

CWMYSTWYTH MINES, CEREDIGION: MANAGEMENT AND PROTECTION PLAN



Prepared by Dyfed Archaeological Trust
For: Cambrian Mines Trust



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**CWMYSTWYTH MINES,
CEREDIGION:
MANAGEMENT AND
PROTECTION PLAN**

Gan / By

James Meek

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CWMYSTWYTH MINES, CEREDIGION: MANAGEMENT AND PROTECTION PLAN

EXECUTIVE SUMMARY

The Cwmystwyth Mines site is one of national importance in terms of archaeological and heritage value, as well as for its ecology and biodiversity, and its geological importance. The site has evidence for 4000 years of mining, from the Bronze Age through to the early 20th century.

In 2012 the Cwmystwyth Mines site was purchased by the Cambrian Mines Trust from Crown Estates, with the aim of improving accessibility to the site and providing more information to visitors on its significance, in terms of archaeology, ecology and geology. In 2013 Cadw and Ceredigion County Council (through Cynnal Y Cardi) provided funds for the development of a Management and Protection Plan for the site to develop ideas being put forward by the Cambrian Mines Trust in their 'A Way Ahead' document. This Plan has been developed by DAT Archaeological Services in partnership with the Cambrian Mines Trust. It has included consultation and input from members of Cadw, Ceredigion County Council, Natural Resources Wales and Dyfed Archaeological Trust. Further consultation has been undertaken with ecological specialists and mining historians.

The Cwmystwyth Mines site is one with a number of designations which are constraints to future works at the site, although not prohibitive. The majority of the site area owned by the Cambrian Mines Trust is recognised for its archaeological and historical importance and designated as a Scheduled Ancient Monument. Its environmental importance is also recognised, with almost the entire site lying within the Elenydd Special Area of Conservation and the Elenydd Mallaen Special Protection Area. The site is also covered by the Elenydd and Mwyngloddfa Cwmystwyth Sites of Special Scientific Interest. These environmental designations protect the specialised flora which have developed across the area, some specifically within the former mines site; the fauna of the area including protected species such as bats which use the mine adits and levels, and the birds which nest in the upland areas of the site; and they also recognize the geological importance of the site in terms of both its physical geography and mineralisation. The above designations mean that before any works are undertaken at the site, whether above or below ground, relevant consents would be needed from the governing bodies, specifically Cadw and Natural Resources Wales. Relevant legislation is also discussed.

The present management regime across the site area is quite limited. Graziers rights across the land are held by a number of the local farmers, which is acknowledged in the various ecological designations as something whereby livestock should be maintained at their present level to manage vegetation levels. The site area is also monitored by graziers as they access the site to check on livestock. Local residents also regularly walk in the area and check on the site.

A number of factors are contributing to the deterioration of the site. these include misuse of the site by off road vehicles, fly tipping and vandalism. Further damage has occurred through the digging out of spoil tips for building materials. These can all cause significant damage to the designated features and habitats. Damage through erosion is also being caused by flash flooding, where streams are exposing archaeological remains, undermining structures and also eroding some of the contaminated fines and slimes dumps on the site, which leads to polluted material draining straight into the River Ystwyth. Below ground, the mine workings are also noticeably deteriorating through natural decay and

movement. Underground revetment walls are failing and timber artefacts (supports, ladders, launders etc) are rotting.

The Cwmystwyth site is one of the main sources of pollution in the Ystwyth valley. Pollution from Pugh's and Kingside adits are recognised as the two main sources on the site, with the eroding fines and slimes dumps also a notable cause.

Through this Plan, the aspirations of the Cambrian Mines Trust have been considered as a series of works which should be undertaken in the future for the positive benefits of the site and its future protection. These include erection of signage stating what the site is and that it is owned by the Cambrian Mines Trust; interpretation boards (website and information leaflets) providing information on the significance of the site in terms of archaeology, ecology and geology, as well as the dangers of such sites to visitors; visitor management through improved parking and a defined footpath; management of the Nant Y Gwaith stream course to prevent further erosion and reduce pollution; and consolidation and repair to the impressive portals to Level Fawr and Taylor's Level; management and improvement of access to below ground workings for surveyors, experienced mine explorers and researchers. These improvements are considered as the first Phase of a larger project to improve access and management of the site. This part of the Plan also discusses potential partners in the delivery of these project elements.

The plan discusses a second Phase of works at the site which should consider the longer term sustainability and management of the site area. This could include the development of a hydro-electric scheme built in a very similar location to the one that was used over 100 years ago at the site. The income generated from the scheme could be used to reinvest in the management of the Cwmystwyth Mines site. Further remediation and consolidation of other structures at the site, above and below ground, is also necessary as is continued research and recording of the archaeology, ecology and geology of the site. The continued promotion and education of visitors and school children to the area is also essential to ensure the site does not get neglected.

A range of potential funding sources are discussed within this plan for which the proposed works at Cwmystwyth would qualify for consideration, which include such sources as the Cefn Croes Wind Farm Community Trust Fund, the Esmee Fairburn Trust and the Heritage Lottery Fund.

The Plan also considers the various consents and permissions that will be needed to undertake any works at the site, such as Scheduled Monument and SSSI Consents and planning permission. The various designations will require a whole suite of initial surveys of the relevant areas of site and assessment of predicted impacts to be undertaken prior to consents or planning permission being granted. Obtaining the relevant permissions is definitely seen as possible as long as dialogue is continued during all stages of development and delivery of the eventual project, between the Cambrian Mines Trust and the various governing bodies. A list of relevant contacts has been provided, all of whom were consulted during the production of this document.

The Plan emphasises that the long term sustainability of the site must be considered in terms of being able to generate some form of income that can be used for future maintenance, repair and recording. The site provides further research opportunities into the environment (archaeology, ecology, geology, pollution) and future schemes of recording may come through the funding of such research.

GWAITH MWYN CWMYSTWYTH, CEREDIGION: CYNLLUN RHEOLI A GWARCHOD

CRYNODEB GWEITHREDOL

Mae safle Gwaith Mwyn Cwmystwyth o bwysigrwydd cenedlaethol wrth ystyried ei archaeoleg a'i dreftadaeth, ynghyd â'i ecoleg, ei fioamrywiaeth a'i bwysigrwydd daearegol. Mae yna dystiolaeth o fwyngloddio ar y safle ers 4000 mlynedd, o'r Oes Efydd tan yr 20^{fed} ganrif.

Prynwyd y safle yn 2012 o Ystadau'r Goron gan Ymddiriedolaeth Mwyngloddiau Cambria, gyda'r bwriad o wella mynediad i'r safle a darparu mwy o wybodaeth i ymwelwyr ar ei archaeoleg, ei ecoleg a'i ddaeareg. Yn 2013 darparodd Cadw a Chyngor Sir Ceredigion (trwy Cynnal y Cardi) gyllideb i ddatblygu Cynllun Rheoli a Gwarchod ar gyfer y safle, er mwyn datblygu ar y syniadau a gynigir yn nogfen 'Ffordd Ymlaen' ('A Way Ahead') Ymddiriedolaeth Mwyngloddiau Cambria. Cynhwyswyd ymgynghoriadau a mewnbwn aelodau o Cadw, Cyngor Sir Ceredigion, Cyfoeth Naturiol Cymru ac Ymddiriedolaeth Archeolegol Dyfed. Ymgwymerwyd ag ymgynghoriadau pellach gydag arbenigwyr ecolegol ac haneswyr mwyngloddiau.

Mae yna nifer o ddynodiadau sydd yn effeithio ar waith pellach ar safle Gwaith Mwyn Cwmystwyth, er nad ydynt yn waharddol. Cydnabyddir pwysigrwydd hanesyddol ac archeolegol y rhan fwyaf o'r tir sydd dan berchnogaeth Ymddiriedolaeth Mwyngloddiau Cambria gan ddynodiad Heneb Rhestredig. Cydnabyddir pwysigrwydd amgylcheddol y safle hefyd, gyda'r rhan fwyaf o'r safle yn syrthio tu fewn i ffiniau Ardal Gadwraeth Arbennig Elenydd ac Ardal Warchodaeth Arbennig Elenydd – Mallaen. Mae dynodiadau Safle o Ddiddordeb Gwyddonol Arbennig Elenydd a Mwyngloddfa Cwmystwyth hefyd yn perthyn i'r safle. Mae'r dynodiadau amgylcheddol hyn yn gwarchod y planhigion arbenigol sydd wedi datblygu yn yr ardal, rhai o'r rhain yn arbennig ar safle'r hen waith mwyn; mae ffawna'r ardal, gan gynnwys rhywogaethau dan warchodaeth megis ystlumod, yn defnyddio twneli a lefelau'r mwynglawdd, ac mae adar yn nythu ar ardaloedd ucheldirol y safle; maent hefyd yn cydnabod pwysigrwydd daearegol y safle o safbwynt ei ddaearyddiaeth materol a'i fwneiddiad. Golyga'r dynodiadau uchod bod yn rhaid derbyn y caniatadau perthnasol o'r cyrff llywodraethol, Cadw a Chyfoeth Naturiol Cymru yn benodol, cyn ymgymryd ag unrhyw waith, boed ar yr arwyneb neu dan y ddaear. Trafodir y ddeddfwriaeth berthnasol hefyd.

Mae'r gyfundrefn rheoli bresennol ar y safle yn eithaf cyfyng. Mae gan nifer o ffermwyr lleol hawliau pori dros y safle, a chydabyddir yr angen i gynnal stocio ar y lefelau presennol er mwyn rheoli llystyfiant gan y diffiniadau amgylcheddol. Mae trigolion lleol yn cerdded yn yr ardal yn rheolaidd ac yn cadw llygad ar y safle.

Mae nifer o ffactorau yn cyfrannu i ddirywiad y safle, gan gynnwys camddefnyddio'r safle gan gerbydau oddi ar y ffordd, tipio sbwriel a fandaliaeth. Gwnaed niwed pellach gan gloddio'r tomenni gwastraff ar gyfer deunyddiau adeiladu. Gall hyn oll greu niwed sylweddol i'r nodweddion a'r cynefinoedd dynodedig. Mae llifogydd brig hefyd yn erydu'r safle, gyda'r nentydd yn dadorchuddio olion archeolegol, yn tanseilio adeiladau ac yn erydu rhai o'r tomenni manion a slwtsh llygredig, mae hyn yn achosi deunyddiau llygredig i lifo'n syth i'r afon Ystwyth. Dan y ddaear, gwelir dirywiad yn strwythur y gloddfa o ganlyniad i bydredd naturiol a symudiad. Mae'r welydd cynnal yn y gloddfa yn methu ac mae arteffactau pren (cynhalbyst, ysgolion, landerau ayyb.) yn pydru.

Mae safle Cwmystwyth yn un o'r prif ffynonellau o lygredd yng nghwm yr Ystwyth. Cydnabyddir mae llygredd o geuffyrdd Pugh a Kingside yw'r ddau brif

ffynhonnell ar y safle, gyda'r erydiad o'r tomenni manion a slwtsh yn ffynhonnell bwysig hefyd.

Trwy'r cynllun hwn, ystyrir ddyheadau Ymddiriedolaeth Mwyngloddiau Cambria yn gyfres o waith ar gyfer y dyfodol er budd y safle a'i warchodaeth yn y cyfnod nesaf. Mae'r rhain yn cynnwys codi arwyddion i nodi natur y safle a'i berchnogaeth gan Ymddiriedolaeth Mwyngloddiau Cambria; byrddau dehongli (gwefan a thaflenni gwybodaeth) i ddarparu gwybodaeth ar bwysigrwydd archeolegol, ecolegol a daearegol y safle, ynghyd â pheryglon safleoedd o'r fath hyn i ymwelwyr; rheoli ymwelwyr gan wella'r cyfleusterau parcio a chreu llwybr troed penodol; rheoli cwrs Nant y Gwaith er mwyn osgoi erydiad pellach a lleihau llygredd; a sefydlogi a thrwsio mynedfeydd nodedig Lefel Fawr a lefel Taylor; rheoli a gwella mynediad tanddaearol ar gyfer arolygwyr, anturwyr mwyngloddiau profiadol ac ymchwilwyr. Ystyrir y gwelliannau hyn yn Gam cyntaf o brosiect ehangach ar gyfer gwella mynediad i'r safle a'i reolaeth. Trafodir partneriaid posib wrth weithredu'r elfennau hyn o'r prosiect yn y rhan hyn o'r cynllun.

Trafodir ail Gyfnod o waith yn y cynllun, dylai hwn ystyried cynaliadwyedd a rheolaeth hirdymor y safle. Gallai hyn gynnwys datblygu cynllun hydro-drydan ar safle agos iawn i'r un a ddefnyddiwyd dros 100 mlynedd yn ôl yn y gwaith. Gallai unrhyw elw a wnaed gan y cynllun hwn gael ei fuddsoddi yn rheolaeth safle Gwaith Mwyn Cwmystwyth. Mae sefydlogi a thrwsio strwythurau eraill ar y safle hefyd yn angenrheidiol, boed uwchben neu dan y ddaear, ynghyd ag ymchwil a chofnodi pellach o archaeoleg, ecoleg a daeareg y safle. Mae hyrwyddo'r safle ac addysgu ymwelwyr a phlant ysgol amdano hefyd yn hanfodol er mwyn sicrhau na chaiff y safle ei esgeuluso.

Trafodir nifer o ffynonellau cyllid posib a fyddai'n addas ar gyfer y gwaith a gynigir yn y cynllun, gan gynnwys cronfeydd megis Cronfa Ymddiriedolaeth Gymunedol Fferm Wynt Cefn Croes, Ymddiriedolaeth Esmee Fairburn a Chronfa Dreftadaeth y Loteri.

Mae'r cynllun hefyd yn ystyried y caniatadau angenrheidiol er mwyn ymgymryd ag unrhyw waith ar y safle, megis Caniatâd Henebion Rhestredig a SoDdGA a chaniatâd cynllunio. Bydd yr holl ddynodiadau yn gofyn am set gyflawn o archwiliadau cychwynnol ar yr ardaloedd perthnasol ac asesiadau o'r effeithiau posib cyn derbyn unrhyw ganiatâd neu ganiatâd cynllunio. Rhagdybir ei fod yn bur bosib derbyn y caniatadau angenrheidiol, ond bydd yn rhaid i'r drafodaeth rhwng Ymddiriedolaeth Mwyngloddiau Cambria a'r cyrff llywodraethol barhau trwy gydol pob cam o ddatblygu a gweithredu'r prosiect terfynol. Darperir rhestr o gysylltiadau perthnasol, ac fe ymgynghorwyd gyda phob un ohonynt wrth gynhyrchu'r ddogfen hon.

Mae'r cynllun yn pwysleisio'r angen i ystyried cynhyrchu incwm o rhyw fath ar gyfer y safle er mwyn gofalu am gynladwyedd hirdymor y safle, atgyweiriadau, cynnal a chadw a chofnodi. Mae yna gyfleoedd am ymchwil pellach i amgylchedd (archaeoleg, ecoleg, daeareg, llygredd) y safle a gallai cyllidebau am gynlluniau cofnodi pellach darddu o ariannu'r fath ymchwil.

1 INTRODUCTION

1.1 Project Background and Scope

1.1.1 A Specification and Brief for the production of a Protection and Management Plan for the Cwmystwyth Mines site was prepared by Ceredigion County Council. This formed part of a tender request. The aim of the plan was to provide the owners of the mines site, The Cambrian Mines Trust (CMT), with a framework by which future projects and proposals at the site could be developed, providing information on relevant statutory requirements and legislation.

1.1.2 DAT Archaeological Services were commissioned to prepare the document. The works have been funded by Cadw and Ceredigion County Council (Cynnal Y Cardi). The report will be for the use of The Cambrian Mines Trust.

1.1.3 The Cwmystwyth Mines site was formerly owned by the Crown Estates, and following a number of years of negotiations the site was taken over by The Cambrian Mines Trust (CMT or the Trust). These negotiations were completed in 2012 when the CMT was formed and registered as a Private Company Limited by Guarantee with no share capital on 28th March 2012 (Company No 8004161). At this point CMT took over the ownership of the site and custody of adjacent parts of the site not under Crown control.

1.2 Cambrian Mines Trust

1.2.1 CMT is run by three directors, Roy Fellows, David James and Hugh Ratzer who have all assisted with the preparation of this Plan. The Cambrian Mines Trust website states that *'The Trust is dedicated to acquiring any and all kinds of land or rights relative to historic mining remains in England and Wales. Our purpose is the preservation of those remains both surface and underground and also the preservation and restoration of underground access'*.
<http://www.cambrianmines.co.uk/>

1.2.2 The Object of CMT, as included in their Articles of Association is:

The object of the Trust is to advance the education of the public by securing the preservation, restoration, improvement, enhancement and maintenance of features and objects of industrial, scientific, social and historical interest relating to the winning and working of minerals, slate and stone in Wales and the counties immediately adjoining including the provision of museums and visitor centres for the display of such features and objects and the organization of meetings, exhibitions, lectures, publications and other forms of instruction relevant to the historical, social and industrial development of mining and quarrying in the said area, for the benefit of the people..

1.3 Scope of the Project

1.3.1 Based on the tender documentation the following requirements and key outputs were included within the DAT Archaeological Services tender and have been addressed within this document where possible:

- 1) The production of a Protection and Management Plan, hereafter referred to as the Plan.
- 2) The Plan will allow the Client to understand the implications of the proposed actions and will be a robust basis from which to approach works on site and for funding bodies when required in the future.

- 3) The Plan will consider each of the 15 proposals within the original 'wish list' prepared by CMT and will document the potential risks (benefits or dis-benefits) and will prioritise certain activities.
- 4) Review and re-writing of the wish list to make the aspirations clearer and remove those tasks considered unviable or unnecessary.
- 5) Following this review the wish list was reduced to 11 items. The Plan has itemised each proposal within the revised list and assessed them and their effects on the site:
 - a) From the perspective of any statutory legislation
 - b) From a biodiversity and a heritage perspective
 - c) From a local impact perspective – considering aesthetics, current land-use and community involvement
 - d) From a health and safety perspective
 - e) From a financial perspective, where appropriate allocating an indicative cost or income and identifying potential funding sources if required
 - f) In context with other proposals
 - g) From a time/priority context
- 6) The Plan provides an overall framework for approaching the future management and protection of the mines. It does not include the preparation of any specialist documentation (such as Health and Safety plan, full costed proposals for future works, designs or applications for funding).
- 7) Attendance at a public consultation meeting organised by Cynnal Y Cardi.

1.4 Site Location

1.4.1 The Cwmystwyth Mines lie on the eastern side of Ceredigion within the Ystwyth valley (site centred on SN 8039 7500; Figures 1 and 2).

1.4.2 The area owned by CMT covers almost 139ha mostly on the northern side of the River Ystwyth, and a parcel of land to the south covering the major part of the South Cwmystwyth Mines. The Trust also have mineral and sporting rights in this area (Pink area on Figure 2). An additional area of 1.19ha lies to the southeast (again south of the river and covering the remaining part of the South Cwmystwyth Mines) where the Trust own mineral and sporting rights, but not land ownership (Blue area on Figure 2).

1.5 Pollution at the Cwmystwyth Mines

1.5.1 The Cwmystwyth Mines site is known to be a major source of pollution into the River Ystwyth. Pollution from the Pugh's and Kingside adits are recognised as the two main sources of pollution on the site. The Cwmystwyth Mines were considered within the Metal Mines Strategy for Wales document (Environment Agency Wales 2002) as a site area where treatment of pollution would be very difficult due to restrictions on available areas of land and other factors, including archaeology. Natural Resources Wales (NRW, formerly Environment Agency Wales) are presently relooking at this, and a number of other sites, for the feasibility of implementing water treatment schemes. The Cambrian Mines Trust

and NRW have been discussing options at the site and will continue with this dialogue as and when a scheme is developed.

1.6 Abbreviations used in this report

BCA	British Caving Association
BCT	Bat Conservation Trust
CCC	Ceredigion County Council
CMT	The Cambrian Mines Trust (The Trust)
CYC	Cynnal Y Cardi
DAT	Dyfed Archaeological Trust
EMRG	Early Mines Research Group
HER	Regional Historic Environment Record
HLC	Historic Landscape Character
HLF	Heritage Lottery Fund
NAMHO	National Association of Mining History Organisations
NGR	National Grid Reference
NMW	National Museums Wales
NRW	Natural Resources Wales
PRN	Primary Record Number
RCAHMW	Royal Commission on the Ancient and Historic Monuments of Wales
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WMPT	Welsh Mines Preservation Trust

1.7 Illustrations

1.6.1 Printed map extracts are not reproduced to their original scale and are illustrative only.

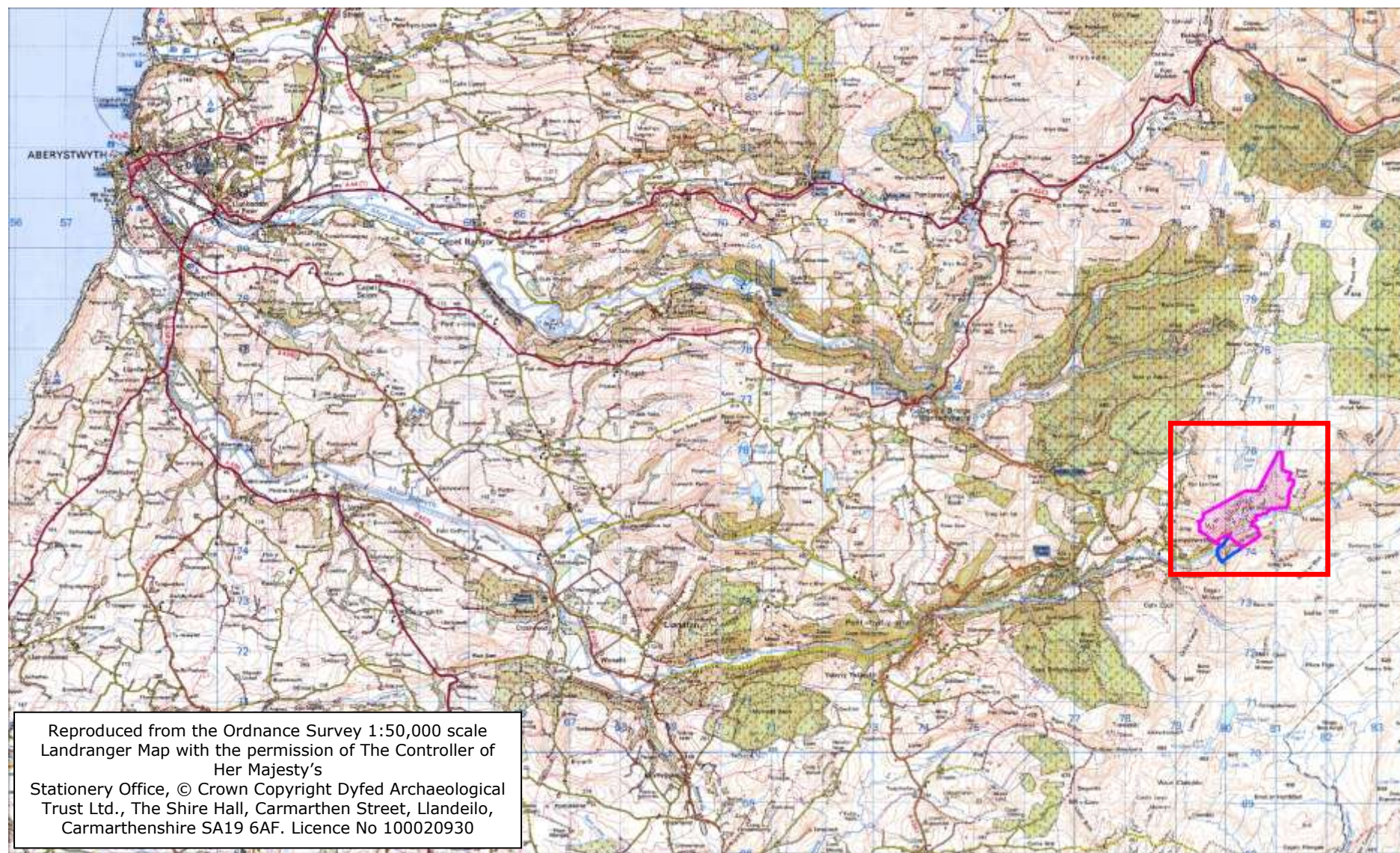


Figure 1: Location plan of the Cwmystwyth Mines, based on the Ordnance Survey.

