2METAL MINES REMEDIATION PROJECT PART 3: WEMYSS ARCHAEOLOGICAL ASSESSMENT





Prepared by DAT Archaeological Services For Natural Resources Wales





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METAL MINE REMEDIATION PROJECT PART 3: WEMYSS ARCHAEOLOGICAL ASSESSMENT

Gan / By

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METAL MINE REMEDIATION PROJECT PART 3:

WEMYSS

ARCHAEOLOGICAL ASSESSMENT

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METAL MINE REMEDIATION PROJECT PART 3:

WEMYSS

ARCHAEOLOGICAL ASSESSMENT

SUMMARY

DAT Archaeological Services were commissioned by Natural Resources Wales to provide an archaeological assessment to inform an option appraisal process for environmental remediation works at three former metal mines in Ceredigion; Abbey Consols (SN 74304 66123); Esgair Mwyn (SN 75469 69293); and Wemyss (SN 71579 74089). Natural Resources Wales defined study areas for these three sites: Abbey Consols covering an area of c.3.3ha; Esgair Mwyn covering an area of c.16.2ha; and Wemyss an area of c.11.9ha.

The object of this assessment was to collate existing information and identify the most significant elements of the mine sites and provide at least one plan of each mine identifying zones of archaeological sensitivity or any specific features of high significance. In addition, this assessment was intended to identify any known archaeological remains and their significance, as well as identify the potential for hitherto unknown archaeological deposits or structures to be present within the respective mine areas, highlighting any features or areas of high sensitivity.

These assessments will be provided for use in the development of the scope of future environmental remediation works required at the mines.

Wemyss is located at the head of the Cwmnewydion valley, a tributary of the River Magwr, which joins the River Ystwyth at Abermagwr and is a significant source of metal pollution. This is causing a chemical and ecological impact on downstream watercourses. A discussion of potential mitigation measures in relation to all three metal mines is included in Appendix 1.

1. INTRODUCTION

1.1 Project Proposals and Commission

- 1.1.1 DAT Archaeological Services were commissioned by Natural Resources Wales (NRW) to provide an archaeological assessment to inform an option appraisal process for environmental remediation works at three former metal mines in Ceredigion; Abbey Consols (SN 74304 66123); Esgair Mwyn (SN 75469 69293); and Wemyss (SN 71579 74089).
- 1.1.2 Natural Resources Wales defined study areas for these three sites: Abbey Consols covering an area of *c*.3.3ha; Esgair Mwyn covering an area of *c*.16.2ha; and Wemyss an area of *c*.11.9ha.
- 1.1.3 This report forms Part 3 of the overall study and specifically considers the Wemyss mine. A discussion of potential mitigation measures in relation to all three metal mines is included in Appendix 1.
- 1.1.4 A written scheme of investigation was prepared for the Metal Mine Remediation Project, covering all three mines. The scope was agreed with NRW prior to the commencement of the reports. The object of the assessments as outlined in the Written Scheme of Investigation (Appendix 2) is to:

...."collate existing information and identify the most significant elements of the mine sites and provide at least one plan of each mine identifying zones of archaeological sensitivity or any specific features of high significance. The assessments will be provided for use in the development of the scope of future environmental remediation works required at the mines."

1.1.5 In addition, these assessments are intended to "identify any known archaeological remains and their significance, as well as identify the potential for hitherto unknown archaeological deposits [or structures] to be present within the respective mine areas, highlighting any features or areas of high sensitivity".

1.2 Scope of the project

- 1.2.1 This assessment is presented as a fulfilment of the Written Scheme of Investigation (Appendix 2) as approved by Natural Resources Wales.
- 1.2.2 This assessment is primarily a desk-based study of the Wemyss mine study area as defined by NRW (Figure 2). The aim of this assessment is to establish how the mine developed over time and where structures were located. The results of this assessment including an illustrative plan of archaeological constraint are intended to identify the extent and character of the archaeological resource.
- 1.2.4 In addition to the desk-based study, this assessment included consultation with members of the Welsh Mines Preservation Trust (namely, Graham Levins, Robert Ireland, Peter Claughton and David Sables), and Robert Protheroe-Jones, Curator of Heavy Industries at Amgueddfa Cymru National Museum of Wales.
- 1.2.5 The mine site was visited to assess and verify the presence or absence of archaeological remains, and to identify any new features within the bounds of each study area. These site visits were undertaken with Tom Williams of Natural Resources Wales and members of the Welsh Mines Preservation Trust.

- 1.2.6 The assessment should be seen only as the first stage of the archaeological process and does not preclude the possibility that further archaeological mitigation may be required prior to, or during, any programme of remediation works.
- 1.2.7 The report complies with the Standard and Guidance for an Archaeological Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA), 2014) and abides by their Codes of Conduct (CIfA 2014).

1.3 Abbreviations used in this report

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

1.4 Illustrations

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

1.5 Timeline

1.5.1 The following timeline is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text (Table 1).

Period	Approximate date	
Palaeolithic –	<i>c</i> .450,000 – 10,000 BC	_
Mesolithic –	<i>c</i> . 10,000 – 4400 BC	Pre
Neolithic –	<i>c</i> .4400 – 2300 BC	hist
Bronze Age –	<i>c</i> .2300 – 700 BC	orio
Iron Age –	<i>c</i> .700 BC – AD 43	D
Roman (Romano-British) Period –	AD 43 - <i>c.</i> AD 410	
Post-Roman / Early Medieval Period -	<i>c</i> . AD 410 – AD 1086	
Medieval Period –	1086 - 1536	Hist
Post-Medieval Period ¹ –	1536 - 1750	öri
Industrial Period –	1750 - 1899	n
Modern –	20th century onwards	

Table 1: Archaeological and Historical Timeline for Wales

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

2. LOCATION

2.1 Site locations

- 2.1.1 The map below shows the locations of all three mine sites. Wemyss mine is located in an extensive upland moorland area of Ceredigion between 190m and 260m above sea level.
- 2.1.2 The remains of Wemyss mine are situated some 2.5km northwest of the village of Pont-rhyd-y-groes in the county of Ceredigion. The minor road that runs from Pont-rhyd-y-groes to Abermagwr dissects the site; with the ruined mine buildings to the north of the road and to the south of the road the mine's spoil tips tumbling down to the stream below.
- 2.1.3 Approximately 500m to the northeast is the site of Frongoch metal mine (PRN 9151) with which the history and development of Wemyss mine is inextricably linked.



Figure 1: Location map of Abbey Consols, Esgair Mwyn and Wemyss, metal mines on the 1:250,000 Ordnance Survey map. The study areas are shown shaded in red.

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2.2 The study area

2.2.1 The study areas for each mine were defined and supplied by Natural Resources Wales. The study area for Wemyss mine covers an area of 11.9ha and is shown in Figure 2.

