# ABBEY CONSOLS MINE WATER CAPTURE PROJECT- PHASE I:

# ARCHAEOLOGICAL WATCHING BRIEF 2021



View northeast of the excavated trench section showing the steep cut through bedrock for the tramway cutting.



Prepared by: DAT Archaeological Services For: Griffiths Ltd





# DYFED ARCHAEOLOGICAL TRUST

REPORT NO. 2021-56 EVENT RECORD NO. 126363

May 2021

# ABBEY CONSOLS MINE WATER CAPTURE PROJECT – PHASE I: ARCHAEOLOGICAL WATCHING BRIEF 2021



By

Luke Jenkins

Paratowyd yr adroddiad yma at ddefnydd y cwsmer yn unig. Ni dderbynnir cyfrifoldeb gan Ymddiriedolaeth Archaeolegol Dyfed Cyf am ei ddefnyddio gan unrhyw berson na phersonau eraill a fydd yn ei ddarllen neu ddibynnu ar y gwybodaeth y mae'n ei gynnwys

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# **ABBEY CONSOLS MINE WATER CAPTURE PROJECT – PHASE I:**

# ARCHAEOLOGICAL WATCHING BRIEF 2021

Client	Griffiths Ltd
Event Record No	126363
Report No	2021-56
Project Code	FS21-005
Report Prepared By	Luke Jenkins
Fieldwork Undertaken By	Luke Jenkins
Illustrated By	Luke Jenkins
Report Approved By	Fran Murphy

Rev Number	Description	Undertaken	Approved	Date
_V1	Draft	IJ	FM	
_V2	Final	IJ	FM	21/11/2022

#### ABBEY CONSOLS MINE WATER CAPTURE PROJECT:

EX	ECUTIVE	SUMMARY	1
1.	INTROD	UCTION	2
	1.1	Project Commission	2
	1.2	Scope of Project	2
	1.3	Report Outline	3
	1.4	Abbreviations	3
	1.5	Illustrations	3
	1.6	Timeline	3
2.	THE	SITE	8
	2.1	Location	8
	2.2	Archaeological and Historical background	9
	2.3	Historical Mapping	9
	2.4	Previous archaeological work	10
3.	WAT	CHING BRIEF METHODOLOGY	11
	3.1	Fieldwork	11
	3.2	Post-Fieldwork Reporting and Archiving	11
4.	RESU	JLTS	12
	4.1	Mine Adit Entrance	12
5.	CON	CLUSIONS	16
6.	SOU	RCES	17
	APPE	NDIX I: WRITTEN SCHEME OF INVESTIGATION	18

### **ARCHAEOLOGICAL WATCHING BRIEF 2021**

ТΔ	RI	FS	

Table 1:	Archaeological and Historical Timeline for Wales.	4

# FIGURES

Figure 1:	Map extract showing the location of Abbey Consols Mine	5
Figure 2:	The mine water capture arrangement plan	6
Figure 3:	The mine water capture arrangement plan overlying an extract of the 1889 Ordnance Survey 1st edition 25" map	7

# **PHOTOGRAPHS**

Photograph 1:	View north from the dressing floors of the mine towards the location of the wheel pit and position of deep adit entrance in hillside	4
Photograph 2:	View south across the site of Abbey Consols Mine	8
Photograph 3:	Excavation area. Looking southeast	13
Photograph 4:	Showing the cut for the tramway beginning to appear aft removal of modern quarry waste	er: 13
Photograph 5:	View of the excavated trench section showing the steep of through bedrock for the tramway	cut 14
Photograph 6:	Closer view of the excavated trench section showing the steep cut through bedrock for the tramway	14
Photograph 7:	View of mine waste covering the base of tramway cut	15

# ABBEY CONSOLS MINE WATER CAPTURE PROJECT – PHASE I: ARCHAEOLOGICAL WATCHING BRIEF 2021

#### EXECUTIVE SUMMARY

DAT Archaeological Services were commissioned to undertake an archaeological watching brief during ground works associated with the construction of a mine water capture system at Abbey Consols Metal Mine, Ceredigion (NGR SN7432 6610).

Evidence of a former mine tramway leading to the adit entrance was recorded during the development ground works but the adit entrance itself was not uncovered.