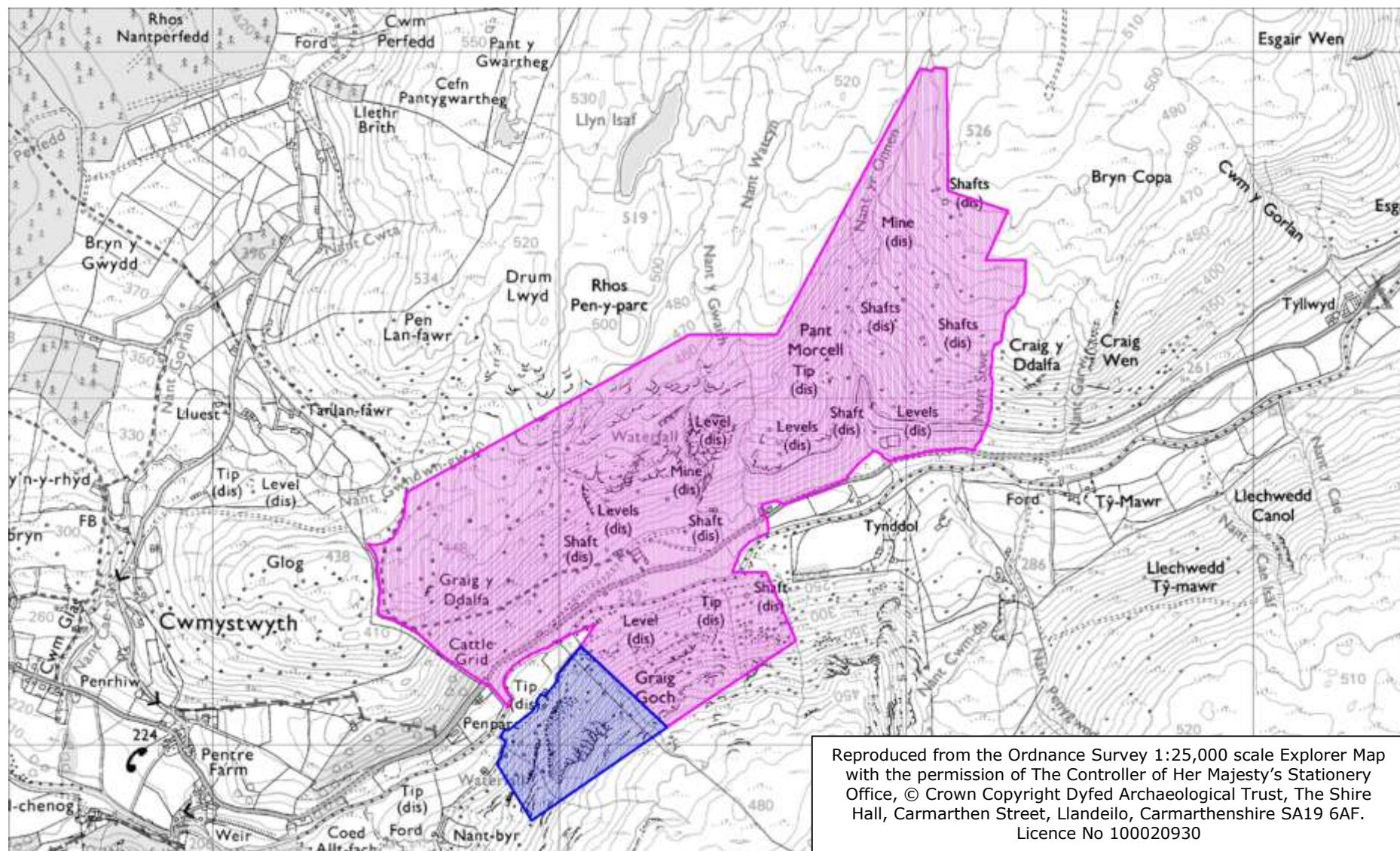


Figure 2: Site Location plan showing land owned by Cambrian Mines Trust (pink boundary) and area of mineral/sporting rights (blue)

2 ARCHAEOLOGICAL AND HISTORICAL SUMMARY

2.1 Introduction

2.1 The aim of this report is not to rewrite the history of the Cwmystwyth Mines, but a short summary is included to place the site within its archaeological and historical context. The following background to the Cwmystwyth Mines site is reproduced from the previous Conservation Plan prepared for the site by Dr Simon Timberlake, with full permission from the author (Timberlake 2012).

2.2 Historical importance

2.2.1 The history of lead mining here has been fairly well documented by Simon Hughes in his British Mining Series No.17 monograph *The Cwmystwyth Mines*, first published in 1981 but revised in several editions since.

2.2.2 In terms of ore output, more than 30 different mineral veins have been worked here, the two principal ones being the Kingside and Comet Lodes (including their various branches), the third most important being Michell's. Lead occurred in all the veins (as galena - lead sulphide), and this was the principal ore extracted, at least until 1884 when it was superseded by the production of zinc (or blende - zinc sulphide). Small amounts of copper ore (chalcopryite) have been extracted at various times (particularly from the eastern end of the Comet Lode ('Belshazzar' or Copper Lode) on Copa Hill), although no production of this mineral has been recorded since 1800. Compared to the mines to the north of the Rheidol, the lead ore from Cwmystwyth appears to have been silver-poor, although some 33,509 ozs of silver metal were nevertheless recorded as having been obtained between 1848 and 1916 (this suggests an average content of 3.3 ozs silver per ton of lead ore). The total *recorded* output for lead since 1848 is only 32,913 tons, and for zinc ore 19,913 tons, thus it would appear that the mine was already exhausted by this time. However, the large area of shallow workings, including those on Copa Hill and the rich ore 'pipe' worked as an opencast on the Graig Fawr, at the junction of the Kingside and Comet Lodes, attests to the large volume of lead ore removed prior to the 19th century and the advent of deep mining (some estimates of this are as much as 200,000 tons (Hughes 1981)).

2.3 Archaeological importance

2.3.1 Archaeological excavations carried out on Copa Hill between 1986-2002 have provided us with evidence of some of the earliest metal mining in Britain. Located at 426m AOD, a small opencast trench (c.10m + deep) mined during the Early Bronze Age using stone and antler tools in conjunction with firesetting, exploited the exposed outcrop of the Comet Lode, most probably for the extraction of copper (but perhaps also for lead) periodically over a period of (up to) several hundred years between c. 2000-1600 Cal BC (Timberlake 2003 & 2009). This site on the Comet Lode Opencast (SN 8116 7523) appears to be the only known location for prehistoric mining within the vicinity, and no further evidence of metallurgical activity (smelting) or settlement has yet been found. It seems that it was only the weathered top of the lode that was exploited; rather than the chalcopryite in the quartz-ankerite veins, it was the oxidized minerals (such as malachite) that were separated and extracted. This site is extremely important archaeologically on account of the lack of later disturbance and mining, and the size of the undertaking compared the other eight Bronze Age mines so far identified in mid-Wales (Timberlake 2009). Almost certainly this is the best preserved Bronze Age mine in Britain in terms of its archaeological remains, and with 20 years of excavation and post-excavation work undertaken, this is

probably the best studied. During the course of these excavations a system of hollowed-out wooden drainage launders, fragments of basket and rope, 4000-year old wooden mine stemples, plus mining tools including red deer antler picks and hammer stones and the withy handles for these were found (Timberlake 2003). Meanwhile palaeo-environmental work carried out on the peat of the blanket bog above the site has provided a contemporary record of minor copper pollution around the mine (Mighall et al. 2000). There is also evidence for Medieval as well as 17th-century/ 18th-century prospection (shafts) dug through the infilled/backfilled prehistoric opencast, as well as a Late Medieval/ early Post-medieval hushing dam at its front. A 12th-13th-century AD radiocarbon date has also been obtained from the basal post-abandonment infill of an ancient leat, the former course of which runs along the contour from the headwaters of the Nant yr Onnen to empty into a sluice channel above the prehistoric opencast. The dating of this peat fill suggests either an Early Medieval or earlier Roman date for its use. Recent archaeological work on Copa Hill has focused on the excavation of the disputed lead stamping mill. This was excavated between 2005 and 2007 in order to determine whether this was the site of William Waller's 17th-century water-powered stamps, or that of Sir Thomas Bonsall's (1780s). The excavations revealed a process of wet stamping, gravity separation and buddling indicating that the extant remains dated from the end of the 18th century, though finds of 17th-century pottery indicated some earlier activity (Timberlake 2007).

2.3.2 At the base of Copa Hill traces of ancient lead smelting were identified at Banc Tynddol just above the valley road. Archaeological excavation carried out in 2002 revealed evidence for Roman (1st-2nd-century AD) lead smelting as well as Early Medieval lead smelting bole hearths of the 8th-12th-centuries AD (the last phase possibly associated with mining carried out as part of the interest of the monks of Strata Florida Abbey) (Timberlake 2002a). Beneath one of these hearths what appeared to be an empty grave cut was found, from the upper fill of which came a single 39mm diameter beaten gold foil disc which probably dates this feature to the period 2600-1700 BC, and likely the earlier part given the Early Beaker cultural attribution of this gold item (Timberlake 2002b & 2004). The discovery of this disc and grave near to the foot of the Comet Lode, and to the Early Bronze Age mine at its top, whilst possibly coincidental, might also be significant as a link between Beaker metal interests and these early copper mines, as has also been found at Ross Island in southwest Ireland.

2.4 A history of mining

2.4.1 Cwmystwyth belonged to the grange of Strata Florida Abbey, and disputes over leases at the beginning of the 16th century implies the existence of a much earlier interest of the monks in these mines, as does the account provided by Leland of former mining and smelting here, which he recorded on passing through the valley sometime between 1536 and 1538. Leland's account is suggestive of mining on the Graig Fawr, although there may well also have been lead workings on Copa Hill at this time. Following the dissolution of the monasteries, only Copa Hill was retained by the Crown, thus the earliest mining leases to private speculators (e.g. to Charles Evans and John Hopwood in 1588) relate to the western half of the mine (i.e. land to the west of the Nant yr Onnen). Since the Graig Fawr appears to have been the focus of much of this early interest, the area was soon reclaimed by the newly formed Society of Mines Royal, although leases still appear to have been issued separately for the two halves of the mine. Successive leases show a continuous interest in Cwmystwyth from the beginning of the 17th century onwards, including that to Sir Hugh Myddleton and Sir Francis Bacon in 1617 (Myddleton became rich through his efforts of mining silver at Goginan and Cwmsymlog). The exact location of all this mining activity at Cwmystwyth remains a mystery. Nevertheless, Morgan Herbert of the Hafod was

tenant in 1699, and for a few years thereafter it seems that he exploited a rich portion of the Kingside Lode (Herbert's Stope) just to the west of Copa Hill.

2.4.2 Renewed interest was shown in Cwmystwyth from 1704 onwards by the newly formed Company of Mine Adventurers, whose activities in Cardiganshire were carried out by William Waller in partnership with the Neath industrialist Sir Humphrey Mackworth. Much of this work appears to have just been prospection and development, driving adits on Copa Hill (where the focus of activity appears to have been), at Pentrefach and Nantrefach (Pugh's Mine), and at Pentre and Briwnant above Cwmystwyth village. Although a fair amount of information survives as to this activity, only 580 tons of lead ore are recorded as having been raised. Following the dismissal of Waller from his post and the collapse of the 'Mine Adventurers', mining activity here appears to have been minimal, and to some extent illegal, although by 1725 Thomas Powell of Nanteos laid claim to the mine and is recorded as working here in 1725, both on Copa Hill and to the west of the Nant yr Onnen. A general economic revival (and rising lead prices) in 1758-61 coincided with the interest of Chauncey Townsend who engaged the services of a Derbyshire man, Thomas Bonsall, to manage his mining interests here. Bonsall took the lease himself during the mid-1780s, and thereafter carried out considerable underground development work within the area of Pugh's Mine, Level Fawr, the Penguelan section, and under Copa Hill, for the first time exploiting the abundant deposits of zinc blende, no doubt stimulated by the new demand for this mineral following the perfection of the patent Champion process for zinc in Bristol at the end of the 18th century. Most of the surface remains of *hushing* also date to this period. Bonsall relinquished Copa Hill in 1791 and thereafter brought the mine into its most successful period, raising about 46 tons per month over the next 10 years, with a reputed income of £2-3000 per annum from Pugh's and Kingside Mines alone.

2.4.3 From 1807 the lease passed to a local miner Joseph Jones, although from 1811 onwards his activity appears to have been restricted to Copa Hill. Thereafter, short-lived success followed for a partnership of the Alderson Brothers from Swaledale (1822-34), whilst the continuing rise in metal prices also benefited Lewis Pugh of Aberystwyth who held the lease from 1835-1844. Pugh retained the services of the Yorkshire and Derbyshire miners and raised many thousands of tons of lead ore, chiefly from the western workings (Pugh's Mine), effectively commencing the first deep workings from the valley floor. Considering the long duration of working the mine, its shallowness at this time (30 fathoms below adit) was unusual - most probably reflecting the still accessible richness of the ore reserves on the Graig Fawr. In 1848 John Taylor & Sons took over the controlling share of the mine and introduced the modern Cornish-style mining practice typical of mid-late Victorian mines in Cardiganshire. Leats were cut, as water power was first harnessed in earnest, and a succession of mine captains including James Raw and from 1870-1880 the Cornishman William Michell who introduced many changes in working practice and much new technology, including compressed air drills, milling machinery and buddles for ore separation. Yet despite massive investment, the mine still refused to pay, whilst both drought and snow regularly brought pumping and production (now chiefly of zinc ore) to a halt. In 1887 Taylors split the mine in two, concentrating much of their efforts on the central part of the site (Kingside Mine) sinking a new shaft (Taylors Shaft) some 264' below adit (Top Adit). However, in its 5 years of working the Kingside Mine returned only 410 tons of lead ore, a similar amount to that produced by its immediate neighbour the Cwmystwyth Mine to the west.

2.4.4 Mining re-started in 1900 with a lease to Henry Gamman and the Cwmystwyth Mining Co., an event perhaps best remembered for the construction of the timber framed 'state of the art' ore dressing and concentrating mill, the remains of which survived on site until its final demolition in 1992. Eleven inch

pipes delivered a 740' head of water from a reservoir on the plateau above the mine to a number of Pelton turbines, one of which generated electricity, the remaining two powering an air compressor plant, a tramway incline, and much of the mill machinery. Despite a production of some 1850 tons of lead and nearly 9000 tons of zinc concentrates Gamman had depleted nearly all of his capital by the end of 1909, and so sold out to Brunner, Mond & Co, retaining a part share of this on account of his initial investment in the mine. Much of the capital invested thereafter continued to be spent on the modernisation of the mine layout as well as in largely unproductive development work. Little real production resulted, and although a considerable amount of prospection and development work continued under the guise of various different companies right up until 1923 (several of them under the management of Hywel Evans), the very last ore return recorded for the mine was of 64 tons lead and 214 tons of zinc ore in 1912. Interestingly enough, the last prospection and development work took place at the eastern end of the Comet (Copper) Lode on Copa Hill, not a stone's throw from the site of the earliest mining here some 3,700 years before (Timberlake 2012).

2.5 The Cwmystwyth mines have evidence of mining from the Bronze Age through to the 20th century. The site includes extensive surface, shallow buried and below ground remains (through the network of adits, shafts and stopes) associated with mining and ore processing. Apart from the known features identified from visible remains and those recorded on earlier maps, there are likely to be considerably more hitherto unidentified features buried beneath spoil tips or other made ground across the entire site area. These could date from the Bronze Age through to the 20th century.

2.6 The Cwmystwyth site falls within the Upland Ceredigion Registered Historic Landscape (HLC). The Cwmystwyth mines are defined as a specific element within the wider HLC. The historic background is summarised within its description as follows. *This historic landscape area has been defined by the mining industry. Archaeological excavations have demonstrated that opencast copper mining was undertaken here in the Bronze Age (Timberlake 1995), and lead has been mined here since at least Roman times (Bick 1974, 19-23; Hughes 1981). Metal was probably worked under the control of Strata Florida Abbey in the Middle Ages as this area lay within Cwmystwyth Grange. In the 18th century prospecting for lodes by scouring the surface of the ground by a sudden rush of water - hushing - was practised, and the channels and reservoirs of this process can still be seen. Metal mining in the 18th and 19th centuries has bequeathed a bewildering array of remains, an industrial archaeologist's paradise, including: tips, shafts, tramways, inclines, open-casts, crusher houses and other buildings. In the late 19th century the search for blende resulted in the construction of a large crusher house - the rusting remains of which have only recently been swept away - and other installations. Work finally ceased at Cwmystwyth in 1921.*

2.7 Its description and essential historic landscape components are described thus. *This area, which is entirely defined by industrial archaeology, lies across the valley sides and the valley floor of the Ystwyth. The valley here has a deep U-shaped profile, with the floor at 300m and the sides rising to over 500m. The sides are craggy, even cliff-like on the northern side. The many scree slopes are more likely to be a result of mining than a natural process. Mining remains are everywhere. These are varied and most are of a robust character. Remains of stone built structures in this area - domestic and industrial are scattered across the landscape. Many are in a perilous condition. Recorded archaeology comprises remains directly associated with the metal mining industry, including finds of Roman date, or remains indirectly associated with the industry such as abandoned worker cottages.*

3 PREVIOUS WORKS AND STUDIES AT THE CWMYSTWYTH MINES SITE

3.1 Archaeological and Historical Studies and Reports

3.1.1 The archaeological and historical significance of the Cwmystwyth Mines site is such that it has been the subject of numerous studies and surveys. Many of these are published, but there is also a considerable amount of information held in archives (including personal archives) that would benefit from being collated.

3.1.2 As noted above in the section by Simon Timberlake perhaps the main historical study of the site was published in 1981 by Simon Hughes (with more recent revisions). Further summaries were provided by Timberlake and Hughes for inclusion in the Early Metallurgical Sites publication edited by Blick (2000).

3.1.3 Robert Protheroe-Jones, Curator of Heavy Industry at the National Museum of Wales, has extensive surveys of the below-ground elements of the mine which he has been surveying for very many years. It is intended that this information will be published in the longer term. The Ceredigion Metal Mines Survey of the mid-1990s was also undertaken by Robert Protheroe-Jones which identified numerous individual structures and features within the Cwmystwyth Mines site. This survey is constantly being updated and is in the process of another revision.

3.1.4 Archives of information are held by the RCAHMS including numerous photographs (both site shots and aerial photographs); site surveys carried out by RCAHMS and Lampeter University in 1993; newspaper cuttings; and other archaeological reports prepared for the site. The National Primary Record Number for the site is NPRN 115. Other studies related to the site commissioned by the RCAHMS include the recent Upland Initiative Cwm Ystwyth – Cwm Mwyro Archaeological Survey by Trysor.

3.1.5 The Dyfed Archaeological Trust Historic Environment Record (HER) holds numerous photographs of the site and copies of the majority of reports written on the mines. The HER also holds copies of all of the individual records made for the site through the Metal Mines surveys by Robert Protheroe Jones. In total there are 249 sites recorded on the HER within the area owned by the CMT. As noted in the previous section, this only includes the known sites and there are likely to be many more structures hidden beneath spoil and made ground across the site area. The records do not include individual structures, features or finds in the below ground works.

3.1.6 Former projects on the archaeology and history of the area, including Cwmystwyth, include the work done for The Spirit of the Miners project through Ceredigion County Council and Countryside Council for Wales (now Natural Resources Wales).

3.2 Geological, Environmental and Ecological Studies

3.2.1 Apart from archaeological and historical studies there are also reports on the geology of the area, such as that by David James (2001 & 2006) and earlier surveys by the British Geological Survey. Further studies were done as part of the Spirit of the Miner's project (Mason 2008), much based on his earlier work (Mason 1997).

3.2.2 Numerous ecological studies have been undertaken of the site, including bat surveys and other reports and studies which have supported the various environmental designations within which the Cwmystwyth Mines site lies. These include a number of bat surveys by Dr Robert Stebbings, Tom McOwat and Richard Crompton and lichen surveys by Steve Chambers.

4 SCHEDULED ANCIENT MONUMENT CD145 - COPA HILL/ CWMYSTWYTH LEAD, COPPER AND ZINC MINES

4.1 CD145 – Copa Hill/ Cwmystwyth Lead, Copper and Zinc Mine Designation

4.1.1 The Cwmystwyth Mines site has been designated a Scheduled Ancient Monument as it is recognised as being an archaeological site of national importance. It comprises mining activity confirmed to date from the Bronze Age through to the 20th century. The scheduled site is one of the largest in Wales, covering an area of 0.96 square kilometres (Figure 3). The CMT owned land covers all of the SAM area. The purpose of scheduling is to ensure the long-term preservation of the site.

4.1.2 In summary the scheduled area comprises all known mine workings at Cwmystwyth on the northern side of the road, with a small part on the southern of the road around Pugh's adit and the adjacent building. It includes all the workings on Copa Hill following the steep valley sides of the Nant Yr Onnen. The scheduling covers all remains at the site both above and below ground (the mine workings) and all features and artefacts therein. It includes all known remains and those that are yet to be discovered.

4.2 Legal Protection of a SAM

4.2.1 Being scheduled means that the site is statutorily protected under the Ancient Monuments and Archaeological Areas Act of 1979. The Cadw document 'What is Scheduling' (2002) states that *'Any proposal to carry out works at a scheduled ancient monument which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding, or covering up a monument must be the subject of an application for scheduled monument consent (SMC). Indeed, an application for scheduled monument consent also has to be made for works which may be beneficial to the monument, such as consolidating masonry, or for conducting a research excavation. It is an offence to carry out such works at the site of a scheduled ancient monument without first obtaining scheduled monument consent.'*

4.2.2 Where any planning application is submitted for works within a scheduled area, the local authority will consult with Cadw to ensure that the proposals have also obtained SMC and that any conditions placed upon that consent are complied with.

4.2.3 Any planning permission granted for activities within a SAM (once SMC has been obtained) will also have archaeological planning conditions placed upon it.

4.2.4 Where SMC or SMC and planning permission has been granted the conditions are most likely to require a form of archaeological mitigation is in place before or during the commencement of the proposed works. Such archaeological mitigation could include the following:

- **Archaeological assessment** – undertaken prior to the start of any works, and possibly supporting the application for SMC / planning permission. This would most likely be required in those cases where significant developments are proposed.
- **Archaeological / Building survey** – where alterations are to be carried out to structures or where alterations in ground layout are proposed, initial recording of the structures or ground layout would be required to detail them in their present state prior to any alteration. This could be in the form of topographic, photographic or detailed building recording surveys.