3. METHODOLOGY

3.1 Archaeological Assessment

- 3.1.1 This Archaeological Desk Based Assessment has been prepared using the following methodology which has been discussed and agreed with the archaeological advisors to the planning authority and with NRW. A written scheme of investigation detailing this methodology was prepared and submitted for approval to the archaeological advisors to the planning authority (Appendix 2).
- 3.1.2 The archaeological assessment has been prepared using the following sources of information:
 - Dyfed Archaeological Trust Historic Environment Record data and other relevant information (including a review of online information held on the RCAHMW Coflein site) minimum search area was that as defined within the tender documentation;
 - Identification of any Scheduled Ancient Monuments, Listed Buildings, Conservation Areas or Historic Landscape Areas within or in the vicinity of the site area from information held by Dyfed Archaeological Trust, CADW and NRW (formerly CCW) – 2km search area;
 - Readily available bibliographic information, cartographic material and photographs (including aerial photographs) held at the Trust;
 - A review of historic maps to include a map regression exercise;
 - Relevant web-based information;
 - Site visit and walkover survey;
 - Consultation with the Welsh Mines Preservation Trust regarding each site and identification of any specific features of high significance;
 - Consultation with Robert Protheroe-Jones, curator of Heavy Industries at Amgueddfa Cymru National Museum of Wales, and a Trustee of Dyfed Archaeological Trust;
 - A consideration of underground features of the mines; and
 - Assessment of the archaeological potential of the area.
- 3.1.3 The report complies with the Standard and Guidance for Archaeological Desk-Based Assessments (CIFA 2014).

3.2 Site Walkover Survey

- 3.2.1 A site visit and walkover of the Wemyss site was undertaken on 3rd February 2016, by Menna Bell & Fran Murphy (DAT Archaeological Services), Tom Williams (NRW) and Robert Ireland (Welsh Mines Preservation Trust).
- 3.2.2 The site visit comprised a walkover of the study areas and its surrounding environs. Photographs were taken and field observations recorded in note form.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Historic Landscape

- 4.1.1 The study area defined for Wemyss mine spans two Historic Landscape Character (HLC) areas as recorded on the Register of Landscapes of Outstanding Historic Interest in Wales (Cadw 1998). These both lie within the Upland Ceredigion landscape area.
- 4.1.2 The northern part of the study area falls within the Llety Synod & Frongoch HLC. This is summarised as :

A large and complex area that consists of an undulating plateau ranging in height from 220m to 340m, with wet hollows and occasional craggy outcrops and peaks. Almost all the land comprises improved grazing, though peaty and rushy patches can be found in valley bottoms and rougher grazing on some steep slopes. Apart from conifer plantations and small stands of broadleaf woodland, it is virtually a treeless landscape. Settlement is of dispersed farmsteads, with a small cluster of buildings at Trisant which include a listed mid-19th century chapel.

The field pattern is one of large, irregular enclosures. These were once divided by earth banks, which are now redundant or augmented with wire fences. Closer to farms enclosures are smaller, but still irregular, with occasional hedges on the earth banks. These hedges are not in a good condition and are rarely stock-proof - all are supplemented with wire. The physical remains of mining are much in evidence and form an important element of the historic landscape. Frongoch mine buildings are of national importance, though in a poor state of preservation. Associated with the mine are further landscape components such as spoil heaps, reservoirs and leats. The reservoirs in particular are dramatic elements of the landscape.

The recorded archaeology of this area is dominated by the metal mining industry, and by deserted farmsteads and cottages. A Bronze Age round barrow and a hearth or burnt mound - a possible settlement site - of similar date provide time-depth to the landscape. This is emphasised by the three early Christian monuments at Llantrisant, and by the place-name Llety Synod, which may indicate a Medieval hospice.

It is the mining component of this Historic Landscape Area that defines it from its neighbours. Only to the southwest are mining features present to such a degree. To the north is a more settled area, to the west higher formerly unenclosed land, to the south and east squatter settlements, and to the southeast lower-lying enclosed land.

4.1.3 The southern part of the study area falls within the Cwmnewidion HLC. This is summarised as:

A narrow, steep-sided valley. The floor of the valley rises from 100m at the western end to over 200m at the east. The valley sides rise to over 300m. The landscape area includes the valley bottom and the lower slopes of the valley sides, but not the higher slopes. A minor road, but nevertheless an important local route-way, runs along the northern side of the valley floor linking the fertile lands of the lower Ystwyth valley with Pont-rhyd-y-groes and Cwmystwyth. The settlement pattern is of dispersed farmsteads located at the foot of the steep valley sides with enclosed land spread across the valley floor. Enclosures are small and irregular and are formed by low earth banks. Banks were formerly topped with hedges, but apart from in the extreme western part of the area these hedges have gone and are now replaced by wire. Improved grazing predominates on the valley floor, giving way to poorer quality land on the lower slopes. Land here is enclosed into larger divisions, but the earth bank boundaries are redundant and replaced by wire. There are stands of deciduous woodland and 20th century forestry at the western end of the area.

The remains of the metal mining industry are an important and distinctive element in this landscape. These are concentrated towards the eastern end of the valley and comprise dominant spoil heaps and mine buildings. The mine buildings constructed of local stone are roofless, but stand in some instances to their original full height. The buildings include a generating station at Frongoch mine that was supplied by a pipeline from a reservoir to the north.

Other than metal mine remains; the recorded archaeology consists of a mill site and a chapel.

4.2 Historical Development

- 4.2.1 Wemyss lead and zinc mine (PRN 23230) is immediately southwest of Frongoch mine (PRN 9151) and is located around 3.5km southwest of Devil's Bridge, Ceredigion. The Frongoch mineral lode ran through both Frongoch and Wemyss mines and was worked independently until 1846 when Wemyss was purchased by John Taylor & Sons Company; owners of Frongoch mine. Thereafter, Wemyss was operated in conjunction with Frongoch until the closure and sale of both mines in 1903.
- 4.2.2 Shortly after its procurement by John Taylor the Wemyss adit was extended eastwards to serve the Frongoch workings. By 1848 the Wemyss adit had holed through to the Frongoch adit at the 24 fathom level, subsequently becoming the deep ("Frongoch") adit that purportedly extended for 3 miles (Bick, 1986). The "adit began on the main lode near the road [northern side presumably], but after about 150 fathoms turned northeast for about 25 fathoms before continuing eastwards on a north lode which outcrops on surface about 20 fathoms north of Boundary Shaft [at Frongoch]" (Bick, ibid:14).
- 4.2.3 During this period in the mid-nineteenth century the mines were both profitable and productive while the operations continued to exploit deeper levels. In 1863 new dressing floors were constructed at Wemyss to process the ore from Frongoch. Sometime during the 1870s Ball's Shaft, the first of two principal shafts at Wemyss was cut into the lode at 76 fathoms (Bick, *ibid*).
- 4.2.4 However, by the latter half of the nineteenth-century the mines began to struggle as the productivity of the lode began to dwindle. Meanwhile the prices of metal fluctuated against ever increasing working costs. In 1878, the mines made their first loss and the Taylor Company sold their lease of both mines.
- 4.2.5 In the same year of 1878 the lease was obtained by Messrs Henry Davey and Alexander Kerby of London, and John Kitto from Llanidloes. By all accounts Kitto, a competent and successful mining engineer, was the primary agent and motivator of this venture. It was during the early years of this leasehold that Glanville's Shaft; the second of the principal shafts was cut into the lode. Unlike Ball's shaft, Glanville's Shaft was much shallower at only 16 fathoms (Bick, *ibid*). Kitto was also responsible for the construction of the pit for a 56ft waterwheel (later replaced by a 55ft wheel) at the lower levels of the site which was fed by a circuitous leat

that carried water from the dressing floors (Bick, *ibid*). The later 55ft wheel turned a line of flat rods connected to the machinery at Vaughan's New Shaft at Frongoch (Bick, *ibid*).