#### **CRYNODEB GWEITHREDOL**

*Comisiynwyd Gwasanaethau Archaeolegol YAD i gynnal brîff gwylio archeolegol yn ystod gwaith daear sy'n gysylltiedig ag adeiladu system dal dŵr mwynglawdd ym Mwynglawdd Metel Abbey Consols, Ceredigion (NGR SN7432 6610).* 

Cofnodwyd tystiolaeth o hen dramffordd mwynglawdd yn arwain at fynedfa'r ceuffordd yn ystod y gwaith datblygu ar y tir ond ni ddarganfuwyd mynedfa'r ceuffordd ei hun

# ABBEY CONSOLS MINE WATER CAPTURE PROJECT – PHASE I: ARCHAEOLOGICAL WATCHING BRIEF 2021

# 1. INTRODUCTION

## **1.1 Project Commission**

- 1.1.1 DAT Archaeological Services were commissioned by Griffiths ltd on behalf of Natural Resources Wales to undertake an archaeological watching brief during ground works associated with a mine water capture scheme at Abbey Consols Metal Mine, Ceredigion (centred on NGR SN7432 6610; Figure 1, Photograph 1).
- 1.1.2 The scheme aims to capture the water flow from the mine adit as close as possible to the former adit entrance and to convey the mine water to the current discharge pipe under the road until further construction can be carried out to fully transfer the water to a water treatment process.
- 1.1.3 This work forms part of a remediation project led by Natural Resources Wales to reduce and prevent the current extent of metal discharge from the site.
- 1.1.4 The main elements of the mine water capture construction (Figure 2) are:
  - Excavation in the vicinity of the buried adit entrance to install a mine water capture structure (MH3 chamber with gravel & perforated pipe water inlet).
  - Installation of a chamber (MH1) near to the road for flow measurement and sampling.
  - Trenching and installation of a carrier pipe from the mine water capture chamber to MH1, including an intermediate chamber (MH2).
  - Replacement of existing land drain along north side of the road, also feeding into MH1; and
  - Temporary pipe connection between MH1 and the existing discharge pipe under the road.
- 1.1.5 The site area has been subject to a historic environment desk-based assessment (Bell et al, 2016) and archaeological evaluation (Murphy 2019). The archaeological evaluation confirmed that significant buried archaeology survived across the site.
- 1.1.6 A Written Scheme of Investigation (WSI) for the archaeological watching brief was prepared by DAT Archaeological Services (Appendix I) and approved by the local planning authority prior to groundworks commencing. The WSI was prepared in accordance with the relevant Chartered Institute for Archaeologists (CIfA) standards and guidance (CIfA 2014).

#### **1.2 Scope of Project**

1.2.1 A Written Specification of Investigation (WSI) for the watching brief was prepared by DAT Archaeological Services prior to the commencement of

works (see Appendix I). The WSI outlined the methodologies by which the watching brief should be undertaken, including those:

- To monitor ground works to identify the presence/absence of any archaeological deposits.
- To appropriately investigate and record any archaeological deposits exposed by the groundworks and to ensure the preservation *in-situ* of any significant archaeological remains exposed.
- To establish, where possible, the character, extent and date range for any archaeological deposits to be affected by the proposed groundworks.
- To produce an archive and report of the results.
- 1.2.2 The overall scheme of work was summarised as follows:

The implementation of an archaeological watching brief during invasive ground works associated with works for a new mine water capture system. The work will primarily take place in the area surrounding the former adit entrance. Appropriate investigation and recording of any significant archaeological remains will be undertaken if revealed. A report and archive of the results of the works will be prepared.

# 1.3 Report Outline

1.3.1 This report describes the location of the development works, reviews the archaeological background, and provides a summary and discussion of the archaeological watching briefs and their results.

## 1.4 Abbreviations

1.4.1 Sites recorded on the Regional Historic Environment Record<sup>1</sup> (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Dyfed Archaeological Trust Development Management – DAT-DM; Scheduled Monument – SM; Written Scheme of Investigation – WSI; -Pembrokeshire Coast National Park Authority – PCNPA.

#### 1.5 Illustrations

1.5.1 Printed map extracts are not necessarily produced to their original scale.

# 1.6 Timeline

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

<sup>&</sup>lt;sup>1</sup> Held and managed by Dyfed Archaeological Trust, Corner House, Carmarthen Street, Llandeilo SA19 6AE.

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 <sup>2</sup> –	1536 - 1750	öri
Industrial Period –	1750 - 1899	n
Modern –	20 <sup>th</sup> century onwards	

Table 1: Archaeological and Historical Timeline for W	'ales
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**Photograph 1:** View north from the dressing floors of the mine towards the location of the wheel pit and position of deep adit entrance in hillside. Photograph taken before start of development groundworks.