- **Archaeological Evaluation** – prior to the commencement of any proposed works it may be necessary to undertake a preliminary survey of the works to determine the presence/absence, state of preservation, extent, date, depth and significance of any below ground remains. This may take the form of non-intrusive geophysical survey (gradiometer or resistivity) or intrusive surveys in the form of trial trenching. Both surveys would provide further information on the known archaeology, but would also determine the presence of hitherto unknown remains. It is considered unlikely that geophysical survey would be required at the Cwmystwyth site due to ground conditions, although the method has not been tested to determine if it would work metal mine sites.
- **Archaeological Watching Brief** – where archaeological potential has been identified and impacts from the proposals will be slight, or where the archaeological potential is considered low in an area of proposed works, then an archaeological watching brief during the undertaking of those works may be deemed appropriate. This would involve an archaeologist/s being present at the site to observe if any archaeological remains are exposed and if so, the archaeologist would create an appropriate record of those remains. In some cases watching briefs can identify unexpected remains of such significance that a more detailed stage of excavation and recording is necessary.
- **Archaeological Excavation** – in cases where significant archaeological remains have been identified by evaluation or during the course of a watching brief, detailed excavation prior to the commencement of works (or further works) may be necessary. Excavation is the most intensive form of archaeological recording and can be very time consuming and costly. The aim of the work is to preserve any identified remains through record, in effect removing them from the site to allow development to continue.
- **Preservation in-situ** – where identified archaeological remains are of such significance that it is not appropriate that they are disturbed, then preservation *in-situ* would be required. This is the preferred option for archaeological remains, especially in cases where the remains are of national significance (as is the case at Cwmystwyth). Where it can be shown that the works would be beneficial to the longer term preservation and future of the site as a whole, other forms of archaeological intervention may be considered appropriate. The application for and subsequent determination of Scheduled Monument Consent would address such issues.

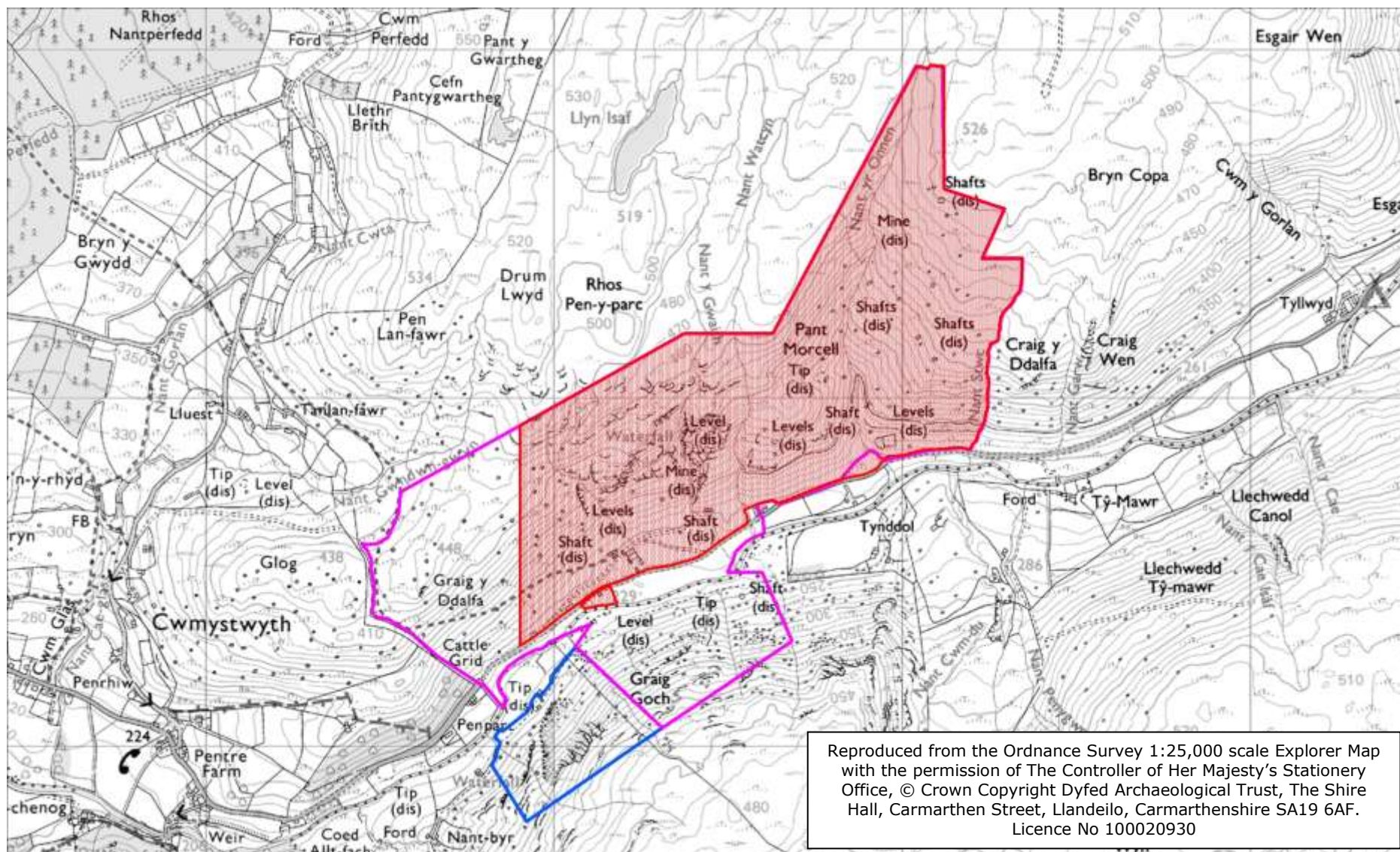


Figure 3: Area of Scheduled Ancient Monument superimposed on The Cambrian Mines Trust land

5 ELENYDD SPECIAL AREA OF CONSERVATION (SAC)

5.1 Elenydd SAC Designation

5.1.1 The Elenydd SAC (reference UK0012928) is an expansive area covering parts of Ceredigion and Powys covering almost 86.09 square kilometres (CCW 2008, revised 2013). The CMT owned area lies entirely within the designated SAC area excluding a small part on its southwestern side (south of the road) (Figure 4). The SAC is a European designation and defined in article 1.1 as:

"special area of conservation means a site of Community importance designated by the Member States through a statutory, administrative and/or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated".

5.1.2 The Elenydd area has been designated as an SAC as it contains habitats that are rare or threatened within a European context. The priority habitat features of the SAC include the following Annex I Habitats (most significant):

Blanket Bogs (EU Habitat Code 7130) – these lie on the upland areas of the Elenydd area and thus potentially within the upper areas of the CMT owned land on its northern side. The species of interest within the bogs include bog mosses (*Sphagnum* Sp.), moor grasses (*Molinia caerulea*), bog rosemary (*Andromeda polifolia*), heather (*Calluna vulgaris*) and hare's tail cottongrass (*Eriophorum vaginatum*). This habitat is also one of the primary reasons for the selection of the Elenydd area as an SAC.

Calaminarian grasslands (EU Habitat Code 6130) – these grasslands are extensive across the CMT owned land. The grasses (*Violetalia calaminariae*) are metal tolerant species which readily colonise the former spoil tips, scree slopes, rock outcrops, buildings, shafts and adits entrances. The grasses are notable for having associated scarce species of lead moss (*Ditrichum plumbovaca*) and lichens (including *Vezdaea cobria*, *Lecanora handelii* and *Gyalidea subscutellaris*). This habitat is one of the primary reasons for the selection of the Elenydd area as an SAC.

European dry heaths (EU Habitat Code 4030) – these typically occur on free draining acidic soils, and contain species such as heather (*Calluna vulgaris*) and gorse (*Ulex* Sp.). Dry heaths are present in areas across the CMT land. This habitat is a qualifying reason, but not a primary one, for the selection of the Elenydd area as an SAC.

Oligotrophic to mesotrophic standing waters of the Isoeto-Nanojuncetea (EU Habitat Code 3130) – these include the clear water lakes and reservoirs across the Elenydd area, with shoreweed (*Littorella uniflora*) considered to be the defining component. Although no such areas lie within the CMT area, they could potentially be affected by works at the site. This habitat is a qualifying reason, but not a primary one, for the selection of the Elenydd area as an SAC.

5.1.3 The SAC designation also includes the following Annex II Habitat:

Floating water-plantain *Luronium natans* (EU Habitat Code 1831) – this occurs in a range of freshwater situations, including lakes in the uplands and slowly-flowing lowland rivers, pools, ditches and canals. Such features occur across the CMT area in pools adjacent to the streams and River Ystwyth, and former leats and channels which retain water. Pillwort (*Pilularia globulifera*), another nationally scarce plant, can also occur in these habitats. This habitat is one of the primary reasons for the selection of the Elenydd area as an SAC.

5.1.4 The SAC designation includes two other Annex I habitats, but these are not present within the CMT area, namely Old sessile oak woods (EU Habitat Code 91A0) and *Tilio-Acerion* forests of slopes, screes and ravines (EU Habitat Code 9180).

5.2 Legal Protection of an SAC area

5.2.1 The full legal measures to protect SAC areas are laid out within the 'Conservation of Habitats and Species Regulations 2010'. This includes legislation for the protection of the designated habitats, as well as any protected species of flora or fauna within those. This would apply to the various rare plants and lichens that are present at the site, breeding birds, bats and any other protected mammals and invertebrates that may be present at the site. The relevant protected species are listed in Schedule 8 of the 2010 regulations.

5.2.2 It is also noted that almost all SAC areas lies within Sites of Special Scientific Interest (SSSI). For each of the SSSIs a list of operations is included which could damage the site and for which consents must be obtained. A list of the activities relevant to the Cwmystwyth Mines site is included in the SSSI section below. SSSI consents are obtained from Natural Resources Wales (NRW).

5.2.3 Where any proposed activities will require planning permission then the local authority will require assessments of the impacts of the work on the SAC or elements/species therein to be prepared. The local authority will also consult with NRW to ensure the assessment is appropriate and that the proposed activities will not adversely affect the integrity of the SAC. Conditions or restrictions to any such consents may also be applied to ensure the protection of the SAC. Any such consents will be monitored by either or both the local authority and NRW to ensure compliance throughout.

5.2.4 Any planning permission granted for activities within a SAC (once consents have been obtained) will also have environmental planning conditions placed upon it.

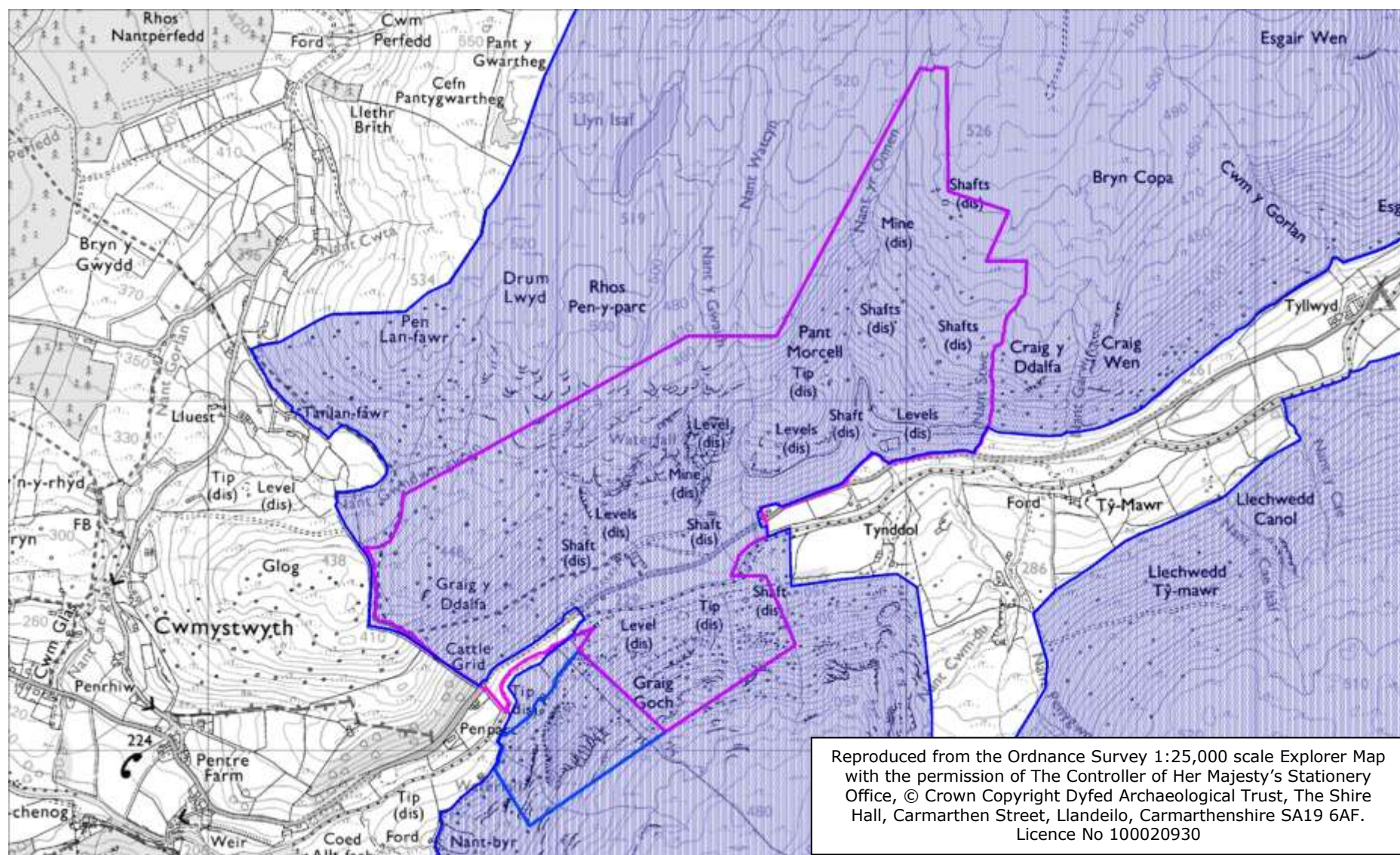


Figure 4: Area of the Elenydd Special Area of Conservation superimposed on The Cambrian Mines Trust land

6 ELENYDD–MALLAEN SPECIAL PROTECTION AREA (SPA)

6.1 Elenydd–Mallaen Special Protection Area Designation

6.1.1 A Special Protection Area is one designated for the protection of rare and vulnerable birds (in a European wide context) and for regularly migratory species (CCW 1993). The Elenydd–Mallaen SPA covers an area of 300.22 square kilometres which encompasses almost all of the CMT owned land, excluding the lower River Valley and the main area of the mines site (around the mill) (Figure 5).

6.1.2 There are three Annex I birds recorded as nesting within the SPA area:

Merlin (*Falco columbarius*)

Peregrine Falcon (*Falco peregrinus*)

Red Kite (*Milvus milvus*)

6.1.3 All of these birds have been recorded within the Cwmystwyth Mines site, although not all have been confirmed as breeding within the area.

6.2 Legal Protection of an SPA area

6.2.1 As with the SAC, the full legal measures of protection for the SPA are laid out within the 'Conservation of Habitats and Species Regulations 2010'. The SPA designation reinforces that the species therein are protected in a European wide context.

6.2.2 Again, the inland SPA areas all lie within Sites of Special Scientific Interest (SSSI) and the consents and regulations applicable for the SSSI are the same as for the SPA.

6.2.3 Where any proposed activities could impact upon the SPA (whether requiring planning permission or otherwise) an appropriate assessment of the impacts of the work will need to be prepared and approved by the local authority and NRW. The assessment will need to demonstrate that the proposals will not have an impact upon the special European wildlife interest of a SPA to proceed. Conditions or restrictions to any such consents may also be applied to ensure the protection of the SPA. Any such consents will be monitored by either or both the local authority and NRW to ensure compliance throughout.

6.2.4 Any planning permission granted for activities within a SPA (once consents have been obtained) will also have environmental planning conditions placed upon it.

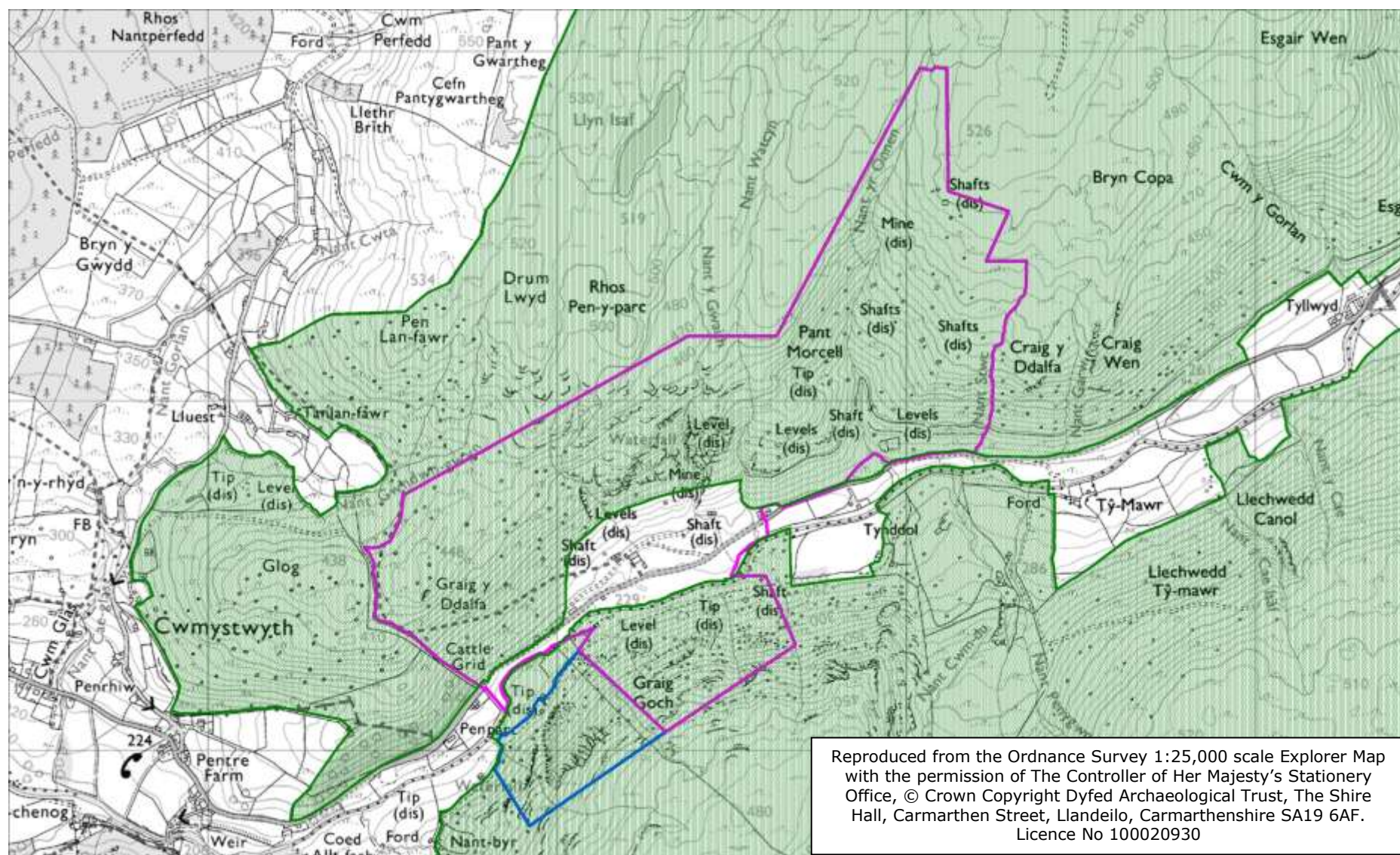


Figure 5: Area of the Elenydd-Mallaen Special Protection Area superimposed on The Cambrian Mines Trust land

7 SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)

7.1 Sites of Special Scientific Interest

7.1.1 The SSSI designation recognises those places that are of national importance in terms of the natural heritage. They are a UK base designation, although as noted above, they can also have additional internationally important designations such as SAC or SPA status. The purpose of the designation is to safeguard the quality, diversity and geographic range of habitats, species and geological features for the future.

7.2 Elenydd SSSI

7.2.1 The Elenydd SSSI covers an area of 227.7 square kilometres (CCW undated(a) and undated(b)). The SSSI contains the Elenydd SAC and the majority of the Elenydd-Mallaen SPA. The SSSI covers the majority of the CMT owned area of the Cwmystwyth Mines excluding the lower river valley and the mill area of the mines, which has its own SSSI designation (Mwyngloddfa Cwmystwyth, see below) (Figure 6).

7.2.2 The citation for the designation includes both habitats and species as covered by the Elenydd SAC and Elenydd-Mallaen SPA (Calaminarian grasslands, blanket bogs, raptors etc) (Appendix 2; CCW undated(b)). In terms of bird species the SSSI citation includes numerous other birds, including raven, buzzard, hen harrier and short eared owl. The full citation is included in Appendix 2.

7.2.3 The SSSI designation also covers the physical geological importance of the site specifically mentioning the Cwm Ddu landform in terms of mass movement and also for Pleistocene/Quaternary deposits; and the Cwmystwyth mines site in terms of the mineralogy.

7.2.4 Within the Core Management Plan for the Elenydd SAC document, a descriptive overview of the conservation objectives for the constituent SSSI sites within the SAC area is included (CCW 2008, revision 2013; Annex 1). The following parts are taken from the Elenydd SSSI section where relevant to the Cwmystwyth Mines site.

The steeper hill slopes and drier hilltops often support areas of dry heathland. These are particularly extensive in Cwm Ystwyth and to the east of the Elan valley reservoirs, covering around 5% of the site in total. This heathland is generally dominated by heather and bilberry, with crowberry, cowberry and lichens all prominent in places. Grasses, such as sheep's fescue, mat grass and wavy hair-grass, can be frequent and there is generally a well-developed moss layer. Sunny south-facing slopes at lower altitudes support heathland that is more open in character and is dominated by mixtures of heather and bell heather, with lichens, or by dense patches of western gorse. This vegetation is often associated with rock screes. The locally rare lesser twayblade can be found beneath the tall heather canopy on the hilltops to the north of Cwm Ystwyth.

There are several old metal mine sites within Elenydd. The main mining areas were in Cwmystwyth and at Nant Methan, Nant y Car and Rhiwnant valley in the east. All of these areas contain outcrops of metal rich rocks and large areas of partially vegetated mine spoil, extending to over 40 ha in total. Typically, these areas support a sparse sward of sheep's fescue, mosses, including the rare lead moss, and a rich variety of specialised lichens, including many rare and scarce species. Rock outcrops at Cwmystwyth mine support several thriving populations of the scarce fern

forked spleenwort. Old mine shafts also provide roosting sites for several types of bat.

Cwmystwyth mine is of national importance for the study of mineralization in the Central Wales Orefield. The spoil tips at the mine contain abundant ore material, including galena, chalcopyrite and sphalerite, which enable the recognition of two main phases of mineralization. Additional interest is provided by the structural relationships and mineralogical variations displayed by the three main mineral veins, namely the Comet, Kingside and Mitchell's lodes. These veins are exposed both at surface and in the underground workings and indicate at least two separate phases of vein emplacement.

The old mine tips and buildings remain generally undisturbed and the shafts and underground workings are left open to allow access for scientific study and bats but fenced off to maintain public safety and deter unauthorised access.

The landforms in Cwmystwyth known as Cwm Ddu and Cwm Tinwen are unique in upland Wales. Although these landforms resemble cirques that have been generated through glacial erosion, several studies have revealed that, whilst differing somewhat in overall structure, essentially they were formed by frost-shattered debris sliding down slope on the surface of perennial snow patches. Evidence collected from these landforms suggests that much of mid-Wales was ice-free during the last Ice Age. These areas are preserved as open landscape that is largely free of trees and scrub and man-made features.

