

Archaeology Wales

Abbey Consols Metal Mine, Pontrhydfendigaid, Ceredigion

Archaeological Watching Brief



By
Stephen Cole

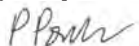
Report No. 1776

Archaeology Wales

Abbey Consols Metal Mine, Pontrhydfendigaid, Ceredigion

Archaeological Watching Brief

Prepared For: Quantum Geotechnical & NRW

Edited by: Philip Poucher
Signed: 
Position: Project Manager
Date: 1/4/19

Authorised by: Mark Houliston
Signed: 
Position: Managing Director
Date: 1/4/19

By
Stephen Cole

Report No. 1776

March 2019

CONTENTS

Summary	1
1 Introduction	2
1.1 Location and Scope of Work	2
1.2 Geology and Topography	2
1.3 Archaeological and Historical Background	3
2 Methodology	4
3 Watching Brief Results.....	5
4 Finds.....	15
5 Conclusion.....	16
6 Bibliography and References.....	17

Figure 1: Location map

Figure 2: Site & trench location plan

Figure 3: Trench location plan detail

Figure 4: Trench plan over 1889 Ordnance Survey map

Figure 5: Trench plan over 1905 Ordnance Survey map

Photos 1 – 3: General shots of site

Photos 4 – 33: Trial Pits

Photos 34 – 40: Trial Trenches

Appendix I Context List

Appendix II Written Scheme of Investigation

Appendix III Archive Cover Sheet

Copyright Notice: Archaeology Wales Ltd. retain copyright of this report under the copyright, Designs and Patents Act, 1988, and have granted a licence to Quantum Geotechnical and NRW to use and reproduce the material contained within. The Ordnance Survey has granted Archaeology Wales Ltd a Copyright Licence (No. 100055111) to reproduce map information; Copyright remains otherwise with the Ordnance Survey.

Summary

This report results from an archaeological watching brief undertaken by Archaeology Wales Ltd for Quantum Geotechnical Ltd, on behalf of Natural Resources Wales, in association with ground investigation works at the former Abbey Consols Metal Mine, in the Afon Teifi Valley, near Strata Florida Abbey, Pontrhydfendigaid, Ceredigion, centred on SN 74303 66104.

The mine (PRN 9310) is a relatively extensive, largely 19th century, mine complex, retaining a number of features including supply ponds, leats, shafts and spoil tips, with the potential for further features to survive below-ground. The ground investigation works comprised the digging 31 test pits and four trial trenches.

Imported stony deposits representing mining waste were encountered, largely appearing to correspond to the extent of mining waste material and areas of former filter beds depicted on late 19th and early 20th century map sources, with increased spread to the west and south, presumably the result of modern reworkings. Very limited evidence of intact buried built elements of the mine complex were revealed, but included potential former trackways and tramways. No structural remains of mine adits or mine buildings were uncovered, however the depth of the waste material spread across the site indicates the potential for such structural remains to survive buried within the site.

Crynodeb

Mae'r adroddiad hwn yn ganlyniad i friff gwylio archeolegol a gynhaliwyd gan Archaeology Cymru Cyf ar gyfer Quantum Geotechnical Cyf, ar ran Cyfoeth Naturiol Cymru, mewn cysylltiad â gwaith archwilio'r tir yn Chwarel Fetel flaenorol Abbey Consols, yn Nyffryn yr Afon Teifi, ger Abaty Strata Florida, Pontrhydfendigaid, Ceredigion, y mae ei ganolbwynt yn SN 74303 66104.

Mae'r chwarel (PRN 9310) yn safle eithaf eang, yn bennaf o'r 19^{eg} ganrif, sydd â nifer o nodweddion, gan gynnwys pyllau cyflenwi, camlesi, siafftiau a thomenni rwbel, gyda'r posibilrwydd bod nodweddion eraill wedi goroesi o dan y ddaear. Roedd y gwaith o archwilio'r tir yn cynnwys cloddio 31 o dyllau profi a phedair ffos dreialu.

Canfuwyd gwaddodion caregog dieithr a oedd yn cynrychioli gwastraff cloddio, a oedd gan mwyaf yn ymddangos fel eu bod yn cyfateb i ehangder y deunydd gwastraff cloddio ac ardaloedd y gwelyau hidlo blaenorol a nodwyd ar ffynonellau map o ddiwedd y 19^{eg} ganrif a dechrau'r 20^{fed} ganrif, gyda gwasgariad estynedig i'r gorllewin a'r de, sy'n ganlyniad i waith modern, gellir tybio. Canfuwyd ychydig iawn o dystiolaeth o'r elfennau adeiledig cyflawn o'r chwarel o dan y ddaear, ond roedd yn cynnwys traciau a thramffyrdd blaenorol posibl. Ni chanfuwyd unrhyw adfeilion strwythurol o fynyddfydd i'r chwarel neu adeiladau, fodd bynnag, mae dyfnder y deunydd gwastraff a oedd wedi'i wasgaru ar draws y safle yn dangos y potensial i adfeilion strwythurol o'r fath oroesi drwy gael eu claddu o fewn y safle.

1 Introduction

1.1 Location and Scope of Work

Archaeology Wales Ltd was commissioned by Quantum Geotechnical Ltd, on behalf of Natural Resources Wales (NRW), to undertake an archaeological watching brief in association with the ground investigation (GI) works at the former Abbey Consols Metal Mine. The mine is located in the upper reaches of the Afon Teifi Valley, near Strata Florida Abbey, Pontrhydfendigaid, Ceredigion, centred on SN 74303 66104.

The work took place on the site of the former Abbey Consols Metal Mine (PRN 9310). This is a relatively extensive, largely 19th century, mine complex. Although many of its standing buildings have gone, the complex retains a number of features including supply ponds, leats, shafts and spoil tips, with the potential for further features to survive below-ground. The GI comprised digging 31 test pits and four trial trenches. The archaeological watching brief was therefore requested during all ground-breaking work associated with the GI, the requirements for which are set out in Planning Policy Wales (Ed. 10, December 2018), Section 6.1, and Technical Advice Note (TAN) 24: The Historic Environment (2017).

Prior to works commencing an approved Written Scheme of Investigation (WSI) was produced by WSP for Natural Resources Wales (WSP 2018) in accordance with the *Standard and Guidance for Archaeological Watching Briefs* (CIfA 2014) and was designed to provide an approved methodology of archaeological work to be implemented during the construction works (Appendix II).

The watching brief took place in January 2019. The following report provides details of the results of the work undertaken. The project was managed by Phil Poucher MCIfA, and undertaken by Jerry Bond and Steven Cole, all of AW. The AW Project Number is 2689 and the Site Code ACMM/19/WB.

1.2 Geology and Topography

The site is located towards the upper reaches of the Afon Teifi in Ceredigion. It lies a short distance to the northwest of the remains of Strata Florida Abbey, and approximately 1km to the east of the village of Pontrhydfendigaid.

The mine remains are laid out on the lower south facing slopes of Banc Gwyn, on the north side of the Teifi valley. The site comprises an area of stone and spoil heaps and quarry face enclosed by post-and-wire fencing and straddling both sides of a local access road. The surrounding area is one of enclosed pasture, bounded by a mix of post-and-wire fencing and hedgerows, with areas of woodland on steeper slopes and open

uplands. The settlement pattern is one of dispersed farmsteads and dwelling along with small villages.

The underlying geology is defined by the Devil's Bridge formation, which is composed of mudstone and sandstone formed during the Silurian period. The superficial deposits are defined as glacial deposits formed during the Quaternary period, containing diamicton (BGS 2019).

1.3 Archaeological and Historical Background

There is some evidence of prehistoric activity in the general area, Bronze Age burial mounds have been noted on surrounding hilltops and an Iron Age hillfort lies close to Pontrhydfendigaid. The earlier archaeology of the immediate area is however dominated by the medieval Strata Florida Abbey. This Cistercian Abbey was founded in the mid-12th century and was the centre of a vast estate, seen as one of the homes of Welsh culture. The main abbey complex lay to the southeast, but it would have been surrounded by farmland and pastures, and potential mining sites that all helped to add to the wealth of the abbey.

The abbey was dissolved in the 16th century. The other dominate archaeological feature of the local area are the metal mines of the 18th, 19th and into the 20th century. Metal ore has been extracted from Ceredigion from relatively early, with Bronze Age mining recorded at Cwmystwyth, and as mentioned above it is likely Strata Florida Abbey was also engaged in mining operations. These would have been relatively small-scale however, with the exploitation and extraction of metal ores from the region increasing throughout the 18th century, and reaching a peak during the 19th century. The nearby village of Pontrhydfendigaid was built up in the late 18th and 19th centuries due to the growing lead mining industry, and miner worker houses dating mainly to the second half of the 19th century are still prominent features of the village.

The Abbey Consols mine was a relatively small mine compared to some contemporary sites in the area, such as Frongoch and Cwmystwyth, but it still produced a recorded 1,236 tons of lead and 1,765 tons of zinc between 1848-1909. The last recorded output from the mine was in 1913. The plan of the mine can be seen on 19th century maps (Figures 4 & 5), mine shafts lie to the north, with tramways running down to the main complex of buildings, spoils tips and filter beds at the current site. Most of the above ground structural remains have been removed by past reclamation works, with the site now characterised by spoil tips, a number of shafts and the remains of a water wheel pit, dressing floors and filter beds.

2 Methodology

A watching brief complying with the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for an Archaeological Watching Brief (2014) was undertaken during all intrusive ground work on the site.

The watching brief was undertaken to allow the preservation by record of any archaeological deposit, the presence and nature of which could not be ascertained in advance. The watching brief also provided an opportunity, if needed, for the watching archaeologist to signal 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 to a satisfactory and proper standard (CIfA, 2014).

The excavation comprised of 31 test pits and four trial trenches, located between the river to the south and the hillside to the north. The test pits were on average 2.6m in length, with an average width of 0.65m. The depth varied depending in how deep was required by the contractors. The shallowest was 1.5m with the deepest nearing 3m.

The entire process was monitored by a suitably trained archaeologist. Sections and plans of the excavation were photographed using a 16MP digital camera. All the deposits encountered were recorded by means of continuous context numbering system and recorded on pro-forma context sheets. All features and deposits are described in accordance with CIfA conventions. A register of all contexts and photographs was also made. Due to the depth off the test pits and trenches and the loose nature of much of the material that was excavated, it was not possible to produce accurate drawn section of the excavated areas, although measured sketch sections and photographs were taken of all areas.

3. Watching Brief results (Figures 3-5)

Test Pit 1 (Photo 4)

Test Pit 1 was located towards the northwest part of the site, away from the main area of workings. It was orientated NW-SE, with dimensions of 2.7m in length, 0.6m in width and a depth of 1.8m. The natural horizon (**102**) was seen at a depth of 0.8m. This deposit comprised a mid-blue grey silty clay with no inclusions. Above this deposit was a subsoil (**101**), seen at a depth from 0.2m to 0.8m. The subsoil comprised of a mid-yellow grey sandy clay, with sparse inclusions of sub-angular stones. The topsoil (**100**) overlies everything, up to 0m to 0.2m thick. The topsoil comprised a dark grey brown silty sand, with no inclusions.

Test Pit 2 (Photo 5)

Test Pit 2 was located to the northeast, a short distance south of the local road that crosses the site. Historic maps suggest this was located on the trackway access to the main complex of mine buildings further south.

The pit was orientated N-S, with dimension of 2.1m in length, 0.6 in width and 1.9 in depth. The natural horizon (**203**) was seen at a depth of 1.4m and was comprised of a mid-grey brown clay. The layer had inclusions of gravel aggregate and cobbles. A subsoil (**202**) overlies the natural horizon, which could be seen at a depth of between 0.42m to 1.4m. This layer comprised a light blue grey clay loam, with inclusions of gravel aggregate and cobbles. Above this subsoil was a trackway (**201**), which could be seen at a depth of between 0.1m to 0.42m. The simple trackway makeup was comprised of compacted shale and mudstone. Overlying the trackway was a thin layer of topsoil (**200**), up to 0.1m thick, comprising a light grey brown clay loam.

Test Pit 3 (Photo 6)

Test Pit 3 was located to the west, near Test Pit 1, and likewise away from the main area of workings. This pit was orientated N-S, with a dimension of 2.6m in length, 0.6m in width and a depth of 1.5m. The natural horizon (**303**) could be seen at a depth of 1.1m and comprised a light blue grey clay, with no inclusions. Above this was a layer of alluvial clay (**302**), which could be seen from a depth of 0.8m to 1.1m. This layer was comprised of mid-blue grey silty clay with frequent sub-angular gravel. This layer is then overlaid by a relatively thin layer (**301**), which could be seen at a depth of between 0.6m and 0.8m. This thin layer comprised a mid-orange brown sandy clay, with sparse inclusions of sub-angular stones. The overlying topsoil (**300**) was up to 0.6m in depth, and comprised a mid-grey brown silty sand, containing abundant sub-angular gravel.

Test Pit 4 (Photo 7)

Test Pit 4 was located in the eastern part of the site, on the line of a former trackway and close to some of the main 19th century mine buildings. The pit was orientated E-W with dimensions of 2.7m in length, 0.6m in width and a 2.2m depth. The natural horizon (**403**) was seen at a depth of 2m, comprised of mid-yellow brown clay loam. The layer had inclusions of gravel aggregate and cobbles. A very thick layer of subsoil (**402**) was seen at a depth between 0.42m and 2m. This layer comprised a light blue grey clay. Above the subsoil was a layer of shale (**401**), potentially representing the former trackway, which was seen at a depth between 0.17m to 0.42m. The surface topsoil (**400**) was up to 0.14m thick, comprised of mid grey brown clay loam.

