

Low Head Pipeline Replacement Project, Dolgarrog,

Report on Archaeological Works



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Low Head Pipeline Replacement Project, Dolgarrog

Report on Archaeological Works

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SUMMARY

This report sets out the results of a programme of archaeological work undertaken by Gwynedd Archaeological Trust (GAT) in advance of, and during, the replacement of the Low Head pipe running from Coedty Reservoir feeding the Dolgarrog hydro-electric power station, Dolgarrog (from SH 7558 6673 to SH 7656 6718). The work was undertaken on behalf of RWE Npower between August 2012 and June 2013.

The archaeological work revealed a rich landscape of settlement activity dating from the Roman period up until the 20th century in the form of numerous field boundaries, buildings, and trackways. A small Roman settlement, consisting of at least two roundhouses was partially excavated prior to the area being fenced off and avoided by the current works. Numerous field boundaries and structures were recorded dating from the medieval period onwards indicating dispersed settlement of the area during this period.

The most visible impact on the area was the construction of the hydro-electric power station during the early 20th century. The construction of this new pipeline, although truncating a number of field boundaries, has managed to avoid or only partially disturb the majority of features uncovered during the archaeological works.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by RWE Npower to undertake a programme of archaeological work prior to, and during, the replacement of the Low Head pipe from Coedty Reservoir feeding the Dolgarrog hydro-electric power station, Dolgarrog (from SH 7558 6673 to SH 7656 6718) (Figure 1).

The work was undertaken between November 2010 and June 2013 and consisted of two assessments (Evans 2010 and Kenney 2011a), a watching brief during test pitting (Kenney 2011b), a six trench evaluation (Owen 2012), and a programme of topographic survey and recording (McNicol 2013). The archaeological work carried out during the main phase of work, and reported on here, consisted of a watching brief during the road widening and groundworks associated with the pipeline, a series of targeted excavations, and a strip, map, and sample excavation. A Project Design was prepared which sets out the legislation framework and planning background in detail for each stage of archaeological work. The Project Design for the main works is included in Appendix I.

The archaeological works were carried out to fulfil the planning conditions on the project. Curatorial responsibility for this project lies in part with the Snowdonia National Park Authority and in part with the Conwy County Borough Council. The archaeological curators for both organisations monitored the archaeological works and were consulted during the creation and alteration of project designs.

This report outlines the results of the programme of archaeological work, and has been prepared in accordance with the *Management of Archaeological Project 2* (English Heritage 1991).

2 SITE LOCATION AND GEOLOGY

The pipe route runs through part of the valley of the Afon Porthllywd, from the Coedty Reservoir to the valve house known as 'Marble Arch', located at the top of Coed Dolgarrog and the steep escarpment forming the main valley side (from SH 7558 6673 to SH 7656 6718). The access roads and tracks leading to the pipeline run along existing roads and tracks running from the village of Tal-y-Bont to the Coedty Reservoir in the north, and from Dolgarrog village through the medieval township of Ardda and on towards Marble Arch in the south (Figure 1). The geology of the area is dominated by Ordovician slates, with contemporary and intrusive igneous formations (Roberts 1979). The steep escarpment of the Conwy valley is caused by an igneous formation with boulder clay, containing pockets of peat, lining the hanging valleys. Peat also covers much of the uplands, whilst the floor of the valley is covered with alluvial deposits (Geological Survey of England and Wales, sheets 9 and 10). The soils reflect the geological and climatic conditions and are badly drained and acidic (Smith and George 1961).

The current land use, outside the industrial activities associated with the pipe route, is a mixture of pasture and meadow in the flood plain, with rough grazing for sheep on the uplands, and woodland on the escarpment.

3 ARCHAEOLOGICAL BACKGROUND

The archaeological background has been discussed in full in the previous Archaeological Assessment (Kenney 2011a), and the reader is referred to that document. However a brief summary is presented here.

3.1 PREHISTORIC

An Early Neolithic chambered tomb on the valley floor at Porthllwyd was badly damaged in the Dolgarrog dam disaster in 1925 (PRN 1544), and its site is now under the hydro-electric works. A worked flint flake (PRN 4615) was found close to this tomb, and a polished stone axe (PRN 4573) was found on the valley side adjacent to Afon Ddu. The assessment identified a cairn (PRN 32146) along with fragments of field systems (PRN 31954 and 31956) which may also be of a Prehistoric date.

The Iron Age hillfort of Pen y Gaer (PRN 663, Scheduled Ancient Monument number CN023) is about 2km northwest of the site. A large roundhouse settlement (PRN

705) on the northwestern slopes of Moel Elio, probably originated in the Iron Age. A number of isolated round huts on the upland pasture (PRN 3775 and 5622 in Cwm Eigiau; PRN 3766 on Bwlch Cowlyd) may have formed part of a late prehistoric transhumance system, which is also suggested by their presence close to later *hafotai*.

3.2 ROMAN PERIOD

It is likely that some of the roundhouse settlements, such as PRN 705, near Moel Elio, continued in use into the Roman period, but the obvious traces of Roman period activity are restricted to the floor of the Conwy valley. It is likely that the present road along the west side of the valley (B5106) follows the former Roman road (PRN 17,703) from the Roman fort at Caerhûn to the fort at Bryn y Gefeiliau between Betws y Coed and Capel Curig (Davidson and Gwyn 1995, 4). The Roman auxiliary fort at Caerhûn lies about 2.5km north of the northern boundary of the study area. This was excavated in the 1920s and the results of the excavations suggest that it was built in the late first century and abandoned about 180 AD. The fort had an annexe and a bath-house. Cremation burials have been found near the fort and a dock on the river may have Roman origins, although this has not been proved (RCAHMW 1956, 34-36).

3.3 MEDIEVAL AND POST-MEDIEVAL

The site encompasses a complex and well preserved landscape in which a significant amount of evidence survives in the form of farmsteads, structures and associated field systems. The earlier field systems consisted of irregular enclosures, probably dating from the 15th to 18th centuries, located generally around or close to the homesteads on mid- slope terraces. As a result of 19th century enclosure which extended into the more upland areas, a more regular field pattern was created. Some of the settlement pattern identified may have had its origins in the Late Middle Age, but no definitely medieval features were recognised in the main party of the site during the assessment. However to the south, and crossed by one of the access routes, was the township of Ardda. This is recorded in the 15th century, but was presumably occupied from much earlier, and was in use into the 18th century. The south-east facing hillslope is covered with remains of small cottages and field boundaries. This area fell within a monastic grange belonging to Aberconwy Abbey and the township may have developed from the main settlement of the grange (RCAHMW 1956, 75-6).

3.4 MODERN

The construction of a hydro-electricity power station and associated aluminium works in the early years of the 20th century led to significant changes within the upland landscape. This involved the construction of a series of dams and leats to provide a water catchment system for the new works, as well as new roads and tramways built to service the construction. The different phases of leats, the pipelines, and the dam now form 'a remarkable industrial landscape' (Gwyn 2006, 126). The developments

at Dolgarrog were part of the first phase of global innovation in hydro-electric power and as such 'the physical remains are a nationally, and possibly internationally, important survival' (Gwyn and Nevell 2006, 14).

3.5 PREVIOUS WORK

Gwynedd Archaeological Trust (GAT) completed an initial scoping assessment of the study area (Evans 2010) followed by a full assessment to take into account the revised project layout (Kenney 2011a) in 2010 and 2011 respectively. This identified 105 sites within the study area and included recommendations for further assessment and mitigation.

In April 2011 a watching brief was carried out by GAT during the excavation of 41 geotechnical test pits and 15 boreholes along the proposed route of the pipe (Kenney 2011b). No archaeological deposits, with the exception of a thin layer of stones in TP20, were identified during the test pitting. The results from the main phase of archaeological work have shown that this layer was natural.

Between October and November 2012 a six trench evaluation was carried out by GAT (Owen 2012) which recorded three field boundaries (PRNs 31957, 31954, and 31943), a possible sheepfold, and a possible Roman roundhouse (PRN 36094). The field boundaries and the sheepfold were fully uncovered during the main phase of works and are discussed below.

The possible Roman roundhouse was only partially revealed during the evaluation (Figure 10), with two possible walls (609 and 610) which may represent the outer walls of the roundhouse uncovered. A sondage excavated in the middle of the roundhouse revealed three flat stones (604) which may represent a floor or a drain. A sherd of Roman pottery, from the base of a Black-burnished ware jar, dating to probably the 2nd to 3rd centuries AD was recovered from the layer below these stone slabs (605), suggesting that the roundhouse is of this date. The roundhouse measures c.5m in diameter internally and approximately 8m externally and extends under a modern access track. Details of the excavation are fully reported in GAT report 1089 (Owen 2012).

Earthworks in the immediate area were previously considered to be a medieval farmstead, but the discovery of the possible roundhouse made it probable that the whole site dated to the Roman period. This area was subjected to detailed topographic survey as part of the programme of survey reported in McNicol 2013.

During January and February 2013 GAT undertook a programme of archaeological survey and recording on the site (McNicol 2013). This recorded a total of 61 sites, only 23 of which would be at least partially disturbed by the main phase of works and are therefore discussed below. The remaining 38 sites recorded but not affected by the development consisted of 14 field boundaries and associated features (PRNs 31898, 31900, 31902, 31905, 31908, 31909, 31910, 31916, 31919, 31927, 31949, 36379, 36383, and 36385), twelve industrial features (PRNs 31890, 31894, 31897,

31925, 31928, 31931, 31933, 31934, 31951, 31952, 31974, and 36386), eight structures (PRNs 12957, 31918, 31948, 31969, 32151, 32152, 32154, and 36094), two terraces (PRNs 31972 and 36384), as well as a possible cairn (PRN 32146) and a rock cannon (PRN 32148). Full detailed descriptions of these can be found in Appendix II.

4 AIMS AND OBJECTIVES

The principal objectives of the archaeological work was to

- record features likely to be impacted by the works before any impact occurs.
- to preserve by record all archaeological features and deposits that existed across the site
- assess the implications of the features recorded for understanding the historical development of the area;

The purpose of post-excavation work is to ensure appropriate analyses are undertaken, that site records are studied, compiled and that a coherent report on the results is produced with appropriate illustrations. It also involves ensuring that site records, both paper and digital are in a format suitable for long term storage.