7.2.5 For the SSSI the following aspects are directly relevant to the Cwmystwyth mines site:

- Blanket bogs (on the upland area)
- Dry heathlands
- Calaminarian grasslands (metal tolerant / lichen rich grasses)
- Floating water plantain (in reservoirs on upland areas)
- Rare lead moss
- Lichens
- Geological formations
- Bats
- Vascular plant assemblage
- Forked spleenwort *Asplenium septentrionale*
- Breeding bird assemblage of upland moorland

7.3 Mwyngloddfa Cwmystwyth SSSI

7.3.1 The Mwyngloddfa Cwmystwyth SSSI covers an area of 0.14 square kilometres (CCW undated(c)). The SSSI lies within the wider Elenydd SAC but is not included within the Elenydd–Mallaen SPA. The SSSI lies entirely within the area of land owned by the CMT (Figure 6).

7.3.2 The SSSI citation includes both geological and biological features (Appendix 3). The mineralogy of the site includes the mineral lodes running through the area and their formation.

7.3.3 Within the Core Management Plan for the Elenydd SAC document, the Mwyngloddfa Cwmystwyth SSSI conservation objectives are described as follows (CCW 2008, revision 2013; Annex 1).

The numerous abandoned mine workings, rock outcrops and spoil tips at Mwyngloddfa Cwmystwyth are of national importance because they provide important information relating to the development of mineralization in the Central Wales Orefield. These rock outcrops, both at the surface and in the underground workings, and mineralized material within the spoil tips clearly show that the lead-, zinc- and copper-bearing veins were formed during two main phases. A long-term vision for this site will be focussed on maintaining access to the underground workings, preserving current levels of rock exposure at the surface, and maintaining the spoil tips in their present state. This will ensure that Mwyngloddfa Cwmystwyth will continue to provide one of the best localities for the study of mineralization in the Central Wales Orefield.

The extent of the mine spoil tips at Mwyngloddfa Cwmystwyth are not decreasing in height or area except as a result of the natural process of weathering and erosion. All of the rare lichen species recorded at this site, that are characteristic of soils or rocks with a high metal content, are present with their populations either stable or increasing. The open sward of lichen-rich grassland includes characteristic grass species such as common bent, sheep's fescue, silvery and early hair-grass. Yorkshire fog is only occasional within the sward and perennial rye-grass is absent.

Access for hibernating bats in the system of underground workings is maintained. All four species previously recorded from the site, namely Daubenton's, Natterer's, Brown long-eared and Whiskered bats are present during the winter months.

7.3.4 For this SSSI the following is directly relevant to the Cwmystwyth mines site are:

- Calaminarian grasslands
- Rare lead moss
- Lichens
- Geological formations
- Bats

7.4 Legal Protection of a SSSI area

7.4.1 The 'Conservation of Habitats and Species Regulations 2010' is again applicable to the SSSI area. For the Mwyngloddfa Cwmystwyth SSSI bats are specifically mentioned in the citation, which are all protected species.

7.4.2 As noted above for both the SAC and SPA areas, a list of operations that may damage the features of interest is given for each of the SSSIs. Before any of the operations on the list (see below) are undertaken NRW must be consulted and consents applied for. Where consents are granted they are usually accompanied by conditions which need to be adhered to ensure the proposed works do not impact on the integrity of the SSSI.

7.4.3 Where planning permission is needed for works within a SSSI, the local authority will seek the advice of NRW in advance of any determination of an application. Appropriate assessments may be needed to demonstrate that the proposed works will not impact upon the integrity of the SSSI.

7.4.4 Any planning permission granted for activities within a SSSI (once consents have been obtained) will also have environmental planning conditions placed upon it.

7.4.5 The list of operations that may damage features are almost identical for both the Elenydd and Mwyngloddfa SSSI sites. These are given below, with the types of damaging operations described for both SSSI sites.

7.4.6 The list of operations that may damage features are almost identical for both the Elenydd and Mwyngloddfa SSSI sites, with a few changes in wording and an additional one for Elenydd SSSI (13c). The potentially damaging operations are laid out in the tables below for both SSSI sites, taken from the documentation available on-line from the CCW website for the two SSSI sites (CCW 1992 – Elenydd & CCW 2000 – Mwyngloddfa Cwmystwyth).

Ref No	Elenydd SSSI – Type of operation
1.	Cultivation, including ploughing, rotovating, harrowing and re-seeding.
2.	Any alterations in the present pattern or frequency of grazing by farm stock.
3.	Introduction of stock feeding. Changes in stock feeding practice.
4.	Any alterations in the present pattern or frequency of mowing or cutting vegetation.
5.	Application of manure, fertilisers and lime.
6.	Application of pesticides including herbicides (weedkillers).
7.	Dumping, spreading or discharging of any materials.
8.	Burning of vegetation, including muirburn (heather burning).
9.	The deliberate introduction of any wild or domestic animal, plant or seed.
10.	Killing or removal of any wild animal, excluding pests.
11.	Destruction, removal or pruning of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould or turf.
12.	Tree planting including afforestation. Changes in woodland management, including clear and selective felling, thinning, coppicing, modification of the stand or underwood and changes in species composition.
13a.	Modification of field drainage including moor-gripping and the use of mole, tile, tunnel or other artificial drains.
13b.	Modification to rivers, streams, ditches or drains, including their banks and beds, as by re-alignment, regrading, dredging or cleaning.
13c.	Management of aquatic and bank vegetation.
14.	Changes in the present utilisation of water including storage, the raising of water levels, irrigation and abstraction from existing water bodies and through boreholes.
15.	Infilling of ditches, drains, pools or marshes.
16a.	Introduction of, or changes in freshwater fishery management, including use of fish cages.
20.	Extraction of minerals including peat, shingle, sand and gravel, topsoil, and subsoil.
21.	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks.

22.	Storage of materials on or against landforms or rock outcrops, or on bog surfaces
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including the laying, maintenance or removal of pipelines and cables.
24.	Modification of landforms, rock outcrops or bog, clearance of boulders, large stones, loose rock or scree and battering, buttressing or grading rock faces and infilling of quarries.
26.	Use of vehicles likely to damage bog and moorland vegetation or bog and landform surfaces.
27.	Recreational or other activities (such as motor-cycling) within the control of the owner or occupier likely to damage bog and moorland flora and fauna, or bog and landform surfaces.
28.	Introduction of/change in game and waterfowl management. Introduction of/change in hunting practice.

Ref No	Mwyngloddfa Cwmystwyth SSSI – Type of operation
1.	Cultivation, including ploughing, rotovating, harrowing and re-seeding
2.	Grazing and alterations to the grazing regime (including type of stock, intensity or seasonal pattern of grazing).
3.	Stock feeding, the introduction of stock feeding and alterations to stock feeding practice.
4.	Mowing or cutting vegetation, the introduction of mowing or cutting and alterations to the mowing or cutting regime.
5.	Application of manure, slurry, silage liquor, fertilisers and lime.
6.	Application of pesticides, including terrestrial and aquatic herbicides, (weedkillers)
7.	Dumping, spreading or discharging of any materials.
8.	Burning and alterations to the pattern or frequency of burnings.
9.	Release into the site of any wild, feral, captive-bred or domestic animal*, plant, seed or micro-organism and any genetically modified organism.
10.	Killing, injuring, taking or removal of any wild animal*, or the eggs/nests of any wild animal or the disturbing, taking, damaging or destroying of any wild animal in its place of shelter including pest control.
11.	Destruction, displacement, removal or cutting of any plant or plant remains including tree, shrub, herb, dead or decaying wood, moss, lichen, fungus, leaf mould, turf or peat
12.	Tree planting, including afforestation.
13a	Drainage including the use of mole, tile, tunnel or other artificial drains.
13b	Modification to the structure of water courses including rivers, streams, springs, ditches, drains, including their banks and beds, as by re-alignment, regrading, damming or dredging.
14.	Alterations to water levels and tables and water utilisation including irrigation, storage and abstraction from existing water bodies and through boreholes. Also the modification of current drainage regime (eg through the installation of new pumps).
15.	Infilling or digging of ditches, drains, ponds, pools, marshes, quarries or pits.
16a	Freshwater fishery production and/or management, including sporting fishing and angling, the introduction of freshwater fishery production and/or management and alterations to freshwater fishery production and/or management.

20.	Extraction of minerals including peat, shingle, hard rock, sand and gravel, topsoil, subsoil, spoil and mine waste dumps.
21.	Destruction, construction, removal, re-routing, or regrading of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and rock exposures.
22.	Storage of materials on or against rock exposures and spoil tips.
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including drilling or the laying, maintenance or removal of pipelines and cables, above or below ground.
24.	Modification of natural or man-made features and clearance of boulders, large stones, loose rock or scree and the battering, buttressing or grading of geological exposures and cuttings (rock and soil).
26.	Use of vehicles.
27.	Recreational activities.
28.	Hunting practices and introduction of, and alterations to, hunting practice.

Notes (from CCW website – applicable to both lists):

i. This is a list of operations appearing to the CCW to be likely to damage the special features of this SSSI, as required under section 28(4)(b) of the Wildlife and Countryside Act 1981 as substituted by Schedule 9 to the Countryside and Rights of Way Act 2000.

ii. Where an operation has been granted a consent, licence or permission from another authority separate consent will not normally be required from CCW, however you should always give notice to CCW prior to exercising such consent, licence or permission.

iii. Any reference to animal in this list shall be taken to include any mammal, reptile, amphibian, bird, fish or invertebrate (including honey bees).

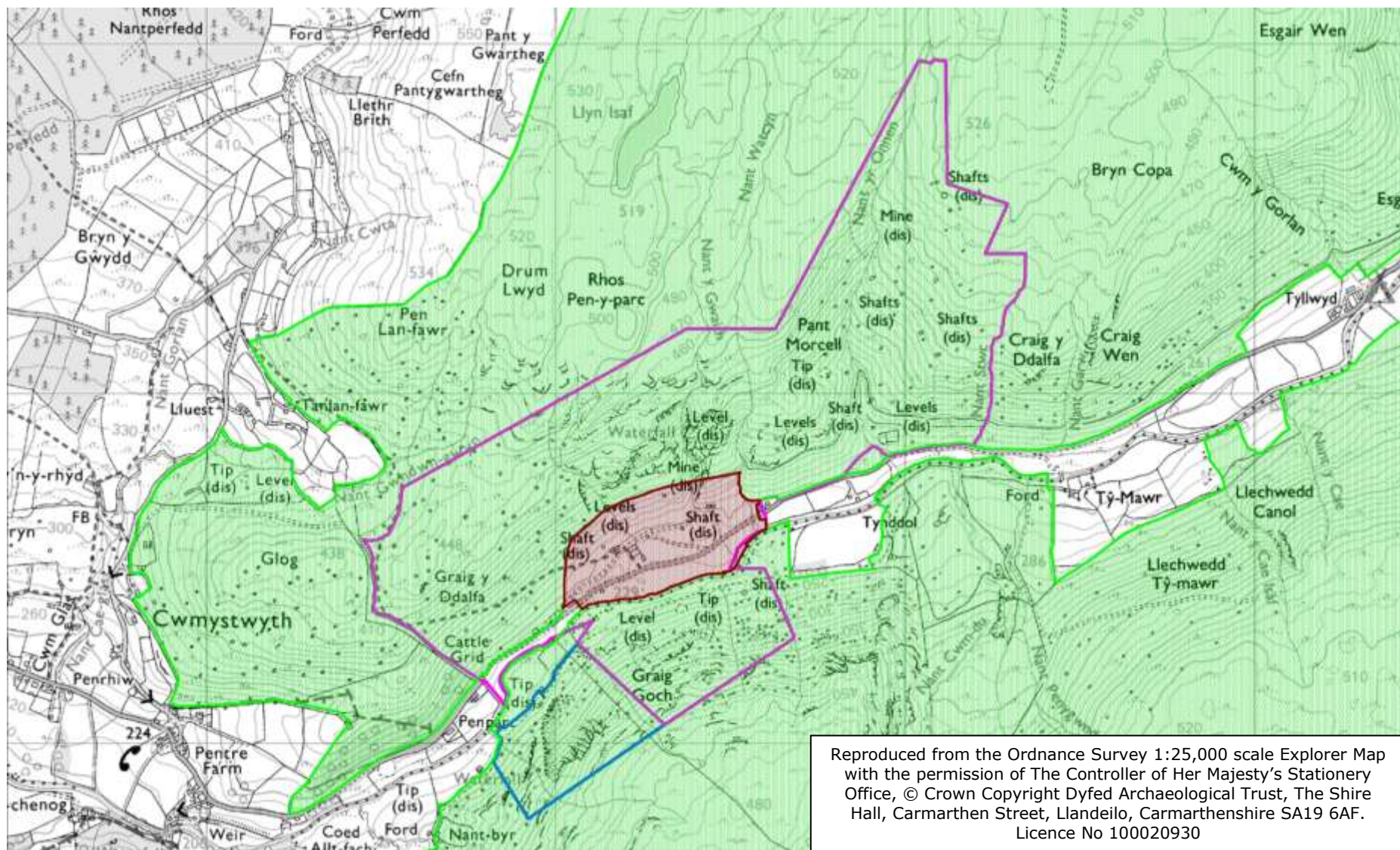


Figure 6: Elenydd (green) and Mwyngloddfa Cwmystwyth (brown) Sites of Special Scientific Interest superimposed on The Cambrian Mines Trust land

8 LEGISLATION

8.1 The following section presents a summary of the various legislation that will be relevant to any future works at the Cwmystwyth Mines Site. It is not exhaustive and it is possible that other legislation may be relevant that the author has not been made aware of during the preparation of this document.

- Ancient Monuments and Archaeological Areas Act 1979
- Conservation of Habitats and Species Regulations 2010
- Countryside and Rights of Way Act 2000
- Environmental Protection Act 1990
- Mines and Quarries Act 1954
- Occupier's Liability Act 1957 and 1984
- Public Health Act 1936
- Wildlife and Countryside Act 1981 (as amended)

Mine and Quarries Act 1954 / Public Health Act 1936 / Environmental Protection Act 1990

8.2 As the Cwmystwyth Mines site is on open access land, regardless of the fact that a number of the mines have not been worked since before 1872, then the Mines and Quarries Act would consider that any unsecured entrance to underground working which pose a potential danger to the public would be considered a statutory nuisance (Section 151). This Act requires that landowners secure and maintain the entrance to every adit, level and shaft at the site with a sufficient enclosure to prevent any person accidentally entering the outlet or falling down the shaft.

8.3 The landowners can be required by the local authority to construct these secured barriers and keep them maintained through the Public Health Act of 1936. If the landowner does not ensure this is being carried out the local authority can implement such works themselves at the landowner's expense (through the powers granted via the Environmental Protection Act 1990).

8.4 At Cwmystwyth prior to CMT acquiring the land, Crown Estates did implement a programme of safety measures across the site, placing barriers on all known adits and levels and fencing off shafts. CMT will need to ensure these barriers are maintained, and replace or mend any such barriers that have deteriorated or been removed. The Mine and Quarries Act is specifically to prevent visitors accidentally entering or falling into one of these, but does not prevent access to non-members of the public, such as experienced mine explorers, cavers or licensed bat researchers, who have been given permission to access the site, which would mean that they are properly trained/experienced and have the correct and fully functioning equipment.

Occupier's Liability Act 1957 and 1984

8.5 Through this act it is the landowner's responsibility to ensure that where there are known dangers within their land, they have a responsibility to take reasonable measures to prevent members of the public accessing the land from getting injured. Again as Cwmystwyth is open access land, then this would apply to anyone on the site whether invited or otherwise.

8.6 At Cwmystwyth, ensuring the existing barriers into shafts and adits at the site are functioning and maintained, as required by the Mine and Quarries Act 1954 and Public Health Act 1936, this would go some way to addressing this.

8.7 This can be further adhered to by erecting signage warning members of the public not to enter adits, levels and shafts, and through information provided via interpretation boards, information leaflets and website. These can also be used to warn of other dangers at the site, such as uneven surfaces, loose spoil heaps, stream courses and ravines etc.

Countryside and Rights of Way (CROW) Act 2000

8.8 The Cwmystwyth Mines site is defined as Access Land under the CROW Act 2000, and therefore all parts of the site can be accessed by visitors. This means (as noted above) that any adit, level or shaft, irrespective of whether it was last worked prior to 1872, would be considered a statutory nuisance if unsecured or barriers not maintained as they would be accessible to the public.

Ancient Monuments and Archaeological Areas Act 1979

8.9 The Cwmystwyth Mines site is a Scheduled Ancient Monument and therefore protected through the Act, as discussed in Section 4. All works within the area, whether above or below ground, will need Scheduled Monument Consent before they can be undertaken. For emergency repairs, where there are Health and Safety risks, then Class Consent may be granted by Cadw to allow the works to continue, although this would still need to be discussed and confirmed with Cadw before any works are undertaken.

Wildlife and Countryside Act 1981 (as amended) / Conservation of Habitats and Species Regulations 2010

8.10 These are relevant at the site and discussed in part above in Sections 5 – 8 (SAC, SPA, SSSIs). The following European protected species have been recorded within or in the near vicinity of the site area:

- Horseshoe bats (Greater and lesser)
- Other bat species (Daubenton's, Natterer's, brown long-eared and Whiskered bats)
- Floating-leaved water plantain
- Otter (evidence recorded in the River Ystwyth)

8.11 The site contains numerous other species of rare or scarce lichens (specifically *Graphina pauciloculata* and *Opegrepha fumosa*) and also *Ditrichum plumbicola* (lead moss).

8.12 Protection is also afforded to all nested birds during breeding seasons.

8.13 The legislation enforces that it is an offence to: intentionally kill, injure, take (handle) or capture the species and also to intentionally or recklessly damage, destroy or obstruct access to any place that the species uses for shelter or protection. This is most pertinent to bats.

8.14 Where protected species could be affected by any works, then a licence must be granted before any such works can commence. To obtain such licenses, it would be necessary to have initial surveys carried out by appropriately qualified ecologists who would then also put together the application for any necessary license.

9 REVISED LIST OF ASPIRATIONS OF THE CAMBRIAN MINES TRUST

9.1 The following list is an updated version of the wish list included in the Cambrian Mines Trust 'A Way Ahead' document. It includes the updated aspirational item (Items 1 – 11) with a brief description, followed by aims, benefits, Potential Cost, the Key Issues and possible partners in delivering the item. Possible funding sources are discussed in the next section (Section 10).

ITEM 1: Signage to indicate ownership

A sign to be located at either end of the site on the B4574, located at least 1m away from the carriageway.

The sign will say 'Cambrian Mines Trust. Welcome to Cwmystwyth Mines' in Welsh (top) and English.

The sign could be of similar size and design to the Elan Valley signage which is used at the entrance points to the Elan Valley and the same design used for the visitor centre (see below).

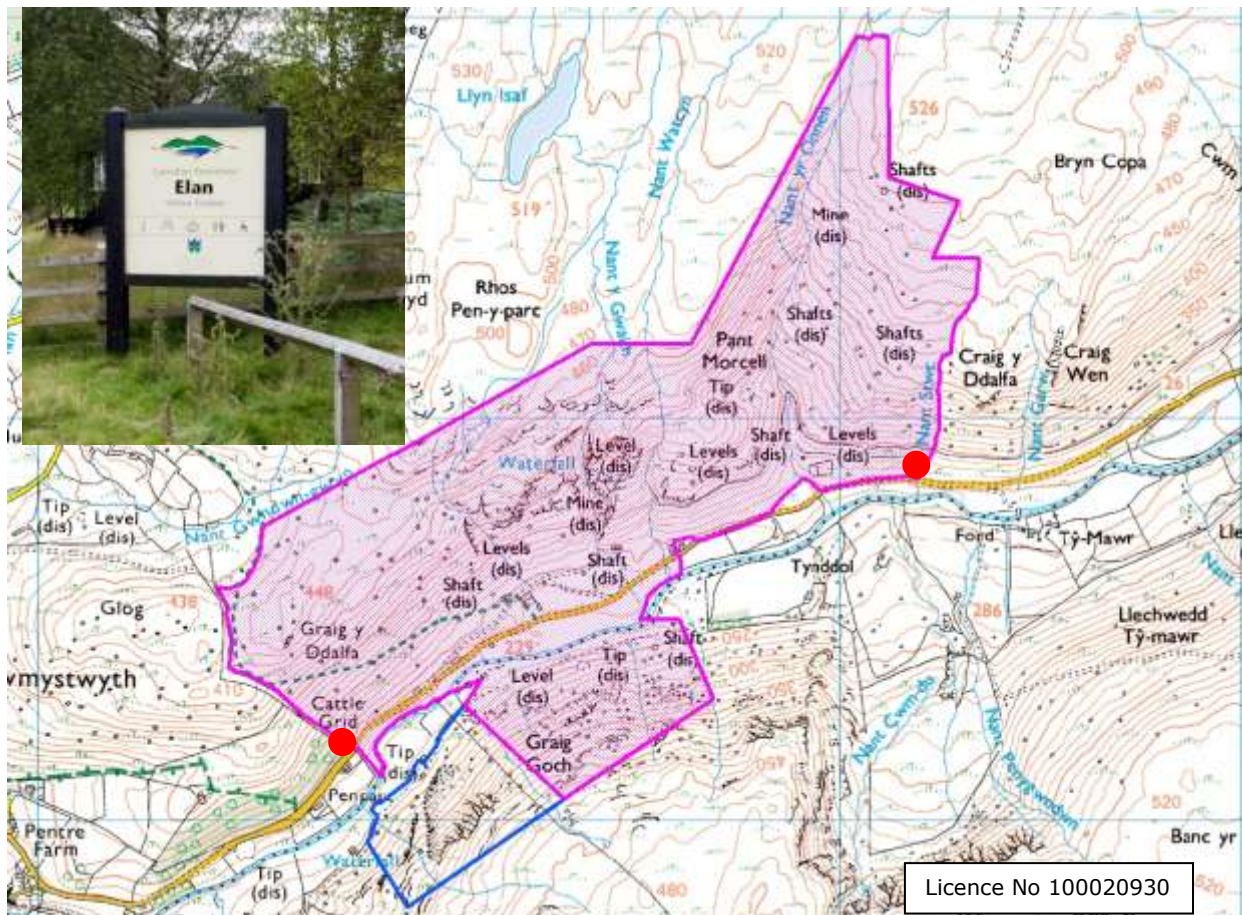
Aims: To inform visitors that the site is a former mining area. To demonstrate that the site is owned and managed. To provide basic information on the site extent and who owns the land.

Benefits: By showing that the site is owned and managed may reduce the amount of unauthorised and inappropriate use of the site (off-roading, materials removal, fly tipping). Educates visitors as to what the site area was.

Cost: Low cost for the actual construction and installation (<£1000).

Key Issues: Signage will be located next to highway and therefore will be subject to planning permission and require discussion with Highways to confirm the scale of the signage and ensure it does not cause a danger to users of the highway. If located within the Scheduled area they will need SMC. Details of the signage to be discussed with NRW to ensure it is permissible in terms of the SAC, SPA and SSSI. An initial lichen survey may be necessary for micro-siting the signs (avoiding any colonies of protected lichens). Increased public access to the site could increase potential liability for the Cambrian Mines Trust.

Partners: Design of the signage and text can be done by the Cambrian Mines Trust (CMT), as could application for consents from Cadw and NRW and discussions with Planning and Highways departments of Ceredigion County Council. Final design and manufacture would be done by a third party. It is possible that erection of the signs could be undertaken by volunteers from CMT. Lichen surveys by specialist Steve Chambers (one of only 3 people who can do such surveys locally, and he has an existing knowledge of the site).