Test Pit 5 (Photo 8)

Test Pit 5 was located on the western boundary of the site. It was orientated E-W, with dimensions of 2.6m in length, a width of 0.6m and a depth of 2.8m. The natural horizon (**504**) was seen at a depth of 1m and comprised a light blue grey clay, with no inclusions. Above this layer was another naturally occurring deposit (**503**), seen at a depth of between 0.4m and 1m. This layer was comprised of a light orange grey sandy clay, with very rare inclusions of sub-angular stones. Above this was a subsoil (**501**) of mid-brown grey silty sand with sparse sub-angular stone inclusions, which could be seen at a depth of 0.2m to 0.4m. The overlying topsoil (**500**) was up to 0.2m thick, and comprised a dark grey brown silty clay.

Test Pit 6 (Photo 9)

Test Pit 6 was located a short distance south of TP5, in an area of later spoil spreads. It was orientated of N-S with dimensions of 2.6m in length, 0.6m in width and a depth of 2.6m. The natural horizon (**602**) was seen at a depth of 0.8m, comprised of mid-orange brown sandy clay with inclusions of rare sub-angular stone. This was overlaid by an alluvial layer (**601**) that could be seen at a depth between 0.2m to 0.8m. The layer was comprised of a light blue grey clay loam, with rare inclusions of sub-angular stone. The topsoil (**600**) overlies everything to a depth of 0.2m. The topsoil is comprised of mid orange brown sandy clay, with no inclusions.

Test Pit 7 (Photo 10)

Test Pit 7 lies towards the eastern boundary of the site, with historic mapping suggesting it is located within, or close to, a range of buildings, potentially mine offices. The pit was orientated E-W with dimensions of 3m in length, 0.6m in width and 1.78m deep. The natural horizon (**702**) could be seen at a depth of 0.6m, comprising a mid-grey brown clay loam, with no inclusions. The overlying subsoil (**701**) was seen at a depth of 0.12m to 0.6m. The subsoil is a light grey brown silty clay with sparse large cobbles. The topsoil (**700**) was up to 0.12m thick, comprising a mid-red brown clay loam.

Test Pit 8 (Photo 11)

Test Pit 8 was located towards the southern end of the site close to the river. It was orientated E-W with dimensions of 2.70m in length, a width of 0.6m and a depth of 2.1m. The natural horizon (**802**) could be seen at a depth of 0.7m, comprising a light blue grey silty clay, with no inclusions. Overlying this layer was a subsoil (**801**) of light grey brown silty sand, with abundant sub-rounded stone inclusions. This layer was seen at a depth of 0.2m to 0.7m. The topsoil (**800**) was a mid-grey brown silty sand, with no inclusions, up to 0.2m in depth.

Test Pit 9 (Photo 12)

Test Pit 9 was also located towards the southern end of the site. It was orientated N-S with dimensions of 2.65m in length, 0.6m in width and the 1.8m in depth. The natural horizon (**903**) could be seen at a depth of 1.2m and the layer was a mid-orange brown clay loam. There were no inclusions in this layer. Above this was potentially another naturally occurring deposit (**902**), which could be seen at a depth of 0.8m to 1.2m. This layer was a mid-blue grey sandy clay with sparse angular stones. This was overlaid by a subsoil (**901**), at a depth of between 0.2m to 0.8m. This layer was a light brown grey silty sand with frequent sub-angular stone inclusions. Overlying everything was the topsoil (**900**), up to 0.2m thick, and comprising of dark grey brown silty sand, with no inclusions.

Test Pit 10 (Photo 13)

Test Pit 10 was located at the southern end of the centre of the site, historic mapping suggesting this may have been at the southern end of the filter beds. This pit was orientated E-W with dimensions of 2.2m in length, a width of 0.6m and a depth of 1.15m. An alluvial horizon (**1002**) was seen at a depth of 0.62m, comprising light brown grey clay loam with no inclusions. Above the alluvial layer is the subsoil (**1003**) at a depth of 0.42m to 0.62m. This subsoil is comprised of mid-orange brown silty clay, with no inclusions. Above the subsoil was a layer of fragmented shale (**1001**), between a depth of 0.08m to 0.42m. The shale appears to have been dumped over the area, potentially as a result of later re-workings. The thin overlying topsoil (**1000**) was a dark-grey brown peaty clay loam, with no inclusions, up to 0.08m thick.

Test Pit 11 (Photo 14)

Test Pit 11 lay just to the east of Test Pit 10, on, or adjacent to, a former trackway shown on historic mapping. The pit was orientated E-W with dimensions of 2.7m in length, a width of 0.6m and then a depth of 1.5m. The natural horizon (**1102**) could have been seen at a depth of 0.3m. This layer was a mid-grey brown clay loam deposit. Above this was a thin alluvial deposit (**1101**). This layer was a light brown grey clay loam that had some iron staining. This layer was seen at a depth between 0.2m and 0.3m. Above this lay a subsoil (**1103**), a thin layer seen at a depth between 0.1m to

0.2m. The subsoil was a mid-brown orange clay loam. The upper deposit was the topsoil (**1100**), up to 0.1m thick, and was a mid-red brown clay loam.

Test Pit 12 (Photo 15)

Test Pit 12 was located at the southern end of the site, close to the line of the river. It was orientated NW-SE with dimensions of 2.6m in length, the width of 0.6m and then a depth of 2.4m. The natural horizon (**1203**) could be seen at a depth of 1.4m and consisted of a light blue grey clay loam, with no inclusions. Above this was a subsoil (**1202**), which could be seen at a depth of between 1.1m to 1.4m. This layer consisted of a mid-orange brown sandy clay with frequent inclusions of angular stones. The next layer appeared to be a buried layer of former topsoil (**1201**), which could be seen from a depth of between 1m to 1.1m. This layer consisted of a dark grey brown silty clay. Above this the upper deposit comprised a layer of redeposited material (**1200**) that appeared to consist of imported material, up to 1m thick. This layer consisted of a mid-brown grey sandy loam, with abundant inclusions of angular gravel. This layer is similar to context number (11500).

Test Pit 13 (Photo 16)

Test Pit 13 was also located at the southern end of the site close to the line of the river. It was orientated N-S, with dimensions of 2.6m in length, 0.6m in width and a depth of 2m. The natural horizon (**1302**) can be seen at a depth of 0.8m. This consists of a mid-blue grey sandy clay that was abundant in sub-rounded stones. Above this was a subsoil layer (**1301**). This layer can be seen at a depth between 0.2m to 0.8m and consists of a mid-brown orange silty sand, with frequent inclusions of sub-angular stones. The upper deposit was the topsoil (**1300**), which was up to 0.2m thick. This layer consisted of a mid-orange brown silty sand that had no inclusions.

Test Pit 14 (Photo 17)

Test Pit 14 was located at the southern end of the site, on rising ground away from the river. It was orientated E-W with dimensions of 2.6m in length, a width of 0.6m and then a depth of 1.7m. The natural horizon (**1402**) could be seen at a depth of 0.8m and consisted of a mid-blue grey silty clay with no inclusions. Above the natural was the subsoil (**1401**), seen at a depth of between 0.3m to 0.8m. The subsoil consisted of a mid-yellow brown silty sand with frequent sub-angular stones within. The upper topsoil (**1400**) was up to 0.3m thick. This layer consisted of a dark grey brown silty sand.

Test Pit 15 (Photo 18)

Test Pit 15 was located at the eastern edge of the site, and was orientated of E-W, with dimensions of 2.6m in length, a width of 0.6m and then a depth of 1.6m. The natural horizon (**1502**) could be seen at a depth of 0.58m, consisting of mid-grey brown clay loam, with no inclusions. Above this was a subsoil (**1501**), seen at a depth of between

0.25m to 0.58m. This layer consisted of a mid-brown grey clay with occasional rounded stones. The upper topsoil (**1500**) was up to 0.25m thick and consisted of a mid-red brown clay loam, with no inclusions.

Test Pit 16 (Photo 19)

Test Pit 16 was also located at the eastern edge of the site. It was orientated E-W, with dimensions of 3m in length, a width of 0.6m and then a depth of 1.42m. The natural horizon (**1602**) was seen at a depth of 0.5m and consisted of mid brown clay loam, with no inclusions. Above this was a weathered subsoil (**1601**). This layer was seen at a depth of between 0.1m to 0.5m and consisted of a light grey clay loam, which had frequent rounded stones. The upper topsoil (**1600**) was 0.1m thick and consisted of a mid-red brown clay loam, with no inclusions.

Test Pit 17 (Photo 20)

Test Pit 17 was located in the far southwest corner of the site, close to the line of the river. It was orientated E-W with dimensions of 2.65m in length, a width of 0.6m and then a depth of 1.3m. The natural horizon (**1702**) was seen at a depth of 1.1m and consisted of a mid-orange brown clay loam, with no inclusions. Above the natural lay a subsoil (**1701**), seen at a depth of between 0.2m and 1.1m. This layer consisted of a mid-grey brown silty sand, with abundant sub-angular stone inclusions. The upper topsoil (**1700**) was up to 0.2m thick, and consisted of dark grey brown silty sand.

Test Pit 101

Test Pit 101 was located towards the northwest edge of the site, close to the line of a small watercourse marked on current mapping. It was orientated N-S with dimensions of 2.9m in length, a width of 0.6m and then a depth of 1.9m. The natural horizon (**10103**) was visible at a depth of 1.3m. The layer consisted of a mid brown silty clay with sparse sub-angular gravel. Above this natural layer was an alluvial layer (**10102**), that could be seen at a depth of between 0.4m to 1.30m. The layer consisted of a light blue grey clay loam, with abundant sub-rounded stone inclusions, and visible iron staining. Above this alluvial layer was the subsoil (**10101**), which could be seen at a depth of 0.15m to 0.4m. This subsoil consisted of a light brown clay. The upper topsoil (**10100**) was 0.15m thick, and consisted of dark red brown peaty loam.

Test Pit 102 (Photo 21)

Test Pit 102 was located to the south of the road that crosses the site, in an area of former mine waste tips marked on historic mapping. It was orientated NW-SE with dimensions of 2.5m in length, a width of 1.5m and a depth of 1.3m. Apart from the topsoil, all visible layers appeared to represent waste material from the mines. The lowest visible layer (**10203**), seen at a depth of 0.9m, consisted of mottled grey and mid red brown silty loam. The abundant inclusions comprised 75% aggregate and 25%

gravel. Above this was another layer of mining waste (**10202**), which could be seen from a depth of between 0.5m to 0.9m. This layer consisted of a mid-grey brown silty loam, largely comprised of 50% aggregates and 50% gravel. The final layer of mining waste (**10201**), could be seen at a depth of between 0.12m to 0.5m and consisted of light brown grey silty loam, but largely comprised 25% stone dust, 10% aggregates and 65% gravel. This was overlaid by a topsoil (**10200**), 0.12m thick, of dark grey brown silty loam, but also containing abundance inclusions of stone dust, aggregate and gravel.

Test Pit 103 (Photo 22)

Test Pit 103 was located to the southwest of 102, and still within the area of former mine waste tips. The sides continuously collapsed, which gave the slot a dimension of 3.9m in length, a width of 2.8m and a depth of 1.15m. Only one layer (**10300**) was visible and recordable, presumably spoil from the mine. The layer consists of a light grey brown sandy loam, largely comprised of 75% aggregate and 25% gravel.

Test Pit 104 (Photo 23)

Test Pit 104 was located towards the western side of the area. It was orientated E-W with dimensions of 2.2m in length, a width of 0.8m and then a depth of 1.72m. The alluvial horizon (**10402**) could be seen at a depth of 0.72m. This layer consisted of a light blue grey clay with sparse rounded stone inclusions. The layer above the alluvial was the subsoil (**10401**), visible at a depth of 0.25m to 0.75m. This layer comprised a light grey brown clay loam with iron stain mottling. This was overlaid by topsoil (**10400**), 0.25m thick, comprised of dark grey brown clay loam.

Test Pit 105 (Photo 24)

Test Pit 105 was located just west of the centre of the site, on the edge of the area of mine waste tips as visible on historic mapping. As with 103 the sides of this Test Pit continuously collapsed, which gave the slot a dimension of 3.1m in length, a width of 2m and a depth of 1.1m. The test pit was abandoned at a depth of 1.1m due to the collapse. Only a single deposit was identifiable below the topsoil, this deposit (**10501**) was seen at a depth of 0.15m and consisted of a mid-grey brown sandy loam, with abundant angular grit stones, presumably representing part of the mining waste material. The topsoil (**10500**) was 0.15m thick, and consisted of dark grey brown sandy loam, with no visible inclusions.

Test Pit 106 (Photo 25)

Test Pit 106 was located in the centre of the site, again in the area of former mine waste tips and as a result also suffered from continual collapse, which gave the slot a dimension of 3m in length, 2m in width and a depth of 3.15m. A natural horizon (**10603**) was visible at a depth of 1.9m, consisting of a mid-blue grey clay loam. Above this layer was a very thin lens of iron panning, presumably leaching from the overlying layers. The

overlying layer (**10602**) is a sloped deposit, visible at a depth of between 0.9m to 1.9m, comprising a light blue grey clay loam that could potentially be alluvial in nature. The next layer (**10601**) above is a mixed deposit consisting of lenses and dumps of clay, largely comprising mid-grey brown sandy loam, including a mix of 25% coarse grit, 25% aggregate and 25% gravel. This layer was visible from a depth of 0.1m to 0.9m. The overlying topsoil (**10600**) was 0.1m thick, consisting of mid-grey brown silty loam, with gravel and aggregate inclusions.