The results of all archaeological projects need to be disseminated. In this case the main product of the work will be the present report on the site work with a full discussion in relation to the wider area. It is proposed to publish a summary of the work in *Archaeology in Wales*, the journal for the Council of British Archaeology Wales.

5 METHODOLOGY

Investigation of features in advance of the works and mitigation during the works involved small targeted excavations, an area subjected to Strip, Map and Sample evaluation and a watching brief on all other groundworks. The aim of the targeted excavations was to record specific features previously identified and due to be impacted by the works. This was carried out in advance of the main site works. The Strip, Map and Sample evaluation allowed for the detailed inspection of an area highlighted as having a high archaeological potential. Any impact from the remaining works on the archaeological resource was mitigated by carrying out a watching brief during the work programme to allow for the identification and recording of archaeological deposits and features. All works were carried out in accordance with the relevant Project Design for the works.

5.1 TARGETED EXCAVATIONS

The areas targeted for evaluation were:

- a possible cairn (PRN 36377) (Figure 5);
- four field boundaries (PRNs 31954, 36380, 36381, and 36382) (Figure 6);
- and an area directly to the northeast of a possible Roman roundhouse (PRN 36094) (Figure 10).

The possible cairn was half sectioned by hand down to the natural geology, while approximately a 1m length (the area that would be disturbed by the widening of the access track in this area) of three of the field boundaries (PRNs 36380, 36381, and 36382) were also hand excavated down to the natural geology. Excavation of two of these field boundaries (PRNs 36380 and 36381) revealed no evidence of any boundary within the area excavated, although remains may exist further away. Field boundary PRN 31954 was fully exposed along its length by a mechanical excavator fitted with a toothless bucket under archaeological supervision.

Within the area directly to the northeast of the possible Roman roundhouse (PRN 36094), topsoil was removed in controlled spits by a mechanical excavator fitted with a toothless bucket under archaeological supervision until the natural geology was encountered (Figure 10). This area was targeted so as to provide a new route for an access track to the pipe which avoided the previously recorded possible Roman roundhouse (PRN 36094).

All identified archaeological contexts were excavated by hand in order to gain a better understanding of their character and a written record of them was completed via GAT pro-forma sheets.

Cross sections through the four field boundaries were drawn to an appropriate scale (1:10 or 1:20). All features were recorded photographically using a Nikon digital SLR set to maximum resolution, and surveyed using a Trimble TSC2 controlled GPS receiver (Trimble R6 Unit), with the results tied into the National Grid.

Field boundary wall PRN 31954 was photographed from above with numerous photo points surveyed in so as to produce a digitally rectified plan, tied into the National Grid (Figure 7).

5.2 STRIP, MAP AND SAMPLE

The easement area within two fields towards the western end of the scheme which had previously been investigated by the trenched evaluation and targeted excavation was subject to a strip, map and sample evaluation (Figure 3).

Topsoil was removed in controlled spits by a mechanical excavator fitted with a toothless bucket under archaeological supervision until archaeological deposits or natural geology was encountered.

All identified archaeological contexts were excavated by hand in order to gain a better understanding of their character and a written record of them was completed via GAT pro-forma sheets.

Cross sections through significant archaeological features were drawn to scale and all features were recorded photographically using a Nikon digital SLR set to maximum resolution. All the features were surveyed using a Trimble TSC2 controlled GPS receiver (Trimble R6 Unit), with the results tied into the National Grid

5.3 WATCHING BRIEF

5.3.1 Road Watching Brief

The road from Tal y Bont to the site required widening in places to allow for vehicles to the site. This involved the removal of short stretches of roadside wall, widening the road often by little more than 1m, and rebuilding the wall in the new location. A watching brief was carried out during this work and the sections impacted are shown on Figure 2.

The demolition of the walls was not monitored, however recording of the walls prior to and after demolition was carried out. All groundworks along the road route were monitored until the natural geology was encountered.

All identified archaeological contexts were excavated by hand in order to gain a better understanding of their character and a written record of them was completed via GAT pro-forma sheets. All features were recorded photographically using a Nikon digital SLR set to maximum resolution.

5.3.2 Main Watching Brief

The main watching brief was carried out during groundworks associated with the pipeline easement, access tracks, and compounds. The central section of the pipeline easement was not monitored as the previous work had revealed that the natural bedrock was mostly on the surface in this area, and therefore the potential for any archaeological features in this area was extremely low.

An area to the east of the Ardda Township area, on the southern access route was marked out by Jane Kenney (GAT) and Louise Shaw (RWE Npower) to allow large machines access to the site. The route avoided all archaeological features and allowed for the crossing of a ditch and scarp at the lowest points where no infilling or benching was needed. A similar route was marked running behind Rock Cannon PRN 32148. However, weather conditions meant that this route was not usable without stripping and therefore this was monitored as part of the on-going watching brief.

A number of features which were due to be impacted upon during the main works, managed to be avoided and/ or fenced off (Field boundaries PRN 31908, 31916, 31927, 31950, 31957, and 31959, entranceway PRN 31919, long hut PRN 31918, probable sheepfold PRN 31948, terrace PRN 31972, possible cairn PRN 32146, and rock cannon PRN 32148), and therefore no detailed recording of them was carried out.

Topsoil was removed in controlled spits by a mechanical excavator fitted with a toothless bucket under archaeological supervision until archaeological deposits or natural geology was encountered. All identified archaeological features were excavated by hand in order to gain a better understanding of their character and a written record of all them was completed via GAT pro-forma sheets.

Cross sections through all the field boundaries disturbed were drawn to an appropriate scale (1:10 or 1:20) after they were disturbed. All these features were recorded photographically using a Nikon digital SLR set to maximum resolution, and surveyed using a Trimble TSC2 controlled GPS receiver (Trimble R6 Unit), with the results tied into the National Grid.

6 ARCHAEOLOGICAL RESULTS

6.1 INTRODUCTION

This section provides a summary narrative of the results of the archaeology work. The results have been divided by form and function. Only those features not previously recorded or those that were disturbed during the targeted excavations, strip, map, and sample excavation, and the watching briefs, are detailed here. For details of all other features the reader is referred to the previous reports (Owen 2012 and McNicol 2013) and Appendix II.

The strip, map and sample evaluation revealed that the possible field boundaries (PRN 31944 and 31956) and the natural boulder/ structure (PRN 31955) were all natural features. The excavation directly to the northeast of the possible Roman roundhouse (PRN 36094) revealed no evidence of any archaeological activity (Figure 5), while the targeted excavation of the possible cairn (PRN 36377), revealed that this was not an archaeological feature, but rather a natural concentration of stones at the bottom of a slope.

6.2 SUMMARY

A total of 42 features were disturbed and recorded during this phase of works. The sites and features recorded consisted of field boundaries (32), features associated with the industrialisation of the area (6), two rock cannons, a possible sheepfold and a trackway. Detailed descriptions of all the features can be found in Appendix II

6.3 FIELD BOUNDARIES

The archaeological mitigation works recorded a total of 32 field boundaries, consisting of drystone walls (30), a hedge, and a bank (Figs. 1-9) (Plates 1-6). These features are all likely to date from the medieval to post-medieval periods and can be categorised as being associated with the landscape of dispersed farms and fields that are seen throughout the area. All these field boundaries were partially truncated by the works by an average of between 1 and 3m, with the exception of PRNs 31943 and 31954 within the strip, map, and sample area where approximately 60% (34m) and 90% (35m) of the field boundaries were removed respectively.

Approximately two thirds of these field boundaries (drystone walls (19), a hedge, and a bank) were located along the northern access route. The majority of these were in a fairly good condition, surviving with an on average height of 1.2m and a width of 0.75m. They were all constructed from sub-rounded stones, with larger stones at the base and appear to be of a post-medieval date, most likely relating to the construction of the road through this area which is shown on the 1846 Caerhŷn Tithe Map.

Of the remaining eleven drystone wall field boundaries directly affected by the development, five (PRNs 31913, 31929 (Figure 9; Plates 2 and 3), 31950 (Plate 4), 31966, and 31971) were shown on the 1788 map of the area, with two not appearing (PRNs 31943 and 31954), and four not within the maps area (PRNs 36380, 36381, 36382, and 36558). The date of construction of the walls shown on the 1788 map is unknown, as no dating evidence was recovered during excavation of them.

All of these field boundaries consisted of drystone walls constructed with small to medium sub-angular stones, built on top of the natural geology. They encompassed natural outcrops of stone where possible and measured on average 0.8m wide. The majority of them are in a fairly ruinous state and survive today between 0.2 and 0.5m high, with the exception of PRNs 31929 and 31971 which survive up to 1.1m high in sections. Only a small section of each of these walls, on average 2-3m, was removed by the development, with the exception of PRNs 31943 and 31954 where approximately 60% (34m) and 90% (35m) of the walls were removed respectively.

The 1st edition OS map shows field boundary PRN 31943 suggesting it was constructed at some point between 1788 and 1889, or that it was missed off the 1788 map for an unknown reason. Field boundary PRN 31954 (Figure 7, Plate 5) while not shown on any of the maps is of similar construction to, and runs parallel to, field boundaries PRNs 31913 and 31943, suggesting it was reasonably contemporary with them.

The 1st Edition OS Map also shows field boundaries PRNs 36382 and 36558 within the southern part of the site as part of the Ardda settlement. Both these walls are still fairly visible today, measuring 1.8m and 1.4m in width and 0.4 and 0.6m in height respectively, although PRN 36382 is fully grassed over now (Figure 8; Plate 1). They

are both constructed straight on top of the natural geology and include natural rock outcrops where available.