Example of Elan Valley signage and plan showing approximate location of signage (red circles) at the edges of Cambrian Mines Trust owned land (pink boundary)

Reproduced from the Ordnance Survey 1:25,000 scale Explorer Map with the permission of The Controller of Her Majesty's Stationery Office, © Crown Copyright Dyfed Archaeological Trust, The Shire Hall, Carmarthen Street, Llandeilo, Carmarthenshire SA19 6AF. Licence No 100020930

ITEM 2: Improved interpretation panels and signage

Design of new bilingual information panels for the site.

Relocation of the interpretation board at Nantwalcyn to the mill area. Replacement of that panel with one describing the South Cwmystwyth Mines (with consent of the land owner).

Design of the signage will include information on the archaeology, geology and ecology of the site and its significance.

A guide for visitors would also be included regarding safe access to the site, no overnight parking, no removal of materials, no off-roading etc. Additional more permanent than presently exist signage warning of dangers within adit entrances or around unsafe structures or potential falls into open stopes or shafts would also be erected. The dangers of natural hazards should also be made known

Information panels to be located at various locations to include the mill area (main information on the lead mines site, geology and ecology), Nantwalcyn (South Cwmystwyth Mines Area) and at the foot of Copa Hill adjacent to the car park at Nant Yr Onnen (Bronze Age and later mining).

Additional information leaflets regarding the site may also be designed and made available at surrounding visitor sites and possibly within the Nantwalcyn Pottery (subject to agreement with Duncan and Karen Browning).

Aims: To provide information to visitors on the site history and its significance. Provide information that the area is protected, being a SAM, SAC, SPA and two SSSIs, and inform visitors regarding safe and permissible access to the site.

Benefits: Educate visitors. Information on regulations about what can and can't be done at the site. Inform public on site dangers to prevent accidents. Inform visitors regarding bats and not to disturb them.

Cost: Interpretation boards could cost between £2000 to £6000 per panel to cover research, translation, design, construction, copyrights and erection. Smaller signage for warnings would be far cheaper. Additional costs would be required for preparation of information leaflets and printing (the design of which should ideally be based on that for the panels) and could cost in the region of £1000 to £2000. Further information could be supplied via a dedicated website and other media, for which there would again be costs, but which would greatly improve the audience and accessibility to information about the site.

Key Issues: Interpretation panels will have to comply with Outdoor Advertising Guidelines. It is most unlikely that interpretation boards will require planning permission or permission from Highways as they will be located within the site areas or car park areas. Where they will be located within the Scheduled area they will require SMC. Details of the signage to be discussed with NRW to ensure they are permissible in terms of the SAC, SPA and SSSI, and any necessary consents applied for. Lichen survey would be needed to ensure they would not be disturb protected species. Copyrights may need to be sought for use of maps or images. The significance of the Welsh place-names and their meanings should also be included in the information. To prevent issues with littering on the site, the provision of returnable laminated guides might be considered instead of paper information leaflets.

Partners: The CMT in conjunction with WMPT could collate existing research to provide the basic information and photographs and perhaps by doing this negate much of the potential worry regarding copyright. It is known that Dr Simon Timberlake is hoping to produce some boards for Copa Hill with grant funds he has already secured from WMPT via the EMRG. Development of the interpretation

boards and other information should be done in consultation with the local community. The boards final design, construction and erection would need to be done by third parties. Certainly the design and final text for the interpretation boards should be prepared by a specialist in such media (Ceredigion County Council may be able to advise who). The same design should be used through website and information leaflet design. The CMT could prepare the application for consents from Cadw and NRW and discussions with relevant departments of Ceredigion County Council, including applying for planning permission if needed. If preliminary archaeological surveys are needed prior to erection of boards, this could be done by CMT or WMPT or through assistance from RCAHMW. Lichen surveys by specialist Steve Chambers. Cadw may be a partner in assisting with the development of interpretation boards, leaflets and websites etc.



Photo showing mill area of mines and possible location for information panels along front wall (shown as an example of what they could look like)

ITEM 3: Improvement of the area adjacent to the B4574 to the south of the mill

Item 3A: Managing the stream course

Construction of a stream culvert to prevent ongoing erosion of archaeology and buildings in the area directly north of the road.

The stream course is also eroding a fines dump to the north of the road, which was formerly protected by a dry stone wall. It is also eroding the slimes spoil tip to the south of the road which is a major source of contaminants into the river.

Re-routing part of the stream outflow into the former Mill Tailrace, following archaeological investigation to confirm its route on the northern side of the road.

Dry stone revetment walls adjacent to eroding fines and slimes dumps could be constructed to mitigate against further erosion of these sources of contamination into the River Ystwyth.

Aims: To direct and manage the flow of the stream course which is presently a wide and irregular channel which changes with heavy rain fall and prevent further erosion and pollution. Improve accessibility into the site area.

Benefits: Prevent further undermining of the surviving walls of the fines store south of the mill building. Prevent further erosion of unidentified archaeological remains which are being eroded within the stream course. Prevent further erosion of the slimes dump on the southern side of the road which is directly polluting the River Ystwyth.

Cost: The management of the stream course could be a considerable cost, depending on the agreed methodology. Not only would there be the cost of the actual construction works, but there would also be costs for initial surveys and subsequent mitigation, such as for archaeological remains, but also lichens. Costs would be over £20,000 for all necessary works. Hydrology and geotechnical surveys would be needed to assess potential environmental or hydrological impacts from changes to the stream course and also to determine whether the mill tail race can be used. Costs could be around £10,000 combined for Items 3A and 3B for archaeological surveys and mitigation.

Key Issues: The works will require SMC and relevant consents from NRW. For archaeology this will likely require preliminary surveys and possible evaluation to determine what remains are present and will be disturbed, to be undertaken prior to the construction works commencing. Subsequent mitigation measures may also need to be implemented, which could involve excavation. The route of the stream course beyond the culverted area would need to be discussed with NRW in terms of its diverted flow into the Ystwyth. Bat survey of the mill tailrace would be needed to ensure that diversion of the stream would not impact upon bat roosts. This could include seasonal restrictions on works being undertaken. Planning permission would be needed as it would involve construction works. Discussions would be needed with Highways due to the culvert running under the road.

Partners: Initial surveys of the area may be able to be done by the RCAHMS or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. CMT could prepare the application for consents from Cadw and NRW and planning application through Ceredigion County Council. Discussions would be needed with Highways as stream will be culverted under the road. Third party contractors would be needed to undertake hydrology, geotechnical surveys and for its construction (ideally a local contractor). There may be opportunities through the implementation of this project to work with NRW in order to address

pollution issues at the outset and this may be able to be tied in with potential water treatment works at the site (see below Item 8).



Photo showing current unmanaged stream course with eroding archaeology visible in the form of a wall



Photo showing eroding slimes dump south of the road

Item 3B: Managing access to the mill area of the site

Construction of a dedicated pathway on the northern side of the B4574 to direct pedestrians from the parking area to the south of the road up to the mill area.

The proposed route would run along the eastern edge of the former stores building that lies to the south of the mill.

Aims: Management of access for the general public within the site, directing them to the mill area and the interpretation boards.

Benefits: Reduce erosion of ecologically sensitive spoil heaps and archaeologically sensitive remains.

Cost: The type of construction of the desired footpath would obviously dictate the level of costs. The costs for simple path construction would range from around £40 to £50 per metre, but the ground level where the pathway is proposed is very uneven so additional levelling would be necessary. As with the stream management, there would also be costs for initial surveys and subsequent mitigation, such as for archaeological remains and lichens. These surveys would be undertaken at the same time as those for Item 3A as they are located in the same areas. Costs could be around £10,000 combined for Items 3A and 3B for archaeological surveys and mitigation.

Key Issues: The works will require SMC and relevant consents from NRW. For archaeology this will likely require preliminary surveys and possible evaluation to determine what remains are present and will be disturbed, to be undertaken prior to the construction works commencing (again in the same phase of works as for Item 3A). Subsequent mitigation measures may also need to be implemented, which could involve excavation. Planning permission would be needed as it would involve construction works.

Partners: Initial surveys of the area may be able to be done by the RCAHMS or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. CMT could prepare the application for consents from Cadw and NRW and planning application through Ceredigion County Council. Discussions with Highways may be needed as the path will lead from the road. Third party contractor would be needed to construct the path, ideally local contractor.



Photo showing possible location of footpath (suggested line marked)

ITEM 4: Improved Car Parking across the site area

This would include improvements to the car parking area opposite the mill site, where modern fly tipped rubble heaps could be levelled to create a larger car parking area whilst maintaining the required farm turning circle.

Areas where parking or vehicle access is not allowed to be defined by the strategic placing of larger boulders (of local stone) which would also deter off-roading.

Re-grading of the sloping car park at Nant Yr Onnen – the level of which seems to have been made up and expanded fairly recently for council use when the existing road bridge was rebuilt.

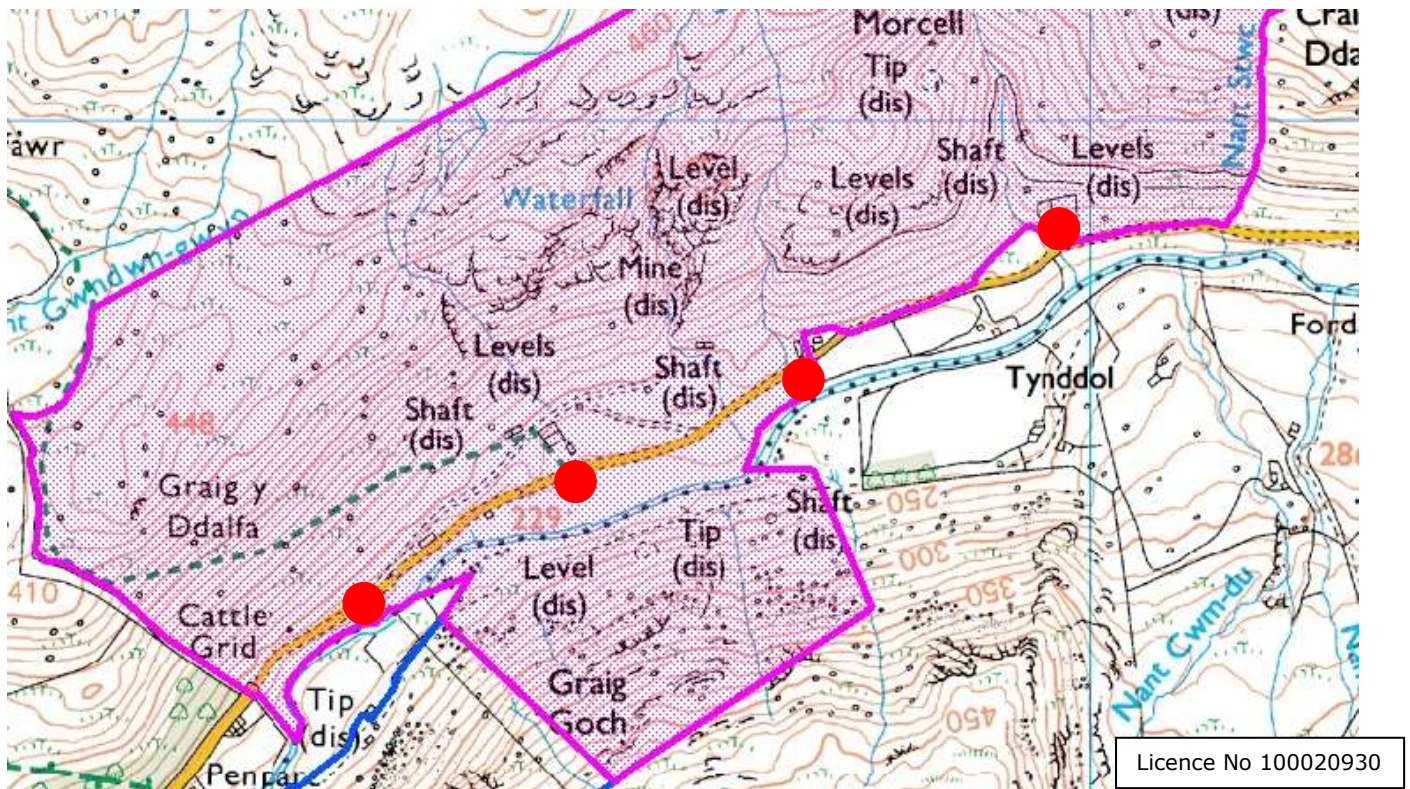
Aims: Improving accessibility to the site for the general public and provision of better parking. Improve the managed appearance of the site.

Benefits: Increase the visitor numbers for the site and thus enable more people to learn about the significance of the heritage, ecology and geology of the site. Removal of unsightly modern fly tipped rubble dumps. Reduce parking on ecologically or archaeologically sensitive areas of the site. Prevent off road vehicles.

Cost: Much of the proposed works would involve minimal ground disturbance, merely levelling fly tipped rubble heaps or levelling surface material across parking areas. Much of this work could be done relatively cheaply with contractor and JCB, costing around £200 to £300 per day. Materials needed for surfacing would be under £500, and additional costs may be needed to purchase boulders which can be used to prevent unauthorised access. There would also be costs for initial surveys and subsequent mitigation, such as for archaeological remains and lichens (although it is unlikely these would be too much of an issue for these areas).

Key Issues: The works will require SMC (where within the Scheduled area) and relevant consents from NRW. Where materials are to be imported (surface materials and boulders) there may be restrictions on what can be used, which would need to be discussed with NRW and the planning authority. It is not possible to use material from the historic spoil tips as these are protected both as part of the SAM as well as the SAC and SSSI. Planning consent would be needed for any construction works, where significant alterations are proposed. Consents from Highways would be needed, and where any where signage is proposed. The existing car parking areas are all quite restricted in size due to constraints from their location, but numbers of potential parking spaces made available may need to be considered for grant applications. Overnight parking restrictions may be applicable.

Partners: Initial surveys of the area may be able to be done by the RCAHMW or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. CMT could prepare the application for consents from Cadw and NRW and planning application through Ceredigion County Council. Discussions with Highways would be needed. Third party contractor would be needed to construct the parking areas (ideally a local firm).



Approximate location of car parking areas to be improved (red circles)

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ITEM 5: Re-opening of the original track to the mine yard

The present track way entrance is located adjacent to Nevill Place and has been blocked off with dumps of stone to prevent unauthorised access. It is proposed that these are removed and a gated entrance constructed. Boulders would also be strategically placed to prevent off-road access.

Aims: Construction of new gated access to the track way that leads to the mine yard. All farmers with grazing rights to the land would have means of opening the gate.

Benefits: Improve the appearance of the mine track way entrance. Deter unauthorised vehicles from accessing the site area. Improve accessibility for local farmers and also for any vehicles required on the site for future works associated with the Trust (if needed).

Cost: Removal of existing modern rubble tip barriers and movement of boulders could be done cheaply with contractor and JCB, costing around £200 - £300 per day. Cost of gate could be between £200 to £500, plus costs for fixing gateposts, erection and lock for the gate. There would also be costs for initial surveys and subsequent mitigation, such as for archaeological remains and lichens (although it is unlikely these would be too much of an issue for this item).

Key Issues: The works will require SMC and relevant consents from NRW. The type of gate or barrier to be used and how it will look in the landscape will be important issues in terms of the Scheduled Monument and further discussions with Cadw as to suitability will be needed. The stone boulders to be used to prevent off road parking / driving would need to be approved by NRW and Cadw.

Partners: Initial surveys of the area may be able to be done by the RCAHMS or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. CMT could prepare the application for consents from Cadw and NRW and planning application through Ceredigion County Council. Third party contractor would be needed to construct the gateway and move boulders, ideally a local contractor.



Photo showing the original track to the mine yard

ITEM 6: Restoration of the portal to Level Fawr and improvement of underground access

The present portal to Level Fawr is suffering from degradation. The original plaque and the subsequent replica have been removed from the site. It is intended that the portal will be restored and a new plaque erected.

As part of these works improvements to the underground access would be undertaken to facilitate authorised access for longer term essential underground maintenance and remediation work on the historic remains, as well as enabling future recording projects.

Aims: To restore the portal entrance and erect a replica plaque above the entrance. Facilitate materials and equipment being able to be taken into the mine for recording and research.

Benefits: Improvement to the outward appearance of Level Fawr, perhaps the best known of the adit entrances into the mine. Enable longer term maintenance and remediation projects of the ever deteriorating below ground remains in the mine. Enable the implementation of programmes of recording work both for the archaeology and ecology of the below ground site.

Cost: Initial condition surveys would be needed, both for archaeology and structural purposes. Works would then include re-pointing of portal and some areas of rebuilding (drystone and mortared). The actual works to the portal could be around £5000 with additional costs for initial archaeological surveys and monitoring during works (perhaps around £2500). Initial bat and lichen surveys would be needed.

Costs for undertaking improvement to access below ground are very difficult to ascertain. Much of this work could be done by experienced mine and cave explorers as voluntary works, but insurance and health and safety will still be of paramount importance and could have substantial costs to ensure it is in place. Such works could disturb bats and so there will be seasonal restrictions on the works.

In the longer term, costs for carrying out schemes of recording of the archaeology and maintenance work below ground may be minimal as could be undertaken by volunteer support, with occasional costs for larger below-ground recording projects. For bats there will be survey costs and for monitoring equipment.

Key Issues: The works will require SMC and relevant consents from NRW. As it is conservation work to an existing structure it is unlikely planning consent would be needed, but should be discussed with Ceredigion County Council. Disturbance to protected species are significant issues for these works and could have seasonal restrictions. If lichens are present discussions will be needed with NRW to ensure that the works do not disturb them, and ideally further suitable habitat created by ensuring mortar for pointing would be suitable for colonisation.

For works to improve the access below ground, health and safety method statements and insurance will need to be in place. The works will require SMC and relevant consents from NRW. Seasonal restrictions on the works due to bats are very likely. The works should not impact upon ventilation or changes in humidity within the underground workings. It is essential that these works ensure that casual public access to the mines is not possible. Managed access will still be possible for approved and experienced visitors through CMT. Access to the mines is recognised as essential within the SSSI designation.

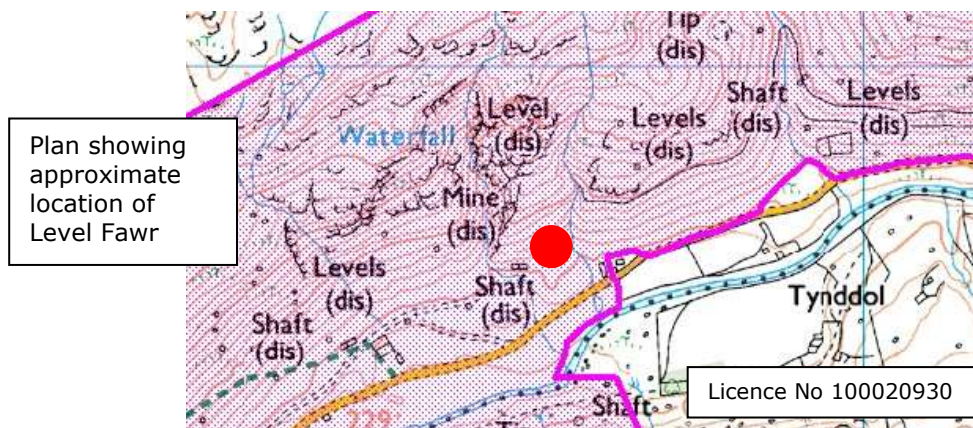
Longer term below ground recording programmes of work will be undertaken by volunteers or contractors experienced in working in such conditions and with appropriate insurances and safety equipment.

Partners: Initial surveys of the area may be able to be done by the RCAHMW or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. Bat surveys by licensed bat expert. CMT could prepare the application for consents from Cadw and NRW and undertake discussions with Ceredigion County Council. Third party contractor would be needed to carry out the consolidation works.

Longer term recording works below ground would be undertaken by licensed bat experts with appropriate experience and equipment. Archaeological recording below ground could be undertaken by specialist firms such as Deri Jones & Associates Ltd. The directors of CMT, Robert Protheroe-Jones and other members of WMPT could be involved in below ground recording works, maintenance and consolidation works.



The portal entrance to Level Fawr February 2014



ITEM 7: Restoration and improvement to the packwall entranceway and portal to Taylor's Level

Removal of the existing metal grill barrier which is fixed to the exterior of the portal and restoration of the dry stone walling around the packwall entrance leading from Nant Yr Onnen.

A new gateway would be constructed hidden within the entrance to the level, preventing unauthorised access.

Aims: To improve the outward appearance of this adit level by removing the existing inappropriately placed grill.

Benefits: Outward appearance of Taylor's Level is improved and the dry stone walls consolidated for the future.

Cost: Initial condition surveys would be needed, both for archaeology and structural purposes. Works would then include re-pointing of portal and some areas of rebuilding (drystone and mortared). The actual works to the portal could be around £5000 with additional costs for initial archaeological surveys and monitoring during works (perhaps around £2500). Initial bat and lichen surveys would be needed. There would be additional costs for a new gate and also for installation within the adit. It is not intended to improve access into this adit.

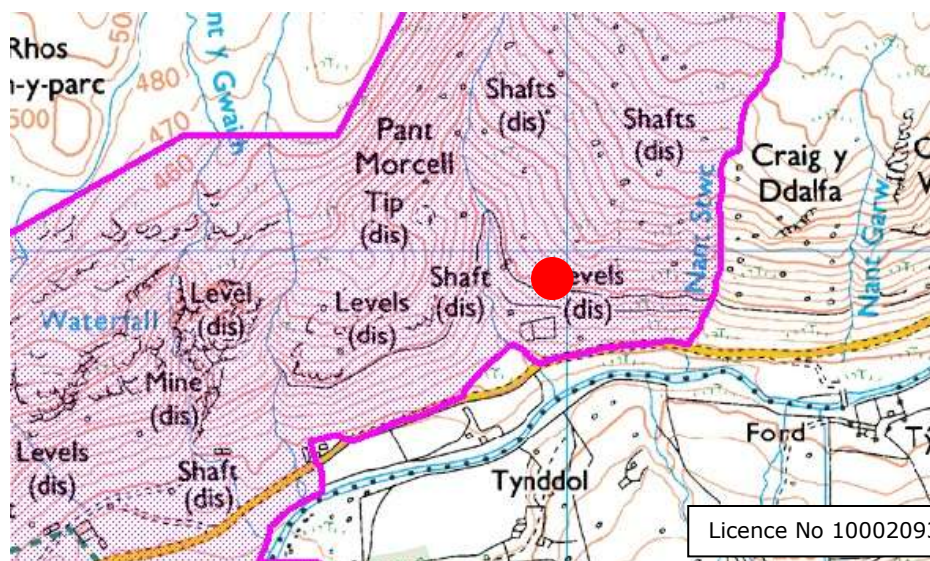
Key Issues: The works will require SMC and relevant consents from NRW. As it is conservation work to an existing structure it is unlikely planning consent would be needed, but should be discussed with Ceredigion County Council. Disturbance to protected species are significant issues for these works and could have seasonal restrictions. If lichens are present discussions will be needed with NRW to ensure that the works do not disturb them, and ideally further suitable habitat created by ensuring mortar for pointing would be suitable for colonisation.

Health and safety method statements and insurance will need to be in place to erect the new gate within the adit entrance. This work will require SMC and relevant consents from NRW. Seasonal restrictions on the works due to bats is very likely. The works should not impact upon ventilation or changes in humidity within the mine. It is essential that these works ensure that casual public access to the mines is not possible.

