

**CPAT Report No. 1891**




# **Trelogan Mine, Flintshire**

Heritage Impact Assessment



YMDDIRIEDOLAETH ARCHAEOLEGOL CLWYD-POWYS  
CLWYD-POWYS ARCHAEOLOGICAL TRUST

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# CONTENTS

<b>SUMMARY .....</b>	<b>II</b>
<b>CRYNODEB.....</b>	<b>III</b>
<b>1 INTRODUCTION.....</b>	<b>1</b>
<b>2 LEGISLATIVE PROVISIONS, PLANNING POLICY AND PUBLISHED GUIDANCE.....</b>	<b>2</b>
<b>3 HISTORICAL BACKGROUND .....</b>	<b>3</b>
<b>4 BASELINE ASSESSMENT .....</b>	<b>10</b>
<b>5 ASSESSMENT OF POTENTIAL IMPACTS .....</b>	<b>14</b>
<b>6 MITIGATION MEASURES .....</b>	<b>21</b>
<b>7 DISCUSSION/CONCLUSIONS.....</b>	<b>22</b>
<b>8 SOURCES .....</b>	<b>22</b>
<b>9 ARCHIVE DEPOSITION STATEMENT .....</b>	<b>23</b>
<b>APPENDIX 1: METHODOLOGY FOR ASSESSING THE POTENTIAL IMPACTS OF DEVELOPMENT ON HERITAGE ASSETS .....</b>	<b>24</b>

## Summary

The Field Services section of the Clwyd-Powys Archaeological Trust carried out a Heritage Impact Assessment in August and September 2022 on land bordering the Afon y Garth stream, to the north-east of the village of Trelogan in Flintshire. The assessment was centred at NGR SJ 12148 80479 and covered an area of 19.5ha encompassing agricultural fields and woodland. It was conducted at the behest of the Coal Authority (CA) on behalf of the joint Metal (Non-Coal) Mine Programme between Natural Resources Wales (NRW) and the CA, to inform a project proposal for mine water monitoring and pollution control works in the area of a mine drainage adit serving the disused Trelogan mine and an overflowing manhole chamber on the course of a pipeline from the drainage adit.

The area to be researched in detail was fairly closely drawn by the CA around the water sources thought to contribute to the metals loading in the Afon y Garth. A search of existing records was made for a zone extending a further 500m to provide a greater understanding of the archaeological resource of the wider area, and this was complemented by a field visit to the study area to assess known heritage assets and to prospect for additional assets. A total of 12 assets were identified within the study area, none of which were designated or registered as being of national importance. All assets were recorded as polygons to identify possible constraints and help to inform the proposals at an early stage. The potential impacts on assets within the study area have been assessed for the temporary flow structures, and designated and registered assets within 1km of the boundary were also considered in case there was a potential for indirect (visual) impacts.

The proposals for the construction of temporary flow monitoring structures have the potential to impact two non-designated heritage assets, the Trelogan Mine drainage adit and a pipeline which drew water from it to power a water supply scheme for local villages. Neither of these assets is of sufficient value to require avoidance and preservation in-situ, but a watching brief during construction of the temporary flow structures might provide information to allow for the better understanding of the heritage assets in question.

## Crynodeb

Bu adran Gwasanaethau Maes Ymddiriedolaeth Archaeolegol Clwyd-Powys yn cynnal asesiad o effaith ar dreftadaeth ym mis Awst a mis Medi 2022 ar dir yn cyffinio â nant Afon y Garth, i'r gogledd-ddwyrain o bentref Trelogan yn Sir y Fflint. Roedd canolbwynt yr asesiad yng Nghyfeirnod Grid Cenedlaethol SJ 12148 80479 ac roedd yn cwmpasu ardal o 19.5ha yn cynnwys caeau amaethyddol a choetir. Cynhaliwyd ef ar gais yr Awdurdod Glo, i ddarparu sail ar gyfer cynnig prosiect gwaith monitro dŵr mwynglawdd a rheoli llygredd yn ardal mynedfa ddraenio mwynglawdd sy'n gwasanaethu mwynglawdd segur Trelogan.

Roedd yr ardal i ymchwilio iddi'n fanwl wedi'i phennu'n eithaf agos gan yr Awdurdod Glo o amgylch y ffynonellau dŵr y credir eu bod yn cyfrannu at y llwyth metelau yn Afon y Garth. Chwiliwyd cofnodion a oedd yn bodoli ar gyfer parth yn estyn 500m pellach i ddarparu gwell dealltwriaeth o'r adnodd archaeolegol yn yr ardal ehangach, ac ategwyd hyn ag ymweliad maes ag ardal yr astudiaeth i asesu asedau treftadaeth hysbys ac i chwilio am asedau ychwanegol. Nodwyd 12 ased i gyd o fewn ardal yr astudiaeth, ond nid oedd yr un o'r rhain wedi'u dynodi neu eu cofrestru fel asedau o bwysigrwydd cenedlaethol. Cofnodwyd yr holl asedau fel polygonau i nodi cyfyngiadau posibl ac i helpu i ddarparu sail ar gyfer y cynigion yn gynnar yn y broses. Mae effeithiau posibl ar asedau o fewn ardal yr astudiaeth wedi'u hasesu, ac ystyriwyd asedau dynodedig a chofrestredig o fewn 1km o'r ffin hefyd rhag ofn y gallai'r gwaith gael effeithiau anuniongyrchol (gweledol).

Mae gan y cynigion ar gyfer adeiladu strwythurau monitro llif dros dro y potensial i effeithio ar ddau ased treftadaeth nad ydynt wedi'u dynodi, adit draenio Mwynglawdd Trelogan a phiblinellau a oedd yn tynnu dŵr ohono i bweru cynllun cyflenwi dŵr ar gyfer pentrefi lleol. Nid yw'r un o'r asedau hyn o werth digonol i'w gwneud yn ofynnol i osgoi a chadw yn y fan a'r lle, ond gallai briff gwylio wrth adeiladu'r strwythurau llif dros dro ddarparu gwybodaeth er mwyn caniatáu gwell dealltwriaeth o'r asedau treftadaeth dan sylw.

# 1 Introduction

- 1.1. The Field Services section of the Clwyd-Powys Archaeological Trust carried out a Heritage Impact Assessment in August and September 2022 on land bordering the Afon y Garth stream, to the north-east of the village of Trelogan in Flintshire. The assessment was centred at NGR SJ 12148 80479 and covered an area of 19.5ha encompassing agricultural fields and woodland. The assessment was commissioned by the Coal Authority (CA) on behalf of the joint Metal (Non-Coal) Mine Programme between NRW and the CA, to inform a project proposal for mine water monitoring and pollution control works in the area of the mine drainage adit serving the disused Trelogan lead/zinc mine.



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*Fig. 1: Location of the Trelogan Mine assessment area*

- 1.2. The Afon Y Garth is heavily contaminated with metals, failing European Water Framework Directive (WFD) standards for lead, zinc, and cadmium. The Afon Y Garth flows into the River Dee estuary 3km north-east of Trelogan, at Ffynnongroyw. The discharge from the Trelogan Mine drainage adit and the overflowing manhole chamber on the course of a pipeline from the drainage adit are considered to be the primary sources of the metal loading into the Afon Y Garth.
- 1.3. The Heritage Impact Assessment was initially desk-based and followed up by a field visit to the study area and its immediate surroundings (see para 2.8), following which this report was written.

## 2 Legislative Provisions, Planning Policy and Published Guidance

- 2.1. Cultural heritage is deemed to include the complete range of man-made features that have been introduced into the landscape from the Palaeolithic, more than two hundred and fifty thousand years ago, up to and including the 20<sup>th</sup> century. Some of these features will be visible as upstanding remains on the ground; others will be buried and only become apparent during ground disturbance, whilst others may be objects that have been discarded, lost or deliberately deposited. Some will have an archaeological interest and importance; others will be more historical in their origin. In addition, some natural features will be relevant because of the information they contain; peat bogs, for instance, hold pollen that can throw light on past human activity in the area. Collectively, all these features are known as heritage assets.