Field boundaries PRNs 36380 and 36381 are not visible on any map and are only visible today as very slight ridges a maximum of 0.15m high. Partial excavation of these features where the access road was going to be widened failed to reveal any structures. PRN 36380 consisted of only a very slight rise in the topsoil and subsoil of only approximately 0.1m, while PRN 36381 didn't show a rise at all, but contained two stones adjacent to each other which may or may not be structural. It is possible that these are lynchets, although they may also represent heavily denuded ancient field boundaries which went out of use prior to the 1st Edition OS Map. The excavation of these features took place in an area where they were at their least distinct and it is possible that excavation in another section would provide a better understanding of them.

6.4 INDUSTRIAL

Only six features relating to the 19th and 20th century industrialisation of the area were directly affected by the development (Figures 1, and 3-5). The remaining features relating to this period are either still in use today and/ or will survive out with the development.

The earliest of these features was the remains of the tramway (PRN 16322) (Plate 6) built between 1861 and 1866 for the slate quarry in Cwm Eigiau and later reused as a railway for the Cwm Eigiau dam construction. This was only partially disturbed by the works, with a small area truncated for the creation of an access road across it. The remaining features all relate to construction of Coedty Dam between 1923 and 1925 and its rebuilding in 1927 after it was destroyed in 1925. These consist of two access tracks (PRN 31958 and 31962) created for the pipeline which were either widened or remade during this phase of works; the actual pipe that runs from Coedty Dam to Marble Arch valve house (Plate 9); as well as an incline (PRN 32164) and a possible tram bed (36387) recorded during the road watching brief and strip, map, and sample excavation respectively.

The incline (Plate 7) was built of sub-rounded boulders and aligned southwest-northeast running straight down the escarpment adjacent to the southern access road (Figure 1). It is approximately 1.5m wide at the top, with a maximum height of 1.5m, although generally much lower, and the digital OS map records it as being c.145m long. The incline is partially collapsed and covered in moss and is shown on the 1974 1:10,000 map surveyed in 1967, but is not recorded on the 1913 OS map or any earlier maps. It was most likely built after the woollen mills went out of use and what appears to be a tramway is shown running up the incline on the 1974 map. This would suggest that it was used for the carrying of materials up before and/ or during the construction of the concrete road that winds its way up the hill to the northwest of the incline.

The probable tramway bed (PRN 36387) (Plate 8) uncovered during the strip, map, and sample excavation consisted of two parallel banks of stones and chippings, 0.25m high and running northeast-southwest for approximately 12m. The eastern bank contained some mixed local stone, which may have been robbed from the nearby field boundary walls (PRN 31913 and 31943), mixed with granite chippings, whilst the western bank was built entirely from chippings. The location of this feature, adjacent and parallel to the pipeline suggests that it was built for the carrying of materials for the pipeline's construction either in 1923-4 for the pipe's original construction or in 1927 for its reconstruction after the flood of 1925 (Jones & Gwyn 1989).

6.5 ROCK CANNONS

One rock cannon and one possible rock cannon were recorded and disturbed during the archaeological works, one in-situ (PRN 36557), and one located within topsoil (PRN 55502) during the road widening watching brief (Figure 4).

Rock cannon PRN 36557 was located on the side of the northern access road within a proposed layby (Figures 2 and 11). Vegetation and turf was cleared by hand from the rock cannon and the surrounding area within the layby area, so as to reveal its extent. It measures 1.8 x 1.55m as exposed and consists of 12 visible holes joined by channels. The rock cannon is drilled into a flat area of bedrock measuring c.2.8 x 1.8m within the layby area. The flat area continues to the west, outside this area on the other side of a fence and within a field, but only one hole was visible on this side as it was not cleared of vegetation and turf (Figure 12; Plate 10).

The holes are circular and vary slightly in size but seem to have been drilled with a 1¼" drill (32mm). All the holes were partly infilled but the deepest measurable one was 14mm deep. The holes are joined by a channel up to 20mm wide, which has a broad V-shaped profile and is a maximum of 5mm deep. The hole on the west side of the fence was joined to the other holes but had no other channel running from it. Some of the holes had slight spalling around them showing that the cannon had been fired. Other cracks on the rock surface are natural fissures. One hole has been used to hold an iron fence post. This fence post and another to the south appear to be supports for some machinery that have been reused as fence posts.

Rock cannon PRN 36557 is number 178 in appendix A of *The Rock Cannon of Gwynedd* (Jones 2002). This is listed as having 25 holes, but number 179 is listed as 12 holes and it is suspected that there has been an error and the number of holes has been confused between these sites. There certainly does not seem to be enough room to the west of the fence for another 13 holes. The full exposed area of the flat rock on the east side of the fence, measuring 3 x 2.35m was fenced off and left untouched by the creation of the layby.

The possible rock cannon (PRN 55502) located during the road watching brief (Figure 4) only had one drilled hole and no channels or spalling. This suggests that it

may have been a rock cannon that was started and not finished, or that it served another, unknown purpose.

6.6 STRUCTURE

Towards the western end of the site, within the strip, map, and sample excavation, the partial foundations of a structure (PRN 36556) were uncovered (Figure 3) (Plate 11). The structure consisted of two perpendicular, single coursed wall foundations, measuring approximately 14m and 2.3m in length, with a width of 1m. The foundations were formed from sub-angular stones measuring on average 0.2 x 0.15 x 0.1m. They were aligned northeast-southwest and northwest-southeast, with the northeastern end continuing outside of the excavation area. Both the northwestern and southwestern ends had been truncated by modern pipeline running directly to the northwest, although the condition of this structure at the time of this truncation is unknown. A sheepfold, approximately the same size and orientation, and in roughly the same location is shown on the 3rd Edition OS map (Figure 13), and it is likely that this is what the structure represents.

6.7 TRACKWAY

Only one trackway (PRN 31893) not related to the industrialisation of the area was recorded during the archaeological works (Figure 4). This was a 3m wide track aligned WNW-ESE running from the modern road, underneath the pipeline, and towards Coed Sadwrn farm (Plate 12), which was shown on the 1889 1st Edition OS map. At its WNW end the track is fairly shallow, however after running underneath the pipe it deepens to approximately 1m and then proceeds to gradually get shallower as it runs uphill until it virtually disappears before entranceway PRN 31949. The trackway runs between natural outcrops of bedrock, most likely using them as a natural edge as there is no evidence that it has been cut into to form the trackway. No evidence of any road surface survives in the area disturbed by the works, suggesting that this may have been a hollow-way rather than a proper trackway.

6.8 POSSIBLE ROUNDHOUSE SETTLEMENT

A possible roundhouse settlement (PRN 36094) located in the western part of the site, not far from the pipe junction at Marble Arch (Figure 5), had previously been investigated by a trial trench and recorded by topographic survey (Owen 2012 and McNicol 2013). The access track running through this area was due to be widened in the main phase of works, but this risked an impact on the settlement. Discussion with GAPS, the SNPA archaeologist and RWE Npower led to an agreement to direct the track to the northeast of this area (Figure 10).

The route of the new track was stripped under archaeological control as described in the methodology and no archaeological deposits or features were found. This ensured that the new track avoided the known archaeology and did not disturb any archaeological features. The evaluation trench previously dug was covered with

geotextile, a 200mm thick layer of fine stone and backfilled with topsoil up to the original ground level.

When the new track was completed the existing track was closed off with soil bunds constructed across the existing track at either side of the settlement in the approximate positions shown on figure 10. With the site protected there was no requirement for further work.

The site was visited on 16/04/2014 to establish how successful the diverting and blocking of the track had been. This revealed certain issues. The bund to the north of the site had not been created because there had been a sharp drop at that side preventing access. However landscaping had removed that drop and access up the track was possible. When the site was visited a pick-up truck was parked on the site. It was also clear from tyre tracks that vehicles had occasionally driven over the bund to the south-east of the site (plate 13). It was agreed with RWE Npower that boulders would be placed at each side of the site on the track to more reliably prevent access. It was noted that the new track that had been planned avoiding the site to the north-east had never been created and access to this area was via an existing track further east.

A large tree that had stood next to one of the building platforms in the southern part of the site had been blown over. This had caused minimal damage to the archaeology as the roots of the tree were surprisingly small. The scar left revealed only bedrock as the tree had been growing on the edge of the rocky scarp that defines the southern edge of the site.

7 DISCUSSION

The archaeological works revealed a rich landscape of settlement activity dating from the Roman period up until the 20th century. Although no prehistoric activity was identified in the area it is possible that some of the field boundaries had their origins in this period and that the possible cairn (PRN 32146), which was avoided by the works also dates to this period.

The Roman roundhouse settlement (PRN 31969 and 36094) was only partially investigated during the programme of archaeological works as the access road was redesigned so as to avoid this area. However, the work on it showed that there were at least two roundhouses with a further two possible house platforms, indicating a small settlement (Figure 10). The discovery of a sherd of Black-burnished ware in the evaluation suggested that the settlement was used into the 2nd to 3rd centuries AD, even if it had been established much earlier, and that it had some contact with Roman economic networks. The evaluation work revealed a 19th century field boundary was built over the collapsed and infilled roundhouse. Much more excavation would be required to investigate the full nature and duration of this

settlement but the priority in the present work was to preserve it for the future with the minimum of disturbance.

From the medieval period onwards the landscape of the site changed with settlement in the form of small farmsteads and enclosures appearing scattered throughout the area. The earliest of these, dating to the medieval period, was the settlement of Ardda at the eastern end of the site. Around these settlements, numerous drystone walls were located, dividing the land into a system of demarcated fields. No dating evidence was recovered for any of these field boundaries and it is unknown whether they were built prior to, contemporarily with, or after the settlements themselves. However, given their similar state to the structures around them it is likely that the majority were at the very least in use at the same time. These settlements and the majority of the field boundaries have long since been abandoned with only their foundations remaining. Only a few of the field boundaries remain in use today, having been either re-built or reinforced with the construction of a fence alongside.

The most visible impact on the wider landscape happened during the 19th and 20th centuries with the establishment of quarries and mines nearby and later on the construction of the hydro-electric power station and the features associated with it from 1908 onwards. Approximately a quarter of the features identified during the full programme of archaeological works were directly associated with this industrialisation of the area. Evidence from the archaeological work and the OS map information suggests that a number of the earlier field boundaries as well as the probable sheepfold PRN 31943 were truncated by these works, although the state that these features were in at the time of this truncation is unknown.