- 4.2.6 In 1898 both sites were leased by the Belgian company "Société Anonyme Minière". The new lease holders endeavored to modernize the site by constructing a hydro-electric power station at nearby Pont Ceunant to power the machinery and mining operations. The five tiered, stone built dressing mill which now dominates the site, was built in 1899 to process the ore from Frongoch. Built on the side of the slope, each tier was occupied by a machine which was supported by a series of platforms and walls, with the dressing process becoming finer downslope. The mill was fed from material from Vaughan's New Shaft at Frongoch via a chain operated tramway which passed under the road by means of a cutting (Bick, *ibid*).
- 4.2.7 In spite of such optimistic investments, the venture proved to be ill fated and terminally brief. The metal markets continued to be volatile but were fleetingly favorable between 1898 and 1900. However, full production was not underway until 1902, and even then, the yields paled in comparison to what Kitto had previously achieved in spite of the absence of modern intervention (Bick, *ibid*). It would seem that during this time production at Wemyss was solely focused on processing the waste dumps from Frongoch. The new dressing mills proved to be highly efficient in this task, producing a dump of tailings and fine waste, of monumental proportions which is still visible today.
- 4.2.8 Full mining operations ceased at Frongoch in June 1903 although the dressing mill at Wemyss continued processing ore until August of the same year. Finally, the mines and machinery were sold at auction to Messrs R.A King & Company in November 1903 (Bick, *ibid*). Thereafter, much of the substantial spoil tips at Frongoch were re-processed during the early twentieth-century, whilst Wemyss was left to quietly decay and erode.

4.3 Recorded Archaeology

Scheduled Ancient Monuments

4.3.1 There are two Scheduled Ancient Monuments (SAMs) with 2km of the Wemyss study area (Figure 6):

SAM No	SAM Name	Period	NGR	Distance (km)
CD146	Fron Goch Lead Mine	SN72118 74450	Post-Medieval	0.12 NE
CD012	Castell Grogwynion Hillfort	SN72125 72495	Prehistoric	1.47 S

Table 2: Scheduled Ancient Monuments within 2km of the Wemyss mine site, including distance to mine area and direction (Figure 3).

- 4.3.2 SAM CD146 Frongoch Lead Mine (PRN 9151) is located to the northeast of the Wemyss study area. The Frongoch mine was in operation from the mid-eighteenth to early twentieth centuries and the scheduled area includes a number of surviving buildings.
- 4.3.3 Castell Grogwynion SAM CD012 (PRN 2066) is an Iron Age hillfort located approximately 1.5km southeast of the Wemyss study area. It is roughly rectangular in plan and measures nearly 170m east-west by some 100m north-south. It is located in a naturally defended position on a rocky hill some 270m above sea level.

Listed Buildings

4.3.4 There are six, post-medieval listed buildings within the 2km search radius of the Wemyss study area (Figure 6):

PRN Number	Listing	Name	NGR	Grade	Distance (km)
5468	9868	Capel Trisant Chapel	SN71699 75755	II	1.384
25529	10735	Telephone call-box to SE of Capel Trisant	SN71735 75749	II	1.374
58125	82650	Cwmnewydion Ganol House	SN70026 74286	II	1.111
58129	82654	Glanrhos House	SN71252 73046	II	0.995
58255	83421	Rockview Mining Shop and Stores	SN72750 73356	II	1.258
58331	9869	Ty Capel House	SN71701 75768	II	1.397

Table 3: HER recorded Listed Buildings with 2km of Wemyss site, including distance to mine area and direction (Figure 3).

Non-designated archaeological assets

- 4.3.5 There are no designated archaeological assets within the Wemyss study area. Consultation of the HER and National Monuments Record (NMR) held by the RCAHMW revealed that there are 30 recorded, non-designated archaeological sites within the study area (Figure 4). Table 4 below lists these sites. Those sites held within the HER are listed by PRN, those held within the NMR by NPRN. Unless otherwise stated all sites listed in Table 3 are of Post-Medieval date.
- 4.3.6 The majority of the sites listed are concentrated along the north and north-eastern areas of the study area; either side of the narrow gorge through which flows the mill race stream. The remainder are clustered over to the western end of the study area, effectively creating two distinct areas of archaeology (Figure 7).

Newly identified archaeological assets

4.3.7 A further 15 archaeological sites have been identified as a result of the desk-based assessment and/or the site visit (Figure 8). These are sites which have not previously been recorded within the HER or NMR. The sites have not been allocated PRNs as yet but for the purpose of this study have been allocated a specific "Site Number" relevant only to the Wemyss study area. Details of these sites are presented in Table 4.

PRN	NPRN	Name	Summary	NGR
23230	33907	Zinc Mine,Lead Mine	The Wemyss mine was a lead and zinc mine which operated in conjunction with Frongoch Mine intermittently from 1861 to 1899. In 1899 a dressing mill was built on the site to process ore from Frongoch Mine. Modernised and provided with electric power from the Pont Ceunant generator house at the end of the 19th century.	SN717742
96303		Wheel Pit	Virtually no trace of waterwheel apart from a brick quoined masonry tailrace culvert just to south at base of vegetated tips (Protheroe-Jones 1993, mine 159, no.3).	SN7115374272
			Only visible on 1905 2nd edition, 1:2500 OS map (MB Feb, 2016)	
96304		Spoil heap	Fines dumps (Protheroe-Jones 1993, mine 159, no.4).	SN7123374215
			<i>Visible on 1st edition 1888. 1:2500 OS map, spoil tips cover a larger area on 2nd edition, 1905 OS map. (MB Feb 2016).</i>	
96305		Dressing	No remains at all of dressing floor (Protheroe-Jones 1993, mine 159, no.5).	SN71287421
		FIOOT	Possible buddles and slime pits/settling tanks shown on 1st edition 1888. 1:2500 and 2nd edition, 1905 OS maps. These may be the site of the new dressing floors built in 1864 (MB Feb 2016).	
96306		Balance Pit	Bobpit; fairly good condition; no other trace of route of flat rods (Protheroe-Jones 1993, mine 159, no. 6).	SN7129274234
			<i>This is not shown on either the 1st edition 1888. 1:2500 or 2nd edition 1905 OS maps. (MB Feb 2016).</i>	
96307		Spoil heap	Coarse tips with much vein stuff (Protheroe-Jones 1993, mine 159, no.7).	SN7132874226
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96308		Level	Deep Adit level: rock cut; open; very wet; fairly large (Protheroe-Jones 1993, mine 159, no.8).	SN7134874244
			This is likely to be the hollow shown on the 1847 tithe map and may be the "original" Wemyss adit. Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96309		Magazine	Substantially intact magazine (Protheroe-Jones 1992, mine 159, no.10).	SN7157974267
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96310		Shaft	Irregular rock cut shaft or stope come to surface; open (Protheroe-Jones 1993, mine 159, no.11).	SN7156874253
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96311		Gulley	Gulley- probable site of a level (Protheroe-Jones 1993, mine 159, no.15).	SN7155174231