### *Planning Policy*

- 2.2. National policy within Wales is set out in Planning Policy Wales (11th edition, 2021) (PPW), which was revised with the purpose of harmonising PPW with the Well-being of Future Generations Act (2015). Issues relating to the historic environment are set out in Chapter 6, Distinctive and Natural Places. This notes that the ‘protection, conservation and enhancement of historic assets is most effective when it is considered at the earliest stage’ of a project; hence the need for a reasonable and proportionate impact assessment to ensure that any proposed development is sustainable and to prevent unnecessary harm to heritage assets.
- 2.3. PPW is supported by Technical Advice Note 24: The Historic Environment (TAN 24) 2017. It is designed to assist local authorities with developing their local plans and for determination of planning applications or listed building consent in relation to historic assets. PPW is also supported by associated Cadw best practice guidance on the historic environment (see below).
- 2.4. The Well-being of Future Generations Act 2015 defines sustainable development as ‘the process of improving the economic, social, environmental and cultural well-being of Wales by taking action ... aimed at achieving the well-being goals’. It requires public bodies in Wales to consider the long-term impact of their decisions, and whether such decisions contribute to social, cultural, environmental and economic well-being in Wales.

### *Guidance*

- 2.5. The assessment followed guidance produced by Cadw, on behalf of the Welsh Government, for managing historic assets: Heritage Impact Assessment in Wales (2017); The Setting of Historic Assets in Wales (2017); and Conservation Principles for the sustainable management of the historic environment in Wales (2011).
- 2.6. The Design Manual for Roads and Bridges (DMRB), revised in 2019, provides a suitable general framework for assessing the cultural heritage (see Appendix 1):
- Design Manual for Roads and Bridges: Volume 11: Section 2 General Principles of Environmental Assessment: Part 4: LA 104 Environmental assessment and monitoring
  - Design Manual for Roads and Bridges, Volume 11 Section 3 Environmental Assessment Techniques: Part 2, LA 106 Cultural heritage assessment.



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### ***Methodology***

- 2.7. The assessment was conducted according to the Chartered Institute for Archaeologists' (CIfA) *Standard and Guidance for Historic Environment Desk-based Assessment* (2020). CIfA is the leading professional body representing archaeologists working in the UK and overseas.
- 2.8. The desk-based element of the study centred on heritage assets recorded in the Historic Environment Record held by the Clwyd-Powys Archaeological Trust, and included the examination of readily available documentary, cartographic, and web-based sources, all of which were consulted to provide the background data for the assessment. A field visit was undertaken on 2 September 2022, to assess the recorded assets and prospect for other, previously unrecorded, heritage assets.

## **3 Historical Background**

- 3.1. This section provides a brief summary of the archaeology and history of the study area and its immediate surroundings, to enable the findings of the assessment to be placed in a wider context. In the following text numbers within brackets refer to either primary record numbers (PRN) in the regional Historic Environment Record (HER) maintained by the Clwyd-Powys Archaeological Trust, or designated and registered assets in the lists maintained by Cadw.

### ***Prehistoric Era (10,000BC – AD 43)***

- 3.2. The only evidence of prehistoric activity within the wider search area is a Bronze Age barrow (PRN 102476) at Mynydd y Garth, some 350m to the north-east of the assessment area. This was originally recorded in the 1940s but a subsequent visit to the location 50 years later revealed no trace of the heritage asset and it is assumed that it was lost to later activity. Owing to the local topography, it seems unlikely that there will be evidence of activity belonging to this period within the study area.

### ***Medieval Period (410 - 1500)***

- 3.3. Evidence of medieval fields and field systems has been recorded for the locality, mainly in the form of small fields known as 'quilllets', though a lynchet (an earth terrace defining an early field division) of potentially the same age was recorded during the site visit in the study area, remaining as a field boundary up to 1839. Apart from these, a medieval spindle whorl has been recorded nearby. Although there is no direct evidence of medieval dwellings, it seems certain that these would have been present, probably on the same sites as more recent settlement in the wider area.

### ***Post-Medieval and Modern Periods***

- 3.4. Mostyn Hall Park (No PGW (C) 14 (FLT)) lies 750m to the east of the study area and has group value with the Grade I Listed Mostyn Hall (LB No 21517) and with numerous Grade I, II\* and Grade II Listed estate buildings around the Hall and home farm and within the park and gardens. Mostyn Hall is notable for having been the residence of the wealthy and prominent local Mostyn family. Landscaping took place on the estate in the 18<sup>th</sup> and 19<sup>th</sup> centuries.
- 3.5. Most of the known local archaeological resource belongs to these periods, in the form of domestic, agricultural and industrial activity. Of the former, there is the mid-17<sup>th</sup> century Perth-y-Maen house, which is a Grade II\* listed building (No 14887), and its nearby walled garden, which is also a registered garden (LB No 300; PGW (C) 71). This is still a working farmstead and there are other buildings there of similar age.



- 3.6. Other farmsteads, such as Trelogan Uchaf, have been recorded in the locality but the only dwelling in the study area is the ruinous Caeau-Isaf (PRN 126867) on the north side of the Afon y Garth.



*Fig. 2: The site of Caeau-Isaf house. CPAT 5007-0001*



*Fig. 3: Saunders Dingle building. CPAT 5007-0018*



- 3.7. A building (PRN 93633) has also been recorded in Saunders Dingle, which is described as a house site in the records, though this is incompatible with the remains. It has a door but no windows so it seems more probable that it was some form of store.
- 3.8. Although the remains have been severely impacted by clearance and subsequent development the most significant element of the landscape in relation to this study would have been the Trelogan Lead/Zinc Mine (PRN 102786), which was worked by what later became known as the London Lead Company from the 1690s until the end of the 18<sup>th</sup> century. A series of shafts were sunk on the local mineral veins and were initially worked using horse whims to haul the material to the surface. Power to process the raw material and remove water from the workings was initially provided by means of a windmill and from 1732 by a range of steam engines, some of which carried out hauling duties in the shafts.
- 3.9. At some point, a deep adit (PRN 213944) was driven from the lower end of Saunders Dingle (see Fig. 4) towards the mine site and this provided an efficient means of draining the workings, though the long period of time that the mine was in operation makes it probable that the workings continued below adit level and additional pumping was required. The mine continued through the 19<sup>th</sup> century under the ownership of the Trelogan Mining Company and was worked by Brunner Mond, from 1897 to the mine's eventual closure in 1911.