Partners: Initial surveys of the area may be able to be done by the RCAHMS or by an archaeological contractor. Impact assessments of the work could be compiled by an archaeological contractor working in conjunction with CMT and members of WMPT to ascertain likely impacts. Lichen surveys by specialist Steve Chambers. Bat surveys by licensed bat expert. CMT could prepare the application for consents from Cadw and NRW and undertake discussions with Ceredigion County Council. Third party contractor would be needed to carry out the consolidation works and installation of the new gate. Volunteer support may be possible with the rebuilding of the dry stone walling.



Taylor's Level from western side of Nant Yr Onnen valley



Plan showing approximate location of Taylor's Level



Existing inappropriately placed barrier to Taylor's Level



Dry stone packwall entrance to Taylor's Level

ITEM 8: Working with Natural Resources Wales for any future water treatment works at the site

Natural Resources Wales have identified Cwmystwyth as a major source of pollution into the River Ystwyth. The water draining from Pugh's Level at the eastern end of the site is one of the main sources of pollution. NRW are looking into the possibilities of a water treatment works to remediate the pollution from Pugh's Level and possibly the nearby Kingside Level, although the available land downstream of the adit may not be large enough for a suitable water treatment works.

The Cambrian Mines Trust will work with NRW to ascertain if a workable solution can be achieved and grant them landowner permission to build such a works at the site. The Trust will also work with NRW to ensure that any future schemes would not compromise any proposed or completed site improvement works implemented by the Trust.

Aims: To work with NRW to allow them to build a water treatment works on Trust land to reduce pollution flowing into the River Ystwyth. Public access to the area would be maintained after its completion and educationally appropriate signage erected.

Benefits: Reduced pollution.

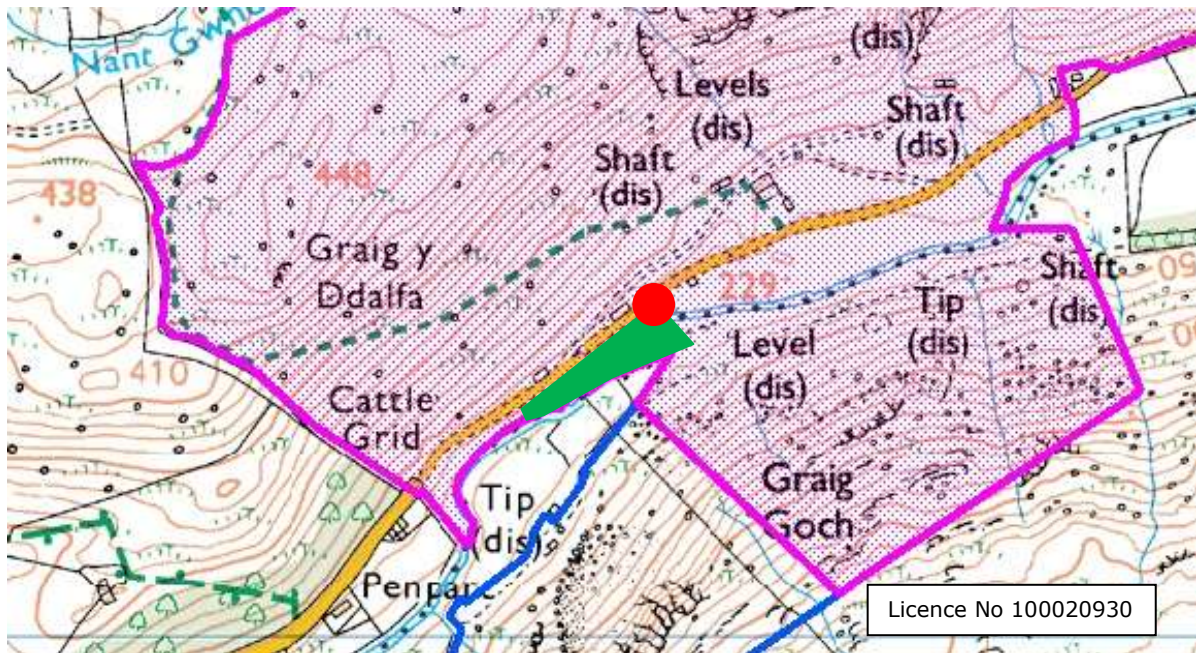
Costs: Will be borne by NRW.

Key Issues: The works will require SMC (if within the Scheduled area) and relevant consents from NRW. Planning consent would be needed. These will be addressed by NRW.

Partners: CMT will provide full support to the works. Opportunities should be considered where the water treatment works could be combined with the managing of the stream course (Item 3A) or alternatively, if the large scale water treatment works are not possible, perhaps NRW might consider supporting Item 3B in order to address pollution at the site (albeit on a smaller scale).



Water draining from Pugh's Level (iron oxide causing the red colouration)



Location of Pugh's Level entrance (red circle) and
potential NRW water treatment area (green)

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ITEM 9: Rebuilding of Neville Place and Staff House

Longer term projects could include the rebuilding of Nevill Place and Staff House into residential properties or accommodation for visitors to the site.

The item is very much in the early stages of discussion. It is probable that planning legislation may mean the scheme would not be granted planning permission. Both properties are presently in unsightly and possibly dangerous states and clean up or stabilisation of the remains should be considered if rebuilding is not permitted.

Aims: To provide an investment and possible income source for the Trust. To prevent further collapse and degradation of the buildings.

Benefits: Have increased occupation at the mine site to assist with management and monitoring.

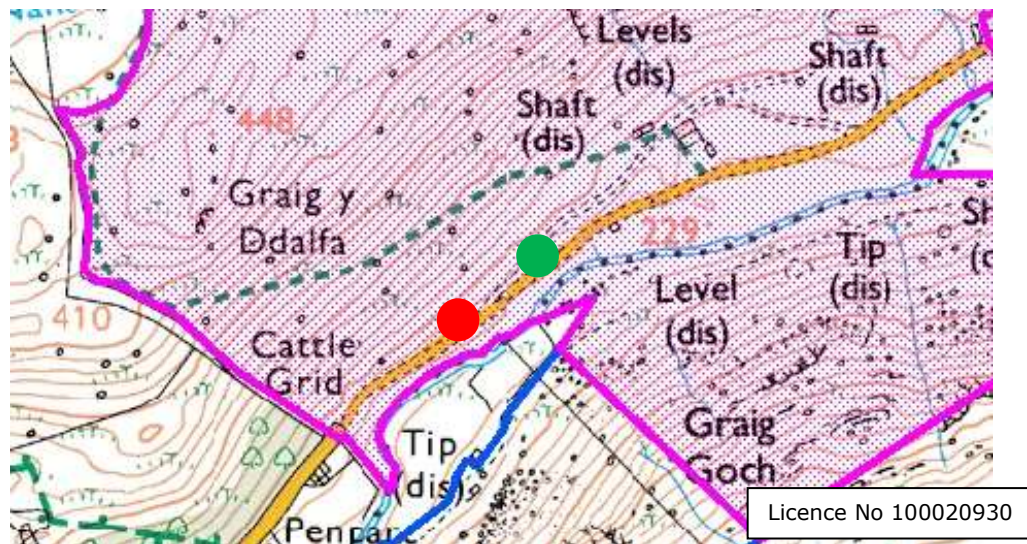
Costs: Substantial costs would be required (>£200,000) for works to include initial surveys and recording of archaeology and ecology, and costs of actual construction.

Key Issues: The works will require SMC and relevant consents from NRW. Planning consent would be needed, but is unlikely to be granted. It is also likely that SMC would not be granted. The aim of this task would provide a future income for CMT, whether via rents or by selling the properties, which would assist with making future management and improvement works at the site more sustainable. The opinions of the community on this aspiration would be very important.

Partners: An archaeological contractor would need to be employed to undertake surveys, as would bat and lichen specialists to carry out preliminary surveys. There would be costs for architects, structural engineers as well as third party contractors for the build.



The remains of Neville Place February 2014



Location plan of Neville Place (red) and Staff House (green)

ITEM 10: Hydro-Electric Scheme

A private company has expressed an interest in the site area for the construction of a hydro-electric scheme. The scheme would follow the line of the former hydro-power scheme that was used by the lead mine to power the mill works.

The scheme has been discussed with NRW and Cadw and is generally looked on more favourably than a previous scheme suggested for the site. Ecological and archaeological issues have been considered in the outline design scheme. The hydro-scheme should not impact on the water flow of Nant Y Gwaith nor from Nant Watcyn.

Water management works and improved access suggested in Item 3A and 3B would be undertaken in anticipation of this scheme and potentially funded by it. Works would not be undertaken which would be negated by the hydro-electric scheme development.

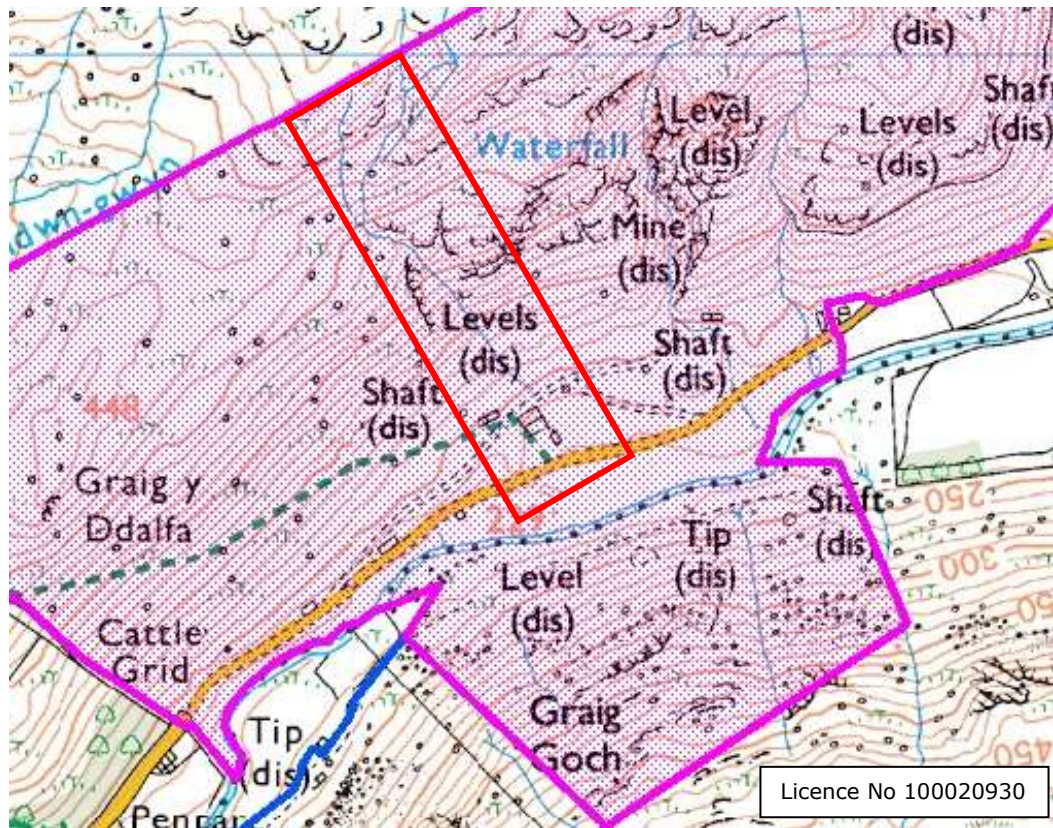
Aims: Construction of a hydro-electric scheme by a private company with permission given by Cambrian Mines Trust.

Benefits: Efficient and renewable energy source which could benefit the local area. Ground rent income for the Cambrian Mines Trust. The development could fund the stream culverting and footpath into the main site area.

Costs: Will be substantial and borne by the Hydro-electric scheme developers.

Key Issues: The works will require SMC and relevant consents from NRW. Planning consent would be needed. These will be addressed by the developers. Any proposed works must be developed to ensure they do not impact upon or negate the improvement work aspirations discussed above and specifically in relation to improvements of the mill area (Items 3A and 3B).

Partners: CMT will provide full support for the works. CMT may also want to consider taking this project forward themselves, with specialist support/or partner, to provide an income for CMT in the future and ensure a sustainable future for the mines site through reinvestment in repairs, remediation and maintenance of above and below ground remains.



Plan showing approximate are of the hydro-electric scheme proposal



View from the mill tailrace with the stream course running up the centre of the hillside, the route of the former water power pipeline can be seen to the left of the stream course

Information supplied by Cambrian Mines Trust –
<http://www.iriscom.co.uk/CMT/Hyro%20proposal2.pdf>

(V2) CAMBRIAN MINES TRUST

A description of the Cwmystwyth Mine high pressure water system and proposed partial reinstatement for generation of electricity.

History

In 1898 the mines were acquired by the Cwmystwyth Mining Company Ltd who were quick to embrace new technology. This included the erection of a new processing mill on the site of the previous mill and replacement of the existing system of waterwheels with a new high pressure water system driving turbines.

A high pressure pipeline (11 inch pipes) coming down from near Nant y Graig gave a head of 190 feet to drive an 120 hp Gilkes Vortex turbine to operate the machinery in the new mill, while a branch from it drove a small 15 hp Pelton turbine situated in the then defunct mine crusher house.

A second high pressure pipeline came down roughly parallel and to the west of Nant Trefach and drove a 5 ft diameter 168 hp Pelton turbine mounted just above the mill with about 780 ft head of water. This operated 2 identical Schram compressors as well as an incline winder used to raise ore trucks from Lefel y Ffordd at road level to the level of the mill hoppers. There was also a clutch system which could engage drive wheels to operate the mill by means of a wire rope loop system.

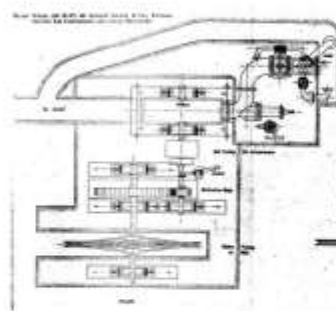
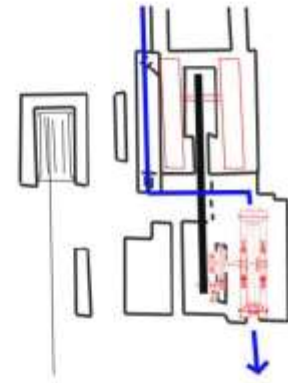
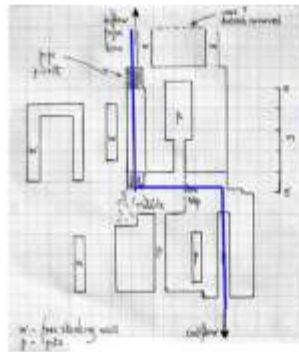
The waste water from the turbine was then carried down a pipe mounted on the plinths below the turbine mounting that are still in existence to an 'L' bend at the lower plinth. The pipeline was then conducted aerially into the mill building to supply the dressing machinery.

Proposal

The proposal is the reinstatement of the Nant Trefach pipeline down to the concrete compressor beds and then from there above ground following the route of the original waste pipe that supplied the mill dressing machinery. This should be visually in character with the original pipeline and mounted on the original plinths. As the mill building no longer exists the pipeline should go below ground as near as possible after the lower support plinth. At a later stage a replica Pelton turbine cover can be fabricated and installed over the original placement on the concrete foundations.

Below ground the pipeline can be buried under a new visitor footpath which will form a reinforced western bank for the Nant Trefach stream so as to prevent erosion by floodwater in times of heavy rain. It is proposed that the new generating station be built within the walls of the mine concentrates store, which is the small building nearest the road. Waste water from the generating turbines can then be ducted into a reopened mill spillway culvert under the road. This can also carry the power line through ducting if permitted. From here the cabling would be carried aerially across the river to join the grid by wooden poles but the first not too close to the road /parking area.

The reopened mill culvert will be able to carry floodwater which normally spills over the road and freezes in cold weather.



In the absence of any drawings or photographs etc and due to the complexity of gearing etc it is not possible to accurately represent the arrangement, however the exact position of the turbine and compressors can be accurately ascertained by simple logic. Above original drawing shows a 'typical' application.

ITEM 11: Establishment of a 'Mid Wales Mining Trail'

Working with other mine sites and attractions, such as those at Llywernog Mining Museum at Pont Erwyd and those at Devil's Bridge developing a trail across the mid-Wales ore field for visitors to learn more about the metal mining industry of the area and its extent. The trail could include hiking routes or driving routes, as well as shuttle buses between sites (in a similar fashion to the Pembrokeshire coast shuttle buses).

Aims: To improve access to metal mining sites and education of visitors to the region and local communities.

Benefits: Increased knowledge of the mining heritage, ecology and geology of the region. Increased visitor numbers and thus economical benefits for local communities and the region.

Costs: Uncertain at this stage.

Key Issues: The scope of this work is uncertain at this stage and much may be developed as information leaflets or a website and therefore not have any direct issues with the Cwmystwyth Mines site. Footpath signage may be needed. It would increase the number of visitors to the site so the above aspiration Tasks 1 to 7 works would need to be implemented prior to this being undertaken to ensure managed access and interpretation is in place.

Partners: CMT will provide full support for the development of the trail, and likely partners would include other heritage attractions and former mine site owners in the region, local businesses/hotels/restaurants etc, WMPT, Cadw, RCAHMW and Ceredigion County Council.

10 FUNDING OPPORTUNITIES

10.1 The following list highlights some of the potential funding opportunities that are available to the Cambrian Mines Trust. The aims of the CMT and a number of the aspirations they have for the site will mean that they would qualify for consideration of a grant from the various bodies, but does not mean that any application would necessarily be successful. Other funding sources, specifically those for the promotion of the geology or bio-diversity, may exist but these have not been identified at this stage.

Cadw

10.2 Some of the proposed works at the site will have a direct benefit for the long term preservation of the Scheduled Ancient Monument and would therefore be eligible for consideration of an application for Ancient Monument's Grant. Additional pieces of work or recording of both above and below ground works could also be eligible for funding through Cadw grant-aid via Dyfed Archaeological Trust as specific projects (unrelated to development). The Cadw Civic Initiative Grant Fund may also be a possible funding source, which can provide small scale match funded grants for up to £5000 for interpretative materials (such as panels and plaques). Match funding for this grant money would have to be non-Welsh Government funding.

Cefn Croes Wind Farm Community Trust Fund

10.3 The main aims of the CMT, especially in terms of the Cwmystwyth site, are for the education of the public through works that they aspire to do at mineral extraction and processing sites. At Cwmystwyth, improving knowledge and understanding of the site and improving access, will hopefully make it one that visitors will choose to come to. In turn this should lead to an economic boost for the area, bringing in more spending to local shops, businesses, restaurants, cafes, hotels etc. The CMT would therefore qualify for consideration of a grant from the Fund. The Fund provides grants mostly in under £10,000, but has provided as much as £30,000 for one project. Grants are awarded annually.

<http://ponterwyd.pumlumon.org.uk/index.php?page=104&lang=eng>

Ceredigion County Council

10.4 There are possibilities of funding through community grants or European Convergence / Rural Development Programme funding as the aims of the CMT are for improvement of education and increase in visitors, leading to an associated economic boost for the region. Other routes to European Rural Development programme funding may be available outside of the County Council. The Environmental Control section of the council may have access to Local Environmental Quality / Greener, Cleaner Tranquil Place funding which CMT may be eligible to apply for. These funds have a £60,000 ceiling level.

Heritage Lottery Fund

10.5 The aims of the CMT and the future aspirations for the Cwmystwyth Mines site fits in well with the criteria for a number of the funding stream offered by the HLF. The 'Our Heritage' fund for grants of between £10,000 to £100,000 (HLF 2013a) or 'Heritage Grants' for grants of over £100,000 (HLF 2013b) would be the most appropriate for Cwmystwyth, although both are very competitive. The

outcomes the HLF require projects to deliver for both funds include the following (taken from the Our Heritage/Heritage Grant application guidelines):

Outcomes for heritage:

- better managed
- in better condition
- better interpreted and explained
- identified/recorded

Outcomes for people:

- developed skills
- learnt about heritage
- changed their attitudes and/or behaviour
- had an enjoyable experience
- volunteered time

Outcomes for communities:

- negative environmental impacts will be reduced
- more people and a wider range of people will have engaged with heritage
- your local area/community will be a better place to live, work or visit
- your local economy will be boosted
- your organisation will be more resilient

10.6 As a minimum the HLF would expect projects to achieve one outcome for heritage and one outcome for people (Our Heritage) and one for communities (Heritage Grant). For Cwmystwyth the majority of the outcomes would be addressed for all categories. There have been a number of successful HLF applications for industrial and mining sites across the UK, including the King Edward Mine in Cornwall and the Mining Memories project in Cannock Chase.

10.7 The Heritage Grant application is undertaken in two stages, the first application stage unlocks the development stage of the project, for which a development grant may be available which could cover the planning applications, consent applications and other relevant surveys required. The second round application is for the delivery-grant request. For larger projects the HLF would require a Conservation Plan (HLF 2012) to be submitted at the development stage. The majority of the requirements of this plan would be included in information needed for SMC and SSSI consents and the planning application, but would require a specialist to put the plan together in a form that would comply with HLF requirements.

Natural Resources Wales

10.8 Applications could be made to NRW for grant aid, including applications for grants through the European Union Water Framework Directive (WMF) and/or the Resilient Eco-systems Fund as the works will reduce the amount of pollutants presently eroding from fines and slimes dumps directly into the River Ystwyth due to the route of the un-managed water course. Other opportunities of working with NRW could be explored for other pollution reducing in general terms for the improvement of pollution at the site, including the following funding source:

<http://naturalresourceswales.gov.uk/apply-buy-report/apply-buy-grid/grants/?lang=en#.U0UJTfldVDI>

The Prince's Countryside Fund

10.9 One of the funding streams previously focussed on reconnecting people with the countryside, which may have been applicable for Cwmystwyth. Unfortunately this is no longer offered as a primary objective for a project. It is possible that this could be jointly considered with the 'Improve the sustainability of rural communities' criteria. The Prince of Wales has visited the area previously so must know something of the site, and with his interest in history/heritage this may be worth pursuing.

<http://www.princescountrysidefund.org.uk/>

Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)

10.10 Although not a grants offering body, there may be opportunities for survey and recording of the site as part of the work of the RCAHMW Reconnaissance and Survey section (no cost to the Trust). RCAHMW could undertake initial survey work to support applications for funding (preliminary surveys may be needed as part of the application process for some grants) or survey work could add value or in-kind contribution to grant funded projects (again something which would support any applications for funding). The RCAHMW would not assist with commercial projects.

Welsh Mines Preservation Trust

10.11 Application for grants to assist with preparation of interpretation boards as they promote the history and archaeology of the mining site. Alternatively WMPT members could be approached to provide volunteer time to assist with recording projects or research.

Bat Conservation Trust

10.12 The aims of the Cambrian Mines Trust will promote the biodiversity of the site and ensure that visitors to the site are aware that they should not do anything to disturb bats; there may be small grants available from the Bat Conservation Trust. One of the aims of the Trust is also to keep access to the mines open for researchers, including bat specialists (as is a requirement of the Mwyngloddfa Cwmystwyth SSSI citation) then there is the possibility of funded training for a dedicated Cwmystwth bat specialist.

Research Project through Brunel University

10.13 An application for a research project has been made by Brunel University with a number of other partners (including CMT) which includes research work being undertaken at the Cwmystwyth site. Unfortunately the nature of the research is such that it is presently confidential to protect intellectual copyright for the time being. If successful, this could release funds for improvements at the site, which would assist with access and implementation of the research project and at the same time ensuring that such works would be beneficial to the site.