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		Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96312	Mine	Minimal ruins of building (Protheroe-Jones 1993, mine 159, no.12).	SN7163874290
	Building	Only visible on 2nd edition 1905 OS map. (MB Feb 2016)	
96313	Shaft	Ball's Shaft: cratered and run in. Development rock tips to west, possible site of ore bins to south (Protheroe-Jones 1993, mine 159, no.14).	SN7162874276
		<i>Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. Annotated as "Ball's shaft on 1896 Crosswood plan of Wemyss (MB Feb 2016).</i>	
96314	Level	Gulley- probable site of level (Protheroe-Jones 1993, mine 159, no.15).	SN7171474292
		<i>Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. Annotated as "adit" on 1896 Crosswood plan of Wemyss (MB Feb 2016).</i>	
96315	Shaft	Glanville's Shaft: run in crater; vegetated tip to south (Protheroe-Jones 1993, mine 159, no.16).	SN7178574335
		Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. Annotated as "Glanville's Shaft" on 1896 Crosswood plan of Wemyss (MB Feb 2016).	
96316	Leat	Well-defined leats (Protheroe-Jones 1993, mine 159, no.17).	SN7172874328
		Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016).	
96318	Wheel Pit	Large, well-built waterwheel pit; east part much filled by stream washing gravel in. Minimal remains of balance bob pit to east; no trace of structure to west (Protheroe-Jones 1993, mine 159, no.20).	SN71677422
		<i>Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. This is also shown on the 1896 Crosswood plan. It is most likely that this is Kitto's 56ft wheel pit (MB Feb 2016).</i>	
96319	Level	Masonry arched entrance, fairly small, to a level. Open (Protheroe-Jones 1993, mine 159, no.21).	SN7163174218
		Not marked on historic OS mapping (MB Feb 2016)	
96320	Wheel Pit	Slight remains of water wheel pit although virtually entirely washed away by stream (Protheroe-Jones 1993, mine 159, no.22).	SN7162674201
		<i>Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. This is also shown on the 1896 Crosswood plan. Secondary wheel to PRN 96318 (MB Feb 2016).</i>	
96321	Building	Ruined building (Protheroe-Jones 1993, mine 159, no.23).	SN71577418
		Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. This is also on the 1896 Crosswood plan and is annotated as a "Smithy" (MB Feb 2016).	

96322		Spoil heap	Mixed coarse and crushed tips (Protheroe-Jones 1993, mine 159, no.24).	SN71627418
			Only visible on 2nd edition 1905 OS map (MB Feb 2016)	
96323		Dressing Mill	Well-preserved ruins of dressing mill on 5 levels, great deal of loadings etc. (Protheroe-Jones 1993, mine 159, no.25).	SN71637415
			Only visible on 2nd edition 1905 OS maps. These were built in 1899 under the Belgian company Société Anonyme Minière (MB Feb 2016)	
96324		Spoil heap	Fine dumps - large (Protheroe-Jones 1993, mine 159, no.26)	SN71577410
			Only visible on 2nd edition 1905 OS maps (MB Feb 2016).	
96328		Tramway	Only trace of route of tramway from West Frongoch (160) mine is hedge bank alignment (Protheroe-Jones 1993, mine 159, no.30).	SN7115774201
			Visible on 1st edition 1888 1:2500 OS map, not shown to be extant on 2nd edition 1905 1:2500 OS map (MB Feb 2016)	
96329		Shaft	Cratered, run in shaft (Protheroe-Jones 1993, mine 159, no.31).	SN71347422
			<i>Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. The 2nd edition also appears to show it. (MB Feb 2016)</i>	
96333		Spoil heap	Development tips protruding from grassy hummocky area (Protheroe-Jones 1993, mine 158, no.6).	SN7183074280
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016)	
96334	33846	Shaft	Boundary shaft: stonewalled collar; blocked with refuse; well preserved balance bob pit to south west with set of steps entering from north (to aid greasing of bearings) (Protheroe-Jones 1993, mine 158, no.7).	SN7184174306
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016)	
96335		Spoil heap	Slight trench above grassy tips (Protheroe-Jones 1993, mine 158, no.8).	SN71897435
			Visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016)	
-	33844	Aqueduct	Frongoch lead mine aqueduct (RCAHMW)	SN71937434
			Possible structure visible on 1st edition 1888. 1:2500 and 2nd edition 1905 OS maps. (MB Feb 2016)	

Table 3: Non designated archaeological assets within the Wemyss study area (shown in Figure 4).

 Comments in italics are updates to the HER record created following the site visit.

DAT Archaeological Services

Wemyss Site Number	Туре	Summary	Evidence	NGR
1	Building	Ruined Stone building emerging from eroding spoil tips in the northern area of the site and is level with a trackway runs parallel to its front.	Ruined Building	SN7160574239
2	Launder	RPJ 1993 Site No. 19 Wemyss (Mine 159): "Stone footing on site of launder"	Documentary	SN7172974256
3	Office and Workshop	Site of "Office & Workshop" depicted on 1896 Crosswood plan of Wemyss mine; not shown on any other mapping. No visible trace on ground.	Documentary	SN7158974193
4	Lime Kiln	"Old Lime kiln" identified on 1905 OS map, Structure visible on modern AP. Site not visited	Documentary	SN71396274145
5	Leat	Leat northeast of "Glanville's Shaft" running east-west, not recorded in HER	Earthwork	SN71805274344
6	Aqueduct	Remains of "Aqueduct" feeding wheel pit PRN 96319 as depicted on historic OS maps, not recorded in HER. Earthwork remains still visible	Earthwork	SN71747274252
7	Gully?	Possible remains of old trench or shaft. Not recorded in HER, shown on historic OS maps but not annotated as such.	Earthwork	SN71762 274264
8	House	Remains of Nant-y-Rhidyll farm house as shown on the 1888 1st edition OS map. Structural remains visible on modern AP	Ruined Building	SN71479274101
9	Leat?	Curvilinear feature shown on 1888 1st edition OS map, 1896 Crosswood plan and 2nd edition 1905 OS map. Also visible as earthwork with bank on southern side with flat bottomed channel. Starts at Adit (PRN 96308) and ends at the Smithy building (PRN 96321).	Earthwork and Documentary	SN71420274189
10	Tramway	Narrow gauge tramway shown on 1888 1st edition OS map at Western end of Wemyss site. Disused by 1905 2nd edition OS map	Documentary	SN7132174188
11	Buddles?	One possible buddle shown on 1st edition 1888 OS map. Three then shown on 1905 2nd edition OS map. On 1st edition OS, buddle appears to be fed by launder/leat	Documentary	SN7126874206
12	Leat/launder?	Possible leat or launder shown on 1st edition 1888 OS map feeding possible buddle (Site 11)	Documentary	SN7126974221
13	Slime pits?	Two rectangular structures shown on 1st edition 1888 OS map	Documentary	SN7125974203
14	Adit	Small "adit" marked on 1896 working plan map	Documentary	SN7164474231

15	Wheelpit?	Possible wheel pit shown on southern side of road on both 1888 and 1905 1:2500 OS maps. Possible leats and launders connected to it.	Documentary	SN71291274212
		As part of PRN 96306		

Table 5: Newly identified archaeological sites within the Wemyss study area (Figure 5).