Test Pit 107 (Photo 26)

Test Pit 107 was located centrally, in an area of filter beds shown on historic mapping. It was orientated E-W with dimensions of 2.35m in length, 0.6m in width and a depth of 1.85m. The natural horizon (**10703**) was visible at a depth of 1m, consisting of mid-blue grey clay loam. Above this natural horizon was an alluvial layer (**10702**), which could be seen at a depth of 0.48m to 1m. This layer consisted of a light blue grey clay loam, with mudstone and gravel inclusions. This was overlaid by a layer of mining waste (**10701**), which could be seen at a depth of 0.08m to 0.48m, included several lenses of sand, gravel and clays. The upper topsoil (**10700**) was 0.08m thick, consisting of a dark grey brown peaty loam.

Test Pit 108 (Photo 27)

Test Pit 108 was located to the southwest of the centre, on the edge of the former filter beds. It was orientated E-W with dimensions of 2.7m in length, a width of 0.8m and then a depth of 1.8m. The natural horizon (**10804**) could be seen at a depth of 1.1m. This layer consisted of a mid-grey brown clay loam with sparse inclusions of mudstone and gravel. The subsoil (**10803**) was visible at a depth of 0.35m to 1.1m. This layer consisted of a mid-yellow brown clay loam with a grey hue, and included indications of iron panning, potentially leaching in from the deposit above. Above this subsoil was a thin layer of possible dumped material or mining waste (**10802**). This layer consisted of a dark brown grey clay, visible at a depth of between 0.2m to 0.35m. Overlying this was a further deposits of dumped material/mining waste (**10801**), visible at a depth of 0.08m to 0.2m. This layer consisted of mid grey silty loam, with lenses of stone dust, grit and iron panning. The upper topsoil (**10800**) was 0.08m thick, and comprised a dark grey brown peaty loam.

Test Pit 109 (Photo 28)

Test Pit 109 was located to the south of the centre, within the area of the former filter beds. It was orientated of E-W with dimensions of 2.5m in length, 0.8m in width and then a depth of 1.6m. The natural horizon (**10903**) could be seen at a depth of 0.82m, and consisted of a mid-grey brown silty clay, with frequent inclusions of stones. The next layer appeared to be an alluvial layer (**10902**), visible at a depth of 0.3m to 0.82m. This layer consisted of a light brown grey clay loam, with frequent inclusions of gravel, mudstone and stones. Above the alluvial layer was a subsoil (**10901**), visible at a depth

of 0.1m to 0.3m. This layer comprised a mid-grey brown silty clay with iron panning. The upper topsoil (**10900**) was 0.1m thick, and consisted of a dark grey brown clay loam.

Test Pit 110 (Photo 29)

Test Pit 110 was located slightly to the east of the centre, on the edge of the former filter beds. It was orientated N-S with dimensions of 2.8m in length, a width of 1m and then a depth of 2.35m. The natural subsoil (**11001**) could be seen at a depth of 1.15m. This layer consisted of mid blue grey clay loam, with fragmented mudstone and gravel inclusions. This was overlaid by a 1.2m thick layer of mining waste (**11000**), comprising a light brown-bluish grey sand with stone dust and abundant gravel inclusions.

Test Pit 111 (Photo 30)

Test Pit 111 was located to the south of the centre, and was orientated of N-S with dimension of 2.60m in length, a width of 0.8m and then a depth of 1.55m. The natural horizon (**11103**) could be seen from a depth of 1m. This layer consists of a mid-blue grey clay loam, with no inclusions. The next layer is a possible alluvial layer (**11102**) and could be seen at a depth of between 0.25m to 1m. This layer consisted of light grey-brown clay loam, with inclusions of mudstone and gravel. The next layer was a deposit of mining waste (**11101**), which could be seen at a depth of between 0.05m to 0.25m. This layer consisted of a gritty mid-reddish brown silty clay, with stone dust inclusions. The upper topsoil (**11100**) was only 0.05m thick, and consisted of mid-grey brown silty loam.

Test Pit 113 (Photo 31)

Test Pit 113 was located towards the northern end of the site, just to the south of the road that passes through. This was located on the edge of the former mine waste tips, and as a result the edges of the test pit continuously collapsed, which gave the slot and dimension of 2.15m in length, a width of 0.6m and then a depth of 2.12m. All the visible layers would appear to represent dumped mining waste material. The deepest layer of mining waste (**11302**) could be seen at a depth of 1.15m. This layer was comprised of a mid-brown grey silty sand, which largely consisted of 50% aggregate, 25% stone and 25% gravel. The overlying layer (**11301**) could be seen from depth between 0.15m to 1.15m. This layer consisted of a mid reddish-brown silty sand, largely composed of 75% stone dust and 25% aggregate. The upper layer (**11300**) comprised further mining waste, 0.15m thick, and composed of light grey aggregate and stone dust.

Test Pit 114 (Photo 32)

Test pit 114 was located in the northwest part of the site, within the area of former mine waste tips and close to the end of a former tramline. It was orientated N-S with dimension of 2.4m in length, a width of 0.8m and a depth of 2.15m. The natural horizon

(**11404**) could have been seen at a depth of 1.92m. This layer consists of a mid-blue grey clay loam. Overlying this was a subsoil (**11403**), visible from a depth of 1.8m to 1.92m. This layer consists of a mid-yellow brown silty clay. Above the subsoil was a possible alluvial layer (**11402**), visible from a depth of 0.95m to 1.8m. This layer consists of a mid-blue grey clay, with frequent inclusions of gravel and aggregate. On top of the subsoil was a layer of possible dumped mining waste material (**11401**), which could be seen between 0.3m to 0.95m. The overlying topsoil (**11400**) 0.3m thick, and comprised a dark grey brown clay loam.

Test Pit 115 (Photo 33)

The location of Test Pit 115 was unrecorded, however it lay within the area of former mine waste tips. The nature of the ground condition meant the sections continuously collapsed, which gave the slot dimensions of 2m deep, but the length and width could not be accurately measured. Only one layer was noted within the test pit (**11500**), consisting of a mid-brown grey sandy loam, with abundant angular grit gravel inclusions.

Trial Trench 01 (Photos 34 – 36)

Trial Trench 01 was excavated along the northern edge of the road that passed through the site, traversing the line of a former tramway. The full length of the trench was unrecorded, but it was approximately 20m long, typically 0.6m wide, but widened at its eastern end to expose some built remains, it reached a maximum depth of 2.3m. The natural horizon (**10008**) was visible at a depth of 1m. This layer consisted of a mid-blue grey clay loam with inclusions of mudstone. Above the natural was a possible alluvial layer (**10007**), which could be seen at a depth of 0.1m. This layer consisted of a mid-red brown silty clay. At the eastern end of the trench this layer was then cut into by a construction cut [**10009**]. This cut had a visible straight, steep western edge, with a moderate break of slope on to a flat base. The cut was at least 4m wide, but continued beyond the limit of the trench, the length was undefined, but the depth was 1.4m deep. The base of the cut was lined with stone slabs (**10005**), which provided a base for a rectangular concrete block (**10004**). The concrete block was 0.9m wide, 0.4m high, and extended back into the section, visible at a depth of 1.1m. Three iron bars protruded from the surface, the longer southernmost had been bent backwards. On top of the stone slabs and around the concrete slab lies a deposit (**10003**) of dark brown silty loam. Above this layer was a layer of backfill material (**10002**) which could be seen from a depth between 0.25m to 1.2m. This backfill layer was a light grey brown silty loam, which predominantly consisted of aggregates. Above this layer was a mixed deposit (**10001**), which could be seen from a depth of between 0.1m to 0.25m. This was a mixed layer of light brown grey clay loam. The overlying topsoil (**10000**) was 0.1m thick and consisted of a spoil waste from the surrounding landscape.

Trial Trench 02 (Photos 37 & 38)

Trial Trench 02 was located to the west of the previous trench, orientated largely E-W but curving to the NW along the contours of the slope. It has a dimension of 13.5m in length, 0.6m in width and then a depth of 2.35m. The natural horizon (**2008**) could be seen at a depth of 1.9m, this layer consisted of a mid-blue grey clay with inclusions of rounded stones. At the western end of the trench was a series of deposits that seemed natural in origin, although they appeared to have steep interfaces between them. The earliest deposit (**2002**) consisted of a mid-grey brown clay loam, seen from a depth of 0.4m to 2.2m. This was overlaid by deposit (**2003**), which could also be seen from a depth of 0.5m to 2.2m. This layer consisted of a redeposited mid grey brown clay loam, with inclusions of 35% aggregates and 30% gravel. The overlying layer (**2007**) then extended the full length of the trench, this layer could be seen from a depth of 0.6m to 1.9m. This layer consisted of a mid-brown grey clay loam that included 20% gravel and 20% aggregates. Overlying this was a layer of mining waste material (**2006**), visible from a depth of 0.35m to 0.6m. This layer consisted of a light grey brown silty clay, with inclusions of 20% gravel and 20% aggregates. At the western end of the trench, at a similar level to deposit (2006) lay deposit (**2001**), visible at a depth of 0.15m to 0.4m. This layer consists of a mid-grey brown silty clay, with abundant shale inclusions, that would appear to represent a deposit of mining waste. The interface between deposits (2006) and (2001) had been truncated by the insertion of a modern drainage trench [**2009**], containing a black plastic drain and backfilled by (**2005**), a deposit of shale mining waste. The drainage trench was 0.9m wide, and 0.35m deep. Topsoil deposits comprised (**2000**) and (**2004**), believed to be the same layer of topsoil but either thinning over, or truncated by drainage cut [2009]. These topsoil layers consisted of a dark grey brown silty peaty loam, up to 0.15m thick.

Trial Trench 03

Trial Trench 03 was located at the northern end of the site, originally positioned in an attempt to locate an adit mouth. The trench was orientated of NE-SW, with dimensions of 10m in length, 0.6m in width and then a depth of 1.5m. The natural horizon (**30003**), could be seen at a depth of 1.2m. This layer consists of a mid-blue grey clay that had no inclusions. The overlying layer (**30002**), which could be seen from a depth from 0.7m to 1.2m, consisted of a mid-blue grey silty clay that with abundant sub-rounded stone inclusions. At the northeast (up-slope) end of the trench was an overlying built-up layer (**30001**), presumably redeposited material that may have been used to build up the embankment. This layer could be seen from a depth of 0.2m to 0.7m and consists of a mid-orange brown silty clay. The overlying topsoil (**30000**) consisted of a dark grey brown silty sand, and was up to 0.2m thick. No evidence for the mine adit was uncovered.

Trial Trench/Test Pit 112 (Photos 39 & 40)

Test Pit 112 was also located in the northern part of the site, which was subsequently extended to create a fourth Trial Trench in this area. This trench was orientated E-W with dimensions of 20m in length (extending up to the field boundary), a width of 0.6m and then a depth of 3.2m. Bedrock (**11204**) was exposed at a depth of 2.2m, consisting of shale. Above the bedrock is the superficial natural (**11203**), which could be seen from a depth of 1.2m to 2.2m. This layer consisted of light grey brown silty sand, with abundant shale fragments. This was overlaid by a subsoil deposit (**11202**), which was seen between a depth of 0.7m to 1.2m. This layer consisted of a mid-grey brown silty sand, with abundant sub-angular stones, gravel and some large stones. At the eastern end of the trench the subsoil was overlaid by a built-up layer (**11201**), visible at a depth between 0.2m to 0.7m, consisting of a mid-orange brown silty clay. This deposit would appear to represent a continuation of (30001) visible in Trial Trench 03. The overlying topsoil (**11200**) is up to 0.2m thick, and consists of a mid-grey brown silty sand, with abundant shale aggregate inclusions.

4. Finds

The excavated material was largely devoid of any artefacts. Only one artefact was recovered during the course of the watching brief. In Trial Trench 02 an iron bar was recovered from the spoil heap, its context of origin was unfortunately not observed. The iron bar was 0.32m in length, with a circumference of 0.14m, and a weight of 3.8kg. The bar would appear to be part of general mining equipment, discarded in the waste material from the mine. A summary of the finds can be found below:

CONTEXT	TYPE	AMOUNT	DATE
2000	Fe object	1 piece	Post-Medieval

5. Conclusion

An archaeological watching brief was undertaken during the excavation of a number of test pits and trial trenches excavated as part of ground investigation works across the site of the former Abbey Consols Metal Mine. A range of deposits were revealed throughout the site that would appear to relate either to natural ground deposits or waste material from mining activity.

Natural deposits included shale bedrock with overlying alluvial and subsoil deposits, these occurred at varying depths across the site, dependent on the overlying material. A large number of test pits and trial trenches included imported stony deposits representing mining waste. The spread of these deposits largely appear to correspond to the extent of mining waste material and areas of former filter beds depicted on late 19th and early 20th century map sources (Figures 4 & 5), with increased spread to the west and south, presumably the result of modern reworkings on the site. Very limited evidence of intact buried built elements of the mine complex were revealed. Evidence of possible former trackways that ran north – south through the site were encountered in TP2 and TP4 at the eastern side of the complex, but comprised a simple layer of compacted stone. One concrete block, uncovered at a depth of 1.1m within Trial Trench 1, may be related to one of the former tramways that transported waste material into the main part of the site to the south. No structural remains of mine adits or mine buildings were uncovered, however the depth of the waste material spread across the site indicates the potential for such structural remains to survive buried within the site.