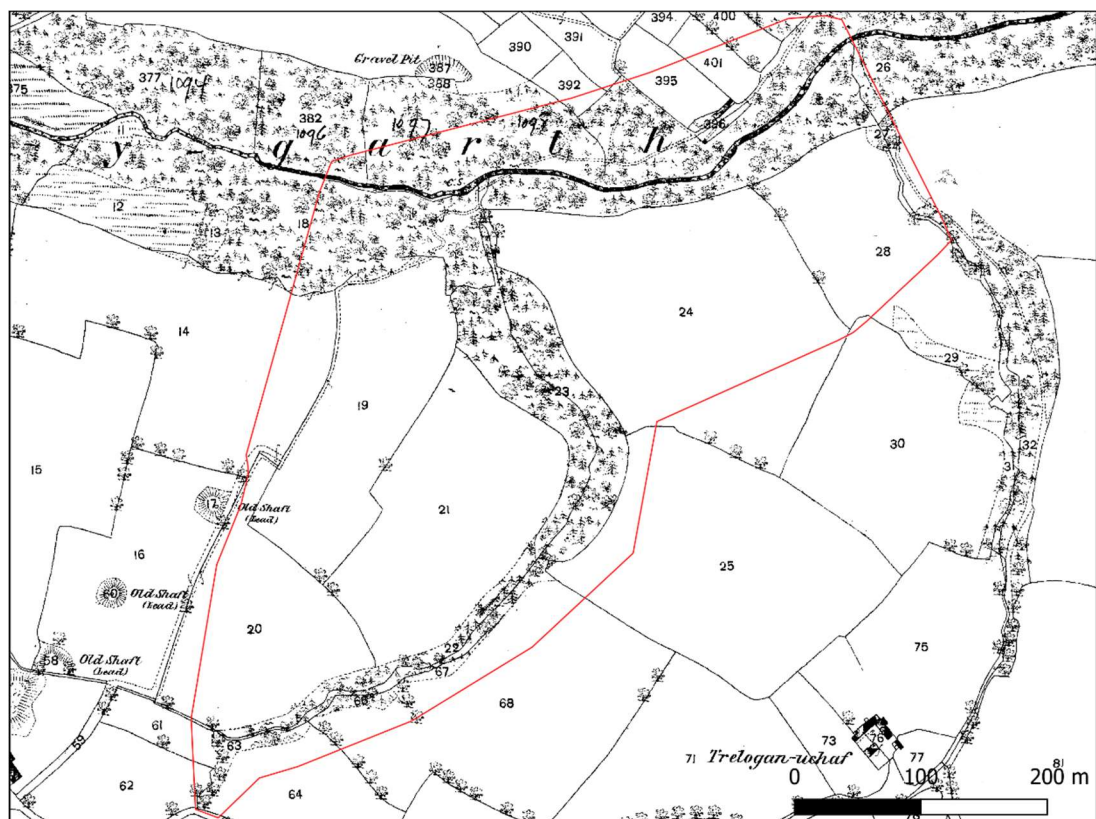


*Fig. 4: The outfall of the Trelogan Mine drainage adit. CPAT 5007-0016*

- 3.10. The main sources used to identify heritage assets were the tithe survey mapping of 1839 and the series of large-scale Ordnance Survey maps published in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries; these are shown below with the study area marked on them in red.



*Fig. 5: Llanasa Tithe map of 1839*



*Fig. 6: First edition Ordnance Survey map of 1872*



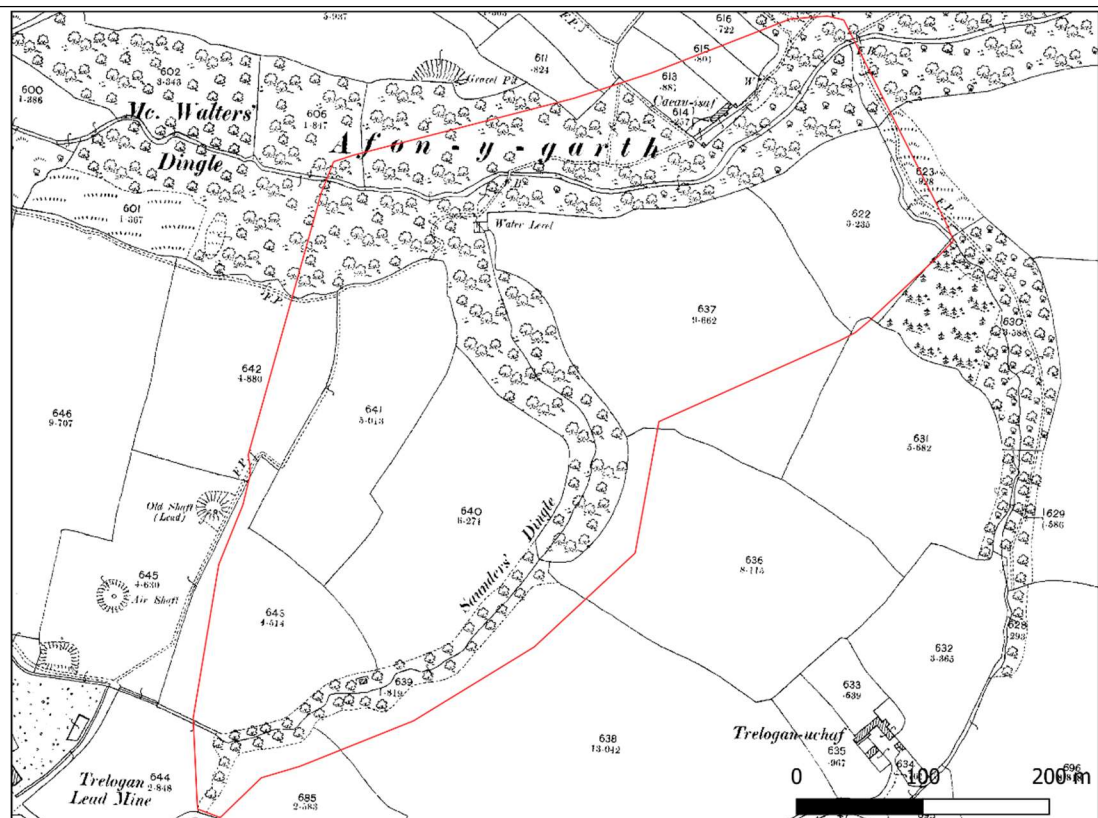


Fig. 7: Second edition Ordnance Survey map of 1899

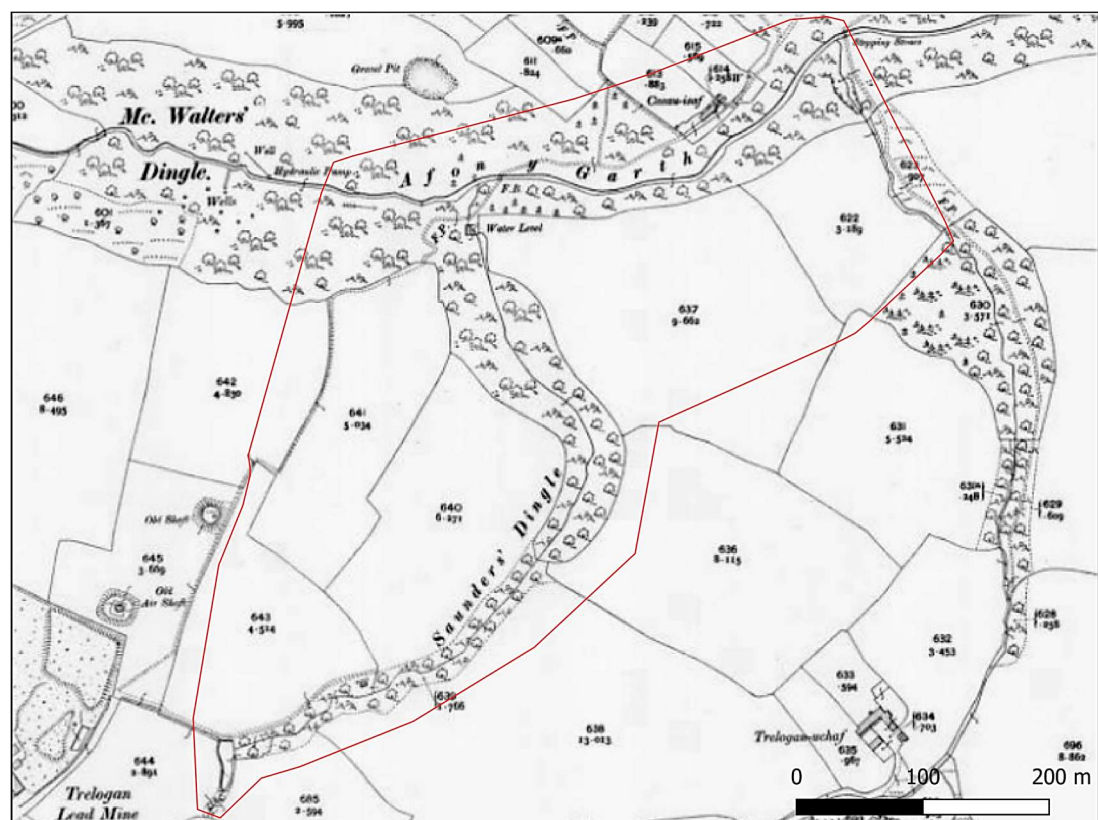


Fig. 8: Third edition Ordnance Survey map of 1912

- 3.11. Broadly contemporary with the closure of the mine the Holywell Rural District Council seems to have commenced the provision of water supplies to local villages, the earliest evidence for this being the 'hydraulic pump' apparently drawing water from a well in Mc. Walters Dingle on the 1912 OS map (Fig. 8). A series of wells are depicted in this area on the map and it seems that the council expanded the scheme in the 1930s by building a hydraulic ram installation (Fig. 9; PRN 213950) further east along the Afon y Garth which used water from the mine drainage adit to pump clean water, presumably from the wells, to heights of between 182 and 292 feet.