The construction of the new pipeline, although truncating a number of field boundaries, has managed to avoid or only partially disturb the majority of features uncovered during the archaeological works.

8 PUBLICATION AND ARCHIVING

A summary of the results will be published as a short article in *Archaeology in Wales*, the journal for the Council of British Archaeology Wales. The full archive report will be lodged with the Gwynedd HER and also with the National Monuments Record.

The paper and digital archive will be lodged with the Royal Commission on the Ancient and Historical Monuments of Wales in Aberystwyth.

9 ACKNOWLEDGEMENTS

The author would like to thank RWE Npower for commissioning the work. Thank you also to Louise Shaw, the Site Liaison Manager for RWE Npower for all her help and co-operation on site. Thanks are due to John G Roberts, SNPA Archaeologist and Ashley Batten of GAPS for advice during the works. The work on site was carried out by Dave McNicol, Ken Owen, Iwan Parry, Jane Kenney and Jess Davidson.

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APPENDIX I: PROJECT DESIGN

**LOW HEAD PIPELINE PROJECT, DOLGARROG
POWER STATION**

**PROJECT DESIGN FOR
ARCHAEOLOGICAL EVALUATION
AND MITIGATION**

Prepared for

RWE Npower Renewables Limited

August 2012

Ymddiriedolaeth Archaeolegol Gwynedd

Gwynedd Archaeological Trust

PROJECT DESIGN FOR ARCHAEOLOGICAL EVALUATION AND MITIGATION (G2158)

Prepared for RWE Npower Renewables Limited, August 2012

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1. INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by RWE Npower Renewables Limited to provide a project design (specification) for completing an archaeological evaluation and mitigation strategy in advance of and during the main construction phase of the Low Head Pipeline Project, Dolgarrog Power Station. It is proposed to replace the upper part of the present over ground pipeline which feeds Dolgarrog Hydro Electric Power Station with a new underground pipe along the same route (centred on NGR **SH76556718**).

GAT has completed an archaeological assessment for the scheme (GAT Reports **900 & 928**), which was incorporated into an Environmental Statement (ES), completed by *Capita Symonds* in January 2012 (*Capita Symonds 2012 Coedty Replacement Pipeline Project, Dolgarrog. Environmental Statement*; Chapter 6 - reproduced as Appendix III). A total of 96 archaeological receptors were identified with the scheme zone: these are listed in Appendix I and located in the reproduced ES Chapter 6 figures 6.3 and 6.5 (Appendix IV).

The archaeological evaluation and mitigation programme incorporates all archaeological receptors impacted by the scheme or requiring avoidance; watching brief mitigation is also to be deployed along the working corridor during main works. Receptor specific evaluation/mitigation is discussed in [para. 3.0](#).

1.1 Monitoring and Guidelines

Curatorial responsibility for this project lies in part with the Snowdonia National Park Authority and in part with the Conwy County Borough Council. The archaeological curators for both organisations should be consulted prior to the start of the project.

This design will also conform to the guidelines specified in *Standard and Guidance for Archaeological Evaluation*, *Standard and Guidance for Archaeological Watching Brief* and *Standard and Guidance for Archaeological Excavation* (Institute for Archaeologists, 1994, rev. 2001 & 2008).

2. BACKGROUND

The archaeological assessment of the scheme zone (Appendix II) was completed by GAT between 2010 and 2011: an initial scoping assessment was carried out in October and November 2010 covering the general area of the development (Evans 2010, GAT Report **900**). In February and March 2011, once a pipeline route had been proposed and sites suggested for compounds, a more detailed assessment was carried concentrating on these areas (Kenney 2011a, GAT Report **928**). Proposed routes allowing access to the pipeline works were later defined and an assessment on these routes was carried out in September 2011 (Kenney 2011b, GAT Report **975**). This information was supplemented by information gained from the archaeological monitoring of geological test pits dug in April 2011 (Kenney 2011c, GAT Report **978**). This information was subsequently synthesised into archaeology chapter of the Environmental Statement completed by *Capita Symonds* in January 2012 (reproduced as Appendix III).

3. SCHEME SPECIFIC RECOMMENDATIONS

Scheme specific recommendations for all identified archaeological receptors were included in Chapter 6 (Archaeology) Capita Symonds 2012 *Coedty Replacement Pipeline Project, Dolgarrog. Environmental Statement* (reproduced as Appendix III).

The object of the present phase of work is to mitigate the impact of scheme on the archaeological receptors. This is to be achieved by undertaking a phased programme of works to include:

- Topographic Survey
- Basic Recording
- Detailed Recording
- Targeted evaluation by trial trenching within defined areas or on specific features
- Excavation of any sites previously discovered that cannot be avoided by the scheme
- Watching brief
- Avoidance

The work will be undertaken as a staged process so that each phase of the project can build on the results of earlier phases.

Most archaeological receptors include several forms of mitigation, completed prior to and during works.

A full list of the archaeological receptors located within the scheme zone can be found in Appendix I; the location of individual receptors can be found in Appendix II. For a description of respective methodologies, cf. [para 4](#).

All reference numbers used refer to Primary Reference Numbers (PRNs).

3.1 Topographic Survey (prior to main works)

676 (Ardda Medieval Township; area adjacent of track to be benched)

16322 (Railway Incline)

12957 (cottage and enclosure)

31929 (sub-oval enclosure)

31934 (incline and water pipe)

31943 (tumbled field wall)

31954 (possible ancient wall)

31955 (natural boulders/structure)

31956 (possible field boundary)

31957 (field wall)

31969 (small farmstead; if unavoidable during improved access works)

31971 (field wall)

32151 (possible building platform)

32152 (Ardda enclosure II)

32154 (Tai-isaf-Ardda enclosure)

31943 (Early 19th century tumbled field wall).

31954 (Possible prehistoric wall).

31955 (Natural boulders or structure).

31956 (Possible prehistoric field boundary)

31957 (18th century or earlier field wall).

3.2 Basic Recording (prior to main works)

16321 (Dolgarrog Hydro-electric plant)

31890 (Llyn Coedty valve house)

31894 (Llyn Coedty Leat)

31897 (Modern bridge)

31907 (Pipe)

31925 (Trackway)

31931 (Tramway to Cwm Eigiau)

31933 (Leat and related drains)

31951 (Original access track to pipe)

31952 (Former locomotive shed)

31962 (Access track to pipe)

31965 (Drainage channels for upper leat drain and surge pipe)

31974 (Channel for stream passing under leat)

3.3 Detailed Recording (prior to main works)

31893 (track)
31898 (drystone wall)
31900 (drystone wall)
31902 (drystone wall)
31905 (drystone wall)
31908 (drystone wall)
31909 (drystone walls)
31910 (drystone wall)
31916 (field boundary)
31919 (entrance into enclosure)
31927 (field boundary wall)
31929 (sub-oval enclosure)
31958 (track to footpath)
31959 (field wall/revetment)
32145 (boundaries to road)

3.4 Trial Trenching (prior to main works)

31943 (tumbled field wall)
31954 (possible ancient wall)
31955 (natural boulders/structure)
31956 (possible field boundary)
31957 (field wall)

3.5 Excavation (prior to main works)

31969 (small farmstead; if unavoidable during improved access works)

3.6 Watching Brief (during main works)

676 (Ardda Medieval Township; area adjacent of track to be benched)

12957 (cottage and enclosure)

16322 (Railway Incline Ardda)

31893 (track)

31898 (drystone wall)

31900 (drystone wall)

31902 (drystone wall)

31905 (drystone wall)

31908 (drystone wall)

31909 (drystone walls)

31910 (drystone wall)

31916 (field boundary)

31919 (entrance into enclosure)

31927 (field boundary wall)

31929 (sub-oval enclosure)

31958 (track to footpath)

31959 (field wall/revetment)

31971 (field wall)

32145 (boundaries to road)

32154 (Tai-isaf-Ardda enclosure)

NB. The archaeological watching brief will monitor all intrusive groundworks within the working corridor of the pipeline.

NB. The archaeological watching brief will also monitor alterations to the local road network to accommodate construction traffic.

4. METHOD STATEMENT

4.1 Topographic Survey

The topographic survey will be completed using a *Trimble TSC2* controlled GPS receiver (*Trimble R6* Unit) and/or a *Geodimeter Pro* Electronic Distance Measuring Total Station (EDM). The relevant unit will be used depending on operational conditions (e.g. GPS signal availability).

The receptors to be surveyed are:

- **PRN 676: Ardda Medieval Township** – the survey will target the area immediately adjacent to the southern access route where it runs through the area of the medieval township shown in ES Chapter 6 Figure 6.5 (reproduced in Appendix IV), designated as area TS2.
- **PRN 12957: Cottage and associated enclosure** – the survey will not include the cottage but will target the terraces running north east from the cottage
- **PRN 16322 (NGR SH7650167162): Railway Incline** - the incline was initially built for slate quarry tramway in the early 1860s and was in operation by 1864 (GAT Report 928: 28); it is first shown on the 1889 map. It was reused in 1907 to construct a railway for building the Llyn Eigiau dam and in 1917 to build the Llyn Cowlyd dam (*ibid*), and continued to be used in the early 20th century to take equipment up and down the escarpment. There was a winch and a ropeway on the incline in the 1950s. Much of the upper part of the incline is still well preserved with some sections in cuttings and some on stone embankments. These earthwork features will be targeted by the topographic survey.
- **PRN 31929 (NGR SH75976721): Sub-oval enclosure** - small rather irregular sub-oval enclosure defined by low denuded walls. There is a gap in the NE side that may be an entrance to match the one on the SW side (feature 37). These features will be targeted by the topographic survey.
- **PRN 31934 (NGR SH76476704): incline and water pipe** - Part of water catchment system for hydro-power station built for the aluminium works between 1907 and 1911, an incline taking water in a pipe from the upper leat to the power station. The incline is shown on 1913 map, although it does not indicate the pipe. The pipe was made redundant when the pipeline from Llyn Cowlyd was constructed in 1936 and 1937 (*ibid*. 40), but is still used as part of the surge protection for the Coedty system. This pipe is to be entirely removed and replaced, and will possibly be mounded over and partially buried. The impacted area indicated on ES Chapter 6 Figure 6.3 (reproduced in Appendix IV), will be surveyed; a detailed record will also be completed.
- **PRN 31969 (NGR SH76446723): small farmstead** - one definite and one probable building platform lie between a tumbled wall and the base of a low rocky escarpment (GAT Report 928: plate 8). Some of the wall survives to a height of 0.5m but the traces of the buildings are very slight. The best defined platform is rectangular, measures about 10m x 3m and lies parallel to the slope. To its east is a less well defined platform about 5m long that may be part of a yard rather than for a building. To the north is a sub-circular enclosure c.6m in diameter, very over grown with bracken. This may have an entrance in the SW side. A track giving access to the pipe cuts through this area and on the E side of the track is a low boundary wall with a possible building platform adjacent to it. This platform has been disturbed by the

track but is 3m wide and at least 3m long. A long stone slab built into the wall may indicate that one wall of the building was incorporated into the field wall. There is no hint of this farmstead on the 1788 map so presumably it went out of use before the late 18th century. The main building platforms and sub-circular enclosure lie just beyond the proposed works and can be avoided but the platform by the track and associated wall are likely to be affected by the works. A topographic survey of the enclosure/platform by the track and associated wall will be completed along with an archaeological excavation of the surveyed area (located on ES Chapter 6 Figure 6.3; reproduced in Appendix IV).

- **PRN 31971 (NGR SH76496718 C): field wall** - late medieval/early post medieval field wall that becomes a terrace as it descends the slope. Most of its corner has been cut away by the recent track but it continues on the other side of the incline. It generally appears as a low tumbled wall but becomes a terrace 1m high near the corner. Large oaks and coppiced hazel grow along the boundary. This is shown on the 1788 map as the north-eastern boundary of 'Bryn Kelin'. Where the end of this boundary has to be removed it will be mitigated via detailed recording and topographic survey and a watching brief during works including the recording of a section of the boundary.
- **PRN 32151: possible building platform** –possible medieval feature located on ES Chapter 6 Figure 6.5. Not directly impacted; the survey will incorporate the visible earthwork.
- **PRN 32152: Ardda enclosure II** - possible post-medieval feature located on ES Chapter 6 Figure 6.5. Not directly impacted; the survey will incorporate the visible earthwork.
- **PRN 32154: Tai-isaf-Ardda enclosure** - possible medieval feature located on ES Chapter 6 Figure 6.5. The survey will incorporate the visible earthwork and will be supplemented by a watching brief during main works
- **PRN 31943: Early 19th century tumbled field wall** – to be surveyed as part of area FA1 located on ES Chapter 6 Figure 6.3 (reproduced as Appendix IV).
- **PRN 31954: Possible prehistoric wall** - to be surveyed as part of area FA1 located on ES Chapter 6 Figure 6.3 (reproduced as Appendix IV); survey to precede evaluation trenches.
- **PRN 31955: Natural boulders or structure** - to be surveyed as part of area FA1 located on ES Chapter 6 Figure 6.3 (reproduced as Appendix IV); survey to precede evaluation trenches.
- **PRN 31956: Possible prehistoric field boundary** - to be surveyed as part of area FA1 located on ES Chapter 6 Figure 6.3 (reproduced as Appendix IV); survey to precede evaluation trenches.
- **PRN 31957: 18th century or earlier field wall** - to be surveyed as part of area FA1 located on ES Chapter 6 Figure 6.3 (reproduced as Appendix IV); survey to precede evaluation trenches.

The topographic survey will be mainly undertaken in **January 2013** when vegetation cover is most limited. Note: the exceptions to this are PRNs 31943, 31954, 31955, 31956 and 31957, which are being undertaken prior to trial trenching scheduled for October 2012. *An interim report has been requested by RWE Npower Renewables Limited within two weeks of completion of the survey work: as the survey is being completed in two stages (October 2012 and January 2013), respective copies will be submitted at the appropriate time. RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.*

The digital survey archive will be held by GAT under an appropriate project number (G2158).

An appropriate level of staffing would be two archaeologists.

4.2 Basic Recording

Receptors will be recorded by photographic record (with visible ranging poles and photographic identification boards), using a digital SLR camera set to maximum resolution and a written description on GAT pro-formas. Basic recording is to be completed prior to main works.

- **PRN 16321 (NGR SH7655167184): Dolgarrog Hydro-electric plant**
- **PRN 31890 (NGR SH75586672): Llyn Coedty valve house:** A small corrugated iron structure located at the foot of Llyn Coedty dam, with the pipe entering it. Valve house for water exiting the dam into the pipe.
- **PRN 31894 (NGR SH75576673 to SH75686789; SH75666709 C): Llyn Coedty Leat:** The leat, associated with the hydro-electric works, is orientated NE-SW running into Llyn Coedty reservoir from Rowlyn Isaf, in a concrete channel about 8m wide. It cuts through the former field systems of Bont Newydd and Ffrith Ddu. A short section of this leat was built with the dam but most was constructed in 1955-58 (Jones and Gwyn 1989, 185). The trackway by the leat was in part the route of a tramway for the construction of the leat. The route of the leat and working spaces for its construction are marked on a map in the Sidney Colwyn Foulkes Collection (GAT Report 928 Figure 8) and the route of the leat was designed by Colwyn Foulkes to minimise the impact on the landscape.
The trackway running next to the leat is to be upgraded to provide access for the current works.
- **PRN 31897 (NGR SH75766733): Modern bridge -** A modern concrete bridge faced with stone crossing the leat (feature 10). It must date from the construction of the leat in the 1950s, but is built on the line of a road that may have medieval or post-medieval origins, leading from the valley to the farms of Pont Newydd, Ffrith Ddu and Coed Ty Mawr.
- **PRN 31907 (NGR SH75526674 to SH76566718): Pipe -** A riveted and welded 6 foot pipe running from Coedty Reservoir to its junction with other pipes at Marble Arch, and thence down to the power station at the aluminium works (plate 1). It was built on concrete piers and a plinth, and completed 1924, but there were problems with it and it failed under test and caused flooding in the village (GAT Report 928: 32). The pipe was damaged in the flood of November 1925 and rebuilt by March 1927 (*ibid*).
- **PRN 31925 (NGR SH75956702 C): Trackway -** Track running beside Low Level Leat and built to service the leat presumably in 1925. Reuses part of the Llyn Eigiau railway trackbed and for most of its length follows the Llyn Cowlyd tramway.
- **PRN 31931 (NGR SH76056706 C): Tramway to Cwm Eigiau -** Slate quarry tramway built to service two "small and unpromising" quarries exploited between 1825 and 1873 (GAT Report 928: 39). The tramway was constructed in the early 1860s and was in operation by 1864 (*ibid*). The tramway was reused in 1907 to construct a railway for building the Llyn Eigiau dam (*ibid*). Work on the dam completed Nov 1910 and in 1911 all plant removed apart from track on the incline through the woods. Again reused in 1917 as start of tramway to build Cowlyd dam.

- **PRN 31933 (NGR SH76086691 C): Leat and related drains** - Upper leat built as part of the water catchment system for hydro-power station built for the aluminium works. The leat was constructed between 1907 and 1911 (GAT Report 928: 39) and is shown on the 1913 map. The upper leats ran from the Afon Ddu and the Afon Porth-llwyd to a pipe that took the water down to the power station. There are two drains running down from the Afon Porth-llwyd branch of the leat, allowing overflow water to flow back into the river.
- **PRN 31951 (NGR SH76086721): Original access track to pipe** - SW end of NE-SW aligned trackway, which curves to the north and then joins line of pipe. At this point the trackway passes through a gap in the rock outcrops. The gap may have been a natural one that was improved but much clearance of stone, if not actual quarrying of rock must have been done. No obvious traces of quarrying on rock face but this is heavily overgrown with lichen and moss. The track currently leads to a gate in a modern fence but extent of grass and moss growth and the lack of obvious tool marks on the rock face make it appear to be of some antiquity. However it is not shown on the old maps and does lead to the pipe. In places it can be seen that the surface of the track is covered with hard core. There is a short section of track running from the main track to the W and curving to the top of a small rock outcrop overlooking the pipe. The relationship to the pipe, the presence of hard core and the absence from the old maps suggests that this track was used for access while building the pipe and dates from the 1920s.
- **PRN 31952 (NGR SH76406706): Former locomotive shed** - Corrugated iron shed identified by Jones and Gwyn (1989, 180, reference in GAT Report 928: 43) as a locomotive shed on siding on Llyn Cowlyd tramway.
- **PRN 31962 (NGR SH76246722 C): Early 20th century access track to pipe** - One of several tracks that were probably built for the construction of the pipeline and are still used for access for maintenance.
- **PRN 31965 (SH76326726): Drainage channels for upper leat drain and surge pipe** - Later C20th century neatly revetted channels running from the base of a boulder filled ravine. A broad catchment area divides into two channels. Built in mortared field stone, with the base of the channels also lined with stone. The channels are part of the overflow drain from the upper leat. Nearby is a reinforced concrete pipe running down the slope to the main pipe. This used to be attached to the main pipe as a surge pipe, releasing water pressure in case of flooding. This would have carried excess water up to the Low Level Leat.
- **PRN 31974 (NGR SH75726722): Channel for stream passing under leat – 20th century channel** roughly lined with boulders where the stream that has been channelled under the leat exits. Although this looks ancient it was presumably constructed when the leat was built, although some of the stream may have been canalised previously.

The basic recording will be mainly undertaken in **January 2013** when vegetation cover is most limited. This information will be incorporated into the main mitigation report: *RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.*

The archive will be held by GAT under an appropriate project number (G2158).

An appropriate level of staffing would be two archaeologists.

4.3 Detailed Recording

Detailed recording requires a photographic record, surveying and the production of a measured drawing prior to the commencement of the works on site.