6. Bibliography and References

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, compilation, transfer and deposition of archaeological archives.

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, documentation, conservation and research of archaeological materials.

Chartered Institute for Archaeologists, 2014. Standards and guidance for excavation.

Chartered Institute for Archaeologists, 2014. Standards and guidance for an archaeological watching brief.

Natural Resources Wales, Abbey Consols Metal Mine, Archaeological Written Scheme of Investigation for a Watching Brief, 2018.

Natural Resources Wales: https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=12778

British Geological Survey: Geology of Britain viewer: www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html

Dyfed Archaeology: http://www.dyfedarchaeology.org.uk/HLC/uplandceredigion/_uplandceredigionsouthwest.htm#pontrhydfendigaid

CADW: <http://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=1876>



Figure 1: Location map,
1:25 ,000 @ A4

The Ordnance Survey has granted Archaeology Wales Ltd a Copyright Licence (No. 100055111) to reproduce map information; Copyright remains otherwise with the Ordnance Survey

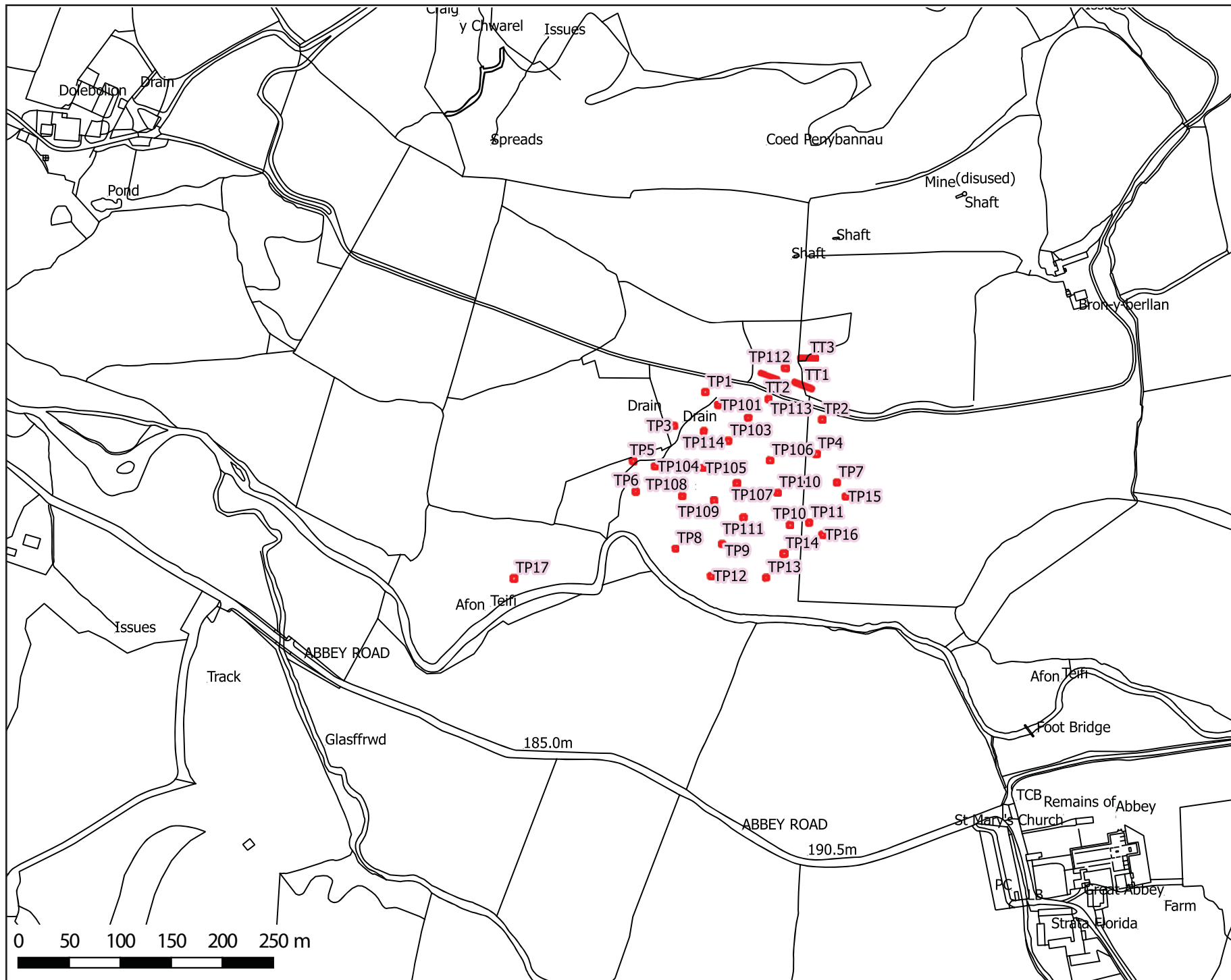


Figure 2: Site and trench location plan, 1:5000 @ A4

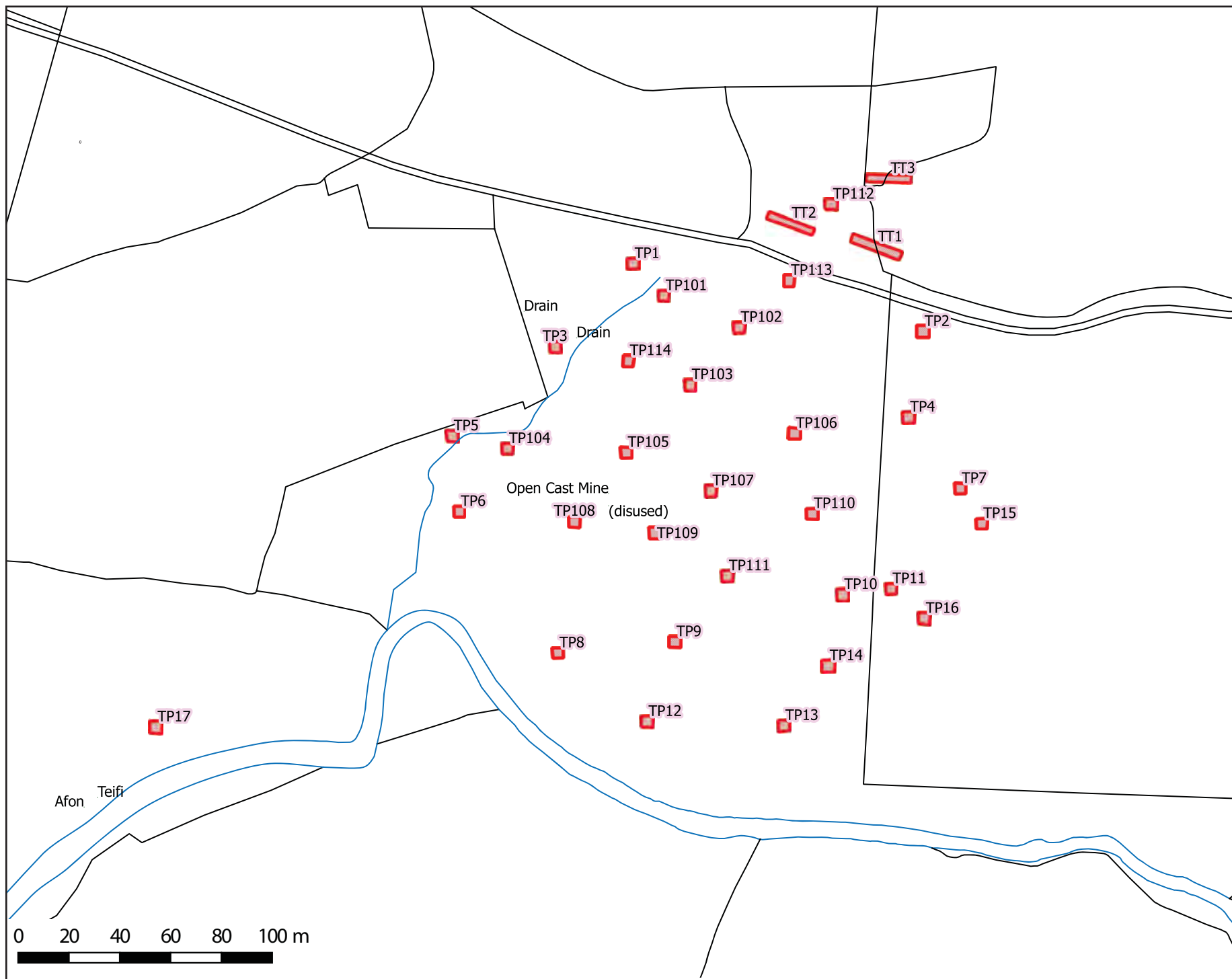


Figure 3: Trench location plan in greater detail.

1:2000 @ A4

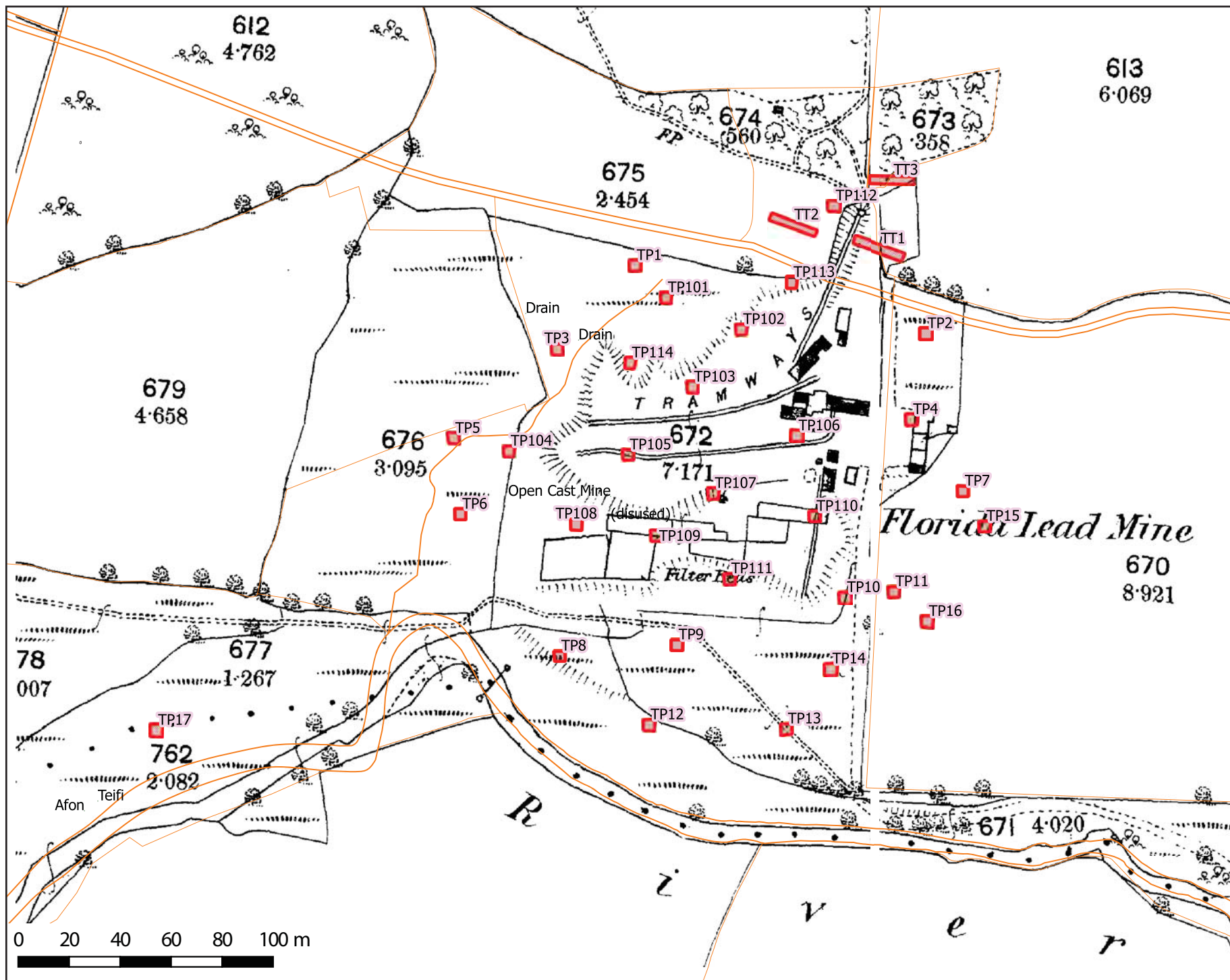


Figure 4: Trench locations (in red) and current topographic features (in orange) overlaid on the Ordnance Survey map of 1889.