Other possible funding sources

- Lord Barnby's Foundation Trust - grants of £1000 - £5000, including for environment, conservation and heritage
- The H B Allen Charitable Trust – no restrictions on types of projects for which grants will be offered, but they do prioritise – and relevant to Cwmystwyth could be Environment/wildlife/animals. No limit on size of grants.
- Esmee Fairburn Trust – provides grants for Heritage projects and those for the environment. Grants are generally between £10,000 and £150,000

10.14 Funding Applications

10.14.1 To achieve the best way forward a mix of grants should be applied for to cover the majority of the works proposed by the CMT and discussed in Section 9.

10.14.2 Although separated into 11 individual items on the task list, it is proposed that a number would be grouped together to form a single Phase 1 project, although consideration and development of a second phase of works should also be considered and combined within any application. Thereby funding would be sought for the Phase 1 and Phase 2 combined proposals.

10.14.3 The following items from the aspiration list should be grouped into the Phase 1 part of the project – hereinafter called the Cwmystwyth Access and Information Improvement Phase.

ITEM 1: Signage to indicate ownership

ITEM 2: Improved interpretation panels and signage

ITEM 3: Improvement of the area adjacent to the B4574 to the south of the mill

Item 3A: Managing the stream course

Item 3B: Managing access to the mill area of the site

ITEM 4: Improved Car Parking across the site area

ITEM 5: Re-opening of the original track to the mine yard

ITEM 6: Restoration of the portal to Level Fawr and improvement of underground access

ITEM 7: Restoration and improvement to the packwall entranceway and portal to Taylor's Level

10.14.4 All of the above items for the Phase 1 part of the project are focussed on the improvement of the site in terms of public accessibility, education and understanding as well as the preservation of the site both above and below ground for the future (whether through preservation *in-situ* or through preservation through record). They would thus qualify for application for funding from Cadw, Cefn Croes Wind Farm Community Fund, Ceredigion County Council and the HLF. The interpretation panels would include information on the heritage as well as bio-diversity and geology of the site and thus also potentially qualify for funding from the above sources as well as potentially The Prince's Countryside Fund, NRW and the Bat Conservation Trust. The works would also prevent further erosion of the fines and slimes dumps leading to pollution directly into the River Ystwyth and thus further NRW grants may be available, as well as supporting any application for HLF funding.

10.14.5 With the items being grouped into the initial Cwmystwyth Access and Information Improvement Phase (Phase 1), this would mean that the applications for SMC and consents for working in the SAC, SPA and SSSIs should also be combined, as should a planning application. Initial surveys, such as an archaeological impact assessment, targeted lichen survey and bat surveys for the two adits should also be combined to single phases of work. Combining these surveys for the Phase 1 project would be far more efficient than dealing with them individually. Such works may be funded by the development-stage grant of the HLF Heritage Grant (if successful). The information would also assist with the development of the Conservation Plan

10.14.6 To ensure that the works qualify for larger amounts of funding (eg through the HLF Heritage Grant), the applications would also need to consider the longer term sustainability of the Cwmystwyth Mines site. This is where the Phase 2 part of the project would need to be developed. Within the aspirational items, this had already been considered by CMT in ITEM 9 and ITEM 10, whereby guaranteed income through rental monies would be fed back in to the Trust for future management of the site. It may be worth CMT considering developing the hydro-electric scheme themselves, and bringing in a developing partner to work with them (as opposed to the other way around) as part of the Phase 2 part of the project, thereby ensuring more income from the scheme would pass directly to the Trust for use in the management and promotion of the site in the future. By developing the hydro-electric scheme along the same route as that built at the turn of the 19th century it also provides an opportunity to provide information for visitors on how the original scheme worked in comparison to the modern one. Grants may be available to aid with the development of this project. The electricity generated by the hydro-electric scheme could be used to provide the local community with renewable energy.

10.14.7 ITEM 9: *Rebuilding of Neville Place and Staff House* would be a project aimed to bring revenue into CMT again to ensure the sustainable future of the Cwmystwyth Mines site. Unfortunately feedback from the council indicates that this is unlikely to be granted planning permission. The intention of this aspiration is a commendable one and perhaps needs a rethink as to how such a scheme could be achieved, or alternatively Item 10 could be pursued as a CMT development instead as indicated above.

10.14.8 Other things that might be considered as part of the Phase 2 element of the project could be further consolidation of structures at the site which are unsafe; undertake areas of laser scanning or panoramic photography of the below ground workings, prior to further degradation and use this to construct visual tours of some of the below ground workings for use on website; development of education resources for and working with local schools; development of a mobile exhibition which could be taken to various locations in the region (village halls, schools, libraries, museums or galleries) to promote the site to the community and visitors to the region, with displays panels, photographs, exhibits and other media. Such works would further promote the site and provide information on its significance to the wider community, school children and visitors, and allowing virtual access to some of the below ground workings and geological formations.

10.14.9 ITEM 8: *Working with Natural Resources Wales for any future water treatment works at the site* would be a separate project funded and developed by NRW if it is taken forward. This would not require grant funding and could not be included in any initial applications for planning or other consents at this stage. As noted above there may be other opportunities for NRW to work with CMT to reduce pollution into the Ystwyth, such as through the management of the stream course at the mill to divert it from eroding the fines and slimes dumps.

10.14.10 ITEM 11: *Establishment of a 'Mid Wales Mining Trail'* would be a collaborative project to involve a number of partners across the metal mining area of mid-Wales. This could be eligible for grant funding from a number of sources, but would need to be developed further with other partners. This aspiration is one which would encourage visitors to the site in the future.

10.14.11 It is essential that any future proposals for the site will not negate the works done in the Cwmystwyth Access and Information Improvement Phase. The majority of proposed works are very unlikely to cause any effect to the works carried out in this phase, but those associated with any future hydro-electric scheme potentially could. The design of such a scheme would be done to ensure this does not happen, although potentially they could be undertaken at a similar time.

11 PLANNING REGULATIONS AND GUIDANCE

11.1 The following section presents a summary of the various planning regulations and requirements that will be relevant to the implementation of future works at the Cwmystwyth site. The Cwmystwyth Mines Access and Information Improvement Phase would certainly need to consider the following planning guidance, though the list is not exhaustive. Other regulations and guidance will be necessary where other items in the wish list are taken forward.

- Advertising Guidelines – relevant to the display of signage for the mine and any interpretation boards;
- Highways regulations – applicable for any works located on or adjacent to the highway;
- Welsh Office Circular 60/96: Planning and the Historic Environment: Archaeology – covers archaeological issues within the planning process.
- Welsh Office Circular 61/96: Planning and the Historic Environment: Historic Buildings and Conservation Areas – although buildings on the site are not listed, nor is it a Conservation Area some of the principles relating to the built heritage would be applicable to the site

11.2 Ceredigion County Council has produced a document which provides details of what should be included with a planning application 'National Requirements for Planning Applications at Ceredigion County Council'¹. The online document is most useful in identifying the various documents and assessments that should be included with a planning application, dependent on the nature of development and where the site is located. In the case for the proposed Cwmystwyth Mines Access and Information Improvement Phase the following information will (probably) be required, supported by this Management and Protection Plan:

- **Design and Access Statement** – The council recommends initial consultation to establish the scope of the D&A statement. *The two component parts of the statement should identify and explain how issues such as context, scale, use, sustainability and landscape have been addressed through an inclusive design. For small projects, the access and design components will be fully combined into one short statement to describe in simple terms how design and access issues relevant to the application, have been considered and addressed* – to include:
 - environmental sustainability;
 - movement to, from and within the development
 - character
 - community safety
- **Ownership Certificates** – Under Article 7 of the Town and Country Planning (General Development Procedure) Order 1995, the local planning must see proof of ownership of the site.
- **Plans and Drawings** – including site plans, block plans, existing and proposed.
- **Community Impact Assessment** – This might be a useful document to include, combining more local opinion on the project and more detail on how the works will benefit the community in the longer term.

¹ http://www.ceredigion.gov.uk/utilities/action/act_download.cfm?mediaid=13729

- **Ecological/Geological Survey Assessment** – As the site is covered by European and National designations, it will be necessary to have such assessments in place to support the planning application. Such information will be necessary to support applications for consents and licences as well.
- **Heritage Statement** – As the site is a Scheduled Ancient Monument a heritage statement will be required. Detailed historic backgrounds already exist for the site, so it is most likely that an impact assessment would be required. This would combine existing knowledge with the potential impacts from the various items outlined in the Access and Information Improvement Project.
- **Protected Species Survey and Assessment** – initial surveys targeted at the specific areas identified within the Access and Information Improvement Project will be needed. Again this would support both the planning application and applications for consents/licences.
- **Bilingual Statement** – to confirm that the interpretation boards, information leaflets, websites and all signage will be bilingual.
- **Land Contamination Assessment** – as noted in Item 3A Section 9, such information will be necessary to support the proposals for management of the stream course next to the mill.
- **Landscape Assessment** – This may be necessary as the works in the mill area would alter the landscape to some extent. Obviously it is intended that the Access and Information Improvement Project cause as little change to the landscape of the site.
- **Photographs and Photomontages** – A series of photographs of the site and the various locations for access and information improvements could be included with the application. Much of this would be included with any Design and Access Statement, Heritage Statement or Landscape Assessment undertaken for the site.

11.3 The above information should also consider any works that the CMT would like to take forward as the Phase 2 element of the project. This could include the hydro-electric scheme, below ground recording and remediation works of structures.

12 HEALTH AND SAFETY

12.1 The responsibilities of CMT in terms of adits, level and shaft entrances are discussed above in Section 8. In summary as the site is open access land, all known adits, levels and shafts must be secured to prevent accidental access by members of the public which could result in injury. Additional signage and other warning information about the site and its dangers as a whole should be used to demonstrate that all reasonable measures are being taken to prevent accidental access into the below ground workings or injury on other parts of the site.

12.2 The site area contains heavy metal contaminants (zinc and lead specifically). No bare soil should be touched without gloves. Hand-washing / cleaning facilities should be made available on-site to any contractor (or volunteer) who will be working on the delivery of any items within the wish list (most specifically Items 1 to 7 at this stage). Hands should be washed before eating and drinking.

12.3 A health and safety plan should be developed for the delivery of the Cwmystwyth Access and Information Improvement Plan. This would highlight potential health and safety risks for the whole of the project. Specialist advice should be sought in the preparation of this document as elements will involve below ground working.

12.4 Access to below ground workings is possible at Cwmystwyth by experienced mine explorers and cavers, assuming they have been given permission by CMT and are appropriately equipped (which must be appropriate and in full working order). Ensuring the above is being adhered to it is also necessary that the individuals or groups accessing the mines will be members of the British Caving Association (BCA) and therefore covered by the BCA Public Liability Insurance (limit of indemnity is £5 million). CMT are an Access Controlling Body to the mines as defined by the BCA, and thus they are covered by the Zurich public liability insurance and also by the BCAs own £250,000 indemnity to landowners. Any seasonal or other restrictions into specific adits due to bats will be made known to any groups who ask for permission to access the workings.

12.5 The mines are not accessible to general members of the public, with maintained barriers covering the entrances to the known adits, levels and shafts. Warning signs have been erected in the mine entrances and these will be replaced with more permanent signage as part of the Cwmystwyth Mines Access and Information Improvement Project.

13 CONCLUSION

13.1 The Cwmystwyth Mines site is recognised as being one of national importance in terms of archaeological and heritage value, as well as for its ecology and biodiversity, and its geological importance. The site has evidence for 4000 years of mining, from the Bronze Age through to the early 20th century.

13.2 The site area was purchased by the Cambrian Mines Trust from the Crown Estates in 2012 with the aim of improving accessibility to the site and providing more information to visitors on its significance, in terms of archaeology, ecology and geology.

13.3 The area owned by CMT is almost entirely within the defined area of the Scheduled Ancient Monument. The CMT owned area lies almost entirely within the Elenydd Special Area of Conservation, the majority of it lies within the Elenydd Mallaen Special Protection Area, it is also covered by the Elenydd and Mwyngloddfa Cwmystwyth Sites of Special Scientific Interest. These are all statutory designations protecting the archaeology, ecology and geology of the site.

13.4 The present management regime across the site area is quite limited. Graziers rights across the land are held by a number of the local farmers, which is acknowledged in the various ecological designations as something which should be maintained at its present level as this manages vegetation levels. The site area is also monitored by graziers as they access the site to check on livestock. As the directors of CMT know the local graziers, this enables any issues to be reported to them, although only on an *ad-hoc* basis. The site is also watched by Duncan and Karen Browning owners of Nantwalcyn pottery, and friends of the CMT directors. They are aware that the land is used for off-roading by 4x4 vehicles, but can only advise that off-roading is not permitted in terms of the archaeological and environmental designations of the site.

13.5 The site is deteriorating noticeably. This occurs above ground from misuse of the site, such as access by off road vehicles driving across spoil tips disturbing protected habitats under the environmental statutory designations and also archaeological remains protected by Scheduling. Fly tipping occurs at the site, both of domestic rubbish, but also of building materials. Similarly some of the spoil heaps, protected by the various designations, have previously been dug into and removed for hardcore. Graffiti is evident on a number of the standing structures, especially at the western end of the site, Neville Place and Staff House.

13.6 Erosion and damage is also being caused above ground by flash flooding. This is most evident in the mill area of the site where the stream course of Nant y Gwaith has splayed out at the base of the hillside, causing significant erosion to archaeological remains, including the undermining of one of the buildings. This stream course has also eroded fines and slimes dumps on the site, and polluted material is draining straight into the Ystwyth.

13.7 Below ground, the mine workings are noticeably deteriorating. Recording undertaken by Robert Protheroe-Jones since the 1980s has shown significant differences in the stability of some of the stopes, many of which have now partially collapsed. Underground revetment walls are failing and timber artefacts (supports, ladders, launders etc) are rotting.

13.8 The Cwmystwyth site is one of the main sources of pollution in the Ystwyth valley. Pollution from Pugh's and Kingside adits are recognised as the two main sources on the site, with the eroding fines and slimes dumps also a notable cause.

13.9 The preparation of the Management and Protection Plan for the Cwmystwyth Mines site has identified the significance of the site in terms of its statutory designations and the responsibilities these put upon the owners of the site where any works are proposed. The document outlines the various procedures that will need to be followed to consents and permissions to take works forward.

13.10 Through this Plan, the aspirations of the Cambrian Mines Trust have been considered as a series of works which should be undertaken in the future for the positive benefits of the site and its future protection.

13.11 By implementing schemes of visitor management, including the prevention of unauthorised vehicle access the specialised habitats that have established on the spoil heaps should be better protected from disturbance. The spoil heaps are also important elements of the heritage of the site. Management of the Nant Y Gwaith stream course will improve access to the site, and will also prevent further erosion of spoil heaps and archaeological remains in the mill area of the site. This will also reduce pollution into the River Ystwyth.

13.12 The advancement of education about the site is one of the main aims of CMT and the Plan suggested ways in which this could be provided. New interpretation boards are proposed to provide information on the heritage, ecology and geology of the Cwmystwyth, as well as informing visitors about the dangers of such sites. Information leaflets should be produced which could be made available in retail establishments in the area. CMT presently have their own website with information on Cwmystwyth, but this could be enhanced or a new dedicated Cwmystwyth Mines website established, following the design and style of the interpretation boards/information leaflets. Other ways of improving education about the site could be provided by developing exhibition materials or education packs which could be taken to various venues around the area to promote the site to the community, school children and visitors to the area. It is essential that the next and subsequent generations are informed about the significance of the Cwmystwyth Mines site to sustain interest and ensure its protection in the future, both above and below-ground.

13.13 It is proposed that a two phase scheme of work is developed in detail for the site to include The Cwmystwyth Mines Access and Interpretation Phase (Phase 1) as the initial way forward for the site. The project combines the Aspirational Items 1 to 7 (discussed in section 9). The development of longer term aspirations for the site should also be developed as Phase 2 of this project, which should aim to enable the site to have a sustainable future, possibly generating income which can be used in future management and maintenance work. It is suggested that this could include not only the hydro-electric scheme (perhaps developed as a CMT led project), but also further remediation of structures at the site to improve safety and their long term preservation. Many of the buildings on the western side of the site have already been subject to some remediation works undertaken by Crown estate, but there are many others across the site area including a number of very interesting stone built ones (including hoppers used to load trams) on Copa Hill which would be well worth consolidating to prevent further deterioration.

13.14 More details on the project will need to be developed and then discussed in detail with Cadw, Ceredigion County Council and NRW to confirm the extent of any initial surveys that might be needed prior to application for consents/planning being put together. Initial surveys and impact assessments for lichens, bats and archaeology could then be done as a combined task, focussing on each of the areas of impact. Such works may be able to be funded through the development-stage of the HLF Heritage Grant funding source (if this grant source is considered appropriate and application is successful).

13.15 The Cwmystwyth Mines site provides many opportunities for collaborative working with mining specialists, mine explorers/cavers, archaeological, ecological and geological specialists, as well as working with the local community to promote this very important part of the regions cultural and natural heritage. The importance of the site must be made known to future generations, and the interest in it sustained.

13.16 The long term sustainability of the site must also be considered in terms of being able to generate some form of income that can be used for future maintenance, repair and recording. Other than the possibilities discussed above, the site provides research opportunities into the environment (archaeology, ecology, geology, pollution) and future schemes of recording may come through funding of such research.

13.17 The long term future of the Cambrian Mines Trust is also important for the long term future of the site. It may be that the Trust could recruit new members, and ideally including members of the local community and especially the graziers who already have a vested interest in the site. The Trust could work with existing local groups and societies to promote the site and encourage participation in future projects at the site, whether those suggested within this document or future projects and studies. Considerable local interest in the future of the site is evident from the attendance at the Community Event organised during the course of this project. It might be worth considering establishing a local group or society associated directly with or even part of the Cambrian Mines Trust.

14 CASGLIADAU

14.1 Cydnabyddir bod safle Gwaith Mwyn Cwmystwyth o bwysigrwydd cenedlaethol wrth ystyried ei archaeoleg a'i dreftadaeth, ynghyd â'i ecoleg a'i fioamrywiaeth a'i bwysigrwydd daearegol. Mae yna dystiolaeth o fwyngloddio ar y safle ers 4000 mlynedd, o'r Oes Efydd tan yr 20^{fed} ganrif.

14.2 Prynowyd y safle yn 2012 o Ystadau'r Goron gan Ymddiriedolaeth Mwyngloddiau Cambria, gyda'r bwriad o wella mynediad i'r safle a darparu mwy o wybodaeth ar gyfer ymwelwyr ar ei archaeoleg, ei ecoleg a'i daeareg.

14.3 Mae'r rhan fwyaf o'r tir sydd dan berchnogaeth Ymddiriedolaeth Mwyngloddiau Cambria wedi ei ddynodi yn Heneb Rhestredig. Mae'r ardal dan berchnogaeth YMC bron yn gyfan gwbl yn rhan o Ardal Gadwraeth Arbennig Elenydd, mae'r rhan fwyaf ohono yn rhan o Ardal Warchodaeth Arbennig Elenydd – Mallaen, ac mae'n rhan o ddynodiadau Safle o Ddiddordeb Gwyddonol Arbennig Elenydd a Mwyngloddfa Cwmystwyth. Mae'r rhain yn ddynodiadau statudol i warchod archaeoleg, ecoleg a daeareg y safle.

14.4 Mae'r rheolaeth bresennol o'r safle yn eithaf cyfyng. Mae gan nifer o ffermwyr lleol hawliau pori dros y safle, a chydabyddir yr angen i gynnal y lefelau stocio presennol er mwyn rheoli'r llystyfiant gan y dynodiadau amgylcheddol. Mae'r porwyr hefyd yn monitro'r safle wrth iddynt ei dramwyo i ofalu am eu praid. Gan fod cyfarwyddwyr YMC yn gyfarwydd i'r porwyr lleol, mae hyn yn galluogi i unrhyw faterion gael eu hadrodd a'u nodi, er ar sail *ad-hoc* yn unig. Mae perchnogion crochendy Nantwalcyn, Duncan a Karen Browning, hefyd yn gwylio'r safle ac maent yn gyfeillion i gyfarwyddwyr YMC. Maent yn ymwybodol bod cerbydau 4x4 yn defnyddio'r tir, ond yr unig beth y gallant ei wneud yw hysbysu'r gyrwyr nad oes yna ganiatâd iddynt ddefnyddio'r tir ar gyfer y fath weithgareddau o ganlyniad i'r dynodiadau archeolegol ac ecolegol sydd ar y safle.

14.5 Mae yna ddirywiad amlwg yng nghyflwr y safle. Ar yr arwyneb mae hyn yn digwydd o ganlyniad i'r camddefnydd o'r safle, er enghraifft gan gerbydau oddi-ar y ffordd yn gyrru dros y tomenni gwastraff gan darfu ar y cynefinoedd a warchodir gan ddynodiadau amgylcheddol statudol ac olion archeolegol Rhestredig. Mae pobl yn tipio sbwriel brig ar y safle, o wastraff cartref i ddeunyddiau adeiladu. Mae rhai o'r tomenni gwastraff, a warchodir gan amryw ddynodiadau, wedi eu cloddio ar gyfer craidd caled yn y gorffennol. Gwelir graffiti ar nifer o'r adeiladau, yn enwedig ar ochr orllewinol y safle, ar Neville Place a'r Tŷ Staff.

14.6 Achosir erydiad a difrod ar yr arwyneb hefyd gan lifogydd brig. Mae hyn fwyaf amlwg yn ardal y felin lle mae Nant y Gwaith yn ymledu ar waelod y llethr, gan erydu'r olion archeolegol yn sylweddol, gan gynnwys tanseilio rhai o'r adeiladau. Mae'r nant hefyd wedi erydu'r tomenni manion a slwtsh, ac mae deunydd llygredig yn llifo'n uniongyrchol i'r Ystwyth.

14.7 Dan y ddaear, mae yna ddirywiad amlwg yng nghyflwr y gwaith. Mae'r gwaith cofnodi a wnaed gan Robert Protheroe-Jones ers y 1980au yn dangos gwahaniaethau sylweddol yn sefydlogrwydd rhai o'r stobau; mae nifer o'r rhain bellach wedi cwmpo yn rhannol. Mae welydd cynnal yn y gloddfa yn methu ac mae arteffactau pren (cynhalbyst, ysgolion, landerau ayyb) yn pydru.

14.8 Mae safle Cwmystwyth yn un o'r prif ffynonellau o lygredd yng nghwm yr Ystwyth. Cydnabyddir mae llygredd o geuffyrdd Pugh a Kingside yw'r ddau brif ffynhonnell ar y safle, gyda'r erydiad o'r tomenni manion a slwtsh yn ffynhonnell bwysig hefyd.

14.9 Mae paratoi'r Cynllun Rheoli a Gwarchod ar gyfer Gwaith Mwyn Cwmystwyth wedi adnabod pwysigrwydd y safle o safbwynt y dynodiadau

statudol sydd arno a'r cyfrifoldebau y mae'r rhain yn gosod ar berchnogion y safle wrth gynnig ymgymryd ag unrhyw waith. Mae'r ddogfen yn amlinelli'r gwahanol weithdrefnau sydd yn rhaid eu dilyn er mwyn derbyn hawl a chaniatâd weithio ar y safle.

14.10 Trwy'r cynllun hwn, ystyrir dymuniadau Ymddiriedolaeth Mwyngloddiau Cambria yn gyfres o waith ar gyfer y dyfodol er budd y safle a'i warchodaeth yn y cyfnod nesaf.