- **PRN 31893 (NGR SH75946706): Coed Sadwrn Track** - A trackway leading towards Coed Sadwrn. This is well defined on E side of gateway seen as a clear hollow-way with walls on either side for part of its route. The walls are tumbled and the whole is overgrown. The low level leat has destroyed part of it but it continues on the other side. To the W of the gateway one branch of the track is quite clear as a hollow but the other branch is not visible. Shown in detail on 1889 map but track also marked on 1816-1824 map, and shown running from gateway 74 on the 1788 map (cf. GAT Report 928). The main works cut through the NW end of the track. This area requires detailed recording including survey and a watching brief during the works including recording of a section of the track. The rest of the track should be fenced off to avoid damage. Tree planting is proposed in this area. Archaeological advice required to avoid planting on or damaging archaeological features.
- **PRN 31898 (NGR SH75726718 C): Drystone wall field boundary** - Late medieval/early post medieval wandering drystone wall, up to two rough courses wide and high. It probably forms the boundary to Pont Newydd Cottage fields or paddocks and to be of 18th century or earlier in date (Withers 1995 quoted in GAT Report 928: 31). Large plant access requires removal of wall. Detailed recording prior to this event followed by an archaeological watching brief during breaching.
- **PRN 31900 (NGR SH75696709): Drystone wall** – 19th Century well-built drystone wall, surviving up to six courses high, of loose rounded boulders. The wall is up to 1m high in places. Its character appears to be of 19th century date, and built on a regular straight alignment. It probably forms a later sub division of some of the wandering wall systems. Large plant access requires removal of wall. Detailed recording prior to this event followed by an archaeological watching brief during breaching.
- **PRN 31902 (NGR SH75656699): Drystone wall** - Late medieval/early post medieval wandering drystone wall, up to two rough courses wide and a single course high surviving. It probably forms part of the early fields and paddocks associated with Ffrith Ddu farmhouse and may be of 18th century or earlier in date. Large plant access requires removal of wall. Detailed recording prior to this event followed by an archaeological watching brief during breaching.
- **PRN 31905 (NGR SH75576690C): Drystone wall** - Late medieval/early post medieval wall Probably rebuilt and straightened at NW end but probably part of the older field system. A well-built drystone wall of loose rounded boulders. The wall is up to 1m high in places. Its character appears to be of 19th century date, but its south-eastern end was far from straight as shown on the 1889 map. It is probable that the wall has been rebuilt and straightened but was originally part of the wandering wall system around Ffrith-Ddu. The south-eastern end of this wall may have to be removed. . Detailed recording prior to this event followed by an archaeological watching brief during breaching.
- **PRN 31908 (NGR SH75606678 C): Drystone wall** - Late medieval/early post medieval well-built drystone wall of loose rounded boulders, although now very collapsed. The wall is up to 0.5m high in places. Trees grow along its length. Detailed on the 1889 map as a line of trees, so the wall must have been out of use by then. Detailed recording prior to groundworks followed by an archaeological watching brief during breaching.
- **PRN 31909 (NGR SH75646690): Drystone walls south of Ffrith Ddu House** - Late medieval/early post medieval well-built drystone wall of loose rounded boulders. The wall is up to 1m high in places. Associated with other less well preserved walls forming small rectangular fields. These walls wander slightly and are probably of pre-

19th century date. Detailed recording including survey. Watching brief including recording of section.

- **PRN 31910 (NGR SH75726697): Drystone wall with possible inscribed stone -** Late medieval/early post medieval much collapsed drystone wall, probably associated with Ffrith Ddu farmhouse. It included a rough boulder, about 1.3m high and 0.4m wide, inscribed with a possible Latin Cross orientated slightly north-north-west to south-south-east. The stone is broken along its western side. The SE end of this wall may have to be removed. Detailed recording, watching brief
- **PRN 31916 (NGR SH75906709): Field boundary -** Regular straight boundary shown on 1889 map. A 19th century drystone wall, up to two rough courses wide and high. This wall forms the boundary to Coed Sadwrn farm and is of 19th century date, but it roughly followed and regularised the line of an early boundary along the western side of 'Erw' {A3} and 'Tir Newydd' {A4}, shown on the 1788 map. Detailed recording prior to groundworks followed by an archaeological watching brief during breaching.
- **PRN 31919 (NGR SH75986719): Entrance into enclosure -** Late medieval/early post medieval - The SW side of a small enclosure is formed by a wandering drystone wall, up to two rough courses wide and generally not more than a single course high. There is a 2m wide gap in the wall bounded on the NW side by a line of boulders. Against the inside of the wall to the SE of the gap is a heap of stones. This could be the remains of a small structure but the stones seem to be quite haphazardly dumped rather than laid. A track runs through the gap into the enclosure. The gap faces the long hut (feature 36). It is possible that the gap was created for later access to the enclosure but it is neatly formed and the track is well defined so it is likely that this gap was the original entrance to the enclosure and demonstrates the close association of the long hut and the enclosure. Detailed recording prior to groundworks followed by an archaeological watching brief during breaching.
- **PRN 31927 (NGR SH76146713): Field boundary wall -** Late medieval/early post medieval denuded field wall with stones forming a rough line. Some of the stones are large boulders up to 1m tall but no coursing survives. This wall is shown on the 1889 map as quite straight but looks slightly wandering on the ground. It is shown on the 1788 map. The field to the E was called 'Cae Fynnon' {A8} and was arable in 1788. The field to the W was 'Erw' {A2} and was under pasture in 1788 despite the name, which suggests that it was originally enclosed for arable. Detailed recording prior to groundworks followed by an archaeological watching brief during breaching.
- **PRN 31929 (NGR SH75976721): Sub-oval enclosure -** Late medieval/early post medieval small rather irregular sub-oval enclosure defined by low denuded walls. There is a gap in the NE side that may be an entrance to match the one on the SW side. This route seems to have been used for access recently but the gap in the NE side is not as clear and convincing as an original entrance as that in the SW side, and may have been made more recently to allow access through the enclosure. The difficulty of terrain to the NE of the enclosure and the lack of a clear track here suggests that there was not an original route through the enclosure. However the area was covered in dense dead bracken so earthworks were difficult to detect. This enclosure is named as Erw Bach {31} on the 1896 map. On the 1788 map it is shown as a distinct enclosure but labelled as part of 'Erw' {A2}, with 'Cae Bach' applied to a field much further west {A5}. The 'erw' name indicates a possible arable field, although on the 1788 map all of A2 is shown as under pasture. Detailed recording prior to groundworks followed by an archaeological watching brief during breaching.
- **PRN 31958 (NGR SH75896713): Track leading to footpath -** 19th century track, c2m wide running at an angle up the slope from near the bridge. Stones cleared from the route are dumped along the track edge but there is not real wall or revetment. The track breaks through the field boundary at the top of the slope, with much of the stone from the wall still visible in the surface of the track. The track is shown on the

1889 map and joins with a footpath running across the field to Coed Sadwrn. No earthwork remains of this footpath could be seen. Track is to be improved. Detailed recording including measured survey. Watching brief including recording of section.

- **PRN 31959 (SH75926716 C): Field wall/revetment** - Late medieval/early post medieval
- field boundary wall running along top of natural escarpment. Revetment of rounded boulders c1m high facing NW. The ground to SE is level with the top of the wall. A line of hazel and ash grows along the wall indicating a former hedge. Many of the hazel are old coppices and some trunks are bent showing where they were once laid. Wall is fairly close to the existing pipeline so care must be taken that the wall is not damaged when the pipe is dismantled.
- **PRN 32145 (boundaries to road): 19th/20th century roadside boundary walls** - any roadside boundary walls affected by alteration works to existing road network to accommodate construction traffic to be recorded and supplemented with a watching brief.

The detailed recording will be mainly undertaken in **January 2013** when vegetation cover is most limited. This information will be incorporated into the main mitigation report: *RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.*

The archive will be held by GAT under an appropriate project number (G2158).

An appropriate level of staffing would be two archaeologists.

4.4 Targeted evaluation by trial trenching

Topsoil and unwanted material overlying the archaeological remains would be removed by machine.

Once archaeology is encountered remains will be excavated by hand. Excavation of features will be sufficient to identify the importance and nature of the remains. All features, fills and layers would be allocated context numbers, and context records will be compiled throughout the course of the evaluation.

- **PRN 31943 (NGR SH75776692 C): Tumbled field wall** - early 19th century low tumbled wall running SE-NW downhill. SE end is quite well defined but becomes rather vague to NW, although still visible as a slight scarp. Not completely straight, wanders slightly. About 1m wide and up to 0.6m high in best preserved sections. This field was under arable in the late 18th century and this boundary is not shown on the 1788 map. It therefore seems to have been a sub-division added in the 19th century as it is shown on the 1889 map. A targeted trench measuring 20m by 2m will be located across the receptor, within the pipe easement; the results may lead to further mitigation that will be discussed in a future project design.
- **PRN 31954 (NGR SH75826696): Possible ancient wall** – A rough line of stones running c. NW-SE uphill, including one stone set on edge (plate 3). The alignment continues for about 22m with a large natural boulder forming part of it. Some of the stones in the line look possibly laid and others look natural. The field is very stony and this could be a chance alignment but it is quite coherent and may be a much

denuded field wall. If it is the latter its condition suggest that it might be older than the other boundaries in this area and could be prehistoric. This field may have suffered severely from erosion as it is shown on the 1788 map as being under arable, which currently seems unlikely with the quantity of stones. However if it was of much better quality in the past its use as a prehistoric field seems more likely. A targeted trench measuring 10m by 2m will be located across the receptor; the results may lead to further mitigation that will be discussed in a future project design.