1:2000 @ A4

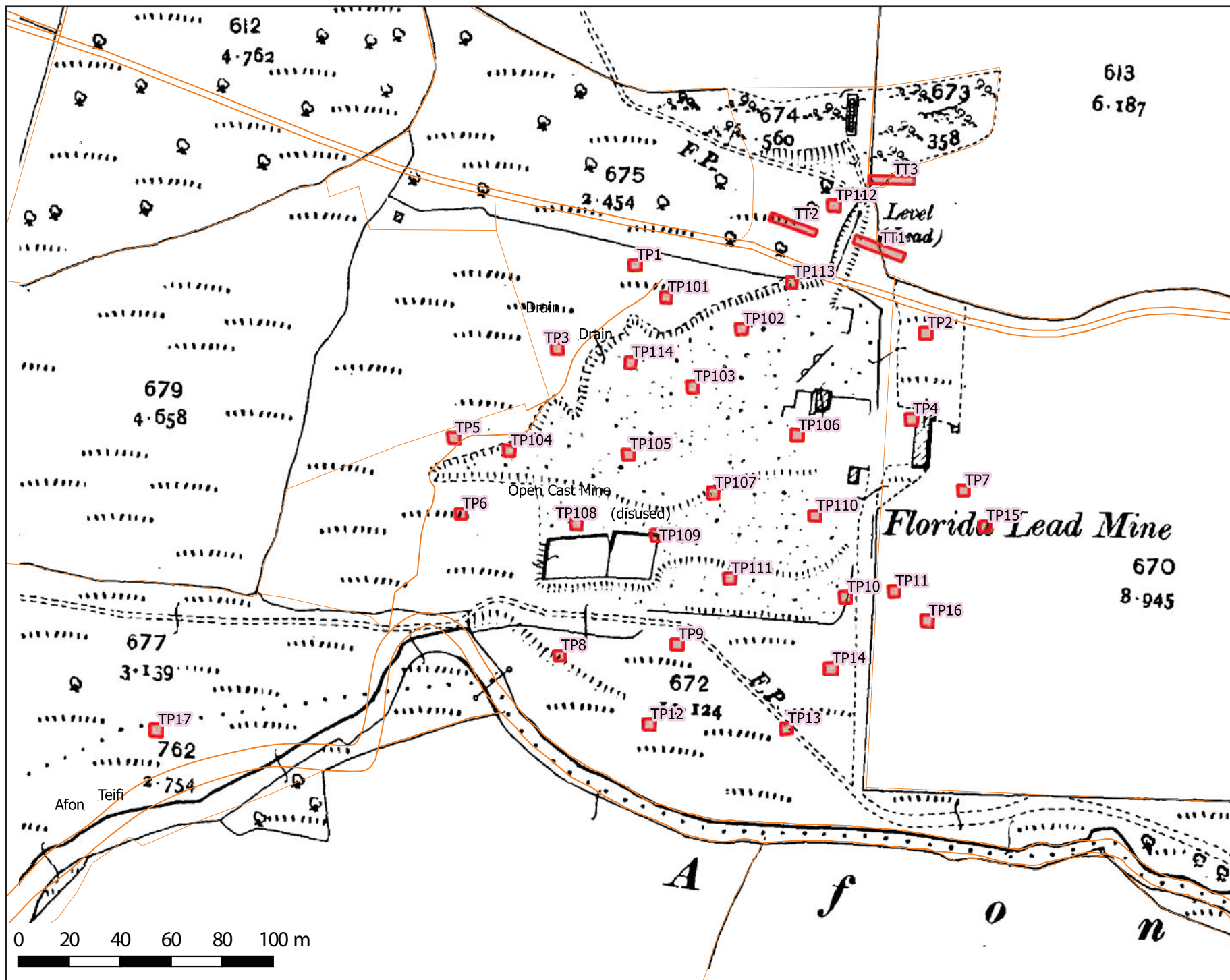


Figure 5: Trench locations (in red) and current topographic features (in orange) overlaid on the Ordnance Survey map of 1905.

1:2000 @ A4



Photo 1: General shot showing the former mine workings in its setting. Facing southeast.



Photo 2: General shot of excavations at the northern end of the site. Facing northwest.



Photo 3: General shot of excavations in the centre of the site. Facing north.



Photo 4: TP 1, facing north, showing deposits 102, 101 & 100. 2m scale.



Photo 5: TP 2, facing northeast, showing deposits 203, 202, 201 & 200. 1m scale (horizontal), scale in 1cm segments (vertical).



Photo 6: TP3, facing north, showing deposits 303, 302, 301 & 300. 2m scale.



Photo 7: TP4, facing northeast, showing deposits 403, 402, 401 & 400. 1m scale (horizontal), scale in 1cm segments (vertical).



Photo 8: TP5, facing southeast, showing deposit 504, 503, 501 & 500. 2m scale.



Photo 9: TP6, facing north, showing deposits 601 & 600. 2m scale.



Photo 10: TP7, facing north, showing deposits 702, 701 & 700. 1m scale.



Photo 11: TP8, facing north, showing deposits 802, 801 & 800. 2m scale.



Photo 12: TP9, facing north, showing deposits 903, 902, 901 & 900. 2m scale.

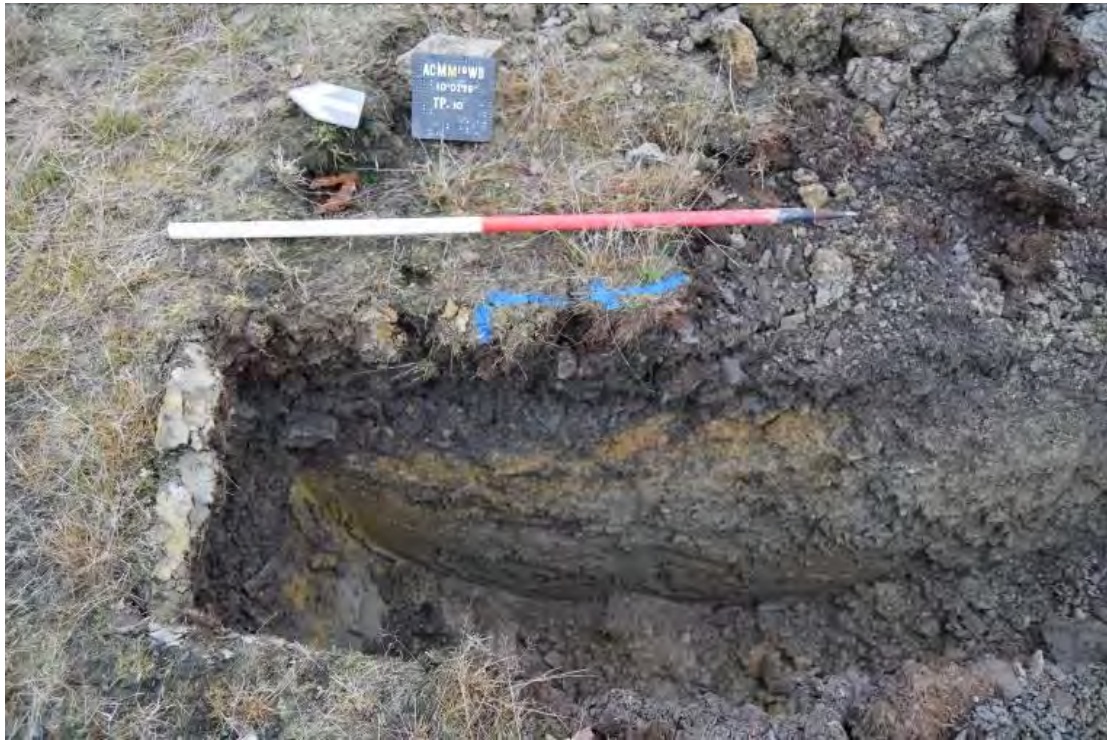


Photo 13: TP10, facing east, showing deposits 1002, 1003, 1001 & 1000. 1m scale.



Photo 14: TP11, facing south, showing deposits 1102, 1101, 1103 & 1100. 1m scale (horizontal), scale in 1cm segments (vertical).



Photo 15: TP12, facing south, showing deposits 1202, 1201 & 1200. 2m scale.



Photo 16: TP13, facing north, showing deposits 1302, 1301 & 1300. 2m scale.



Photo 17: TP14, facing north, showing deposits 1402, 1401 & 1400. 2m scale.



Photo 18: TP15, facing north, showing deposits 1502, 1501 & 1500. 1m scale.



Photo 19: TP16, facing north, showing deposits 1602, 1601 & 1600. 1m scale (horizontal), scale in 1cm segments (vertical).



Photo 20: TP17, facing east, showing water ingress and deposits 1701 & 1700. 2m scale.



Photo 21: TP102, facing east, showing deposits 10203, 10202, 10201 & 10200. 1m scale.



Photo 22: TP103, facing north, showing deposit 10300. 1m scale.



Photo 23: TP104, facing east, showing deposits 10402, 10401 & 10400. 1m scale (horizontal), scale in 1cm segments (vertical).



Photo 24: TP105, facing south, showing deposits 10501 & 10500. 1m scale.



Photo 25: TP106, facing southeast, showing deposits 10602, 10601 & 10600. 1m scale.



Photo 26: TP107, facing north, showing deposits 10703, 10702, 10701 & 10700. 1m scale.



Photo 27: TP108, facing southwest, showing deposits 10804, 10803, 10802, 10801 & 10800. 1m scale.



Photo 28: TP109, facing northwest, showing deposits 10903, 10902, 10901 & 10900. 1m scale.



Photo 29: TP110, facing southeast, showing deposits 11003, 11002, 11001 & 11000. 1m scale.



Photo 30: TP111, facing west, showing deposits 11103, 11102, 11101 & 11100. 1m scale.



Photo 31: TP113, facing south, showing mining waste deposits 11302, 11301 & 11300. 1m scale.



Photo 32: TP114, facing west, showing deposits 11402, 11401 & 11400. 1m scale.



Photo 33: TP115, facing west, showing mining waste deposit 11500.



Photo 34: Trial Trench 01, facing north, showing concrete block 10004, with overlying deposit 10001 & 10000. 1m & 0.2m scale.



Photo 35: Trial Trench 01, facing northwest, closer shot of concrete block 10004. 1m & 0.2m scale.



Photo 36: Trial Trench 01, facing east, showing deposits 10008, 10007, 10003, 10001 & 10000, with concrete block 10004 to the rear. 1m scale.



Photo 37: Trial Trench 02, facing west, showing deposits 2007, 2006 & 2004. 2m scale.



Photo 38: Trial Trench 02, facing west, showing deposits 2002, 2003, 2007, 2006, 2001, 2009, 2005 & 2000/2004.



Photo 39: Trial Trench/TP112, facing east, showing deposits 11204, 11203, 11202, 11201 & 11200.
1m scale.



Photo 40. Trial Trench/TP112, facing west, showing deposits 11204, 11203, 11202, 11201 & 11200.

Archaeology Wales

APPENDIX I: Context List

Context Descriptions

Context Number	Context Type	Description	Dimensions
TP1 - 2.7m x 0.6m, 1.8m deep			
100	Layer	- Topsoil - Moderate, dark grey-brown silt-sand	Across TP1, 0.2m thick
101	Layer	- Subsoil - Moderate, mid yellow-grey clayey-sand - Rare, medium-large sub-angular stone	Across TP1, 0.6m thick
102	Layer	- Natural - Moderate, mid blue-grey silty-clay	Across TP1, in excess of 1m thick
TP2 - 2.1m x 0.6m, 2.2m deep			
200	Layer	- Topsoil - Moderate, light grey-brown clay-loam	Across TP, 0.1m thick
201	Layer	- Trackway make-up - Compact, mid grey-brown, crushed shale & mudstone	Across TP, 0.32m thick
202	Layer	- Subsoil - Compact, light blue-grey clay - Very rare small-medium sub-rounded gravel and cobbles	Across TP, 1m thick
203	Layer	- Natural (Till) - Very compact, mottled grey-brown clay - Abundant medium-large sub-angular mudstone, gravel and cobbles	Across TP, in excess of 0.8m thick
TP3 - 2.6m x 0.6m, 1.5m deep			
300	Layer	- Topsoil - Moderate, mid grey-brown silty-sand	Across TP, 0.6m thick
301	Layer	- Subsoil - Moderate, mid orange-brown sandy-clay - Rare, small-medium sub-angular stone	Across TP, 0.2m thick
302	Layer	- Natural - Compact, mid blue-grey silty-clay - Abundant small-medium sub-angular gravel	Across TP, 0.3m thick
303	Layer	- Natural - Compact, light blue-grey clay	Across TP, in excess of 0.4m thick
TP4 - 2.7m x 0.6m, 2.2m deep			
400	Layer	- Topsoil - Loose, mid grey-brown clay-loam	Across TP, 0.14m thick
401	Layer	- Dumped material - Moderate, mid grey-brown fragmented shale	Across TP, 0.25m thick
402	Layer	- Subsoil - Compact, light blue-grey clay	Across TP, 1.58m thick
403	Layer	- Subsoil/Natural (Till) - Very compact, mid yellow-brown clay - Abundant, medium-large sub-rounded shale and cobbles	Across TP, in excess of 0.2m

TP5 - 2.6m x 0.6m, 2.8m deep			
500	Layer	• Topsoil • Moderate, dark grey-brown silty-sand	Across TP, 0.2m thick
501	Layer	• Subsoil • Moderate, mid grey-brown silty-sand • Rare, small-medium sub-angular stone	Across TP, 0.2m thick
503	Layer	• Natural • Moderate, light orange-grey/blue sandy-clay • Very rare, small-medium sub-angular stone	Across TP, 0.6m thick
504	Layer	• Natural • Compact, light blue-grey clay-loam	Across TP, in excess of 1.8m
TP6 - 2.6m x 0.6m, 2.6m deep			
600	Layer	• Topsoil • Moderate, mid orange-brown sandy-clay	Across TP, 0.2m thick
601	Layer	• Natural • Moderate, light blue-grey clay-loam • Rare, small-medium sub-angular stone	Across TP, 0.6m thick
602	Layer	• Natural • Compact, mid orange-brown clay-loam • Rare, small-medium sub-angular stone	Across TP, in excess of 1.8m thick
TP7 - 3m x 0.6m, 1.78m deep			
700	Layer	• Topsoil • Moderate, mid red-brown clay-loam	Across TP, 0.12m thick
701	Layer	• Subsoil • Compact, light grey-brown silty-clay • Rare, very large sub-rounded cobbles	Across TP, 0.48m thick
702	Layer	• Natural • Compact, mid grey-brown clay • Common, medium sub-angular mudstone	Across TP, in excess of 1.18m
TP8 - 2.7m x 0.6m, 2.1m deep			
800	Layer	• Topsoil • Moderate, mid grey-brown silty-sand	Across TP, 0.2m thick
801	Layer	• Subsoil • Moderate, light grey-brown silty-sand • Abundant, small-medium sub-rounded stone	Across TP, 0.5m thick
802	Layer	• Natural • Compact, light blue-grey silty-clay	Across TP, in excess of 1.4m thick
TP9 - 2.65m x 0.6m, 1.8m deep			
900	Layer	• Topsoil • Moderate, dark grey-brown silty-sand	Across TP, 0.2m thick
901	Layer	• Subsoil • Moderate, light brown-grey silty-clay • Abundant, small-medium sub-angular stone	Across TP, 0.6m thick
902	Layer	• Natural • Moderate, mid blue-grey sandy-clay • Rare, small-medium angular stone	Across TP, 0.4m thick