<sup>&</sup>lt;sup>2</sup> 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

#### Abbey Consols Mine Water Capture Project – Phase I: Archaeological Watching Brief 2021





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#### Abbey Consols Mine Water Capture Project – Phase I: Archaeological Watching Brief 2021



Figure 2: The mine water capture arrangement plan- supplied by client. Not to original scale.

DAT Archaeological Services

Report No: 2021-56



**Figure 3:** The mine water capture arrangement plan (outlined in red) overlying an extract of the Ordnance Survey 1<sup>st</sup> edition 25" map published in 1889

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# 1. THE SITE

# 2.1 Location

- 2.1.1 Abbey Consols Mine is located 1.2km to the east of the village of Pontrhydfendigaid, in the county of Ceredigion (Figure 1). The mine is surrounded by farmland which is currently under pasture. The access road has been extended across the former processing floors and waste tips and is now used from time to time as a motor racing track. The site lies on gently sloping ground; sloping southwards to the Afon Teifi.
- 2.1.2 Natural Resources Wales records that Abbey Consols Mine is the largest source of zinc pollution into the Afon Teifi, with an estimate of over 2 tonnes per annum being discharged into the river.
- 2.1.3 The mine site lies in the upper reaches of the Afon Teifi valley, close to the valley floor. Currently, the site is surrounded by farmland and is used intermittently as a motor racing track.
- 2.1.4 Today the area of the mine comprises the remains of a wheel pit and shafts on the hillside to the north, with remnants of dressing floor structures on lower ground to the south. The former dressing floor area now comprises rough scrubland interspersed with large amounts of mine tailings and has been significantly landscaped in recent years for use as a racetrack (Photograph 2). The dressing floor was where the process of sorting the raw material extracted from the mine took place. This was the first stage in the extraction of a metal from an ore in which as much gangue (minerals of no economic importance found together with ore minerals) as possible were removed and the ore prepared for smelting and refining. Tailings are the waste products from the dressing floor; discarded because they are not thought to contain workable quantities of mineral ore.



**Photograph 2:** View south across the site of Abbey Consols Mine.

2.1.5 The superficial geology is Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 11.6 and 11.8 thousand years ago during the Quaternary period. Bedrocks consist of: Devil's Bridge Formation - Mudstone and sandstone, interbedded. This Sedimentary bedrock formed between 443.8 and 433.4 million years ago during the Silurian period. The mining activity is associated with the bedrock formation.

# 2.2 Archaeological and Historical Background

- 2.2.1 The following information regarding the sites history and archaeological background is taken from the archaeological evaluation undertaken by Dyfed Archaeological Trust in 2019 (Murphy and Jenkins 2019).
- 2.2.2 Abbey Consols Mine lies within the Upland Ceredigion Registered Historic Landscape. At 468 square kilometres, it is the largest landscape on the Register of Landscapes of Outstanding Historic Interest in Wales (Cadw 1998).
- 2.2.3 Silver and lead mining activity was most intense in the late 19<sup>th</sup> and early 20<sup>th</sup> century and left a lasting impression on the landscape. This is observed in the description and essential historic landscape components of the Ystrad Fflur Historic Landscape Character Area (HLCA), where the abandoned mines and spoil heaps are briefly mentioned. Communities such as Pontrhydfendigaid developed for the mining industry, leaving an imprint on the landscape.
- 2.2.4 Due to the proximity of Abbey Consols Mine to Strata Florida Abbey and the fact that the Cistercians were skilled at ore extraction and processing, it is possible that some level of medieval mineral extraction could have taken place at the site. However, there is very little readily available information on the historical development of the mine, possibly because the mine was small and only in operation periodically. Information held on the HER and NMR indicate that mine working at this location was undertaken over several short periods including during 1848, 1852, 1856-61, 1877-82, 1886-91, 1893-98 and 1905-9.
- 2.3 **Historical Mapping** (adapted from Bell et al 2016).

#### *First edition Ordnance Survey 25" map published in 1889*

- 2.3.1 This is the earliest map to show the 'Florida Lead Mine'. Trackways, tramways, many buildings, a shaft, and filter beds are shown on the map, and scarp marks show the landscaping that has taken place because of mining and tipping (Figure 3).
- 2.3.2 At the northern end of the site an incline is shown serving the level in this area (although it is not marked as such). At the southern end of the incline are several buildings and two tramways. It also appears that these structures are located on top of a large spoil tip.
- 2.3.3 The 1891 1:10,560 OS map shows the same layout, although in less detail.

#### Second edition Ordnance Survey 25" published in 1906

2.3.4 Changes at the Florida Lead Mine between 1889 and 1906 are apparent from the Ordnance Survey (OS) map published in 1906. A wheel pit not

marked on earlier maps is now visible, but a decline is seen throughout the rest of the study area with buildings much reduced and only two filter beds now marked. The most obvious change is the removal of the tramways.