4.4 Cartographic Information

4.4.1 Whilst it would be erroneous to consider Wemyss in isolation from Frongoch mine, it has been necessary for the purpose of this study to differentiate between the two sites. The site of Wemyss has been defined as the area delimitated by a boundary supplied by Natural Resources Wales (Figure 2). Any references to the Wemyss site or study area hereafter are made in accordance with the constraints of this boundary. For illustrative purposes, this perimeter of the study area is shown outlined in pink on the cartographic images.

Llanfihangel y Creuddyn Tithe Award map of 1847 (Figure 6)

- 4.4.2 The tithe map was published a year after the Taylors' purchase of Wemyss in 1846 and it gives an indication of the scale of the industry at this date (Figure 6). At the western extent of the study area and on the northern side of the road, a small hollow (A) most likely indicating an adit and a building are depicted. The location of this adit would appear to fit that of the original Wemyss adit as described by Bick (1986, see para 3.1.2) and it seems reasonable to assume that it is one and the same. A similar hollow (B), likely to be another adit (or a continuation thereof) is shown in the north-eastern corner of the study area. A small building (C) referred to as a "House and Garden" on the apportionment is located immediately south west of the western hollow or adit. A watercourse (D) is depicted running northeast-southwest through the centre of the site before continuing under the road and joining the Cwmnewydion stream to the south.
- 4.4.3 Nant-y-Rhidyll farmhouse (E) and its access track are shown to the south of the road. The course of the road, with its distinctive near ninety degree bend, is consistent with the course now followed by the modern road. A cluster of buildings in the north-eastern corner of the map indicates the western extent of Frongoch mine (F), a separate entity at this time.

Ordnance Survey 1st edition 25" map published in 1888 (Figure 7)

4.4.4 This map shows the significant changes which had occurred during the intervening years during the endeavours of the Taylor Company and in later years Kitto (Figure 7). The landscape has changed considerably and Frongoch mine is no longer a separate entity but is connected to Wemyss by a series of trackways and leats as the mining operation sprawled westwards. The north and northeast of the study area is now populated by spoil tips, trackways and Ball's and Glanville's shafts are shown. Kitto's 56ft wheel pit and a second, smaller wheel pit to the south are shown supplied by an "aqueduct". In addition to this a magazine is shown to the north. At the western extent of the study area the hollow of the adit is illustrated and appears to be a focus for mining activity. Here, a shaft, spoil tips and possible leats or launders are shown supplied with water from a leat or watercourse which meanders along the western side of the main area of working. A possible (elevated) leat or launder appears to cross the road where it connects with a possible wheel pit and other features associated with a dressing floor. One buddle is shown along with two probable slime or settling pits and a small spoil tip. There is also a tramway which runs northwest-southeast, parallel to the road where it connects to West Frongoch (often referred to as "Wemyss" mine in historic mapping) mine tramway. Nant-y-Rhidyll farmhouse and track are shown and a small area of waste now occupies the field on the south side of the road bend.

Ordnance Survey 6" map of Cardiganshire published in 1891

4.4.5 The 6 inch map of 1891 does not show any major changes from the 25" map published in 1888.

Crosswood (Earls of Lisburne) working plan and section of Wemyss mine c.1896 (Sketch of original – Figure 8)

- 4.4.6 This map is one of a series of plans and sections of Wemyss and Frongoch mines drawn between 1890 and 1896 that are held in the National Library of Wales, Aberystwyth.
- 4.4.7 Drawn as a schematic plan the Crosswood map shows the extent of mine working at Wemyss from Glanville's Shaft in the east to West Frongoch mine in the west. The map because of its size could not be photocopied but a number of sketches of details from the original map were made during a visit to the library and the most useful sketch is shown in Figure 8. This sketch shows the central area of Wemyss mine and illustrates that the map showed both principal shafts, along with leats, waterwheels, and a smithy, as well as the eastern adit shown on previous mapping. In addition to these features, the plan also shows an "office and workshop" at the lower end of the site, located in between the smithy and Kitto's second, smaller waterwheel south of the 56ft wheel pit. Furthermore, the plan also shows a small "adit" located just north of and equidistant between the two waterwheels.

Ordnance Survey 2nd edition 25" published in 1905 (Figure 9)

4.4.8 By 1905 Wemyss mine is labelled as "*disused"*, having closed in 1903 although the map illustrates the changes that occurred in the intervening period between this map and the plans drawn up between 1890-1896 (Figure 9). The large dressing mill built in 1899 is shown along with the tramway which serviced the mill from the northeast. In addition to these structures and those features previously described, a large spoil tip now dominates the field east of Nant-y-Rhidyll farm and south of the road. Just to the west of the study area boundary, an additional spoil tip and small wheel pit are shown supplied with water via an aqueduct. This would appear to be the western extent of Wemyss mine. Lastly, an "Old Limekiln" is shown to the west of Nant-y-Rhidyll farm.

Ordnance Survey 6" map of Cardiganshire published in 1906

4.4.9 No changes are shown on this map published in 1906 from that depicted in 1905.

Ordnance Survey 6" map of Cardiganshire published in 1953

4.4.10 By 1953 the site had been long abandoned but appears to be relatively unchanged save a notable exception; the dressing mill is no longer depicted. This seems an odd omission since the remains of the dressing mill are still visible today. The course and cutting of the tram road from Frongoch is depicted although it is no longer identified as such.

4.5 Site Visit

- 4.5.1 A site visit to Wemyss mine was undertaken on 3rd February 2016 to assess the nature and extent of any surviving archaeology on the ground and to allow for the possible identification of previously unrecorded sites.
- 4.5.2 The site visit studied mainly the north and northeast regions of the study area for these areas were of most concern to NRW. The industrial remains

at the western end of the site were not visited. Nor did this site visit asses any underground archaeology.

- 4.5.3 In general, the surface archaeology at Wemyss is in relatively good condition for it has suffered less erosion and decay than that at Frongoch. The infrastructure of trackways, leats and tramways are still prominent and easily traceable, along with the openings of shafts and adits. Owning to the nature of the industry at Wemyss (functioning mainly as drainage and ore processing for Frongoch) there are few built structures or buildings on the site. The built structures that are present remain substantially extant; particularly the remains of the dressing mill (PRN 96323) and the 56ft wheel pit (PRN 96318). Wemyss however, is largely dominated by spoil tips of coarse to fine mine waste. The largest of these tips (monumental in its size) dominates the southern end of the site (PRN 96324).
- 4.5.4 All the elements within the study area are vulnerable to the effects of water and are actively being eroded. The agents of this erosion are twofold; firstly by the pooling and runoff of surface water and secondly, by the more persistent action of the stream which flows down through the centre of the site from the northeast. The stream enters a modern culvert at the edge of the road and thereafter it flows past the western side of the large spoil tip (PRN 96234), undercutting it as it goes.
- 4.5.5 The visit began at the northeast corner of the site and progressed steadily downstream.
- 4.5.6 At the northeast corner of the study area, terraces of spoil tips are intersected by trackways and the remains of a leat (PRN 96316 and Wemyss New Site 5) which runs along the northern perimeter of the study area (Photo 1). The flooded opening of Glanville's Shaft (PRN 96316) is clearly visible, from which a small stream of water flows to a trackway where it is carried south-westwards across the site (Photo 2). It appears that water has been following along this track for some time; exploiting the lower wheel-rut as a convenient channel (Photos 3 & 4). Whilst the course of this water is causing some erosion to the site, it is actually fairly benign for it is not directly impacting upon any visible built structures or spoil tips. Above this track and along the northern boundary of the site are the surviving remains of two buildings including the magazine store (PRN 96309), the opening to Ball's Shaft (PRN 96313), at least one other shaft (PRN 96310) and gully (PRN 96311). Eroding from the spoil tips below these features, and level with the aforementioned track, is the unrecorded remains of a stone building (Wemyss New Site 1, Photo 4).
- 4.5.7 Elsewhere, the main stream that flows across the site travels downslope through the Kitto's 56ft wheel pit (PRN 96318) (which is now mostly filled in) and a significant amount of water now pools around the surface of the structure (Photo 5). The wheel pit itself is a substantial dry stoned structure although its revetments are beginning to collapse, most likely due to water erosion (Photo 6). The stream then continues downslope from the base of the structure, through an area of fine mine waste tips where it joins a modern culvert (Photo 7). The secondary waterwheel (PRN 96320) is no longer visible and nor is there any trace of the "Office and Workshop" (Wemyss New Site 3) identified on the 1896 Crosswood plan of the site (Photo 8). Water also flows from a well preserved stone arched level (PRN 62319) in this area. It is possible that this is the small adit depicted on the 1896 Crosswood plan (Wemyss New Site 14, Photo 9).