903	Layer	- Natural - Compact, mid orange-brown clay-loam	Across TP, in excess of 0.6m thick
TP10 - 2.2m x 0.65m, 1.15m deep			
1000	Layer	- Topsoil - Moderate, dark brown peaty-loam	Across TP, 0.08m thick
1001	Layer	- Subsoil - Moderate, mid grey fragmented shale/aggregate	Across TP, 0.35m thick
1002	Layer	- Subsoil - Compact, mottled light brown-grey clay	Across TP, in excess of 0.7m thick
1003	Layer	- Subsoil - Moderate, mid orange-brown silty clay	Across TP, 0.2m thick
TP11			
1100	Layer	- Topsoil - Moderate, mid red-brown clay-loam	Across TP, 0.2m thick
1101	Layer	- Subsoil - Compact, light brown clay - Common, medium-large sub-angular mudstone	Across TP, 0.3m thick
1102	Layer	- Natural (Till) - Compact, mid grey-brown clay - Common, medium sub-angular mudstone	Across TP, in excess of 1.2m thick
1103	Layer	- Subsoil - Moderate, mid brown-orange clay-loam	Across TP, 0.1m thick
TP12 - 2.6m x 0.6m, 2.4m deep			
1200	Layer	- Redeposited - Moderate, mid brown-grey sandy-loam - Abundant, medium angular gravel	Across TP, 1m thick
1201	Layer	- Topsoil (buried) - Moderate, dark grey-brown silty-clay	Across TP, 0.1m thick
1202	Layer	- Subsoil - Moderate, mid orange-brown sandy-clay - Abundant, medium-large angular stone	Across TP, 0.3m thick
1203	Layer	- Natural - Compact, light blue-grey clay-loam	Across TP, in excess of 1m thick
TP13 - 2.6m x 0.6m, 2m deep			
1300	Layer	- Topsoil - Moderate, mid orange-brown silty-sand	Across TP,
1301	Layer	- Subsoil - Moderate, mid brown-orange silty-sand - Abundant, medium sub-angular stone	Across TP, 0.6m thick
1302	Layer	- Natural - Compact, mid blue-grey sandy-clay - Abundant, medium-large sub-rounded stone	Across TP, in excess of 1.2m thick
TP14 - 2.6m x 0.6m, 1.7m deep			
1400	Layer	- Topsoil - Moderate, dark grey-brown silty-sand	Across TP, 0.3m thick

1401	Layer	• Subsoil • Moderate, mid yellow-brown silty-sand • Abundant, medium sub-angular stone	Across TP, 0.5m thick
1402	Layer	• Natural • Compact, mid blue-grey silty-grey	Across TP, 0.9m thick
TP15 - 3m x 0.6m, 1.6m deep			
1500	Layer	• Topsoil • Moderate, mid red-brown clay-loam	Across TP, 0.25m thick
1501	Layer	• Subsoil • Moderate, mid brown silty-clay	Across TP, 0.3m thick
1502	Layer	• Natural (Till) • Compact, mid grey-brown clay • Common, medium-large sub-angular mudstone	Across TP, in excess of 1.18m thick
TP16 - 3m x 0.6m, 1.42m deep			
1600	Layer	• Topsoil • Moderate, mid red-brown clay-loam	Across TP, 0.1m thick
1601	Layer	• Subsoil • Compact, light grey clay • Abundant, medium-large sub-rounded stone and cobbles	Across TP, 0.4m thick
1602	Layer	• Natural (Till) • Compact, mid brown clay • Common, medium-large sub-angular mudstone	Across TP, in excess of 0.9m thick
TP17 – 2.65m x 0.6m, 1.3m deep			
1700	Layer	• Topsoil • Moderate, dark grey-brown silty-sand	Across TP, 0.2m thick
1701	Layer	• Subsoil • Moderate, mid grey-brown silty-sand • Abundant, medium sub-angular stone	Across TP, 0.9m thick
1702	Layer	• Natural • Compact, mid orange-brown clay-loam	Across TP, in excess of 0.2m thick
TP101 – 2.9m x 0.6m, 1.9m deep			
10100	Layer	• Topsoil • Moderate, dark brown peaty-loam	Across TP, 0.15m thick
10101	Layer	• Subsoil • Moderate, light brown clay	Across TP, 0.25m thick
10102	Layer	• Subsoil • Moderate, light blue-grey clay • Rare, medium-large sub-rounded stone and cobbles	Across TP, 0.9m thick
10103	Layer	• Subsoil • Light brown silty-clay • Common, medium sub-angular mudstone and gravel	Across TP, in excess of 0.6m thick
TP102 – 2.5m x 1.5m, 1.3m deep			
10200	Layer	• Topsoil & mining waste • Moderate, dark grey-brown silty-sand • Abundant, small sub-angular stone	Across TP, 0.12m thick
10201	Layer	• Mining waste • Loose, light grey gravel and stone dust	Across TP, 0.38m thick

10202	Layer	• Mining waste • Loose, mid grey-brown aggregate and gravel	Across TP, 0.4m thick
10203	Layer	• Mining waste • Loose, mottled mid grey-reddish brown aggregate & gravel	Across TP, in excess of 0.4m thick
TP103 – 3.9m x 2.8m, 1.15m deep			
10300	Layer	• Mining waste • Very loose, light grey-brown aggregate & gravel	Across TP, in excess of 1.15m thick
TP104 – 2.2m x 0.8m, 1.72m deep			
10400	Layer	• Topsoil • Moderate, dark brown clay-loam	Across TP, 0.25m thick
10401	Layer	• Subsoil • Moderate, light grey-brown clay	Across TP, 0.47m thick
10402	Layer	• Subsoil • Moderate, light blue-grey clay • Common, medium-large sub-rounded mudstone and cobbles	Across TP, 0.68m thick
10403	Layer	• Subsoil • Compact, light blue-grey clay • Common, medium-large sub-rounded mudstone and cobbles	Across TP, in excess of 0.3m thick
TP105 – 3.1m x 2m, 1.1m deep			
10500	Layer	• Topsoil • Loose, dark grey-brown sandy-loam	Across TP, 0.15m thick
10501	Layer	• Mining waste • Very loose, mid grey-brown sand and gravel/stone dust	Across TP, in excess of 0.95m thick
TP106 – 3m x 2m, 3.15m deep			
10600	Layer	• Topsoil • Moderate, mid grey-brown gravel	Across TP, 0.1m thick
10601	Layer	• Mining waste • Loose, mixed gravels and clay lenses	Across TP, 1.7m thick
10602	Layer	• Mining waste • Loose, light grey stone dust	Across TP, 1m thick
10603	Layer	• Natural • Compact, mid blue-grey clay • Common, medium-large sub-angular and sub-rounded stone and cobbles	Across TP, in excess of 1.25m
TP107 – 2.35m x 0.6m, 1.85m deep			
10700	Layer	• Topsoil • Moderate, very dark grey-brown peaty-loam	Across TP, 0.08m thick
10701	Layer	• Mining waste • Moderate, dark brown peaty-loam with lenses of gravel and clay	Across TP, 0.4m thick
10702	Layer	• Subsoil • Compact, light blue-grey clay • Common, small-medium sub-angular mudstone and gravel	Across TP, 0.52m thick

10703	Layer	- Subsoil - Compact, mid blue-grey clay	Across TP, in excess of 0.85m thick
TP108 – 0.8m wide, 1.8m deep			
10800	Layer	- Topsoil - Moderate, very dark brown peaty-loam	Across TP, 0.08m thick
10801	Layer	- Mining waste - Loose, mid grey silt - Abundant stone dust and medium sub-angular gravel	Across TP, 0.12m thick
10802	Layer	- Mining waste? - Moderate, dark grey clay	Across TP, 0.5m thick
10803	Layer	- Subsoil - Moderate, light mottled yellow-brown & grey clay	Across TP, 0.75m thick
10804	Layer	- Subsoil - Compact, mottled mid grey-brown clay - Rare, small-medium sub-angular gravels	Across TP, in excess of 0.7m thick
TP109 – 2.5m x 0.8m, 1.6m deep			
10900	Layer	- Topsoil - Moderate, dark grey-brown clay-loam	Across TP, 0.1m thick
10901	Layer	- Subsoil - Moderate, mottled mid grey-brown silty-clay	Across TP, 0.2m thick
10902	Layer	- Subsoil - Moderate, mottled light grey-brown clay - Abundant small-medium gravel & mudstone	Across TP, 0.52m thick
10903	Layer	- Natural - Compact, mid brown silty-clay - Abundant, medium-large sub-angular stone	Across TP, in excess of 0.78m thick
TP110 – 2.8m x 1m, 2.35m deep			
11000	Layer	- Mining waste - Loose, light brown-blue/grey sand, with stone dust and gravels	Across TP, 1.2m thick
11001	Layer	- Subsoil - Compact, mid blue-grey clay - Common medium-large sub-rounded mudstone and gravels	Across TP, in excess of 1.15m thick
TP111 – 2.6m x 0.8m, 1.55m deep			
11100	Layer	- Topsoil - Loose, mid brown silty-clay	Across TP, 0.05m thick
11101	Layer	- Mining waste - Loose, mid red-brown gritty-silt with stone dust	Across TP, 0.2m thick
11102	Layer	- Subsoil - Compact, mottled light grey-brown clay - Common, medium sub-angular mudstone and gravels	Across TP, in excess of 1.3m thick
TP113 – 2.15m x 0.6m, 2.12m deep			
11300	Layer	- Mining waste - Loose, light grey stone aggregate	Across TP, 0.15m thick
11301	Layer	- Mining waste - Loose, light red-brown aggregate and stone dust	Across TP, 1m thick

11302	Layer	• Mining waste • Loose, light grey-reddish brown gravel and stone	Across TP, in excess of 0.9m thick
TP114 – 2.4m x 0.8m, 2.15m deep			
11400	Layer	• Topsoil • Moderate, dark brown clay-loam	Across TP, 0.3m thick
11401	Layer	• Mining waste • Loose, large aggregates	Across TP, 0.65m thick
11402	Layer	• Subsoil • Compact, mid blue-grey clay • Abundant, small-medium sub-angular stone	Across TP, 0.9m thick
11403	Layer	• Subsoil • Moderate, mottled mid yellow-brown clay with coarse grits	Across TP, 0.12m thick
11404	Layer	• Subsoil • Compact, mid blue-grey clay	Across TP, in excess of 0.25m thick
TP115 – 2m long, 2m deep			
11500	Layer	• Redeposited mining waste • Loose, mid brown-grey sandy-loam • Abundant small-medium angular gravel	Across TP, in excess of 2m thick
Trial Trench 01 – 2.3m deep			
10000	Layer	• Topsoil/Mining waste • Disturbed	Across TT, 0.1m thick
10001	Layer	• Make-up • Moderate, mixed light brown clay	4m long, 0.15m thick
10002	Fill	• Mining waste/backfill • Loose, light grey fragmented shale	4m long, 0.95m thick
10003	Fill	• Backfill of 10009 • Moderate, dark brown silty-loam	3m long, 0.1m thick
10004	Structure	• Concrete Block • Within 10009	0.9m wide, 0.3m high
10005	Structure	• Stone slab foundation for 10004 • Within 10009	2m wide, 0.1m thick
10006	Layer	• Mining waste • Loose, light grey stone dust	0.4m thick
10007	Layer	• Redeposited material • Moderate, mid red-brown silty-clay	0.9m thick
10008	Layer	• Subsoil • Compact, mid blue-grey-brown clay • Rare, medium-large sub-angular mudstone	Across TT, in excess of 1.3m thick
10009	Cut	• Construction cut • Steep, straight edge. Moderate BOS to flat base	In excess of 4m wide, 1.4m deep
Trial Trench 02 – 13.5m x 0.6m, 2.35m deep			
2000	Layer	• Topsoil • Moderate, dark brown loam	0.15m thick
2001	Layer	• Mining waste • Loose, mid grey-brown fragmented shale	0.25m thick

