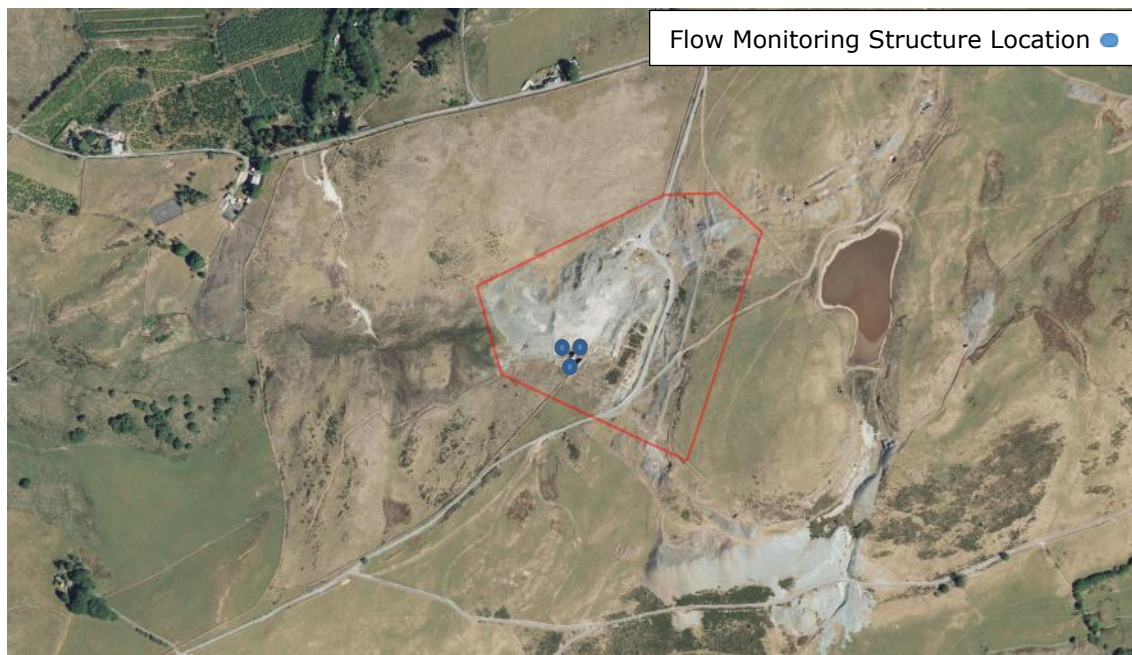


Figure 18: Location of Glog Fach monitoring structures.



Photo 57: View east along one of the watercourse to be monitored. 1m scale place in the channel.



Photo 58: View northeast along the watercourse to be monitored within the spoil tip. 1m scale.

- 8.1.6 Future remediation work may require surface water management interventions, clearance works, and potential ground investigation works. Enabling works may also be required, such as the construction of access routes, parking and storage areas, establishing a constructor's compound, and associated services.
- 8.1.7 Such works are likely to require ground-disturbing activities that could have physical impact upon historic assets by potentially exposing, damaging or destroying archaeological remains.

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 both Level Fawr and Glog Fach clearly rests largely in the metal mining activity that was established in the 18th and early 19th century and continued through into the late 19th to early 20th centuries. Prior to the establishment of this mining activity the archaeological potential of both Level Fawr and Glog Fach appears relatively limited. Some prehistoric activity is noted in the wider landscape, with some significant sites such as the Bronze Age standing stone of Carreg Samson on the ridge to the southwest of Glog Fach, but at present there is little indication of potential Prehistoric activity within the study areas themselves.

- 8.2.3 There is very little evidence of extensive activity in the area during the Roman and early medieval periods. By the medieval period the areas lay within the monastic grange of Strata Florida Abbey, and dispersed settlement and upland farming is likely. Once again however, there is little indication of such activity within the study areas themselves. This situation is likely to have continued into the early post-medieval period, with dispersed upland farming predominating. Any pre-mining archaeological remains are also likely to have been adversely affected by the subsequent activity on the site.
- 8.2.4 The aforementioned Carreg Samson, a Bronze Age standing stone, is a Scheduled Monument CD235 and site of high archaeological value. Although clearly the site will not be directly affected, any work in the area should also take care to avoid or limit the potential impact on the setting of such a monument. There is no indication that any associated archaeological remains would be affected by potential remediation works in the study area, or that long distance views and inter-visibility between CD235 and associated sites would be affected. The Glog Fach mine site does currently provide a very visible visual element in the current setting of CD235, and the main access to the site passes through the mine site. There is the potential therefore for remediation work to impact upon these elements, depending upon the eventual scale of the works, but it would appear unlikely such works could have a significant impact upon the setting of CD235. The immediate flow monitoring structures will not have any impact upon the setting of CD235.

Level Fawr

- 8.2.5 Work on the Level Fawr adit (PRN 57523 / 96529) started in 1785, and over the subsequent 100 years it grew to become the longest drainage adit in mid-Wales, serving several mines in the area. The adit mouth is well-preserved and represents an important surviving element of an industry that helped shape the development, settlement and appearance of the local landscape. The significance of the site is recognised in its designation as a Grade II listed structure (ref.10694). As such special permission would be required prior to any works that affected the structure of the adit mouth.
- 8.2.6 The area in front of the adit mouth contained a dressing floor (LF04), and likely saw associated mining activity from the late 18th century when work on Level Fawr started, through until the early 20th century when the last of the mines drained by the adit closed. A variety of individual features have been identified, such as the leat (LF01, LF02) carrying water from the adit, adjacent enclosures (LF03) and mine buildings (PRN 96531, PRN 8748/57522/95630), all of which still stand as visible features, including the Grade II listed Count House (ref.10693). Alongside these identified features however there is also a significant potential for buried archaeological remains associated with the mine processing activity throughout the study area. The enclosed nature of the area, currently comprising the gardens and grounds of Count House, suggests it is likely to have been fully utilised and to have seen intense activity between the late 18th and early 20th centuries. The condition and extent of buried remains is not at present understood, some clearance and levelling is likely, and clearly modern drainage activity has been undertaken, potentially replacing sections of the leat with modern culverts, but there remains a potential for elements of the dressing floor, and unmapped structural features to survive below the surface.