- 2.3.5 By the 1963-4 1:10,560 OS map, a few more buildings have disappeared, and on the 1:2,500 map of 1982, the filter beds and spoil heaps have gone and only three small structures are outlined. The 1:10,000 OS map of 1982 shows field boundary changes in the south-western part of the site resulting in a pattern that is like the one seen today.
- 2.3.6 In recent years the area has been partially remodelled to accommodate a racetrack.

#### 2.4 **Previous Archaeological Work**

- 2.4.1 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. Robert Protheroe-Jones has since conducted more recent surveys and a review of the site; the results of which are pending.
- 2.4.2 The study area has also been subject to a historic environment desk-based assessment (Bell et al 2016).
- 2.4.3 In 2019 an archaeological evaluation was undertaken at Abbey Consols Mine by DAT Archaeological Services. The evaluation focused on the area identified as having high archaeological potential in the desk-based assessment where remains of structures could be seen protruding through the ground surface (Bell et al 2016). This area encompassed the former dressing floor of the mine where the ore was processed. Seven trenches were excavated, and the results of the evaluation suggested that the proposed design of the remediation project would cause minimal damage to the recorded archaeology. However, it was also suggested that all ground works during the remediation project should be monitored by an archaeological watching brief. This mitigation would allow any unrecorded archaeological features or deposits to be recorded, and with the results of the archaeological evaluation should form a good record of the surviving 19th century mine features at Abbey Consols Mine.

## **3 WATCHING BRIEF METHODOLOGY**

#### 3.1 Fieldwork

- 3.1.1 The watching brief was undertaken in accordance with the Chartered Institute of Archaeologists' (CIfA) *Standard and Guidance for an Archaeological Watching Brief* (2014).
- 3.1.2 A written scheme of investigation was prepared by DAT Archaeological Services detailing the proposed archaeological works, which was approved by Dyfed Archaeological Trust – Development Management in their capacity as advisors to the local planning authority prior to the works commencing (APPENDIX I).
- 3.1.3 Recording of all archaeological features or deposits conformed to best current professional practice and was carried out in accordance with the Recording Manual<sup>3</sup> used by DAT Archaeological Services. A written, drawn and photographic record was maintained throughout this watching brief. All contexts encountered during this watching brief were recorded.
- 3.1.4 The machining was undertaken using a 20 tonne 360° Komatsu excavator fitted with a flat bladed bucket. On occasion it was necessary to use a toothed bucket, however this was kept to a bare minimum.

# 3.2 Post-fieldwork Reporting and Archiving

- 3.2.1 All data recovered during the fieldwork will be collated into a site archive structured in accordance with specifications in Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation (Brown 2011), and the procedures recommended by the National Monuments Record, Aberystwyth.
- 3.2.2 The results of the fieldwork have been assessed in local, regional and wider contexts. The report includes a desk-based research element to ensure that the site is placed within its wider archaeological context.
- 3.2.3 A report fully representative of the results of the fieldwork has been prepared.

<sup>&</sup>lt;sup>3</sup> DAT Archaeological Services have adopted the Recording Manual developed by English Heritage Centre for Archaeology. A copy will be available on-site for inspection if required.