*Fig. 9: Hydraulic ram installation building, with ram remains nearby. CPAT 5007-0012*

- 3.12. Information on the installation was provided by Green and Carter of Somerset, who hold the records for Blake's Hydram (see Fig. 10), and these indicate that it was constructed in 1933, with the installation last serviced in 1953, sometime after which the supply was presumably superseded by mains water. The installation took water from the drainage adit, via what seems to have been a control building (PRN 213945), and channelled it through a pipeline (PRN 213946) to a concrete building containing hydraulic rams, alongside the Afon y Garth (Fig. 9). Just upstream of the building the pipeline passes through a manhole chamber from which water is overflowing down the side of the valley (Fig. 12), presumably as the pipe below is blocked. The line of the clean water pipe, a 3 inch rising main, is not known but a stop tap (PRN 213952) a short distance further downstream appears to indicate some of the route.



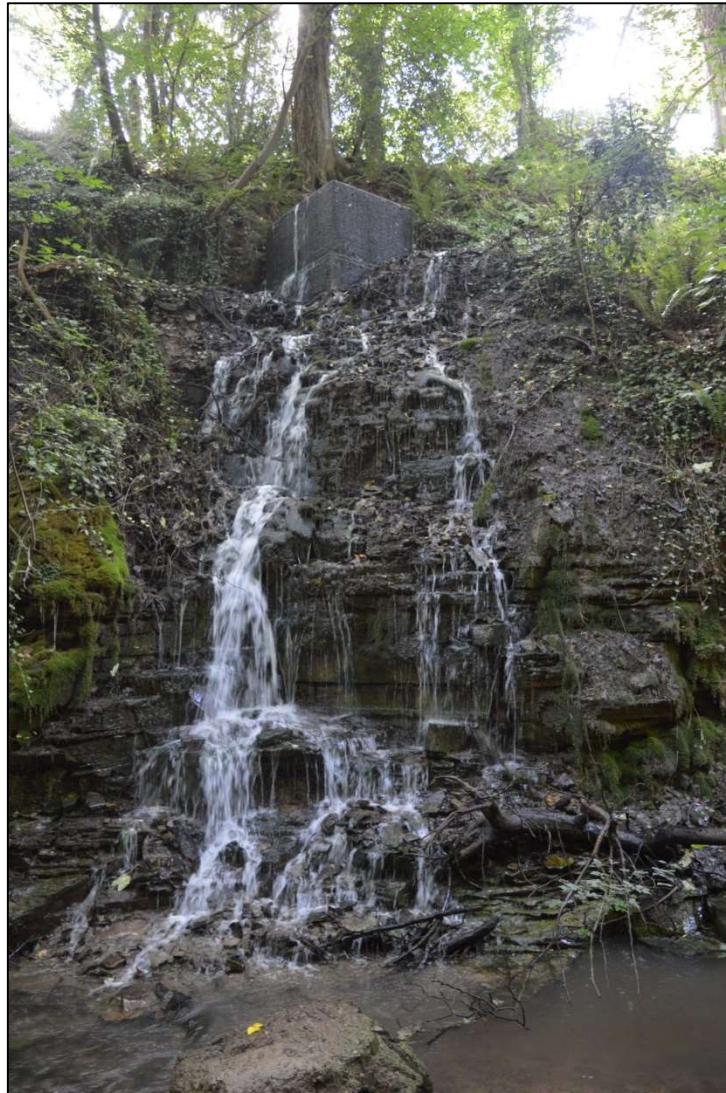


*Fig. 10: Hydraulic Ram identification plate. CPAT 5007-0011*



*Fig. 11: Probable control building, near the Trelogan Mine drainage adit, for the hydraulic ram installation. CPAT 5007-0015*





*Fig. 12: Overflowing manhole chamber on the course of the pipeline from the drainage adit, just upstream from the hydraulic ram building. CPAT 5007-13*

- 3.13. The current nature of the study area is characterised by agricultural fields, both arable and pasture, which are separated by narrow, heavily wooded, gorges containing streams. The amount of tree cover in the gorges has a significant impact on the appearance of the area by reducing visibility towards and away from the study area. Past land-use would have been largely the same from the medieval period onwards, though the presence of the Trelogan mine workings in close proximity would no doubt have been a major influence in the 18<sup>th</sup> and 19<sup>th</sup> centuries, following which the Holywell RDC waterworks alongside Afon y Garth would have been an important part of the local landscape up to the mid-20<sup>th</sup> century.
- 3.14. The local archaeological resource is predominantly post medieval and recent in date, with a lesser medieval component related to agricultural activity in the period. Roman and Prehistoric activity seems to be unlikely with current knowledge.

## **4 Baseline Assessment**

- 4.1. The baseline assessment has considered all heritage assets within the study area, together with designated and registered assets which lie within 1km.

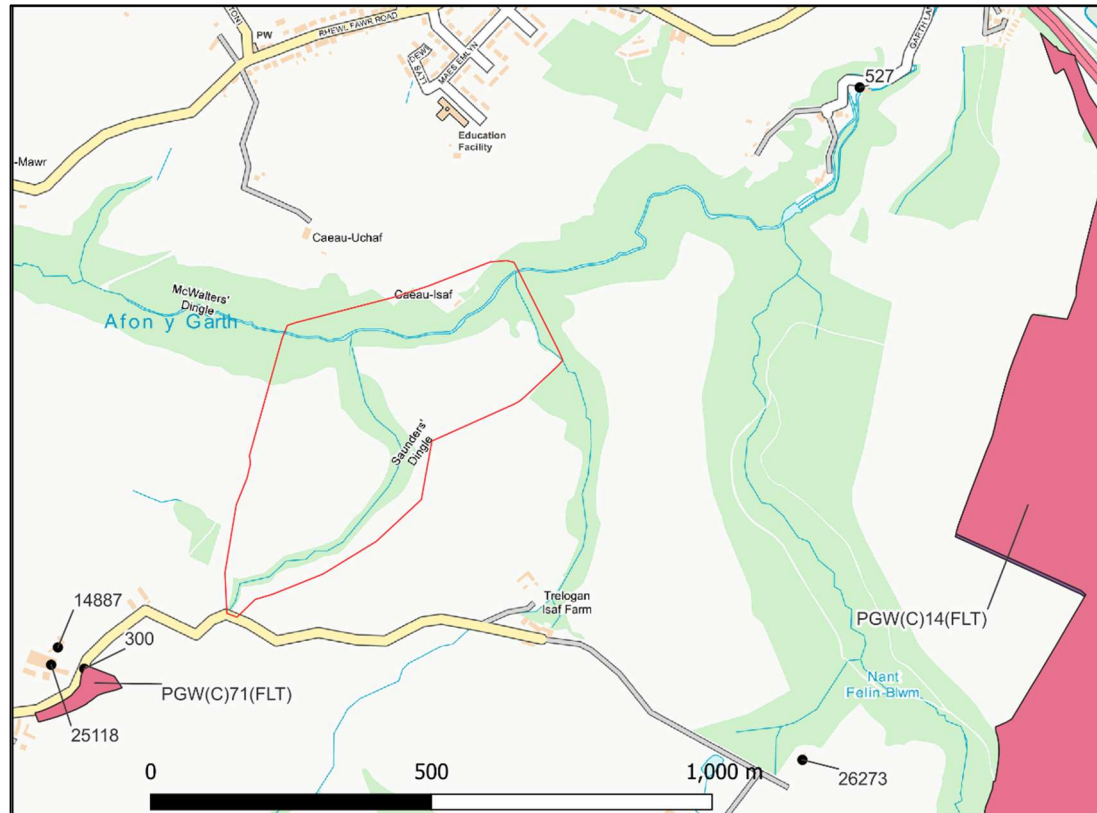


## Designated and Registered Heritage Assets

- 4.2. The following section provides details of all designated and registered heritage assets within 1km of the study area, which are summarised in Table 1. These were identified from Cadw's datasets, accessed on 20 June 2022. There are no designated or registered assets within the study area.