14.11 Gan weithredu ar gynlluniau i reoli ymwelwyr, gan gynnwys rhwystro mynediad i'r cynefinoedd arbenigol ar y tomenni gwastraff gan gerbydau heb ganiatâd, dylai'r cynefinoedd hyn cael eu diogelu yn well rhag difrod. Mae'r tomenni gwastraff hefyd yn elfennau pwysig o dreftadaeth y safle. Bydd rheoli cwrs Nant y Gwaith yn gwella mynediad i'r safle, ac yn atal erydiad pellach o'r tomenni gwastraff a'r olion archeolegol yn ardal y felin. Bydd hyn hefyd yn lleihau'r llygredd yn yr afon Ystwyth.

14.12 Mae dyrchafu addysg ar y safle yn un o brif amcanion YMC ac mae'r cynllun yn cynnig dulliau i ddarparu ar gyfer hyn. Cynigir byrddau dehongli newydd er mwyn darparu gwybodaeth ar dreftadaeth, ecoleg a daeareg Gwaith Mwyn Cwmystwyth, ynghyd â hysbysu ymwelwyr o beryglon safleoedd fel hwn. Dylid gynhyrchu taflenni gwybodaeth, a gallent fod ar gael mewn safleoedd manwerthu yn yr ardal. Mae gan YMC wefan ei hunan ar hyn o bryd, sydd yn cynnwys gwybodaeth ar Gwmystwyth, ond gellid ei wella neu gellid greu gwefan benodol ar gyfer Gwaith Mwyn Cwmystwyth, gan ddilyn dyluniad ac arddull y byrddau dehongli/taflenni gwybodaeth. Gallai dulliau eraill o wella'r cyfleoedd addysgol ar y safle gynnwys datblygu deunyddiau i'w harddangos neu becynnau addysgol i'w defnyddio mewn nifer o leoliadau yn yr ardal er mwyn hyrwyddo'r safle i'r gymuned, plant ysgol ac ymwelwyr i'r ardal. Mae'n hollbwysig bod y genhedlaeth nesaf a'r rhai a ddaw ar ei ôl yn ymwybodol o bwysigrwydd Gwaith Mwyn Cwmystwyth, er mwyn cynnal diddordeb yn y safle a sicrhau gwarchodaeth ar ei gyfer yn y dyfodol, boed ar yr arwyneb neu dan y ddaear.

14.13 Cynigir y dylid ddatblygu cynllun gwaith dwy ran manwl ar gyfer y safle, gan gynnwys Cam Mynediad a Dehongli Gwaith Mwyn Cwmystwyth (Cam 1) yn ffordd ymlaen cychwynnol ar ei gyfer. Mae'r prosiect yn cyfuno Eitemau Dymunol 1 I 7 (a drafodir yn adran 9). Dylid ddatblygu dymuniadau mwy hirdymor ar gyfer y safle yn Gam 2 o'r prosiect hwn, dylai hwn ystyried darparu dyfodol cynaliadwy ar ei gyfer, o bosib gan gynnig incwm i'w ddefnyddio ar gyfer gwaith rheoli a cynnal a chadw'r safle yn y dyfodol. Cynigir y gallai hyn gynnwys y cynllun hydro-drydan (efallai wedi ei ddatblygu yn brosiect dan arweiniad YMC), ond hefyd gwaith i sefydlogi adeiledd y safle, ei wneud yn fwy diogel a sicrhau ei hiroes. Ymgwymerodd Ystadau'r Goron â gwaith sefydlogi ar nifer o'r adeiladau ar ochr orllewinol y safle, ond mae yna nifer eraill ar y safle, gan gynnwys nifer o adeileddau carreg (fel yr hoprod i lwytho troliau) ar Copa Hill sydd yn werth eu cyfnerthu er mwyn atal dirywiad pellach.

14.14 Bydd angen datblygu rhagor o fanylion ar y prosiect hwn a'u trafod yn fanwl gyda Cadw, Cyngor Sir Ceredigion a CNT er mwyn cadarnhau hyd a lled unrhyw archwiliadau cychwynnol a fydd yn angenrheidiol cyn ffurfio ceisiadau am ganiatadau/cynllunio. Gellid wedyn ffurfio tasg gyfunol o gynnal archwiliadau cychwynnol ar gyfer cennau, ystlumod ac archaeoleg, gan ganolbwyntio ar yr effeithiau penodol. Gellid gyrchu arian ar gyfer gwaith o'r fath drwy cam datblygu Grant Treftadaeth CTL (os ystyrir bod y ffynhonnell hyn yn addas ac os bydd y cais yn llwyddiannus).

14.15 Mae safle Gwaith Mwyn Cwmystwyth yn darparu nifer o gyfleoedd ar gyfer gweithio ar y cyd gydag arbenigwyr ar fwyngloddiau, anturwyr mwyngloddiau/ogofwyr, arbenigwyr archeolegol, ecolegol a daearegol ynghyd â gweithio gyda'r gymuned leol i hyrwyddo'r darn pwysig hwn o dreftadaeth

ddiwyllynnol a naturiol y rhanbarth. Rhaid hysbysu'r cenedlaethau a ddaw o bwysigrwydd y safle hwn, a chynnal diddordeb ynddo.

14.16 Rhaid hefyd ystyried cynaladwyedd hirdymor y safle o safbwynt creu rhyw fath o incwm i'w ddefnyddio ar gyfer cynnal a chadw, atgyweiriadau a chofnodi. Ynghyd â'r posibiliadau a drafodir uchod, mae'r safle yn cynnig cyfleoedd ymchwil ar yr amgylchedd (archaeoleg, ecoleg, daeareg, llygredd) a gallai cynlluniau cofnodi yn y dyfodol ddod o ariannu ymchwil o'r fath.

14.17 Mae hiroes Ymddiriedolaeth Mwyngloddiau Cambria hefyd yn bwysig i ddyfodol hirdymor y safle. Gallai'r Ymddiriedolaeth recriwtio aelodau newydd, yn ddelfrydol gan gynnwys aelodau o'r gymuned leol ac yn arbennig y porwyr sydd â diddordeb materol yn y safle. Gallai'r Ymddiriedolaeth weithio gyda grwpiau a chymdeithasau lleol sydd eisoes yn bodoli er mwyn hyrwyddo'r safle ac hybu cyfranogiad mewn prosiectau ar y safle yn y dyfodol, naill-ai y rhai a amlinellir yn y ddogfen hon, neu astudiaethau a phrosiectau y dyfodol. Dangosodd y maint y gynulleidfa a ddaeth i'r Digwyddiad Cymunedol a drefnwyd yn ystod y prosiect hwn bod yna ddiddordeb lleol sylweddol yn nyfodol y safle. Efallai y dylid ystyried sefydlu grŵp neu gymdeithas leol sydd yn gysylltiedig â, neu yn rhan o Ymddiriedolaeth Mwyngloddiau Cambria.

15 RELEVANT CONTACTS

15.1 All of the following contacts have been consulted with during the preparation of this Management and Protection Plan and are the relevant contacts as more detailed plans are developed for the Cwmystwyth Mines site.

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APPENDIX 1: CAMBRIAN MINES TRUST –THE WAY AHEAD DOCUMENT

The Original Wish List

In 2012 Roy Fellows, CMT Director, produced a document entitled 'Cwmystwyth: A Way Ahead' which included a wish list of aspirational future works for the site, listed in priority order. The document acknowledged that no works could be undertaken until all relevant permissions and consents regarding all of the various designations of the site were obtained and complied with.

This wish list has been reviewed and a new series of aspirations has been developed, laid out in the main body of the document (Section 9). This original wish list is reproduced in the following table for reference:

Wish List item	Description
1	A gateway signage system one both ends of the site, "Cambrian Mines Trust. Welcome to Cwmystwyth Mines" in Welsh and English. Subject to relevant permissions.
2	The present interpretation board opposite Nantwalcyn (which faces the wrong direction) moving to the mill area inside one of the fenced enclosures. This would be replaced by a board describing South Cwmystwyth plus some social history. Subject to relevant permissions.
3	A clean up of the land adjacent to the mill area which would entail the location and reopening of the original drainage culvert north of the road, the rebuilding of the original drystone walling to retain the fines dump, (on the right looking up from the road) and reestablishment of the original stream bed, plus a cleaning up of the ground to the left of the stream as a convenient path for visitors. This could form part of a wider initiative to reduce pollution of the river Ystwyth due to wash off.
4	Additional interpretation board with a plan and explanation of the site outlining a guide for visitors with regards to accessing the site, no overnight parking or removal of materials, no off roading etc. Subject to relevant permissions.
5	Provision of extra parking in clearly defined places at various points along the road. The reservation of the existing informal parking opposite the mill as a farm turning circle. Subject to relevant permissions.
6	The reopening of the original track to the mine yard and the fitting of proper gates to secure the site. These gates could also bear appropriate signage. Subject to relevant permissions.
7	Further to the vehicle access provided by (6) the removal of the scrap red vehicle from Kingside Shaft. The shaft could then be partially restored and an interpretation board provided. Subject to relevant permissions
8	Restoration of the portal of Level Fawr and the spiling through and reinstatement of the fall just inside, a replica of the original plaque could be made and fitted. The spiling through and reinstatement of the direct underground road to the skipway so as to enable men and materials easy access for the purpose of maintaining this underground features. Subject to relevant permissions
9	The mucking out of Taylors Level to improve ventilation and the rebuilding of the packwall entrance cutting. The last vestiges of the old grill could be removed and a proper gate fitted just inside. Subject to relevant permissions
10	The Trust is aware of the pollution issues at the mines. Currently water is draining from Pughs Level and the run in Kingside Level, the later is peculating through spoil and draining over an area south of the road. The Trust is committed to working with NRW (formally Environment Agency

	Wales) to mitigate these issues and to this end suggests a reopening of Kingside Level so as to focus the point of emission and lower the water levels underground.
11	The extending and flattening/surfacing of the informal parking area at Nant yr Onnen and the installation of an interpretation board relative to the importance of Copa Hill as an archaeological site (the later suggested by Simon Timberlake). This would be at the northern end of the area and protected from vehicle contact by carefully placed boulders.
12	The rebuilding of Nevill Place to as original condition as possible. This is a terrace of two residential properties. These properties could then be sold or let with constraints on how they are to be kept and maintained in line with their ancient monument status. The sale of these properties should return a surplus for the Trust which could then be appropriated to some of the other works. Staff House also presents an opportunity, however being right on the road any new building would need to be further back from the existing building line. The remaining frontage could be made into a terrace perhaps, with a new building line further to the rear. The terrace frontage could retain original features and if filled with concrete would form a stable structure. Subject to relevant permissions
13	Hydro Scheme. I have been approached by a representative of a Hydro company who is interested in a scheme at Cwmystwyth which is radically different to the previous proposal which was turned down for planning. There would be no access road to cross Trust land, materials being moved in by helicopter to the land at the top. I have indicated that the Trust may be sympathetic subject to the generating station being housed in one of the original mine buildings which would have to be rebuilt to original specification. The ideal building would be the eastern end of the old mine offices with the pipeline coming down the hillside on the footprint of the original mine pipeline. Subject to relevant permissions and the Trust taking into account any concerns of the local community.
14	The reopening of Level y Ffordd (run in at Cwmystwyth fault) as an example of a typical mine entrance. It would be restored as near as possible with authentic timber lagging, gated, and lit internally for the benefit of visitors with LED lights. The power source could be from solar panels or provided by the Hydro Company if the scheme goes ahead. Subject to relevant permissions
15	The establishment of a 'Mid Wales Mining Adventure Trail' or similar involving a Park and Ride scheme between Llywernog Mining Museum and Theme Park, Devils bridge, and Cwmystwyth Mines. This would involve a third party and would not be run directly by the Trust.

APPENDIX 2: CITATION FOR ELENYDD SSSI FROM COUNTRYSIDE COUNCIL FOR WALES WEBSITE

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

POWYS/CEREDIGION ELENYDD

Dates of Notification: 1954, 1959, 1971, 1978, 1979, 1986 and 1992

National Grid Reference: SN 860660 (approx centre of site)

O.S. Maps: 1:50,000 Sheet number: 147

1:25,000 Sheet number: SN 76, 77, 85, 86, 87, 95, 96 & 97

Site Area: 22,770 ha

Description:

Biological

This is one of the most important areas of hill land in Wales for nature conservation. It is of outstanding interest for its range of breeding birds of upland and woodland. Much of the hill vegetation is also of special interest.

The area is built of rocks of Silurian and Ordovician age, and the landform is typical of the 'slate uplands' of south-central Wales, with plateau separated by steep-sided valleys. The moorland plateau is largely covered by blanket bog vegetation. Purple moor-grass *Molinia caerulea* is the dominant plant of these hills, occurring in valley mires, on hill slopes and on the plateau tops.

This dominance is possibly due to management effects of grazing and burning. On the better developed summit blanket bog there is less purple moor-grass and the vegetation may be dominated by hare's-tail cottongrass *Eriophorum vaginatum* or deergrass *Trichophorum cespitosum*, and locally heather *Calluna vulgaris* can be well represented or dominant. Where the water table is high, as on some watershed mires or in shallow depressions on hill slopes, these communities can be rich in bog-moss species *Sphagnum* spp., and support a range of higher plants including cranberry *Vaccinium oxycoccus*, cross-leaved heath *Erica tetralix*, common cottongrass *Eriophorum angustifolium* and bog asphodel *Narthecium ossifragum*. Bog-rosemary *Andromeda polifolia*, here near the southern end of its range, occurs in several locations. Three particularly interesting localities within the site are the watershed mires at the headwaters of the Rivers Elan and Claerwen, the well developed pool and hummock mire at Cors Lwyd and the eroded, but still actively growing, mire complex at Cors Gôch. These areas support rare plant species.

The acid grasslands on the site tend to have a high representation of purple moor-grass, heath rush *Juncus squarrosus* or mat-grass *Nardus stricta*. Some freely drained areas support bent/fescue *Agrostis/Festuca* grassland and others have dwarf-shrub heath dominated by heather or bilberry *Vaccinium myrtillus*. Hillside and streamside flushes are botanically diverse and some support uncommon species, including two localities for bog orchid *Hammarbya paludosa*.

Crags, scree slopes and stream gorges provide contrasting habitat types that support species that would otherwise be suppressed by grazing, and in areas of high humidity support a spectrum of mosses characteristic of a type confined to the Western Atlantic seaboard. Some of the sessile oak woodlands and mixed woodlands included within the site for ornithological reasons are also of interest for the occurrence of unusual lichens. Mountain lakes within the site support a number of rare species, including water lobelia *Lobelia dortmanna*, and water-courses, together with their riparian vegetation, are of botanical interest. An

additional feature of scientific interest is the occurrence of plant species tolerant of heavy metals, which grow on old mine workings.

Elenydd is one of the two most important areas in Wales for upland bird species, the other site being Berwyn. It forms the feeding range for a large part of the British population of red kite, which in winter is dependent on the supplies of sheep carrion to be found on the sheepwalks. The availability of carrion also helps support what is probably the greatest density of ravens in Europe, and also large numbers of buzzard. Other raptors feeding or breeding in the upland areas include peregrine, merlin, hen harrier and short-eared owl. Red grouse breed in heather areas, ring ouzel frequent craggy areas, and the hill slopes support populations of wheatear, whinchat and stonechat. Lakes, reservoirs, rivers and streams provide a habitat for goosander, teal, dipper and common sandpiper. The summit plateau mire communities support important wader populations, with possibly the highest Welsh breeding populations of dunlin and golden plover. Valley mires have good populations of snipe, curlew and lapwing. The woodlands of Elenydd support an outstanding assemblage of breeding bird species. The broadleaved woodland has high populations of breeding summer migrants such as pied flycatcher, redstart and warblers, in addition to the resident species that include woodpeckers, tits, nuthatch and treecreeper. The coniferous woodland contributes additional species, in particular long-eared owl, sparrowhawk, siskin and crossbill. Raptors hunting the open hill breed in both semi-natural and plantation woodland.

Physical

Mass Movement (Cwm Ddu): This locality was produced by a very large rotational slump in the Llandovery Series (Silurian). It is remarkable for its size (500 metres wide, 1 km long and 250 metres in vertical range), its spectacularly cliffed backface and a classic debris tongue stretching out from the slump amphitheatre (cwm) across the low-angle footslope and the narrow floodplain of the Ystwyth. This complete set of features is not as well displayed anywhere else in Great Britain.

Pleistocene/Quaternary: Cwm Ddu and Cwm Tinwen are important features interpreted as nivation cirques. They are exceptional in occurring at much lower altitudes than predicted for true glacial cirques in the area and are believed to have originated through nivation processes during the Devensian. In Cwm Tinwen a large ridge of debris is thought to have formed from the accumulation of frost-shattered material below a large snowpatch. In contrast, the more open, cirque-like basin of Cwm Ddu is floored by terraced superficial deposits. While it has been proposed that this debris accumulated as solifluction deposits beneath an inert mass of neve, recent examination suggests that this explanation is not entirely satisfactory; possibly glacial processes may have been responsible for some of the deposits. The interpretation of the landforms and sediments in Cwm Ddu and Cwm Tinwen, with their bearing on whether these sites acted as major ice sources during the Devensian, is crucial to the understanding of Late Pleistocene events and processes in the area. The contrasting and exceptional features exhibited by the two sites, and their still controversial origin, makes them important localities for Pleistocene studies.

The bog at the head of the River Elan (Cors Lwyd) is an important palynological site recording detailed evidence for vegetation and environmental changes in central Wales during the Devensian Late-glacial and Holocene. It is the only site so far studied in central Wales with a pollen record extending back to the Devensian Late-glacial. The extensive and detailed nature of the pollen stratigraphic record, together with the location of the site, make the bog an essential site for studies of regional variations in vegetation history in Wales.

Fluvial Geomorphology: The upper Elan is a particularly good example of an upland meandering stream in a low relief floodplain. It shows several contrasting planform types in a relatively confined area. The dominant channel change characteristics are lateral growth, loop expansion and relative stabilisation against a confining northern valley wall and southern terraces. Confined cut banks in the section are being actively eroded and provide the main sources of sediment. Sedimentation occurs locally as point bars and medial bars. The upper Elan is representative of an upland valley meandering channel. It is particularly important for the detailed studies that have been carried out and the contrast it provides with lowland meandering sections altered by human interference.

Mineralogy (Cwm Ystwyth Mine): The extensive workings of this long-established mine display a uniquely interesting association between structure and mineralisation. Two early lodes show lateral zoning and are cut and downthrown by a third, later lode which shows vertical zoning. Minerals found include galena, sphalerite, pyrite, chalcopyrite, quartz and calcite. The importance of this site lies in its structure and in the chronology of its mineralisation, rather than in the occurrence of rare mineral species.

Llandovery (Caban Coch Quarry): This locality shows the type section of the Caban Coch Conglomerate, a distinctive deposit formed as a proximal submarine fan in early Silurian times. The conglomeratic unit is around 100 metres in thickness, with shales in its middle part, and it shows sole marks proving derivation from the south-east. This is an important site for studies of the Llandovery basin and sedimentary environments.

Remarks:

The site includes Nant Irfon National Nature Reserve (141.5 ha), declared in 1962, 1972 and 1983 and owned and managed by the Countryside Council for Wales. A further 12 ha at Bwlchgwaller in the Ystwyth Forest are managed by the Council as a Forest Nature Reserve by agreement with the Forestry Commission. The site also includes the Llanerch-yrfa nature reserve (14 ha) managed by the Brecknock Wildlife Trust on a lease from the owners.

Edited version taken from CCW website.

APPENDIX 3: CITATION FOR MWYNGLODDFA CWMYSTWYTH SSSI FROM COUNTRYSIDE COUNCIL FOR WALES WEBSITE

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MWYNGLODDFA CWMYSTWYTH

Date of Notification: 2000

National Grid Reference: SN 803746

O.S. Maps: 1:50,000 Sheet number: 135

1:10,000 Sheet number: SN 87 SW

Site Area: 14.1 ha

Description:

Mwyngloddfa Cwmystwyth is of special interest for its mineralogy and for the plant communities that have developed on the metal-rich spoil tips, associated rock outcrops and ruined buildings. These habitats support a great variety of lichens, including a number of rare species which are typically only found associated with heavy-metal-rich sites. The underground mine workings are important for hibernating bats. The site is situated on the north bank of the Afon Ystwyth 1.5 km upstream of the village of Cwmystwyth, at an altitude of 300 m, and incorporates gently sloping ground on either side of the mountain road to Rhayader. The former mine workings extend into steep crags to the north and into the slopes to the east and to the south of the Afon Ystwyth; these areas lie within the adjacent Elenydd Site of Special Scientific Interest. Cwmystwyth contains the most extensive area of metal mine workings in Ceredigion. Mining began in Bronze Age times but production of metals peaked in the early years of the 20th Century. The workings were officially abandoned in 1923, at which time reported mineral returns amounted to approximately 51,000 tons of lead (galena) and zinc (sphalerite) ore and over 33,000 ounces of silver, although this is almost certainly a gross underestimate of total ore extraction.

Geological

The geological interest at this site lies both in the spoil tips and in the underground workings, and is contiguous with an area of national mineralogical importance located at Graig Fawr and Copper Hill, in the adjacent Elenydd SSSI. Both the early (A1) and late (A2) phases of mineralization are well displayed at the site. A1 mineralization is represented by various quartz-sphalerite-galena-chalcopryrite-dolomite breccias, whilst A2 mineralization, which provided most of the ores mined, is represented by a sphalerite-galena-quartz-calcite-pyrite assemblage. Additional geological interest is provided by the intersection of the south-dipping Kingside and Comet lodes by the younger north-dipping Mitchell's Lode and also by an apparent lateral and vertical mineral zonation exhibited by the Comet and Mitchell's lodes, respectively.

Biological

Many of the spoil tips are largely unvegetated but, in places, there is a sparse sward of common bent *Agrostis capillaris* and sheep's-fescue *Festuca ovina*. The lichen flora of these spoil tips is well developed. It includes species such as *Acarospora sinopica*, *Baeomyces placophyllus*, *Sarcosagium campestre*, *Vezdaea leprosa*, the scarce *Coppinsia minutissima*, *Leptogium intermedium*, *Polyblastia gelatinosa* and *Stereocaulon condensatum* and the rare *Gyalidea subscutellaris*, *Vezdaea cobria* and *V. rheocarpa*, which are all characteristic of soils or rocks with a high metal content. The rare metal-tolerant moss *Ditrichum*

plumbicola occurs in one of the damper areas. The lichen Placynthiella hyporhoda occurs here at its only known British location. Further characteristic lichen species can be found on the walls of the ruined mine buildings, including Psilolechia leprosa and the scarce Massalongia carnososa.

Additional botanical interest is provided by the rocky stream banks within the site, which support a small population of the scarce forked spleenwort Asplenium septentrionale.

The complex system of underground mine workings at Cwmystwyth is the best known location in Ceredigion for hibernating bats. Long-term monitoring of these workings has shown that Daubenton's Myotis daubentonii, Natterer's M. nattereri, Brown long-eared Plecotus auritus and Whiskered/Brandts M. mystacinus/M. brandtii bats are regularly present during the winter months.

Edited version taken from CCW website.

CWMYSTWYTH MINES, CEREDIGION: MANAGEMENT AND PROTECTION PLAN

RHIF YR ADRODDIAD / REPORT NO. 2013/77
RHIF Y DIGWYLLIAD / EVENT RECORD NO. 105883

Ebrill 2014
April 2014

Paratowyd yr adroddiad hwn gan / This report has been prepared by

James Meek

Swydd / Position: Head of DAT Archaeological Services

Llofnod / Signature  Dyddiad / Date 28/05/2014

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by
KENNETH MURPHY

ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf.
on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: TRUST DIRECTOR

Llofnod / Signature  Dyddiad / Date 28/05/2014

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau
sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

As part of our desire to provide a quality service we would welcome any
comments you may have on the content or presentation of this report