## 4 RESULTS

# 4.1 Mine Adit Entrance

#### 7<sup>th</sup>, 10<sup>th</sup>-12<sup>th</sup> of May 2021

- 4.1.1 An archaeological watching brief was undertaken by Luke Jenkins on the 7th, 10th-12th of May 2021. The ground works during this period comprised the excavation for the new mine water collection system at the former mine adit entrance that is located on the northern edge of the mine site. This is thought to be the source of much of the discharged water. Today, this area lies within an area where quarrying has been carried out in recent times to provide hard core for the modern racetrack that runs through the site.
- 4.1.2 The aim of these groundworks was to identify the exact location of the adit entrance and the tramway that ran from the adit to the main dressing floors identified during geotechnical works.
- 4.1.3 Excavation started on the 7<sup>th</sup> of May 2021 using a 20 tonne Komatsu 360° bucket excavator (Photograph 3). During the watching brief it was generally only possible to monitor the works from the edge of the excavated trench due to the depth of the excavations and water ingress rendering the trench unstable and unsafe to enter. Therefore, all measurements of archaeological deposits and features could only be estimated.
- 4.1.4 The excavation trench measured approximately 15m north/south by 18m east/west. The reason for opening such a large trench despite the relatively small footprint of the mine water collection system was due to the required deep depth of excavation necessitating the trench edges to be stepped and battered.
- 4.1.5 Upon removal of substantial amounts of quarry waste at the eastern edge of the excavation area, natural undisturbed ground was recorded comprising orange silty clay. A linear feature cutting the undisturbed silty clay was recorded (Photograph 4), which appeared to indicate the line of the former tramway cutting heading towards the mine adit entrance.
- 4.1.6 The quarry waste deposit appeared to extend across the whole of the area of the former quarry.
- 4.1.7 Upon excavation it was apparent that the cut for the tramway had been backfilled with quarry waste comprising loose shale rubble containing tree stumps and modern finds, probably when the area was levelled during quarrying.
- 4.1.8 From observations during excavation of the trench the tramway cut measured circa 6.0m deep and 5.0m wide and was orientated north-north-east by south-south-west (Photographs 5 & 6). The sloping edges had a gradual break of slope at the top which became almost vertical where bedrock was encountered at lower depth. It is thought that it had a slightly convex base, although water ingress obscured this. No remains of a tramway itself were recorded.
- 4.1.9 It was possible at one point during the excavations to view the bottom of the tramway cutting where a deposit of dark grey mixed mine waste that likely dated to the 'use' period of the mine (Photograph 7) was seen. This

deposit appeared to comprise mine tailings (processed mine waste), mixed stone and organic matter. The deposit measured approximately 0.35m in depth and covered the whole of the base of the tramway cutting. Further inspection of this deposit was not possible due to safety concerns.

4.1.10 It was thought likely that the mine adit entrance was slightly to the north of the excavation trench further into the slope of the hill.



**Photograph 3:** Excavation area. Looking southeast.



**Photograph 4:** Showing the cut for the tramway beginning to appear after removal of modern quarry waste. Looking northeast, 1m scale.



**Photograph 5:** View of the excavated trench section showing the steep cut through bedrock for the tramway. Looking northeast, 1m scale.



**Photograph 6:** Closer view of the excavated trench section showing the steep cut through bedrock for the tramway. Looking northeast.



**Photograph 7:** View of probable mine waste covering the base of tramway cutting. Looking west, 0.5m scale.

### 5. CONCLUSIONS

- 5.1 DAT Archaeological Services were commissioned by Griffiths Ltd on behalf of Natural Resources Wales to undertake an archaeological watching brief during ground works associated with a mine water capture scheme at Abbey Consols Metal Mine, Ceredigion (centred on NGR SN7432 6610; Figure 1).
- 5.2 The scheme aimed to capture the water flow from the mine adit as close as possible to the former adit entrance and to convey the mine water to the current discharge pipe under a road until further construction can be carried out to fully transfer the water to a water treatment process.
- 5.3 This work forms part of a remediation project led by Natural Resources Wales to reduce and prevent the current extent of metal discharge from the site.
- 5.4 The cutting for the former tramway leading to the adit entrance was recorded, buried under substantial depth of quarry waste making close inspection of archaeological deposits impossible. The adit entrance itself was thought to be slightly north of the excavation area and was not revealed during the groundworks.
- 5.5 The tramway cutting leading to the adit entrance measured circa 6.0m deep and 5.0m wide and was orientated north-north-east by south-south-west. It was cut into undisturbed natural ground, the sides becoming near vertical where it cut through bedrock. It is thought that it had a slightly convex base, but this was generally obscured by water ingress. No remains of the tramway itself were recorded.
- 5.6 A deposit of dark grey mixed mine waste that likely dated to the 'use' period of the mine was detected at the base of the tramway. This layer measured approximately 0.35m in depth and covered the whole of the base of the tramway. Again, close inspection of this deposit was not possible due to safety concerns.
- 5.7 No further archaeological deposits or features were recorded during the trench excavations, but observations were seriously hampered by the deep depth of the trench making it unsafe to enter.
- 5.8 The excavations also demonstrated that recent quarrying and associated ground levelling works in this area are likely to have had a damaging impact upon any mine features that might have once existed.