4.5.8 The Smithy building (PRN96321) located on the north side of the road remains largely extant but roofless, and a timber lintel in the southern gable end looks imminently close to collapse. At the south-eastern corner of the study area are the substantial remains of the dressing mill (PRN 96323) which overlook the large spoil tip to the east (PRN 96324) (Photo 10). The remains of wooden stakes are visible (remnants of the former tramway), protruding from the top of this spoil tip (Photo 11).

4.6 **Previous Archaeological Work**

4.6.1 A detailed survey of the remains of the mine was undertaken in 1993 by Robert Protheroe-Jones on behalf of the Dyfed Archaeological Trust. The results of this survey have been added to the HER and the PRNs generated from this survey are those which have been used in this assessment. Robert Protheroe-Jones has since conducted more recent surveys and a review of Wemyss; the results of which are pending.

5. CONCLUSIONS

Archaeological Constraints

- 5.1 Following the results of the desk-based assessment and the completion of the walk-over survey, it has been possible to draw a map of the study area showing the archaeological constraints. This map identifies areas of low, medium or high archaeological potential with areas coloured green, amber and red respectively (Figure 10). This map can be used to inform the detailed design stage of the remediation project.
- 5.2 The constraints map shows the study area outlined in pink and divided into six separate zones of archaeological potential.

Area 1: (Shaded red) Area of high archaeological potential

5.3 This area is the entirety of the north and north-eastern extent of the site as described in the previous section. This area is occupied by the greatest number of known archaeological features and a significant number of previously unidentified sites. It is likely that the density of activity in this area is masking earlier phases of both above and below ground archaeology. Whilst there will be areas within this region which are devoid of archaeology, the distribution of sites is such that is it more convenient to consider this area as a whole as opposed to trying to isolate individual elements.

Area 2: (Shaded amber) Area of medium archaeological potential

5.4 This area covers the large spoil tip at the south of the site (PRN 96324). The results of the desk-based assessment suggests that this spoil tip is largely the product of the latest phase of the mine's production phase but it may contain or cover further archaeological structures and/or artefacts

Areas 3 & 4: (Shaded red) Area of high archaeological potential

5.5 Bisected by the road, these areas are the southern and northern halves of the localised area of mining activity at the western end of the study area. The adit in this area of the site (PRN 96308) appears to be that shown on the tithe and therefore this could potentially be the earliest phase of working at the site. In addition, there is a high density of previously recorded and unrecorded sites in this area which according to modern aerial photography is no longer visible.

Area 5: (Shaded amber) Area of medium archaeological potential

5.6 This area covers the entirety of the curvilinear feature (Wemyss New Site 9) identified during the desk-based assessment. It survives as a definite earthwork and the evidence from the historic mapping suggests that it may have functioned as a leat or drain and is an integral component to the site.

Area 6: (Shaded green) Area of low archaeological potential

5.7 This area covers the south-western and south-eastern areas of the site and appears to be largely devoid of archaeology. It was worth noting that the remains for Nant-y-Rhidyll farm house (Wemyss New Site 8) and its access track, whilst derelict, are still extant.

6. SOURCES

Cartographic

- 1847 Tithe Award map of 1847 for the parish of Gwnnws
- 1847 Llanfihangel y Creuddyn Tithe Award map of 1847
- 1888 First Edition Ordnance Survey 25-inch map of Cardiganshire.
- 1891 Ordnance Survey 6-inch map of Cardiganshire
- c.1896 Crosswood (Earls of Lisburne) working plan and section of Wemyss mine
- 1905 Ordnance Survey 25-inch map of Cardiganshire
- 1906 Ordnance Survey 6-inch map of Cardiganshire
- 1953 Ordnance Survey 6-inch map of Cardiganshire

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Database

Dyfed Archaeological Trust Historic Environment Record, housed with Dyfed Archaeological Trust in The Corner House, 6 Carmarthen Street, Llandeilo, Carmarthenshire, SA19 6AE.

Websites

Coflein: The Royal Commission on the Ancient and Historic Monuments of Wales.

Plwm: The Heritage of Ceredigion's Uplands: <u>http://www.plwm.org.uk/</u> (Accessed Feb 2016).

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Figure 2: Location map showing study area of Wemyss as defined by NRW.

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Figure 3: Map showing designated sites, Scheduled Ancient Monuments and Listed Buildings. Red line is 2km radius search area boundary.

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Figure 4: Non-designated archaeological sites within the study area recorded on the Dyfed Historic Environment Record and the National Monuments Record overlaid on the 1905 Ordnance Survey map of the area.



Figure 5: Newly identified sites within the Wemyss study area overlaid on the 1905 Ordnance Survey map.



Figure 6: Extract of the 1847 Llanfihangel Y Crueddyn parish tithe map with the study area outlined in purple.



Figure 7: Sketch map transcribed from the Crosswood (Earls of Lisburne) working plan and section of Wemyss mine *c*.1896.



Figure 8: Extracts of the 1st edition Ordnance Survey 1:2500 map of 1889, with the study area outlined in purple.

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Figure 9: Extract of Ordnance Survey 1:2500 map published in 1905 with the study area outlined in purple.



Figure 10: Wemyss mine plan of archaeological constraint overlying an extract of the 1905 Ordnance Survey map.

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PHOTOGRAPHS



Photo 1: The leat above Glanville's shaft at Wemyss mine, looking east towards Frongoch mine. 1m scale.



Photo 2: Looking southwest, with the flooded Glanville's shaft with stream running down slope on to trackway. Top of dressing mill and large spoil tip visible in background.



Photo 3: Looking west, showing stream running in wheel rut along trackway.



Photo 4: Water following trackway along mid-level terrace in central area of Wemyss mine. The ruined building (Wemyss New Site 1, Figure 8) can be seen to the right of the track.



Photo 5: Wheel pit (PRN 96318) showing the water that pools around the structure. 1m scale.



Photo 6: West facing elevation of wheel pit (PRN 96318) showing the stream of water running downslope from it. 1m scale.