Table 1: Summary of Designated and Registered Heritage Assets within 1km of the study area

Designated asset	Within 1km
World Heritage Sites	0
World Heritage Sites Essential Setting	0
Scheduled Monuments	0
Listed buildings	5
Registered historic parks and gardens	2
Registered historic landscape character areas	0
Conservation areas	0



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Fig. 13: Designated and Registered Heritage Assets within 1km of the study area

**Listed Buildings**

- 4.3. These are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990, as amended by the Historic Environment (Wales) Act 2016. All listed buildings are nationally important, but are graded in order of significance as Grade I, II\* or II. Grade I buildings are considered to be of equal status to Scheduled Monuments. Local planning authorities must have special regard to the desirability of preserving the setting of a listed building regardless of its grade. Planning Policy Wales (11<sup>th</sup> edition, 2021) requires a 'general presumption in favour of the preservation of a listed building and its setting, which might extend beyond its curtilage' (6.1.10).
- 4.4. There are five listed buildings within 1km of the study area (see Table 2; Fig. 13).

Table 2: Listed buildings within 1km of the study area

Number	Name	Grade	Distance
300	Orchard Wall at Berthymaen	II*	250m SW
527	Garth Mill and Mill House	II	700m NE
14887	Berthymaen House	II*	300m WSW
25118	Barn with attached cartshed at Berthymaen	II	300m WSW
26273	Keepers House	II	830m SE

**Registered Historic Parks and Gardens**

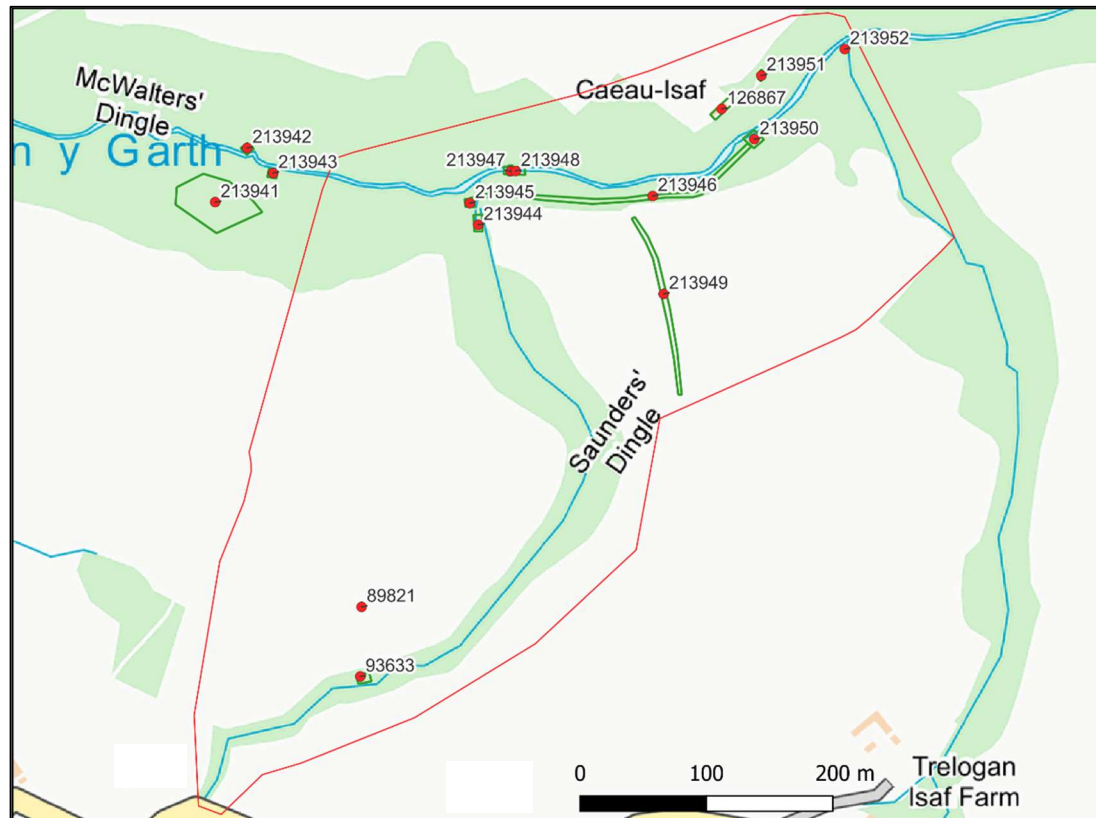
- 4.5. In Wales significant landscapes are catalogued in the two-volume non-statutory Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales (1998 and 2001). Parks and gardens are graded in significance in the same way as listed buildings. Though registered rather than designated, parks and gardens are treated similarly, as indicated in Planning Policy Wales (11<sup>th</sup> edition, 2021).
- 4.6. There are two registered parks and gardens within 1km of the study area (see Table 3; Fig. 13).

Table 3: Registered Parks and Gardens within 1km of the study area.

Number	Name	Grade	Distance
PGW(C)14(FLT)	Mostyn Hall	II*	750m ESE
PGW(C)71(FLT)	Perthymaen	II	250m SW

***Non-designated Heritage Assets within the study area***

- 4.7. A total of 12 non-designated assets were revealed within the study area from all sources. These have been categorised according to their perceived importance. They are depicted on Fig. 14 and listed in Table 4, below.



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*Fig. 14: Non-designated assets within the study area (outlined in red), with their extents outlined in green. The three assets to the west along the Afon y Garth were identified from historic mapping but have been delineated on the plan in case amendments to the scheme make their inclusion necessary.*

Table 4: Non-designated assets within the study area

PRN	Name	Type	Value	NGR
89821	Berth y Maen, Nant Blas Bychan	Mansion	Unknown	SJ 12924 80949
93633	Saunder's Dingle building	Building	Low	SJ 12923 80894
126867	Caeau-Isaf, house	House	Low	SJ 13209 81343
213944	Trelogan Mine drainage adit	Mine level	Low	SJ 13016 81251
213945	Trelogan water supply control building	Building	Low	SJ 13009 81268
213946	Afon y Garth pipeline	Pipeline	Low	SJ 13153 81273
213947	Afon y Garth footbridge	Bridge	Negligible	SJ 13042 81294
213948	Afon y Garth weir	Weir	Negligible	SJ 13046 81294

213949	Saunders Dingle lynchet	Lynchet	Low	SJ 13163 81197
213950	Afon y Garth hydraulic ram	Hydraulic ram	Low	SJ 13234 81318
213951	Caeau-Isaf well	Well	Low	SJ 13240 81369
213952	Afon y Garth stop tap	Pipeline	Low	SJ 13306 81390

## 5 Assessment of Potential Impacts

- 5.1. The potential impacts which may result from any development proposals have been assessed in accordance with the DMRB guidelines for determining the value of an asset and the potential impacts (see Appendix 1). It has to be noted that there are not currently any firm proposals for the infrastructure that may be required so the assessment is necessarily theoretical.
- 5.2. Direct physical impacts occur where a development results in changes to, or the loss of some or all of the physical characteristics of which an asset is composed.
- 5.3. While there is currently no methodology which specifically defines the process for assessing visual impacts on heritage assets, relevant guidance is provided in the following documents:

Cadw, 2017. *The Setting of Historic Assets in Wales*, Welsh Government.

Cadw, 2011. *Conservation Principles for the Sustainable Management of the Historic Environment in Wales*, Welsh Assembly Government.

Cadw and Countryside Council for Wales, 2007. *Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process*, Revised (2nd) edition including revisions to the assessment process (ASIDOHL2).

Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment*, 3<sup>rd</sup> edition (known as GLVIA3).

- 5.4. Cadw's guidance outlines the principles used to assess the potential impact of development or land management proposals within the settings of World Heritage Sites, ancient monuments (scheduled and unscheduled), listed buildings, registered historic parks and gardens, and conservation areas. These principles, however, are equally applicable to all individual historic assets, irrespective of their designation. A staged approach is advocated as follows:

Stage 1: Identify the historic assets that might be affected by a proposed change or development.

Stage 2: Define and analyse the settings to understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced.

Stage 3: Evaluate the potential impact of a proposed change or development on that significance.

Stage 4: If necessary, consider options to mitigate or improve the potential impact of a proposed change or development on that significance.

- 5.5. An important part of the assessment process is to understand the significance of an historic asset which 'embraces all of the cultural heritage values that people associate with it, or which prompt them to respond to it. These values tend to grow in strength and complexity over time, as understanding deepens and people's perceptions evolve'. In order to assess the significance of an historic asset, four component values need to be considered: Evidential value; Historical value; Aesthetic value; and Communal value (Cadw 2011, 10).
- 5.6. Visual impacts might be on 'views to' or 'views from' and should be assessed with reference to key historic viewpoints and essential settings. These should be considered in relation to a site's original character and function, as well as to the vantage points and visual experience of a visitor today (Cadw and CCW 2007, 21). It should be noted that visual impacts can therefore occur even where there is no intervisibility between the development and the asset itself.
- 5.7. The value of an asset has been determined in accordance with DMRB (2019) criteria, while the assessment has also considered its setting and those factors which contribute to its significance. For the purposes of this assessment the magnitude of the visual impact considers those factors outlined in Table 5, which draws on guidance provided in GLVIA3. The significance of the visual impact on a particular heritage asset is then established from the DMRB matrix (2019, Part 4: LA 104, Table 3.8.1).

Table 5: Factors affecting the magnitude of the visual impact

Magnitude	Relevant factors
Major	<p>The proposed development is visible from much or all of the asset and its setting, is close to it and so occupies a wide angle of the view.</p> <p>The proposed development will cause a clearly noticeable change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will alter to a high degree the composition of the view.</p> <p>The proposed development will adversely affect:</p> <ul style="list-style-type: none"> <li>• principal views to and from the asset and its setting</li> <li>• views between associated assets and their settings</li> <li>• views which make a major contribution to the value and appreciation of the asset and its setting</li> </ul>
Moderate	<p>The proposed development is visible from a moderate part of the asset and its setting, is at a moderate distance from it and so occupies a moderate angle of the view, or has no direct intervisibility with the asset but is visible in views to the asset from within its setting, at a moderate distance from it and so occupies a moderate angle of the view.</p> <p>The proposed development will cause a clearly noticeable change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will alter to a moderate degree the composition of the view. Views may be partial/intermittent.</p> <p>The proposed development will adversely affect:</p> <ul style="list-style-type: none"> <li>• secondary views to and from the asset and its setting</li> <li>• partial views between associated assets and their settings</li> </ul>

	<ul style="list-style-type: none"> <li>views which make a moderate contribution to the value and appreciation of the asset and its setting</li> </ul>
Minor	<p>The proposed development is visible from a small part of the asset and/or its setting, is at some distance from it and so occupies a small angle of the view.</p> <p>The proposed development has no direct intervisibility with the asset but is visible in views to the asset from within its setting, is at some distance from it and so occupies a small angle of the view.</p> <p>The proposed development will cause a perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will partially alter the composition of the view. Views may be partial only.</p> <p>The proposed development will adversely affect views which make little or no contribution to the value and appreciation of the asset and its setting</p>
Negligible	<p>The proposed development is visible from only a very small part of the asset and/or its setting, is at a considerable distance from it and so occupies a very small angle of the view.</p> <p>The proposed development has no direct intervisibility with the asset but is visible in views to the asset from within its setting, is at some distance from it and so occupies a very small angle of the view.</p> <p>The proposed development will cause a barely perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will barely alter the composition of the view. Views may be glimpsed only.</p> <p>The proposed development will adversely affect views which make little or no contribution to the value and appreciation of the asset and its setting</p>
No change	<p>The proposed development has no intervisibility with the asset and its setting and will cause no change to the view.</p>

## General

- 5.8. The initial proposal from the Coal Authority is to build two flow monitoring structures at the places from which water flows into the Afon y Garth (see Figs 4 and 12). These will be temporary structures (see Fig. 15 for a typical example, though the exact design has not been finalised) that are planned to be in place for approximately 5 years to gather as much data as possible. Once these results are available then appropriate remedial measures to reduce the metals loading can be formulated. An impact assessment of the proposals will be required at that stage, though the results of this assessment will already have been used in the design process to reduce the impact.

### ***Temporary flow monitoring structures***

- 5.9. The two locations where temporary flow monitoring structures are proposed are not particularly sensitive. At the Trelogan Mine drainage adit, local information indicates that the end of the adit collapsed in the past 20 years or so and this is corroborated by the visible remains (Fig. 4) which show it to be blocked by rubble, through which water flows. As a result of the damage it is unlikely that the installation will have a marked additional impact; any potential here could be mitigated by a watching brief during construction of the monitoring structure, which may provide a positive benefit by revealing the current condition of the asset.



- 5.10. At the second location (Fig. 12) water flows down the side of the valley from a manhole along the route of the 1933 hydraulic ram pipeline, very probably supplied from the drainage adit. In theory it would be possible to unblock the original outlet of the pipeline in or near the hydraulic ram building to measure the flow in the pipeline, but this would almost certainly have an effect on that installation unless it was carefully planned in advance.



*Fig. 15: An example of a typical temporary flow monitoring structure*

### ***Direct Impacts***

- 5.11. All the assets within the study area are non-designated and are of **low** or **negligible** value. The significance of a direct impact resulting from the temporary flow monitoring structures, both with and without mitigation, has been determined for each asset and is detailed in Table 6, the nature of that proposed mitigation follows in Section 6.



Table 6: Non-designated assets subject to a potential direct impact

PRN	Name	Type	Value	Magnitude of impact (without mitigation)	Significance of impact (without mitigation)	Magnitude of impact (with mitigation)	Significance of impact (with mitigation)
89821	Berth y Maen, Nant Blas Bychan	Mansion	Negligible	No change	Neutral	No change	Neutral
93633	Saunder's Dingle building	Building	Low	No change	Neutral	No change	Neutral
126867	Caeau-Isaf house	House	Low	No change	Neutral	No change	Neutral
213944	Trelogan Mine drainage adit	Mine level	Low	Moderate	Slight	Moderate	Slight
213945	Trelogan water supply control building	Building	Low	No change	Neutral	No change	Neutral
213946	Afon y Garth pipeline	Pipeline	Low	Moderate	Slight	Moderate	Slight
213947	Afon y Garth footbridge	Bridge	Negligible	No change	Neutral	No change	Neutral
213948	Afon y Garth weir	Weir	Negligible	No change	Neutral	No change	Neutral
213949	Saunders Dingle lynchet	Lynchet	Low	No change	Neutral	No change	Neutral
213950	Afon y Garth hydraulic ram	Hydraulic ram	Low	No change	Neutral	No change	Neutral
213951	Caeau-Isaf well	Well	Low	No change	Neutral	No change	Neutral
213952	Afon y Garth stop tap	Pipeline	Low	No change	Neutral	No change	Neutral

***Indirect Impacts***

- 5.12. Indirect impacts are considered for the Listed Buildings and Registered Parks and Gardens recorded in Section 4, above. These potential impacts are entirely visual, no other indirect impacts have been identified.

***Listed Buildings***

- 5.13. The assessment has identified five listed buildings within 1km of the study area, where a potential visual impact on the asset and/or its setting might be envisaged as resulting from the installation of the temporary flow monitoring structures.