#### 6. SOURCES

#### Unpublished

- Bell, M. et al 2016, *Metal Mine Remediation, Project Part 1: Abbey Consols Archaeological Assessment*, Unpublished DAT Report No 2016/05 (Part 1)
- Murphy, F & Jenkins, L 2020 *Abbey Consols Mine, Ceredigion Trial Trench Evaluation* 2020, Unpublished DAT Report No 2020-17

#### Cartographic

First edition Ordnance Survey 25" map published in 1889

Second edition Ordnance Survey 25" map published in 1906

#### APPENDIX I:

# ABBEY CONSOLS MINE, CEREDIGION WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL WATCHING BRIEF

#### **1 INTRODUCTION**

- 1.1 This written scheme of investigation (WSI) presents a proposed methodology for an archaeological watching brief at Abbey Consols Metal Mine (centred on NGR SN7432 6610; Figure 1). The watching brief will be undertaken during the construction of a mine water capture system that aims to capture the water flow from the mine adit as close as possible to the former adit entrance and to convey the mine water to the current discharge pipe under the road until further construction can be carried out to fully transfer the water to a water treatment process.
- 1.2 This work forms part of a remediation project led by Natural Resources Wales to reduce and prevent the current extent of metal discharge from the site.
- 1.3 The main elements of the mine water capture construction (Figure 2) are:

• Excavation in the vicinity of the buried adit entrance to install a mine water capture structure (MH3 - chamber with gravel & perforated pipe water inlet).

• Installation of a chamber (MH1) near to the road for flow measurement and sampling.

• Trenching and installation of a carrier pipe from the mine water capture chamber to MH1, including an intermediate chamber (MH2).

• Replacement of existing land drain along north side of the road, also feeding into MH1; and

• Temporary pipe connection between MH1 and the existing discharge pipe under the road.

- 1.4 The main elements of the mine water capture construction are shown overlying and extract of the 1<sup>st</sup> edition OS 1:2500 map published in 1889 in Figure 3.
- 1.5 The site area has been subject to a historic environment desk-based assessment (Bell et al, 2016) and archaeological evaluation (Murphy 2019). The assessment identified the presence of several areas of archaeological potential within the proposed development area (Figure 4) and the archaeological evaluation confirmed that significant buried archaeology survived across the site.
- 1.6 The aim of the watching brief is to provide information on the character and significance of any below ground archaeological remains that may be revealed during ground works associated with the construction of the mine water capture system. Should any significant archaeological deposits be revealed, then a programme of further mitigation can be formulated and potentially implemented prior to development.
- 1.7 This written scheme of investigation (WSI) details the methodology of the watching brief and has been prepared in accordance with the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Archaeological Watching Briefs (CIfA 2014). A copy will be sent to the archaeological curator for their approval.

- 1.8 The written scheme of investigation is in accordance with the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Archaeological Watching Brief (CIfA 2014).
- 1.9 The archaeological works should be undertaken by a Registered Organisation with CIfA and managed by a Member of the Chartered Institute for Archaeologists (MCIfA).
- 1.10 The appointed Archaeological Contractor will need to comply with this approved written scheme of investigation, and any variance from it should be discussed and approved with DAT-DM.



**Photograph 1:** View south of the area of the former dressing floors of Abbey Consols Mine, taken from the wheel pit to the north.

#### Abbey Consols Mine Water Capture Project – Phase I: Archaeological Watching Brief 2021



Figure 1: Map extract showing the location of Abbey Consols Mine. The grid shown is at 1km intervals.

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**Figure 2:** The mine water capture arrangement plan- supplied by client.



**Figure 3:** The mine water capture arrangement plan (outlined in red) overlying an extract of the Ordnance Survey 1<sup>st</sup> edition25" map published in 1889



**Figure 4:** Areas of low (green), medium (orange) and high (red) archaeological potential (Bell et all 2016) overlying an extract of the Ordnance Survey 1<sup>st</sup> edition25" map published in 1889.

### 2. SITE LOCATION

- 2.1. The mine is surrounded by farmland which is currently under pasture. The access road has been extended across the former processing floors and waste tips and is now used from time to time as a motor racing track. The site lies on gently sloping ground; sloping southwards to the Afon Teifi.
- 2.2. Natural Resources Wales records that Abbey Consols Mine is the largest source of zinc pollution into the Afon Teifi, with an estimate of over 2 tonnes per annum being discharged into the river.