2002	Layer	- Natural - Compact, dark grey shale	1.8m thick
2003	Layer	- Redeposited material - Loose, mid grey-brown clayey-silt - Abundant small-medium sub-angular stone & aggregate	1.7m thick
2004	Layer	- Topsoil - Moderate, dark brown peaty-loam	0.12m thick
2005	Fill	- Trench fill - Loose, mid grey fragmented shale - Fill of 2009	0.2m thick
2006	Layer	- Mining waste - Loose, light grey-brown silty-clay - Abundant small-medium sub-angular stone	0.25m thick
2007	Layer	- Deposit - Moderate, light grey clay - Abundant, small-medium sub-angular gravel	1.3m thick
2008	Layer	- Subsoil - Compact, mid blue-grey clay - Rare, medium-large sub-rounded stone	In excess of 0.1m thick
2009	Cut	- Drainage trench - Linear, N-S - Steep sides, concave base	0.9m wide, 0.35m deep
Trial Trench 03 – 10m x 0.6m, 1.5m deep			
30000	Layer	- Topsoil - Moderate, dark grey-brown silty-sand	Across TT, 0.2m thick
30001	Layer	- Hillwash - Moderate, mid orange-brown silty-clay	Across TT, 0.5m thick
30002	Layer	- Subsoil - Moderate, mid blue-grey silty-clay - Abundant medium sub-rounded stone	Across TT, 0.5m thick
30003	Layer	- Natural - Compact, mid blue-grey clay	Across TT, in excess of 0.3m thick
Trial Trench/TT 112 – 15m x 0.6m, 3.2m deep			
11200	Layer	- Topsoil - Moderate, mid grey-brown silty-sand - Abundant, medium-large sub-angular shale fragments	Across TT, 0.2m thick
11201	Layer	- Hillwash - Moderate, mid orange-brown silty-clay	0.5m thick
11202	Layer	- Subsoil - Moderate, mid grey-brown silty-sand - Abundant medium-large sub-angular stone	Across TT, 0.5m thick
11203	Layer	- Natural - Compact, light grey-brown silty-sand - Abundant, medium-large sub-angular shale fragments	Across TT, 1m thick
11204	Layer	- Bedrock - Shale	Across TT, in excess of 1m thick

Archaeology Wales

APPENDIX II: Written Scheme of Investigation



Natural Resources Wales

ABBEY CONSOLS METAL MINE

Archaeological Written Scheme of Investigation
for a Watching Brief





Natural Resources Wales

ABBNEY CONSOLS METAL MINE

Archaeological Written Scheme of Investigation for a
Watching Brief

TYPE OF DOCUMENT (V1) CONFIDENTIAL

PROJECT NO. 70041881

OUR REF. NO. 70041881-008

DATE: NOVEMBER 2018

Natural Resources **Wales**

ABBHEY CONSOLS METAL MINE

Archaeological Written Scheme of Investigation for a Watching Brief

WSP

The Victoria
150-182 The Quays
Salford, Manchester
M50 3SP

Phone: +44 161 886 2400

Fax: +44 161 886 2401

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	01/11/18			
Prepared by	Phillipa Haworth			
Signature	Pp Alison Plummer			
Authorised by	Alison Plummer			
Signature				
Project number	70041881			
Report number	70042978-008V1			

CONTENTS

1	INTRODUCTION	1
1.1	CIRCUMSTANCES OF THE PROJECT	1
1.2	PURPOSE OF THE DOCUMENT	1
1.3	AIMS AND OBJECTIVES	2
	ACADEMIC AIMS	2
	OBJECTIVES	2
2	METHOD STATEMENT	4
2.1	WATCHING BRIEF	4
2.2	HEALTH AND SAFETY	5
2.3	OTHER MATTERS	6
	PROJECT MONITORING	6
	CONTINGENCIES	7
	WORKING HOURS	7
3	REPORT AND ARCHIVE	8
3.1	REPORT	8
3.2	ARCHIVE	8
	TIMETABLE	9
	STAFFING PROPOSALS	9
4	REFERENCES	10

1. INTRODUCTION

1.1. CIRCUMSTANCES OF THE PROJECT

1.1.1. An Archaeological Watching Brief (WB) is required during proposed ground investigation (GI) works at the former Abbey Consols Metal Mine. The mine is located in the upper reaches of the Afon Teifi Valley, on the northern slope between 180m and 220m AOD. It lies 1.2km to the south-east of the village of Pontrhydfendigaid, Ceredigion (Image 1). Specifically, the WB is required for a GI in support of remediation works to the former mine. Several well-preserved archaeological constraints (surface mine features) are present across the site and are presented in the Abbey Consols Metal Mine: Archaeological Constraints Report (WSP 2018).

1.2. PURPOSE OF THE DOCUMENT

1.2.1. An Archaeological Written Scheme of Investigation (WSI) is a comprehensive document detailing the requirements and methodological approaches of a programme of archaeological works, and is intended to meet the spirit and intent of the archaeological requirements. A WB is defined by the Chartered Institute for Archaeologists (CIfA) as a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons (CIfA 2014a). The WB will take place within the area of the proposed GI where there is a possibility that archaeological deposits may be disturbed or destroyed (Image 1).

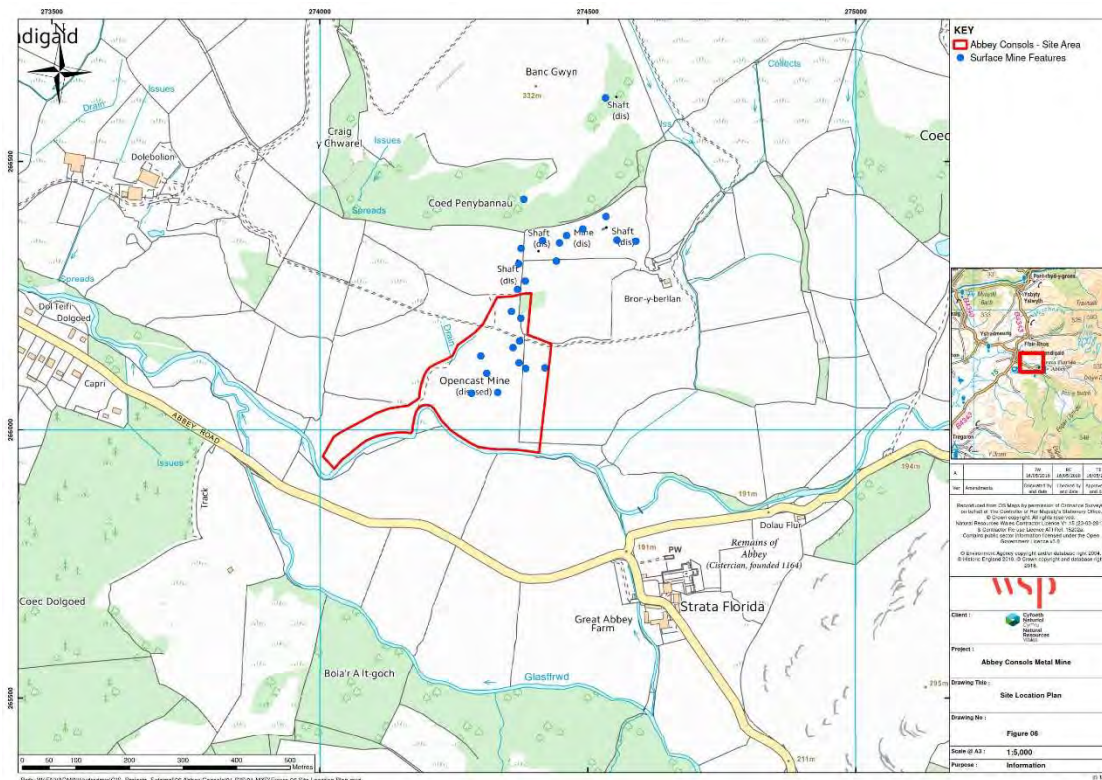


Image 1: Location of the Proposed Scheme subject to the watching brief

1.2.2. The WSI has been formulated in the light of relevant legislation on heritage. The land use planning policies of the Welsh Government is set out in Planning Policy Wales (PPW), which is supplemented

by a series of Technical Advice Notes (TANs) and Welsh Office Circulars. Chapter 6 of the PPW, entitled 'Conserving the Historic Environment', provides policy for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Chapter 6 can be summarised as seeking to:

- preserve or enhance the historic environment, recognising its contribution to economic vitality and culture, civic pride and the quality of life, and its importance as a resource for future generations;
- protect archaeological remains, which are a finite and non-renewable resource, part of the historical and cultural identity of Wales, and valuable both for their own sake and for their role in education, leisure and the economy, particularly tourism;
- ensure that the character of historic buildings is safeguarded from alterations, extensions or demolition that would compromise a building's special architectural and historic interest; and to
- ensure that conservation areas are protected or enhanced, while at the same time remaining alive and prosperous, avoiding unnecessarily detailed controls over businesses and householders.

1.3. AIMS AND OBJECTIVES

ACADEMIC AIMS

- 1.3.1. The main aim of the archaeological investigation will be to record any buried archaeological remains and historic landscape features that are exposed during the construction works. This will be achieved via archaeological monitoring during topsoil stripping.

OBJECTIVES

- 1.3.2. The principal objectives of the archaeological investigation are:
- to record, as far as is reasonably possible, the location, extent, condition, significance and quality of any surviving archaeological remains observed;
 - dependent upon the results to tie in with regional research objectives for the prehistoric period (potentially the Bronze Age);
 - to suggest methods of conservation where appropriate for significant early remains from the railway;
 - to make available the results of the work.

WASTE DELINEATION AND SOURCE CHARACTERISATION (23 NO. TRIAL PITS)

- 1.3.3. The following trial pits will be subject to the Watching Brief (See Image 2):

1.3.4. Source Characterisation/Ground Profiling (Trial Pits)	1.3.5. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, & 17
1.3.6. Waste Delineation (Trial Pits)	1.3.7. 2, 3, 5, 6, 7, 8, 9, 10, & 11

- 1.3.8. These investigation positions (trial pits) are required to improve our understanding of (i) the lateral extent and (ii) the compositional variation and depth of the mining waste across the Abbey Consols site. Each trial pit position will be excavated using a JCB3CX type back-hoe excavator under the close supervision of an experienced engineer. Trial pits will measure approximately 3m x 0.6m at the surface and range in depth between 2 and 4m below ground level.

ADIT INVESTIGATIONS / TRIAL TRENCHING AND PITTING (2 – 3 NO. TRENCHES, 1 NO. TRIAL PIT)

- 1.3.9. Investigations are required between the historic position of a drainage adit entrance and the waste tips to confirm the adit entrance location, discharge and its connectivity with the rest of the site. The adit mouth is thought to have been buried during the excavation of an adjacent quarry and its location is no longer clear. The intention is to excavate two exploratory trenches approximately in parallel to the access road to confirm the depth to bedrock, and allow the investigation for any remnants of mining infrastructure (such as the tramlines once leading away from the adit to the waste tips) and provide the opportunity to look for any indication of adit water seepage and preferential flow paths.
- 1.3.10. The methods intended for the initial two trial trenches along the road are the same as those described above for the Source Characterisation and Waste Delineation trial pits. The same machinery will be used (JCB3CX type excavator) and the same excavation and reinstatement sequence will apply. The key difference will be the length of each excavation, which instead of being limited to circa 3m, will be extended as necessary to expose features of interest. We would expect a typical trench to be extended anywhere between 5 and 10m from one end to the other.

2. METHOD STATEMENT

2.1. WATCHING BRIEF

- 2.1.1. The plan below (Image 2) shows the proposed locations of waste delineation and source characterisation trial pits, adit investigation trial trenching and a possible hand dug excavation around the adit entrance. The other GI works (i.e. boreholes) shown on the image are not subject to this specification.

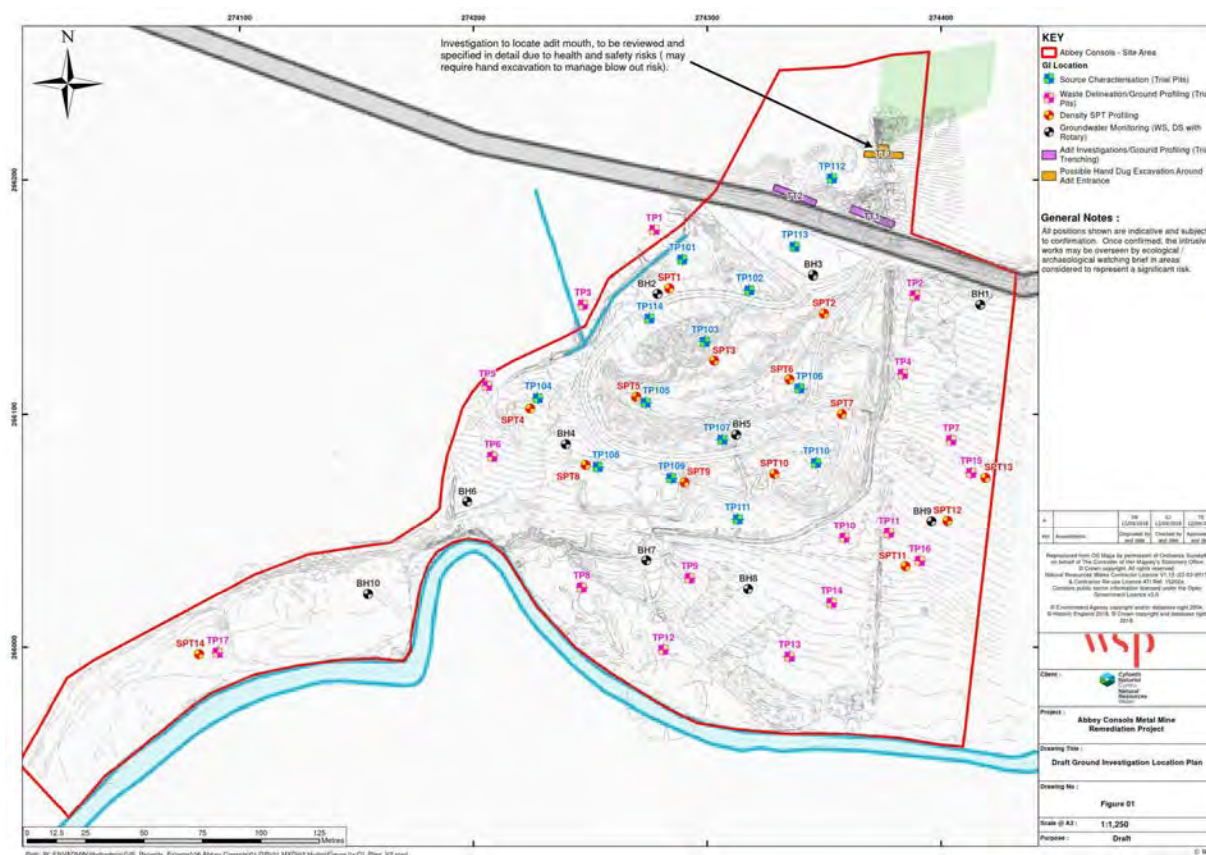


Image 2 – Draft Ground Investigation Location Plan

- 2.1.2. **General Methodology:** all ground-breaking works will be supervised closely by a suitably experienced archaeologist, and if any archaeological deposits or features are identified, work must be stopped in that area to allow time for the archaeologist(s) to investigate. This includes full or partial excavation of identified deposits or features. Any exposed remains will be cleaned manually to define their extent, nature, form and, where possible, date.
- 2.1.3. All information identified in the course of the site works will be recorded stratigraphically. Results of the WB will be recorded on *pro-forma* context sheets, and will be accompanied with sufficient pictorial record (plans, sections and high-resolution digital photographs) to identify and illustrate individual features. Primary records will be available for inspection at all times.
- 2.1.4. **Context Recording:** all contexts will be recorded using *pro-forma* sheets, and details will be incorporated into a Harris matrix. All written recording of survey data, contexts, photographs, artefacts and ecofacts will be cross-referenced from record sheets using sequential numbering.