Table 7: Listed buildings within 1km of the study area

No	Name	Grade	Distance/ direction	Magnitude of impact	Significance of impact
300	Orchard Wall at Berthymaen Farm	II*	250m SW	No change	Neutral
527	Garth Mill and Mill House	II	700m NE	No change	Neutral
14887	Berthymaen House	II*	300m WSW	No change	Neutral
25118	Barn with attached cartshed at Berthymaen	II	300m WSW	No change	Neutral
26273	Keepers House	II	830m SE	No change	Neutral

**300 Orchard Wall at Berthymaen**

- 5.14. The listed building is the wall which surrounds an irregularly-shaped orchard. The wall is up to 2m high, of rubble stone with larger copings. On the north side, facing the road and the house, is a doorway with a Tudor head, above which is '1643 EP' (signifying a member of the Parry family) in raised letters. The internal faces (except the south-west side) have continuous horizontal grooves, into which wooden battens were originally inserted for fixing fruit trees. The wall is breached on the north-east. Listed grade II\* as an exceptionally early orchard wall retaining its original door, and for its contribution to the historic character of the farm.
- 5.15. Although parts of the fields within the study area are intervisible with the listed building, it seems unlikely that any temporary flow structures will be placed in these locations and they will instead be hidden by the local topography and dense tree cover. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

**527 Garth Mill and Mill House**

- 5.16. A 3-storey mill of rubble stone with a 2-storey and double fronted rubble-stone mill house set back against one of its gable walls. Garth Mill is shown on a Mostyn Estate map of 1743, but the present mill appears to be late 18<sup>th</sup> or early 19<sup>th</sup> century in date. The mill house was added in the third quarter of the 19<sup>th</sup> century and is shown on the 1871 Ordnance Survey map. The mill closed in 1956 and after a period of disuse was converted to a public house, which opened in 1983. The mill is listed, notwithstanding its later conversion to a public house, as a rare surviving estate mill of the 18<sup>th</sup> century.
- 5.17. The mill is not intervisible with the study area and the views towards it are similarly divorced by the local topography and dense intervening tree cover. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

**14887 Berthymaen House**

- 5.18. A 2-storey house with a T-shaped plan, of rubble stone with a slate roof behind coped gables, possibly built in the earlier part of the 17<sup>th</sup> century. It was for many generations the home of the Parry family and probably originally consisted of a hall and parlour, but a parlour wing was subsequently added and the original parlour was converted to a kitchen. An attached secondary dwelling was added at the rear probably in the latter half of the 17<sup>th</sup> century. The house later became a part of the Mostyn Estate and in the third quarter of the 19<sup>th</sup> century, a

lower wing was added. The house is listed at grade II\*, notwithstanding alteration to its exterior detail, as an especially well-preserved 17<sup>th</sup> century house with an attached secondary dwelling, retaining its early plan form and detail, and as the centrepiece of a farm of exceptional historic character.

- 5.19. As with the orchard wall, parts of the fields within the study area are intervisible with the listed building though it seems unlikely that any any temporary flow structures will be placed in these locations and they will be hidden by the local topography and dense tree cover. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

**25118      *Barn with attached cartshed at Berthymaen***

- 5.20. An 18<sup>th</sup> century rubble-stone barn with slate roof behind coped gables and a 4-bay queen-post roof. A cart shed and machinery store were added in the third quarter of the 19<sup>th</sup> century. Listed as a well-preserved 18th century barn and for its contribution to the historic character of the farm.

- 5.21. As with the farmhouse and the orchard wall, parts of the fields within the study area are intervisible with the listed building though it seems unlikely that any temporary flow structures will be placed in these locations. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

**26273      *Keepers House***

- 5.22. A 1½-storey cottage built by the Mostyn Estate in 1878 in simple Gothic style, of brick and with a steep tile roof and 2 brick ridge stacks. Listed as an estate cottage retaining strong 19th century character and as one of a number of 19<sup>th</sup> and early 20<sup>th</sup> century Mostyn estate cottages and lodges that constitute a well-preserved group of estate dwellings showing changes in design over time.
- 5.23. There is no intervisibility with the study area owing to the wooded nature of the intervening ground and it plays no part in the views of the listed building. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

***Registered Parks and Gardens***

- 5.24. The assessment has identified two registered parks and gardens within 1km of the study area, where a potential visual impact on the asset and/or its setting might be envisaged due to the installation of the temporary flow monitoring structures.

Table 8: Registered parks and gardens within 1km of the study area

No	Name	Grade	Distance/ direction	Magnitude of impact	Significance of impact
PGW(C)14(FLT)	Mostyn Hall	II*	750m ESE	No change	Neutral
PGW(C)71(FLT)	Perthymaen	II	250m SW	No change	Neutral

***PGW(C)14(FLT)      Mostyn Hall***

- 5.25. Mostyn Hall Park is located in a largely rural area, the park and gardens providing a setting for the house and is situated on a north-east-facing hillside above the Dee estuary. It is registered for the historical interest of its fine early nineteenth-century layout of parkland with its numerous drives and lodges, and its long and winding Marine Walk with its spectacular views over the Dee estuary. There is group value with Grade I Listed Mostyn Hall (LB No 21517) and with numerous Grade I, II\* and Grade II Listed estate buildings around the Hall and home farm and within the park and gardens. Additionally, Mostyn Hall is notable for having been the residence of the wealthy and prominent local Mostyn family. The park surrounds the house and falls into two distinct areas: the deer park north and west of the house and the park to the south, while the whole area is enclosed by nineteenth-century perimeter belts of mixed woodland.
- 5.26. Although it is possible that there might be some intervisibility between the park and the southern edge of the study area, it is apparent that the setting of the park looked inwards and to the north-east where there are expansive views over the Dee Estuary and further afield. The planting of perimeter belts of woodland highlights the desire of the owners to separate it from the surrounding land. Even where there is potential intervisibility it seems improbable that any temporary flow structures will be placed in these locations and these will be hidden by the local topography and dense tree cover. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

***PGW(C)71(FLT) Perthymaen***

- 5.27. The registered garden is the same asset as listed building No 300, the wall which surrounds an irregularly-shaped orchard at Berthymaen. It is registered as an early example of a walled garden dating to the seventeenth century and is also important for its group value with the listed buildings, Berthymaen house and barn.
- 5.28. Although parts of the fields within the study area are intervisible with the registered garden, it seems unlikely that any any temporary flow structures will be placed in these locations and they will be hidden by the local topography and dense tree cover. The impact is therefore considered to be **no change**, the significance of which would be **neutral**.

***Non-designated Assets***

- 5.29. None of the non-designated assets within the study area are higher than **low** in value and so they are of insufficient importance for even a major visual impact to be a consideration in the decision making process.

## **6 Mitigation Measures**

- 6.1. These measures assume mitigation of a worst case scenario in which the heritage asset could be damaged, this is improbable as the intention is for the works to be carried out in a manner which is sympathetic to the local archaeological resource but nevertheless provides a baseline against which mitigation can be considered.

***213944 Trelogan Mine drainage adit***

- 6.2. The portal of the drainage adit appears to have already been damaged by collapse. If works are required in this area, as seems likely, then a watching brief would provide an opportunity to assess the nature of the past damage and record any features of interest that might remain.

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**213946      *Afon y Garth pipeline***

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- 6.3. The structure could be impacted if infrastructure is proposed, so ideally this location would be avoided. If that is not possible then a watching brief should be maintained during construction works to record the nature of the asset, in so far as that may be possible.