#### 3. HISTORICAL BACKGROUND

- 3.1. Abbey Consols Mine lies in the Upland Ceredigion Landscape of Historic Interest which at 468 square kilometres, is the largest landscape on the Register of Landscapes of Outstanding Historic Interest in Wales. The silver and lead mine industry whose period of most intense operation spanned the late 19th and early 20th centuries has left an indelible impression upon this landscape, with abandoned mines and spoil tips. Many communities, such as nearby Pontrhyfendigaid, developed to serve the lead metal mining industry.
- 3.2. There is little readily available information on the historical development of the Abbey Consols Mine. Due to its proximity to Strata Florida Abbey and the fact that the Cistercians were skilled at ore extraction and processing, it is possible that some level of medieval mineral extraction could have taken place at the site.
- 3.3. It is known that the site was worked before 1845, with tithe map information from 1847 indicating two mine pits were present in the area known as Bronberllan (Bron-y-Berllan being the farm directly to the northeast of the mine site). Information held on the HER and NMR indicate that the workings were re-opened 1848 and 1852, and were working from 1856-1861, 1877-82, 1886-91, 1893-98 and 1905-9.
- 3.4. The mine was first called Bronberllan, the name then changed to the Florida Lead Mine by the end of the 19th century, the name continuing into the 20th century. It is recorded that it produced 1236 tons of lead ore and 1765 tons of zinc ore before for the period 1848 to 1909 when it closed.
- 3.5. The levels and adits associated with the mine run into the hillside to the north of the mine dressing floors.

#### 4 WATCHING BRIEF

- 4.1 The definition of archaeological watching brief, taken from the Chartered Institute for Archaeologists Standards and Guidance: for Archaeological Watching Briefs (CIFA S&G: AWB 2014) is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.
- 4.2 The purpose of a watching brief, as laid down in the CIfA S&G AWB is:

to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works.

to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment.

4.3 This document provides a scheme of works for:

#### Archaeological attendance and recording during ground works associated with the construction of a mine water capture system at the former Abbey Consols metal mine.

- 4.4 The following tasks will be completed:
  - To follow this approved written scheme of investigation.
  - To monitor ground works to identify the presence/absence of any archaeological deposits
  - To establish, where possible, the state of preservation, character, extent and date range for any archaeological deposits disturbed
  - Appropriate investigation and recording of any significant archaeological remains will be undertaken if revealed
  - Production of a report and an archive of the results

#### 5 WATCHING BRIEF METHODOLOGY

- 4.1 The watching brief will entail an archaeologist being present during all ground works where there is a potential for archaeological remains to be exposed, damaged or destroyed. This will include but not be limited to the machine excavation of trenches and pits.
- 4.2 It is essential that coordination between the site contractors and archaeologist is established at the outset to avoid any potential disturbance to the site without an archaeologist being present, or unnecessary visits to the site when works are being carried out that do not require the presence of an archaeologist.
- 4.3 Adequate time must be made available to the visiting archaeologist to ensure that appropriate recording can be undertaken of any archaeological features or deposits exposed during ground works.
- 4.4 Recording of all archaeological features or deposits will conform to best current professional practice. Significant archaeological features or deposits will be drawn at a suitable scale (no less than 1:20) and photographed in an appropriate format.
- 4.5 All archaeologically significant finds (if found) will be retained and, where possible, related to the contexts from which they derived. All finds, except those deemed to be Treasure, will remain the property of the landowner.
- 4.6 Under the 1996 Treasure Act, "treasure" can be summarised as:
  - Any object other than a coin containing at least 10% gold or silver and at least 300 years old.
  - Any prehistoric assemblage of base metal.
  - Coins found together which contain 10% gold or silver (but no single coins) and groups of at least 10 coins of other metals, provided they are at least 300 years old.
  - Any object found associated with treasure except unworked natural objects; and
  - Any object which would have been Treasure Trove before the 1996 Act but not covered above.

- 5.7 In the event that unforeseen archaeological discoveries are made during the development, or that archaeological remains of high significance are exposed, the appointed Archaeological Contractor shall have the power to halt any ground works and shall inform the site agent/project manager and prepare a written statement with plan detailing the archaeological evidence. Following assessment of the archaeological remains the appointed Archaeological Contractor shall, if required, implement on behalf of the Client a contingency scheme for salvage excavation of affected archaeological features.
- 5.8 In the very unlikely event that human remains are encountered, the District Coroner's Office and the Police will be notified immediately. All human remains will, where possible, be left *in situ*. If preservation *in situ* is not possible all statutory permissions will be obtained in writing before removal begins.