Photo 7: Overview shot looking south. The remains of the former dressing mill (PRN 96323) can be seen in the background; top of wheel pit (PRN 96318) is visible in left foreground. 1m scale.



Photo 8: The location of the former office buildings shown on the 1896 Crosswood plan is estimated to be to the right of the 1m scale. Wheel pit (PRN 96318) can be seen in the background.



Photo 9: Stone arched entrance to adit? PRN 96319. 1m scale.



Photo 10: West facing elevation of dressing mill (PRN96323).



Photo 11: Looking southeast at large spoil tip of Wemyss mine (PRN 96324).

APPENDIX 1: POTENTIAL MITIGATION MEASURES

General Archaeological Mitigation

At this stage there are no clear plans as to what form the mitigation could take on each site. A generic approach is laid out below. The full scope of the work will be dependent upon the scale and extent of the proposed remediation.

Green Areas

Where the archaeological potential is considered to be low within the mine site it is considered appropriate that an intermittent archaeological watching brief is undertaken during any groundworks. The aim of this work would be to have an archaeologist on-site on occasional visits to observe the progress of the groundworks and keep a check on the presence or absence of any archaeological remains. In the event that archaeological remains are revealed when an archaeologist is not on-site, they would be contactable by the site developer to then go out and record whatever remains are identified.

Amber Areas

The areas of moderate archaeological potential would also be dealt with through the implementation of a watching brief, though this would be more comprehensive than for the Green Areas. The aim of this work would be to have an archaeologist on-site regularly to observe the progress of the groundworks and keep a check on the presence or absence of any archaeological remains. In the event that archaeological remains are revealed when an archaeologist is not on-site, they would be contactable by the site developer to then go out and record whatever remains are identified. Should significant archaeological remains be revealed then there may be a requirement for a more detailed phase of archaeological recording to be implemented prior to development continuing in the area of archaeology.

Red Areas

Where remediation works are proposed in areas of high archaeological potential, ideally some form of archaeological evaluation would be undertaken in advance of development. This would usually take the form of trial trenches being excavated within the areas where groundworks are proposed to determine the presence of archaeology, its depth, significance, state of preservation and date. For the metal mine sites we can be confident that significant 19th century archaeological remains are present across the majority of the areas, although the one thing we cannot be sure about is the depth of those remains below the present ground surface.

A blanket approach to evaluation covering the Red Areas within the metal mine sites is not considered appropriate: intrusive groundworks associated with the remediation works are likely to affect only a small part of the areas. If more detailed plans of the remediation works become available, it may be possible to target specific areas for evaluation prior to ground works commencing, where deeper intrusions are proposed.

An alternative approach is proposed for the metal mines, whereby an intensive archaeological watching brief is implemented during all groundworks in the red areas, where a constant archaeological presence is maintained to observe groundworks and identify archaeological remains as they are exposed. It is suggested that at least one archaeologist is always present on-site, with a second on-hand or regularly present to assist with recording and the surveying of archaeological remains. Should significant archaeological remains be revealed then there may be a requirement for a more detailed phase of archaeological recording to be implemented prior to development continuing in the area of archaeology (which could require more archaeologists and cause delays to the work programme within those areas where archaeology has been identified).

This is a more reactive approach than an evaluation, as the scale and scope of archaeological recording will be determined as and when such remains are exposed. The risk of this sort of work is that the eventual timescale of the archaeological watching brief and overall costs cannot be determined. The benefit is that it avoids the costs involved in undertaking a more random archaeological evaluation of the Red Areas prior to the groundworks commencing and the associated costs of post-excavation works, prior to the resultant phase of mitigation and further post-excavation works.

Discussion of potential mitigation at the three metal mine sites

At Wemyss, it may be preferable to pursue a scheme of superficial water diversion by exploiting the stream which runs along the track at the western side of the site. Although this track is within the Red area (Area 1), limiting intrusive works to this watercourse would significantly reduce the impact to the archaeology here and it can be easily contained. The stream weaves through a dense area with little or no apparent impact on the visible structures and features there. By its very nature, it is an invasive feature and so has mostly likely already impacted upon any surviving archaeology and therefore it offers a convenient opportunity to limit disturbance to an area already disturbed. Any diversion, expansion or further intrusion of this water course will almost certainly impact on something however, and will need to be watched. However, if it is possible to limit any drainage to this stream without greatly exceeding the capacity of the watercourse, then it may be possible to reduce the archaeological mitigation in this area to an intermittent watching brief. Any new intrusive works elsewhere on the site will require watching, the intensity of which can be determined by the significance rating of the area.

Esgair Mwyn however, is a more complex situation and cannot perhaps be as easily resolved. If the remediation works here also involve superficial water drainage then it seems unavoidable that this will impact upon a red area. There are existing streams and rivulets in these areas but unlike that singular case at Wemyss, these are directly impacting upon archaeological features. Similar to Wemyss, any intrusive works will need to be watched and the intensity of which can be determined by the severity of the significance.

The situation is much simpler at Abbey Consols. Here, the site is much smaller, the archaeology less diffuse and well defined. Whilst concerns of superficial water and drainage do fall into a red area (Area 1) this is more localised and easier to target for mitigation. A great deal of impact can be reduced if the modern drainage channel is utilised but as like Wemyss, any diversion from this anywhere in that area will require watching. If remediation works can largely be contained to the modern drain then it may be more appropriate to target evaluation trenches where it is necessary to divert from the drain. However, if these intrusions are small, perhaps they would be adequately dealt with the remit of a watching brief.

Overall, owing to the scale of the sites, the diversity and quantity of archaeology a reactive programme is not only more likely to be cost efficient but will provide a more pragmatic approach to mitigation.

APPENDIX 2: METAL MINE REMEDIATION PROJECT: ARCHAEOLOGICAL ASSESSMENTS OF ABBEY CONSOLS; ESGAIR MWYN AND WEMYSS MINES WRITTEN SCHEME OF INVESTIGATION

1 INTRODUCTION

- 1.1 This written scheme of investigation presents a proposed methodology for archaeological assessments of three former metal mines in Ceredigion; Abbey Consols (SN 74304 66123); Esgair Mwyn (SN 75469 69293); and Wemyss (SN 71579 74089). The assessments have been requested by Natural Resources Wales within an *Invitation To Quote*, with description of the requirement stated as being: *To inform the option appraisal process for each of the 3 sites, NRW is seeking an archaeological consultant to undertake an archaeological assessment so that a better understanding of each site's historic interests can be gained.*
- 1.2 The assessment will be a primarily desk-based study of the site area, identifying any known archaeological or historical features within the mine sites and their immediate environs, identifying potential setting impacts on scheduled ancient monuments or listed buildings in the vicinity, identifying any historic landscape areas that may be affected by the proposals and assessing the potential for hitherto unknown archaeological remains to be present within the remediation areas.
- 1.3 The three mines are all historically significant sites which have been subject to some previous historical research and investigation. The assessment will collate the most relevant facts about the sites and their most significant elements. Maps will be produced highlighting zones of archaeological sensitivity including any special features that could cause issues for any future metal mine remediation.
- 1.4 Study areas have been defined for the three sites as shown on the plan attached to the *Invitation To Quote*: Abbey Consols covering an area of *c*.3.3ha; Esgair Mwyn covering an area of *c*.16.2ha; and Wemyss an area of 11.9ha. The background information for the work within the *Invitation To Quote* notes that the desk studies should include not only the defined study areas (as above), but also potential passive treatment sites as laid out in studies of the Esgair Mwyn and Abbey Consols sites. These additional areas are not defined within the documents.
- 1.5 The specification is in accordance with the *Standard and Guidance for Archaeological Desk-Based Assessments* (Chartered Institute for Archaeologists (CIfA), 2014).
- 1.6 DAT Archaeological Services staff have considerable experience of Metal Mine sites, having prepared the 'Metal Mining in Upland Ceredigion' booklet; undertaken a previous assessment and subsequent stages of evaluation and excavation at the Frongoch Lead mine for NRW; and production of the 'Cwmystwyth Mines Management and Protection Plan' for the Cambrian Mines Trust.
- 1.7 The Trust always operates to best professional practice. DAT Archaeological Services has its own Health and Safety Policy, and all works are covered by appropriate Employer's Liability and Public Liability Insurances. Copies of all are available on request.
- 1.8 This document provides details on how DAT Archaeological Services intend to fulfil the requirements laid out in the *Invitation to Tender* and is intended for NRW only and must not be shown to any third parties.