- **PRN 31955 (NGR SH75816699): Natural boulders/structure** - A group of stones around low bedrock outcrops. There is a gap on the uphill side that might be an entrance but the stones that are not obviously natural look dumped rather than laid. A targeted trench measuring 10m by 2m will be located across the receptor; the results may lead to further mitigation that will be discussed in a future project design.
- **PRN 31956 (NGR SH75776694): Possible field boundary** - An 8m long scarp running SW-NE along the slope, with a rock projecting from it at SW end. The scarp is up to 0.7m high and 1.5m wide. It may be natural but could be the remains of an early field boundary. This is not shown as a boundary on any of the early maps but may be on the same alignment as the ridges shown on the 1788 map and could have been enhanced by ploughing. A targeted trench measuring 10m by 2m will be located across the receptor; the results may lead to further mitigation that will be discussed in a future project design.
- **PRN 31957 (NGR SH75846699): Field wall** - Denuded field wall running alongside track. Generally largely collapsed, occasionally surviving to 0.5m high. This formed the eastern boundary of a field called 'Cae Bach' {A5} on the 1788 map. This is shown as being under arable and belonging to Coed Sadwrn rather than Coedy Mawr, but seems to be a later enclosure than the fields clustered around Coed Sadwrn. A targeted trench measuring 10m by 2m will be located across the receptor, within the pipe easement; the results may lead to further mitigation that will be discussed in a future project design.

The trial trenching will be undertaken in **October 2012**. GAT will supply plant and welfare. *An interim report has been requested by RWE Npower Renewables Limited within two weeks of completion of the work. RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.*

- Site plans and sections would be at a minimum scale of 1:20. All features will be photographed.
- A photographic record will be maintained throughout, using a digital SLR.
- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey.
- A Geodimeter Pro Electronic Distance Measuring Total Station may also be used if extensive subsurface remains are identified.
- The archive will then be held by GAT under an appropriate project number.

The archive will be held by GAT under an appropriate project number (G2158).

An appropriate level of staffing would be two archaeologists.

4.5 Excavation

Area excavations would be stripped of topsoil and other overburden mechanically using an appropriate machine. This would normally be a 360° tracked excavator with a 1.50m or 1.80m wide toothless bucket. In other cases a JCB 3CX excavator would be employed. All machining will be undertaken under direct archaeological supervision. No machinery would be allowed to cross stripped areas.

All undifferentiated topsoil or overburden of recent origin would be removed down to the first significant archaeological horizon or natural subsoil, whichever is encountered first. When necessary, the resulting surface will be cleaned by hand using appropriate hand tools, normally shovels, hoes or trowels.

PRN 31969 (NGR SH76446723):

Late medieval/early post medieval small farmstead. One definite and one probable building platform lie between a tumbled wall and the base of a low rocky Escarpment (GAT Report 928; plate 8). Some of the wall survives to a height of 0.5m but the traces of the buildings are very slight. The best defined platform is rectangular, measures about 10m x 3m and lies parallel to the slope. To its east is a less well defined platform about 5m long that may be part of a yard rather than for a building. To the north is a sub-circular enclosure c.6m in diameter, very over grown with bracken. This may have an entrance in the SW side. A track giving access to the pipe cuts through this area and on the E side of the track is a low boundary wall with a possible building platform adjacent to it. This platform has been disturbed by the track but is 3m wide and at least 3m long. A long stone slab built into the wall may indicate that one wall of the building was incorporated into the field wall. There is no hint of this farmstead on the 1788 map so presumably it went out of use before the late 18th century.

The main building platforms and sub-circular enclosure lie just beyond the proposed works and might be avoided but the platform by the track and associated wall are likely to be severely impacted by the works; a defined excavation area measuring 5m by 3m will be located across the platform and part of the wall; the results may lead to further mitigation that will be discussed in a future project design.

The excavation will be undertaken immediately prior to main works in 2013. GAT will supply plant and welfare.

- Site plans and sections would be at a minimum scale of 1:20. All features will be photographed.
- A photographic record will be maintained throughout, using a digital SLR.
- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey.
- A Geodimeter Pro Electronic Distance Measuring Total Station may also be used if extensive subsurface remains are identified.
- The archive will then be held by GAT under an appropriate project number.

The archive will be held by GAT under an appropriate project number (G2158).

An appropriate level of staffing would be two archaeologists.

This information will be incorporated into the main mitigation report: *RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.*

4.6 Watching brief

This will be conducted during all topsoil stripping and boundary removal associated with the route, including construction compounds and temporary access roads, and the alteration of roadside boundaries on the access routes. Any significant sites identified would be fully excavated and recorded, potentially requiring further mitigation and costs.

Inclusive of this are specific watching brief receptors; these are:

- **PRN 676 (Ardda Medieval Township; area adjacent of track to be benched)**
- **PRN12957 (cottage and enclosure)**
- **PRN 16322 (Railway Incline Ardda)**
- **PRN 31893 (track)**
- **PRN 31898 (drystone wall)**
- **PRN 31900 (drystone wall)**
- **PRN 31902 (drystone wall)**
- **PRN 31905 (drystone wall)**
- **PRN 31908 (drystone wall)**
- **PRN 31909 (drystone walls)**
- **PRN 31910 (drystone wall)**
- **PRN 31916 (field boundary)**
- **PRN 31919 (entrance into enclosure)**
- **PRN 31927 (field boundary wall)**
- **PRN 31929 (sub-oval enclosure)**
- **PRN 31958 (track to footpath)**
- **PRN 31959 (field wall/revetment)**
- **PRN 31971 (field wall)**
- **PRN 32145 (boundaries to road)**
- **PRN 32154 (Tai-isaf-Ardda enclosure)**

These receptors also include preceding evaluation and/or mitigation (q.v.: paras. 4.1 to 4.5).

This work will be programmed in tandem with the construction phase, with some recording of roadside boundaries being undertaken prior to the start of construction .

Based on the IFA. 2001. *Institute for Archaeologists 2001 & 2008 Standard and Guidance for an archaeological watching brief*, an archaeological watching brief is divided in to four categories:

- comprehensive (present during all ground disturbance)
- intensive (present during sensitive ground disturbance)
- intermittent (viewing the trenches after machining)
- partial (as and when seems appropriate).

GAT is recommending an *intensive* archaeological watching brief to be undertaken at appropriate times within construction programme.

- A photographic record will be maintained throughout, using a digital SLR camera set to maximum resolution.
- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey.
- A Geodimeter Pro Electronic Distance Measuring Total Station may also be used if extensive subsurface remains are identified.

The archive will be held by GAT under an appropriate project number (G2158).

Staffing levels for this work are dependant upon the nature and quantity of archaeological features and the nature of the construction programme. An appropriate level of staffing, would be one archaeologist. An additional archaeologist may be required if several watching brief areas are concurrently active.

4.7 Avoidance

Plastic fencing (e.g. Netlon fencing) should be used to clearly define areas to be avoided. The provision and erection of fencing is to be supplied by the contractor but the fencing is to be located under the supervision of an archaeologist.

- **PRN 649 (Cottage, Ardda)**
- **PRN16325 (NGR SH7646867077):** possible long hut, Ardda
- **PRN 31899 (NGR SH75736718):** Clearance cairn - late medieval/early post medieval low cairn about 1m diameter with some larger stones at the edge but no real sign of a kerb. A clearance cairn on the edge of the field.
- **PRN 31913 (NGR SH75746686 C):** Terraced field boundary and possible trackway - *18th century or earlier* terraced field boundary running downslope SE-NW (plate 2). Field to SW about 1m higher than field to NE and terrace revetted with stone facing, some of which has collapsed. At one point stone seems to have been dumped over a corner in the terrace. At the uphill (SE) end a slight linear hollow indicates a ditch or track on the NE side of the terrace. This formed the SW boundary to 'Cae Bach' {A5} as shown on the 1788 map. Cae Bach was under arable in the 18th century. The field to the SW was called 'Cae tan Ty' {B2} and was meadow and rough grazing. This boundary is shown on the 1889 map with a double line. It is not entirely obvious from the map but comparison with other boundaries indicates that the NE line is a ditch and the boundary was composed of a wall and a ditch, shown draining directly into the river.
A track is shown on the 1889 map running down the western side of this boundary leading from Coedty Mawr via a foot bridge to Ffrith Ddu. This was not seen on the ground but some buried remains may survive.
- **PRN 31918 (NGR SH75976716):** Stone structure/long hut - late medieval/early post medieval. Small rectangular stone built structure orientated north-east south-west, measuring c8.5m x 4.7m externally (plate 7). It is built of rough coursed angular shale

slabs, and smaller stones forming walls about 0.7m wide. The SE wall is best preserved as it is terraced into the slope and it stands c.1m high, the SW wall is also fairly well preserved but the other two walls survive only at foundation level. The NW wall has a line of facing stones surviving at foundation level. The interior is full of rubble. The building runs along the slope rather than perpendicular to it and has no other characteristics of medieval long huts. Its preservation also suggests an early post medieval rather than a medieval date. It was probably the house associated with a small farmstead including the adjacent enclosure. *The fencing should be very clear as the whole field is to be used for access.*