Glog Fach

- 8.2.7 Mining at the Glog Fach site (PRN 25931) may have started in the 18th century, although this early work was likely to be largely confined to surface works and no identifiable elements of these early works have been identified within the study area. Deeper mining began under the Williams and then Taylors in the 1820s and 1830s, and it is possible some of the mine shafts and water management systems that have been identified on the site were established during this period. The bulk of the identified mining remains however are likely to have been established in the 1850s and 1860s, and intensively worked until the 1890s with some activity continuing into the early 20th century.
- 8.2.8 Although only one standing structure is clearly visible on the site, that of the Crusher/Winder House PRN 97554, and parts of the site have been turned into an off-road racing track, it is still clear that substantial remains are likely to survive below ground. The earthworks remains of leats are clearly visible, including rock cut stretches and built elements, as are the routes of tramways, including surviving cobbled flooring and timber sleepers. Platforms housing various pits, tanks and processing areas can be readily identified, with the outline of some structures visible at ground level, indicating the survival of buried remains. A variety of structures can also be traced, including infilled wheel-pits and mine buildings that have become buried in spoil. The assessment has allowed for many of these mining features to be mapped, illustrating where archaeological remains are likely, although not all features will have been identified, particularly early features, and therefore there is likely to be significant archaeological potential across much of the Glog Fach study area. No statutory designation applies to the archaeological remains but given the importance of the metal mining industry to the area such remains could be considered to be of regional archaeological interest.
- 8.2.9 As initial works on the site comprise the installation of monitoring structures at the lower western end of the site it is worth highlighting specific features of interest in this area. The standing remains of the Crusher/Winder House PRN 97554 are clearly visible above ground. Comparisons with photographs from 1975 suggest very little deterioration in the structure, the visible remains would therefore appear relatively stable.
- 8.2.10 Lying alongside the crusher/winder house to the southwest are the remains of an associated wheel-pit PRN 97553. The wheel-pit has been infilled with rubble, but large dressed masonry depicts the partial outline, and possible internal timberwork also survives, suggesting the feature may be relatively well-preserved below ground. The infilling has served to obscure the full extent of the wheel-pit, but it does appear to project beyond the northwest edge of the adjacent building and may include a balance pit at this end. How the flow of water through this area interacts with these remains is unclear, at present it appears to run alongside the wheel-pit rather than into it.
- 8.2.11 The water appears to drain into Western Shaft PRN 97552, from where it is assumed it drains eventually into Level Fawr. The shaft is currently fenced off and was therefore not examined closely and it is unclear what built elements may survive around the shaft head. The water courses in this area appear to be a mix of naturally formed channels, but also following the lines of channel and leats that were deliberately constructed during the working life of the mine. There is the potential therefore that watercourses, particularly those that run in close proximity to the Crusher/Winder House PRN 97554 and wheel-pit PRN 97553, have built elements to them of archaeological interest.

8.3 Mitigation

- 8.3.1 Due to the archaeological sensitivity of both the Level Fawr adit area, and the Glog Fach mine site, 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 initial monitoring structure installation at the Level Fawr adit, given its Listed status, careful consideration should be given to the design of the monitoring station to ensure a minimum impact to the structure of the adit, and the appearance of the adit. A permanent structure, or one that involves substantial permanent attachments to the surrounding masonry of the adit mouth should be avoided. If possible, it may be beneficial to place any monitoring structure into the tunnel rather than at the adit mouth, but this may be dependent on what is practically feasible in the design of the structure.
- 8.3.3 For future remediation works at the Level Fawr site any ground-breaking activity 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 an archaeological watching brief would be required on any future ground-breaking activity in this area.
- 8.3.4 For initial monitoring structure installation at the Glog Fach site the locations should be chosen with care and may need to be preceded or accompanied by archaeological evaluation or monitoring. The location of a monitoring station on the watercourse through the spoil to the north/northwest of the Crusher/Winder House PRN 97554 is unlikely to have an impact on buried structural remains, as none have been identified in this location on previous mapping or during the site visit. The watercourse to the southwest/west of the Crusher/Winder House PRN 97554 runs alongside the wheel-pit PRN 97553 and buried structural remains, potentially well-preserved, have been identified. The monitoring structure should therefore be positioned as far west from the Crusher/Winder House PRN 97554 and wheel-pit PRN 97553 as possible to avoid damage to buried remains. Any ground-breaking activity associated with the installation of the monitoring structure may need to be undertaken under archaeological watching brief conditions.
- 8.3.5 For future works at Glog Fach it is hoped that this assessment will help inform the design of any remediation scheme, as well as decisions on archaeological mitigation. The identification of individual features and a more general area of mining activity is intended to provide a baseline understanding of the resource and identify opportunities where further work may be required.
- 8.2.6 Any ground-breaking activity has the potential to impact upon the archaeological resource. It is generally advised that any identified archaeological remains should be avoided and left in situ and undisturbed. Proposed ground-breaking activity may require intrusive archaeological investigation and/or recording prior to a final design scheme being agreed or work commencing. Given the archaeological sensitivity of the area it is likely any ground-breaking activity will also require archaeological monitoring.

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Level Fawr & Glog Fach, Ceredigion:
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