1.9 Dyfed Archaeological Trust is a CIfA Registered Archaeological Organisation.

2. AIM AND OBJECTIVES OF THE PROJECT

2.1 This document provides a scheme of works for:

The preparation of an archaeological assessment for three metal mines in Ceredigion: Abbey Consols; Esgair Mwyn; and Wemyss. The reports will collate existing information and identify the most significant elements of the mine sites and provide at least one plan of each mine identifying zones of archaeological sensitivity or any specific features of high significance. The assessments will be provided for use in the development of the scope of future environmental remediation works required at the mines.

- 2.2 Provision of a written scheme of investigation to outline the methodology by which DAT Archaeological Services will undertake the appraisal.
- 2.3 To identify any known archaeological remains and their significance, as well as identify the potential for hitherto unknown archaeological deposits to be present within the mine areas, highlighting any features or areas of high sensitivity.

3. ARCHAEOLOGICAL ASSESSMENT METHODOLOGY

- 3.1 The archaeological assessment will involve the preparation of a standalone report. The report will be prepared using relevant information from a number of sources, and will comprise a number of elements, including:
 - Dyfed Archaeological Trust Historic Environment Record data and other relevant information (including a review of online information held on the RCAHMW Coflein site) minimum search area will be that as defined within the tender documentation;
 - Identification of any Scheduled Ancient Monuments, Listed Buildings, Conservation Areas or Historic Landscape Areas within or in the vicinity of the site area from information held by Dyfed Archaeological Trust, CADW and NRW (formerly CCW) – 2km search area;
 - Readily available bibliographic information, cartographic material and photographs (including aerial photographs) held at the Trust;
 - A review of historic maps to include a map regression exercise;
 - Relevant web-based information;
 - Site visit and walkover survey;
 - Consultation with the Welsh Mines Preservation Trust (namely Graham Levins) regarding each site and identification of any specific features of high significance;
 - Consultation with Robert Protheroe-Jones, curator of Heavy Industries at Amgueddfa Cymru National Museum of Wales, and a Trustee of Dyfed Archaeological Trust;
 - A consideration of underground features of the mines; and
 - Assessment of the archaeological potential of the area.
- 3.2 The proposed sites visit would be undertaken to provide an assessment of the presence of any visible archaeological remains within the mine areas and possible identification of new features. Photographs will be taken of the site area and its environs and these will be used within the report.

- 3.3 The following will be considered when preparing the appraisal, although in some cases no such features may be present and will thus not be considered further:
 - a. Scheduled Ancient Monuments {SAMs} and their settings;
 - b. Non-scheduled ancient monuments and their settings;
 - c. Listed buildings and their settings;
 - d. Non statutory Buildings of Local Importance, where this information is readily available and relevant to the proposed development;
 - e. Registered Parks and Gardens and their essential settings;
 - f. Registered Historic Landscapes;
 - g. Non-registered historic landscapes;
 - h. Buried archaeological potential;
 - i. Palaeo-environmental potential;
 - j. Newly identified sites of historic importance;
 - k. LANDMAP and landscape characterisation information.
- 3.5 A report will be prepared on the results of the assessment. This report will include information on known sites within and in the vicinity of the proposed development site. Maps of known archaeological and historical sites will be presented in the report. Photographs will be used where appropriate.
- 3.6 The report will be fully representative of the information gained from the above methodology and will include the following:
 - a) A concise non-technical summary of the assessment results.
 - b) The report will contain at least one plan showing the site's location in respect to the local topography.
 - c) The report will list all the sources consulted.
 - d) The report will contain at least one plan showing zones of archaeological sensitivity for each of the mine sites, including any specific highlighted features.
 - e) Map regression exercise using all readily available maps of the sites; and
 - f) An assessment of the relative value or significance of each recognised historic asset.
- 3.7 Once completed, copies of the report will be submitted to NRW. A further copy of the report should be provided to the Dyfed Archaeological Trust for deposition within the Regional Historic Environment Record (HER).
- 3.8 Where appropriate, a summary report on any new significant archaeological discovery will be submitted for publication to a national journal (e.g. Archaeology in Wales) no later than one year after the completion of the work.
- 3.9 The assessment and maps showing zones of sensitivity need to be completed and submitted to NRW prior to the 29th February 2016.
- 3.10 The consultees noted above have extensive knowledge of these metal mine sites and will be invaluable in highlighting any features of special significance or areas of sensitivity which are not readily identifiable from map regression.

4 STAFF

- 4.1 The project will be managed by J Meek MCIfA, Head of DAT Archaeological Services.
- 4.2 The reports will be prepared by members of DAT Archaeological Services staff with experience of metal mines site, namely James Meek (MCIfA), Frances Murphy (ACIfA pending) or Duncan Schlee (summary CVs provided below). A second member of DAT Archaeological Services staff will be used for the site walkover survey for health and safety reasons.

5. HEALTH AND SAFETY

- 5.1 All permanent members of DAT Archaeological Services staff are CSCS² registered.
- 5.2 DAT Archaeological Services will carry out a health and safety risk assessment prior to any site visits to ensure that all potential risks are minimised.
- 5.3 All relevant health and safety regulations must be followed.
- 5.4 All site inductions, H&S procedures, H&S constraints and site rules of the client or any on-site contractor will be made known to DAT Archaeological Services staff prior to any site visits being undertaken.
- 5.5 Safety helmets, high visibility vests and boots are to be used by all site personnel as necessary when on-site visits. Two members of staff will undertake each of the site visits as the sites are remote and potentially dangerous.
- 5.6 The site visits will not include any subterranean parts of the mine sites.

² Construction Skills Certification Scheme (Health and Safety Tested)

METAL MINE REMEDIATION PROJECT PART 3: WEMYSS ARCHAEOLOGICAL ASSESSMENT

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Mawrth 2016 March 2016

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

Boll

Menna Bell

Swydd / Position: Archaeologist

Llofnod / Signature

...... Dyddiad / Date 18/03/2016

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

James Meek

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

Swydd / Position: Head of DAT Archaeological Services

Dames M Llofnod / Signature

Dyddiad / Date 18/03/2016

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