- 2.1.5. *Photography*: a full and detailed photographic record of individual contexts will be maintained and similarly general views from standard view points of the overall site at all stages of the WB will be generated. Photography will be undertaken using high-resolution (minimum 10 megapixel) digital cameras. All frames will include a graduated metric scale.
- 2.1.6. *Planning*: the precise location of all archaeological features encountered will be surveyed using GPS survey instrument, which will enable scaled plans within AutoCAD to be generated. The drawings will be produced at an accuracy appropriate for 1:20 scale, but can be output at any scale required. Section drawings will also be generated as required, depending on the nature of any excavated archaeological features. All information will be tied in to Ordnance Datum.
- 2.1.7. *Human remains*: human remains are not expected to be present, but if they are found they will, if possible, be left *in-situ* covered and protected. The removal of human remains will only take place in compliance with environmental health regulations and following discussions with, and with the approval of, the Ministry of Justice. If human remains are identified, the Ministry of Justice and curator will be informed immediately.
- 2.1.8. *Finds policy*: finds recovery and sampling programmes will be in accordance with best practice (following current Chartered Institute for Archaeologists' guidelines; ClfA 2014b) and subject to expert advice in order to minimise deterioration. In the event of certain finds or features being discovered, relevant expert specialists will be consulted either in-house or external as relevant. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC 1990).

2.2. HEALTH AND SAFETY

- 2.2.1. Full regard will be given to all constraints during the course of the project, and all relevant Health and Safety legislation, CDM, COSHH regulations and codes of practice will be respected. The archaeological contractor should provide a Health and Safety Statement for all projects and maintain a Safety Policy. All site procedures should be in accordance with the guidance set out current legislation, including:
- The Health and Safety at Work Act (1974);
 - Management of Health and Safety at Work Regulations (1999);
 - The Construction (Design and Management) Regulations (2015);
 - The Control of Asbestos Regulations (2006);
 - Construction (Health, Safety and Welfare) Regulations (1996);
 - The Health and Safety (Miscellaneous Amendments) Regulations (2002);
 - The Control of Substances Hazardous to Health Regulations (2002);
 - The Health and Safety (First-Aid) Regulations (1981);
 - The Regulatory Reform (Fire Safety) Order (2005);
 - The Provision and Use of Work Equipment Regulations (1998);
 - Lifting Operations and Lifting Equipment Regulations (1998).
- 2.2.2. A risk assessment method statement (RAMS) will be produced by the archaeological contractor and submitted to the Client prior to the commencement of any on-site archaeological works. Once approved by Dyfed Archaeological Trust (DAT) Development Manager (DM) on behalf of the Local Authority, this WSI will be used for the purposes of a method statement. All archaeological staff associated with the WB will be given a copy of the method statement and the risk assessment prior to the beginning of the works and will be required to read both documents.

- 2.2.3. The archaeological contractor must undertake to safeguard, so far as is reasonably practicable, the health, safety and welfare of its staff and of others who may be affected by our work. This applies in particular to providing and maintaining suitable premises, and providing all reasonable safeguards and precautions against accidents. The contractor must also take all reasonable steps to ensure the health and safety of all persons not in their employment, such as volunteers, students, and members of the public.
- 2.2.4. At present the profession of Archaeologist is largely covered by the CSCS, Construction Related Organisation CRO White Card for Archaeological Technician (Code 5363); other cards are available for site visitors etc.
- 2.2.5. Personal Protective Equipment (PPE): all staff will wear PPE at appropriate times dictated as by the Senior Archaeologist on site. All archaeological contractors staff should be supplied with the following PPE and the relevant items as per the RAMS worn:
- Safety Helmets (EN397);
 - Ear Defenders (EN 352-3);
 - Safety spectacles (EN166);
 - Goggles (Chemical BSEN 166 Type 3);
 - Dust masks plain and valved (EN149 2001);
 - Disposable overalls (Type 5/6 disposable EN340);
 - Hi-visibility vests (EN471);
 - Gloves Nitrile and latex disposable, PVC, EN374;
 - Heavy-duty nitrile rubber gloves (EN420, 388);
 - Safety footwear - steel toecap and mid-sole boots and Wellingtons EN345-47.
- 2.2.6. Any other PPE required by the client and/or Principal Contractor must be provided or funded by them.
- 2.2.7. Services (Gas, Electricity, Water, Sewers and Telecoms): it is the duty of the Client to provide all information reasonably obtainable relating to any contamination or live services present on site prior to the commencement of the programme of archaeological works.
- 2.2.8. No member of the archaeological contractors' staff will touch or otherwise interfere with a live service even if declared 'safe'. In the event of the accidental disruption of a live service by archaeologists, the Senior Archaeologist on site will inform both their Project Manager and the Principal Contractor and, when appropriate, call the relevant emergency number. Any underground service not previously identified which is encountered during excavation will be assumed to be live and will need to be made safe by the Client before further excavation.

ACCESS

- 2.2.9. Reasonable access to the site will be granted to representatives of the DAT DM, who may wish to be satisfied, through site inspection, that the scope and practice of the archaeological works are being conducted according to professional standards and in accordance with any agreements made.

2.3. OTHER MATTERS

PROJECT MONITORING

- 2.3.1. The aims of monitoring are to ensure that the archaeological works are undertaken within the limits set by the WSI, and to the satisfaction of DAT DM, in their capacity of archaeological advisor to the local planning authority.

- 2.3.2. The archaeological contractor will notify the Client and DAT DM of any discoveries of archaeological significance so that site visits can be made, as necessary. Any changes to this agreed WSI will only be made in consultation with the Client and DAT DM.

CONTINGENCIES

- 2.3.3. In the event of encountering deposits and/or artefacts during the GI that require recording and recovery, it may be necessary to delay works whilst the proper investigation and recording takes place. Watching brief recording can often be undertaken without delay to ground works, depending upon the specific circumstances and flexibility of all the staff on site.
- 2.3.4. In the event of archaeological discoveries, the treatment of which (either arising from the volume/quantity of material and/or the complexity/importance of the material) is beyond the resources deployed, the Client will be notified and a site meeting/telephone consultation arranged with DAT DM. The aim of the meeting will be to confirm that an archaeological find has been made for which the resources allocated to the WB itself are not sufficient to support treatment to satisfactory and proper standard and identify measures which would be sufficient to support treatment to a satisfactory and proper standard prior to destruction of the material in question.

WORKING HOURS

- 2.3.5. Normal working hours are variable between 7.30 am and 6.00 pm, Monday to Friday. Should the archaeological contractors staff be asked to work weekends or bank holidays, a project contract variation to cover additional costs will be necessary.

3. REPORT AND ARCHIVE

3.1. REPORT

3.1.1. A draft copy of a final report will be submitted for comment within eight working weeks of the completion of the fieldwork. This will present the results obtained from the archaeological investigation, and will include:

- a title page detailing site address, eight-figure NGR and a site location plan, author/originating body, client's name and address, and the planning application number;
- full content's listing;
- a non-technical executive summary of the findings of the fieldwork, including the nature of the development and the date that the work was carried out;
- a description of the archaeological background;
- an account of the historical development of the site;
- a description of the methodologies used during the fieldwork;
- a description of the findings of the fieldwork;
- detailed plans of the excavated area, showing the archaeological features exposed, tied into the national grid;
- detailed section drawings;
- appropriate photographs of specific archaeological features;
- stratigraphic matrices for the various areas examined;
- initial assessment reports by specialists;
- a consideration of the importance of the archaeological remains present on the site in local, regional and national terms;
- recommendations for any further post-excavation analysis, including proposals for publication, if appropriate.
- a complete bibliography of sources from which data has been derived.

3.1.2. PDF copies of the report will be prepared for the Client (hard copies available if required). A bound paper copy of the report and an archive CD will be sent to DAT DM for inclusion into the Dyfed Historic Environment Record (HER), and to the National Monument Record of the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW).

3.2. ARCHIVE

3.2.1. The results of the archaeological investigation will form the basis of a full archive to professional standards, in accordance with ClfA standards and guidance for the creation, compilation, transportation and deposition of archaeological archive (revised December 2014). The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the ClfA in that organisation's code of conduct (ClfA 2014c).

3.2.2. The archaeological archive will be prepared in accordance with current RCAHMW guidelines (RCAHMW 2017), and will consist of the following:

- All original records created throughout the course of the project;
- All original drawings, whether created during fieldwork or post-investigation;
- Indexes to the drawings;

- Indexes to the photographic archive;
- All born digital material;
- Digital material created from written, drawn or photographed original records;
- The final project report;
- A list of contents of the archive.

3.2.3. The archive produced will be held by the archaeological contractor under the appropriate project code. The location of the finds archive will depend on their quantity, significance and ownership. The final location will be given in the final report.

3.2.4. Dissemination: as a minimum, the information will be finally disseminated through the deposition of the archive, and a final report at the DAT Historic Environment Record. A digital copy of the archive will also be sent to the RCAHMW, as per their guidelines. In the event of significant remains being encountered, however, a higher level of dissemination may be required, including a summary of the results being prepared for publication in Archaeology in Wales.

TIMETABLE

3.2.5. The duration of the WB will be dependent upon the main contractor's programme. A draft report will be submitted to the Client and their consultant and DAT DM for comment within eight weeks of completion of the fieldwork. The project archive will be deposited with the receiving museum (where applicable) within six months of completion of the fieldwork.

STAFFING PROPOSALS

3.2.6. The project will be under the overall charge of a suitably qualified and experienced archaeological Project Manager (PM) with full ClfA membership. The role of the PM will be to ensure that the WSI is implemented within the framework of the Project Objectives. The PM will be responsible for all aspects of staff and resource logistics, ensuring the smooth running of the project programme. The WB will be undertaken by a suitably experienced field archaeologist as appointed by the PM.

4. REFERENCES

Chartered Institute for Archaeologists. 2014a *Standards and Guidance for Archaeological Watching Briefs*. Reading

Chartered Institute for Archaeologists, 2014b *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Material*, Reading

Chartered Institute for Archaeologists, 2014c *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*, Reading

Historic England, 2015 *Digital Image Capture and File Storage Guidelines for Best Practice*, London

RCAHMW, 2017 *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017*



The Victoria
150-182 The Quays
Salford, Manchester
M50 3SP

wsp.com

Archaeology Wales

APPENDIX III: Archive Cover Sheet

ARCHIVE COVER SHEET

Abbey Consols Metal Mine, Pontrhydfendigaid, Ceredigion

Site Name:	Abbey Consols Metal Mine
Site Code:	ACMM/19/WB
PRN:	9310 (Abbey Consols Mine)
NPRN:	33843 (Abbey Consols Mine)
SAM:	-
Other Ref No:	-
NGR:	NGR SN 74303 66104
Site Type:	Ground investigation work on the site of a former 19 th /20 th century metal mine site, comprising largely of flattened waste heaps.
Project Type:	Watching Brief
Project Manager:	Philip Poucher
Project Dates:	January 2019 - March 2019
Categories Present:	-
Location of Original Archive:	AW
Location of duplicate Archives:	RCAHMW, Aberystwyth
Number of Finds Boxes:	0
Location of Finds:	-
Museum Reference:	-
Copyright:	AW
Restrictions to access:	None

Archaeology Wales

Archaeology Wales Limited

The Reading Room, Town Hall, Great Oak Street,
Llanidloes, Powys SY18 6BN

Tel: +44 (0) 1686 440371

Email: admin@arch-wales.co.uk

Company Directors: Mark Houlston MIFA & Jill Houlston

Company Registered No. 7440770 (England & Wales).

Registered office: Morgan Griffiths LLP, Cross Chambers,
9 High Street, Newtown, Powys, SY16 2NY