#### 6 POST-FIELDWORK REPORTING AND ARCHIVING

- 6.1 An archive will be prepared if it meets the requirements of the Dyfed Archaeological Trust archive retention policy (2018). If it does, then data recovered during the watching brief will be collated into a site archive structured in accordance with the specifications in Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation (Brown 2011), and the procedures recommended by the National Monuments Record, Aberystwyth. The National Standards for Wales for Collecting and Depositing Archaeological Archives produced by the Federation of Museums and Art Galleries of Wales will also be adhered to. Digital archives will be collated using the Royal Commission on the Ancient and Historical Monuments of Wales systems (2015) and deposited with the RCAHMW. The Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) shall be followed.
- 6.2 Appropriate specialists will need to be named by the appointed Archaeological Contractor for the analysis of artefacts and ecofacts, to include palaeo-environmental analysis and ceramic identification/analysis. Further specialists may also be required.
- 6.3 The results of the fieldwork will be assessed in local, regional, and wider contexts.
- 6.4 The results will be used to inform subsequent design considerations of the proposed development so that they can aim to avoid impacts upon any archaeological remains or that further archaeological mitigation can be implemented before such remains are disturbed.
- 6.5 The project archive, including all significant artefacts and ecofacts (excepting those which may be deemed to be Treasure) will be deposited with an appropriate body following agreement with the landowner (if retained and containing more than just digital information).
- 6.6 The appointed Archaeological Contractor will arrange for the deposition of finds, and ascertain the costs of storage and deposition, with an approved body before the project commences and inform DAT-DM of the arrangement which has been made.
- 6.7 A summary of the project results, excluding any confidential information, may be prepared for wider dissemination (e.g., Archaeology in Wales and special interest and period-specific journals).
- 6.8 The report will be prepared to follow the Standard and Guidance for Archaeological Watching Briefs (CIfA S&G: AWB 2014).

6.9 Digital copies of the report will be provided to the client, as well as the regional HER and DAT-DM.

# 7 STAFF

- 7.1 The project should be managed by a member of the chartered institute for archaeologists (MCIfA).
- 7.2 The on-site works will be undertaken by experienced archaeologists, with appropriate CSCS certification.

#### 8 QUALITY ASSURANCE

- 8.1 The appointed Archaeological Contractor should have considerable experience of undertaking all categories of archaeological fieldwork and always operate to best professional practice, adhering to CIfA guidelines where appropriate. The appointed Archaeological Contractor should be a Registered Organisation with CIfA, and all staff should abide by their code of conduct and adhere to their relevant standards and guidance.
- 8.2 The appointed Archaeological Contractor should operate robust internal monitoring procedures that ensure that the standard of each project is maintained from commencement to completion.

#### 9 MONITORING

9.1 The fieldwork may need to be monitored by Dyfed Archaeological Trust – Development Management (DAT-DM), in their role as archaeological advisors to the planning authority, who should be provided access to the site at any time during the works.

#### **10 HEALTH AND SAFETY**

- 10.1 All permanent members of staff should be CSCS registered.
- 10.2 Service information should be obtained prior to the start of the works.
- 10.3 A health and safety risk assessment must be prepared prior to the works commencing to ensure that all potential risks are minimised.
- 10.4 The site staff will go through the health and safety risk assessment prior to works commencing and all site staff must sign the document to confirm that they have read, understood, and will comply with the document.
- 10.5 All site inductions, H&S procedures, H&S constraints and site rules of the client or any on-site contractor should be made known to the archaeological staff at the start of the works.
- 10.6 All relevant health and safety regulations must be followed, including compliance with Welsh Government guidelines on working practices during the current Covid-19 Pandemic, and guidance issued by CIfA.
- 10.7 CIfA recommends that ROs should ensure that their own risk assessments and local site operating procedures take account of <u>Prospect's COVID-19</u> <u>site working advice</u> (updated 4 May).. If the site cannot operate in line with this guidance, it must not open or continue to stay open.
- 10.8 The project risk assessment should detail the precautions put in place to reduce the spread of Covid-19 coronavirus during fieldwork.
- 10.9 Safety helmets, high visibility vests and boots are to be used by all site personnel as necessary. The developer will make all site staff aware of any other PPE that may be required.
- 10.10 Working with machinery: all staff must ensure that their presence on site is communicated to all relevant site contractor staff, especially the machine operator. The archaeologist observing the excavation of trenches by

machine will establish a safe working procedure with the machine operator at the start of work. This will include explaining the purpose of the works itself and the method by which the trenches shall be machined. This will include ensuring that the machine driver is aware that topsoil is stripped carefully to avoid disturbing archaeology. This will also include discussing the methodology for safe working, ensuring that no machining is done without an archaeologist being present.

#### **11 ARBITRATIONS**

11.1 Any dispute or disagreement arising out of a contract in relation to this work shall be referred for a decision to the Chartered Institute of Archaeologist's arbitration scheme.

#### 12 SOURCES

- Bell, M. et al 2016, *Metal Mine Remediation, Project Part 1: Abbey Consols Archaeological Assessment*, Unpublished DAT Report No 2016/05 (Part 1)
- Murphy, F & Jenkins, L 2020 *Abbey Consols Mine, Ceredigion Trial Trench Evaluation* 2020, Unpublished DAT Report No 2020-17