## **7 Discussion/Conclusions**

- 7.1. The Heritage Impact Assessment was conducted at the behest of the CA on behalf of the joint Metal (Non-Coal) Mine Programme between NRW and the CA, to inform a project proposal for mine water monitoring and pollution control works in the area of a mine drainage adit serving the disused Trelogan mine and a manhole chamber on the course of a pipeline from the drainage adit. The assessment covered an area of 19.5ha, bordering the Afon y Garth stream and encompassing the water sources thought to contribute to the metals loading of the stream, centred to the north-east of the village of Trelogan in Flintshire, at NGR SJ 12148 80479.
- 7.2. The current nature of the study area is characterised by agricultural fields, both arable and pasture, which are separated by narrow, heavily wooded, gorges containing streams. The amount of tree cover in the gorges has a significant impact on the appearance of the locality by reducing visibility towards and away from the study area. Past land-use would have been largely the same from the medieval period onwards, though the presence of the Trelogan mine workings in close proximity would no doubt have been a major influence in the 18<sup>th</sup> and 19<sup>th</sup> centuries, following which the Holywell RDC waterworks alongside Afon y Garth would have been an important part of the local landscape up to the mid-20<sup>th</sup> century. The local archaeological resource is predominantly post medieval and recent in date, with a lesser medieval component related to agricultural activity. Roman and Prehistoric activity seems to be unlikely with current knowledge.
- 7.3. A search of existing records was made for a zone extending a further 500m to provide a greater understanding of the archaeological resource of the wider area, and this was complemented by a field visit to the study area to assess known heritage assets and to prospect for additional assets. A total of 12 assets were identified within the study area, none of which were designated or registered as being of national importance. All assets were recorded as polygons to identify possible constraints and help to inform the proposals at an early stage. The potential impacts of the proposed temporary flow monitoring structures on assets within the study area have been assessed, and designated and registered assets within 1km of the boundary were also considered in case there was a potential for indirect (visual) impacts.
- 7.4. The proposals for the construction of temporary flow monitoring structures have the potential to impact two non-designated heritage assets, the Trelogan Mine drainage adit and a pipeline which drew water from it to power a water supply scheme for local villages. Neither of these assets is of sufficient value to require avoidance and preservation in-situ, but a watching brief during construction of the temporary flow structures might provide information to allow for the better understanding of the heritage assets in question.

## **8 Sources**

### **Published sources**

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Jones, N., Walters, M., and Frost, P., 2004. Mountains and Orefields: Metal Mining Landscapes of Mid and North-east Wales, CBA Research Report No 142, York.

**Cartographic sources**

1834 Ordnance Survey Surveyors' Drawing No 343

1839 Tithe map for Llanasa Parish

1872 Ordnance Survey 1:2500 1<sup>st</sup> edition map Flintshire 2.15

1899 Ordnance Survey 1:2500 2<sup>nd</sup> edition map Flintshire 2.15

1912 Ordnance Survey 1:2500 3<sup>rd</sup> edition map Flintshire 2.15

1964 Ordnance Survey 1:10560 map Sheet 18SW and 18NW (part)

## 9 Archive Deposition Statement

- 9.1. The project archive has been prepared according to the CPAT Archive Policy and in line with the CIfA *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives guidance* (2014). The archive is entirely digital and will be deposited jointly with the Historic Environment Record, Clwyd-Powys Archaeological Trust and the National Monuments Record (RCAHMW).

Archive summary

CPAT Event PRN: 214624

20 digital photographs, CPAT film no 5007

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## Appendix 1: Methodology for assessing the potential impacts of development on heritage assets

### General

The primary aim of any assessment is to identify the heritage assets within a development site in as far as constraints such as varying land-use allow, and to provide a report on them which should enable the reader to understand their historical context, offer guidance on their level of importance, whether national, regional or local, identify the significance of impact that the development might have upon them, and recommend mitigation to limit the impact of the development on them.

### Impacts and Effects

The development may affect a heritage asset in one of several ways:

- i) **Direct Impact:** A direct impact upon a heritage asset involves the physical alteration or destruction of the latter as a result of the construction, operation or decommissioning of a development. Direct impacts could include the site clearance, reduction of levels, foundations, services, access roads etc.
- ii) **Indirect Impact:** Sometimes known as a secondary impact. An indirect impact arises where the connection between the development and the asset is remote or unpredictable and can affect an asset lying outside the development site. An indirect impact can be physical or visual, and in certain circumstances noise, smell and the like might also be considered under this heading. It should be noted too that in Wales, visual intrusion is normally considered to be indirect, but in England it appears to be classed as a direct impact.
- iii) **Cumulative Impact:** A cumulative impact may arise from the multiple effects of the same development on a single asset, or the multiple effects of the development and of other developments on an asset.

It should be noted that the terms impact and effect are frequently used interchangeably, although there are fine gradations in the meanings of the two words. On occasions these are both used in reports though without explanation.

### The Assessment Methodology

It is a general tenet in conservation strategies that heritage assets represent a non-renewable resource, and should be avoided wherever this is feasible in order to avoid damage or destruction. All sites can be classified according to a system based on that provided for the assessment of heritage assets in the *Design Manual for Roads and Bridges* (revised 2019) (Volume 11, Section 3, Part 2).

The relative value (importance) of a heritage asset, as given in greater detail in DMRB (2019) is laid out in Table 1.



Table 1: Factors for Assessing the Value of Heritage Assets (based on DMRB 2019, Table 3.2N)

<b>Factors for Assessing the Value of Heritage Assets</b>	
<b>Very High</b>	Very high importance and rarity, international scale and very limited potential for substitution: <ul style="list-style-type: none"> <li>• World Heritage Sites (including those nominated).</li> <li>• Assets of acknowledged international importance.</li> <li>• Assets that can contribute significantly to acknowledged international research objectives.</li> </ul>
<b>High</b>	High importance and rarity, national scale, and limited potential for substitution: <ul style="list-style-type: none"> <li>• Scheduled Monuments (including those proposed).</li> <li>• Non-designated monuments of which could potentially be worthy of scheduling.</li> <li>• Listed Buildings.</li> <li>• Assets that can contribute significantly to acknowledged national research objectives.</li> </ul>
<b>Medium</b>	Medium or high importance and rarity, regional scale, limited potential for substitution: <ul style="list-style-type: none"> <li>• Conservation Areas.</li> <li>• Designated or non-designated assets that contribute to regional research objectives.</li> </ul>
<b>Low</b>	Low or medium importance and rarity, local scale: <ul style="list-style-type: none"> <li>• Non-designated assets of local importance.</li> <li>• Assets compromised by poor preservation and/or poor survival of contextual associations.</li> <li>• Assets of limited value, but with the potential to contribute to local research objectives.</li> </ul>
<b>Negligible</b>	Very low importance and rarity, local scale: <ul style="list-style-type: none"> <li>• Assets with very little or no surviving heritage interest.</li> </ul>
<b>Unknown</b>	The importance of the resource has not been ascertained.

Factors that need to be considered in assessing the magnitude of the impact are given in Table 2, based on the DMRB (2019, Table 3.4N), but in modified form, for each historic environment sub-topic (archaeological remains, historic buildings, historic landscapes etc) has its own set of factors, which are set out in great detail in the Design Manual.

Table 2: Magnitude of impact and typical descriptions

<b>Magnitude of impact (change)</b>		<b>Typical description</b>
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.

Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

The significance of the impact of a development on a particular heritage asset is then established from the matrix (Table 3) also taken from the DMRB (2019, Part 4: LA 104, Table 3.8.1).

Table 3: Significance Matrix

Magnitude of Impact	Value/Sensitivity of Heritage Asset				
	Very High	High	Medium	Low	Negligible
<b>Major</b>	Very Large	Large/ Very large	Moderate/ Large	Slight/ Moderate	Slight
<b>Moderate</b>	Large/Very Large	Moderate/ Large	Moderate	Slight	Neutral/ Slight
<b>Minor</b>	Moderate/ Large	Moderate/ Slight	Slight	Neutral/ Slight	Neutral/ Slight
<b>Negligible</b>	Slight	Slight	Neutral/ Slight	Neutral/ Slight	Neutral
<b>No change</b>	Neutral	Neutral	Neutral	Neutral	Neutral

The degree to which the significance of the effect might affect the decision-making process can be summarised in Table 4, which is taken from the DMRB (2019, Part 4: LA 104, Table 3.7).

Table 4: Significance categories and typical descriptions.

<b>Significance category</b>	<b>Typical description</b>
Very large	Effects at this level are material in the decision-making process
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors
Slight	Effects at this level are not material in the decision-making process
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error