- **PRN 31920 (NGR SH75956717):** Probable modern clearance cairn - group of large boulders loosely collected together. This is close to the pipe and probably related to the early 20th century pipe construction.
- **PRN 31948 (NGR SH75926706):** Small structure by track to Coed Sadwrn - small structure by track to Coed Sadwrn (GAT Report 928; plate 4). Rectangular, c6m x 5m with low wall surviving to no more than 0.5m high. Abuts main boundary wall and no obvious entrance visible, although SE wall is very poorly preserved with considerable gaps. Not shown on any of the old maps but character of remains is similar to boundary wall etc and it seems to be roughly contemporary. Probably the structure was too small and insignificant to show on the maps. This structure risks being either levelled in advance of spoil dumping or being buried by spoil unless marked and protected by fencing.
- **PRN 31949 (NGR SH75916707):** Gateway on track to Coed Sadwrn - 19th century gateway across track to Coed Sadwrn, flanked by large unworked stones as gate posts (GAT Report 928; plate 5). The tallest gatepost is 1.9m high and there are holes for hanging a gate on the W side of the stones. The 1889 map shows the track crossing the boundary here but does not mark a gate as such.
- **PRN 31950 (NGR SH76026714 C): Terraced field boundary** - Natural scarp running SE-NW revetted and regularised as a field boundary (plate 6). The scarp is up to 4m high but much of this is natural. Towards the SE end the scarp disappears and the boundary is represented by a simple tumbled wall. The top of the scarp at its highest is revetted with stone facing, much now tumbled. The 1896 map suggests that there were other small enclosures on or against the rocky outcrop at the NW end of the boundary and these might be identified by detailed survey. The map also names the field to the W of this boundary as Erw Bellaf {32} and that to the E as Erw Ty {35}. The 1788 map calls both sides of the boundary 'Erw' {A3} and {A2}, respectively.
- **PRN 31960 (NGR SH76006720): Probable clearance cairn** - Small circular cairn c. 2m diameter composed of small and medium sized sub-rounded stones. Heavily overgrown with grass and moss. 1m high on downhill side but nearly level with ground on uphill side. There is large group of boulders to the NW of this but these are too large to have been moved (unless it was during the pipe construction) and these are probably natural. The works pass to the SE of this feature and it should not be impacted.
- **PRN 31963 (NGR SH76226722): Small enclosure against rock face** - Small sub-rectangular enclosure built against a rock outcrop. Interior is level and the walls survive to no more than 0.7m high. The walls are very overgrown with bracken and difficult to see clearly. There may be a narrow entrance in the SE corner. The field that this enclosure lies within is called Cae Lloiau (field of the calves) on the 1896 map, which raises the possibility that the enclosure may have been used for managing calves.
- **PRN 31976 (NGR SH75836722): Trackway leading to road from Pont Newydd** - Slight, overgrown lines of stones indicate the walls bounding the track running from Pont Newydd to the road. This is clearly shown on the 1889 map, and is probably of 19th century date, although it could be earlier.

- **PRN 32146: Probable clearance cairn**
- **PRN 32158: Building Platform**
- **PRN 32159: Building Platform**

GAT will advise on the location and orientation of all fencing. This will be programmed immediately prior to main works scheduled for March 2013. An appropriate level of staffing, would be one archaeologist. An additional archaeologist may be required if several watching brief areas are concurrently active.

5. POST-EXCAVATION PHASE

5.1 Introduction

The management of this phase will follow guidelines specified in *Management of Archaeological Projects* (English Heritage, 1991), and relevant guidelines from *Management of Research Projects in the Historic Environment* (English Heritage 2006). Five stages are specified:

Phase 1: project planning

Phase 2: fieldwork

Phase 3: assessment of potential for analysis

Phase 4: analysis and report preparation

Phase 5: dissemination

The post-excavation stage for the project will include phases 3 to 5.

Phase 3 involves an objective assessment of the results of the fieldwork phases (Phases 1 and 2) in order to ascertain the appropriate level of post-excavation analysis and reporting. This phase culminates in the production of a post-excavation assessment report. The second involves carrying out the work identified within the post-excavation assessment report, and culminates in a final report and project archive (Phases 4 and 5).

Note: RWE Npower Renewables Limited has stated that GAT must provide two colour paper copies and two electronic copies of the main report.

5.2 Post-excavation assessment

The level of post-excavation analysis and reporting for the purposes of the assessment will be sufficient to establish the character, scale, date range, artefactual and palaeo-environmental potential and overall significance of the remains. The post-excavation assessment will result in an assessment of potential for analysis report and an updated project design describing what further work is needed to complete the final report, appropriate publication and archiving.

Style and format of the report will include as a minimum the following:

- A location plan of trenches and/or other fieldwork
- Plans and sections of features located at an appropriate scale
- A section drawing showing depth of deposits including the present ground level with Ordnance Datum, vertical and horizontal scale.
 - A summary statement of the results.
 - A table summarising per trench the features, classes and numbers of artefacts contained within, spot dating of significant finds and an interpretation.
 - An interpretation of the archaeological findings both within the site and within their wider landscape setting.

Artefact analysis will be sufficient to establish date ranges of archaeological deposits, a general assessment of the types of pottery and other artefacts to assist in characterising the archaeology, and to establish the potential for all categories of artefacts should further archaeological work be necessary.

5.3 Analysis and report preparation

The work undertaken during this phase of the project will be carried out according to the recommendations contained within the post-excavation assessment report and updated project design.

5.4 Production of site archive

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled and cross-referenced, and lodged in an appropriate place (to be decided in consultation with the regional Sites and Monuments Record) within six months of the completion of the project. All digital data will be archived with the Royal Commission on the Ancient and Historical Monuments of Wales.

6. HEALTH AND SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (2006). Risks will be assessed prior to and during the work.

7. INSURANCE

Liability Insurance - Aviva Policy 24765101CHC/000405

- Employers' Liability: Limit of Indemnity £10m in any one occurrence
- Public Liability: Limit of Indemnity £5m in any one occurrence

The current period expires 21/06/13

8. OTHER

Any queries concerning the above should be directed to Mr Andrew Davidson or Mr John Roberts at the Gwynedd Archaeological Trust Offices, Garth Road, Bangor. Telephone (01248) 352535.

9. SOURCES CONSULTED

Capita Symonds 2012 *Coedty Replacement Pipeline Project, Dolgarrog. Environmental Statement*

Evans, R. 2010. Gwynedd Archaeological Trust Report **900**: Hydro-Electric Pipeline, Dolgarrog – Archaeological Assessment

Evans, R. & Kenney, J. Gwynedd Archaeological Trust Report **928**: Archaeological Assessment: Dolgarrog Hydro-Electric Works

Standard and Guidance for Archaeological Evaluation (Institute for Archaeologists, 1994, rev. 2001 & 2008)

Standard and Guidance for Archaeological Watching Brief (Institute for Archaeologists, 1994, rev. 2001 & 2008)

Standard and Guidance for Archaeological Excavation (Institute for Archaeologists, 1994, rev. 2001 & 2008)

APPENDIX II: CONTEXT REGISTER

Context #	Area	Description
101	TR1	Topsoil – Dark grey brown slightly gritty silt with a few stones and many bracken roots.
102	TR1	Lower topsoil – Mid brown loam with occasional small and medium stones.
103	TR1	Natural – Reddish brown silty loam with some gravel and occasional large stones (sub-angular).
104	TR1	Roadside wall. Large sub-angular stones up to 0.6m long haphazardly placed in matrix similar to 0102.
105	TR1	Wall foundation – Sheepfold. Neatly laid foundation of flat slabs up to 0.4m long. Generally survives to only 1 slab deep but with some smaller stones on top.
106	TR1	Group of 3 sub-angular stones under wall (0104), possibly natural boulders rather than foundation stones.
107	TR1	Cut for wall (0105). Slight trench or terrace no more than 0.2m deep.
201	TR2	Topsoil – Mid dark greyish brown clayey silt containing occasional small to medium sub-rounded and sub-angular stone.
202	TR2	Stone concentration – This concentration not structural, possibly the result of field clearance, visible above topsoil (0201).
203	TR2	Natural – Light mid reddish brown clayey silt with occasional small and large sub-rounded stone inclusions.
301	TR3	Topsoil – Dark greyish brown gritty sandy silt with occasional sub-angular stones and many bracken roots.
302	TR3	Subsoil – Mid brown sandy silt loam with a moderate amount of small sub-angular stone.
303	TR3	Curved wall – Composed of small boulder sized stone and a few upright stones on the outer face, (0305) may be the return wall for this feature.
304	TR3	Cobbled area – Small cobbled area or drain located at the southern end of the wall (0303), composed of small cobble sized stone and incorporated within two large natural boulders.
305	TR3	Return wall – A few large stones which may form a return wall for the curved wall (0303).
306	TR3	Re-deposited clay – Backfill from a recent geological test pit.
307	TR3	Natural – Mid orangey brown clayey silt containing a moderate amount of pebble sized sub-angular stone.
401	TR4	Topsoil – Dark grey brown clayey silt with large amounts of root disturbance, and occasional small and medium sized sub-angular stone.
402	TR4	Possible terminus of field boundary – Linear concentration of stones, aligned NE-SW at the point where the ground appears to slope steeper to the NW. A large stone at the NE end may be a wall terminus, the smaller stones forming a rubble core to the field boundary.
403	TR4	Subsoil – Reddish brown clayey silt.
404	TR4	Natural – Light greyish brown clayey silt with patches of gravel and occasional small and medium sized sub-angular and sub-rounded stone.
501	TR5	Topsoil – Dark greyish brown clayey silt with occasional small sub-angular and sub-rounded stones, and many bracken roots.
502	TR5	Stone concentration – Possibly a natural concentration of stone, fairly loose within a matrix of a light reddish brown clayey silt.
503	TR5	Field boundary – NW-SE aligned stone core large field boundary. Three very large stones at the base of the wall in this area with inner faces, overlain by smaller stones.
504	TR5	Natural – Light reddish brown clayey silt containing a moderate amount of sub-angular and sub-rounded stone inclusions.
505	TR5	Subsoil – Mid reddish brown clayey sandy silt with moderate stone inclusions of mainly sub-angular stone.
601	TR6	Topsoil – Black slightly gritty silt with occasional stones and many bracken roots.
602	TR6	Field wall – Possibly dating to the 18 th Century, a roughly made stone wall composed of

		irregularly placed stones of varying size and shape, and clearly built over an existing demolished stone wall/structure.
603	TR6	Collapsed rubble – Probable rubble from a demolished structure. The number of small stones may indicate that the larger stones had been removed and reused for the later field wall and/or associated structures.
604	TR6	Slabs – Slabs exposed in sondage across the trench, they may be part of a floor but there are no hints of other such slabs and therefore it is possible they form a drain. There is a vertical slab that may indicate the former existence of a box compartment or hearth although there is no indication of burning or charcoal in this area.
605	TR6	Black layer – A very dark grey, slightly gritty silt with frequent stones up to 0.15m in length. The dark colour and very occasional fragments of charcoal suggest this is an occupation layer, a sherd of Roman pot was found securely sealed within this deposit, as well as 2 heat altered pebble sized stone that may be described as pot boilers.
606	TR6	Natural – This deposit directly overlies the bedrock and a strong red-brown in colour, and other parts were a pale red-brown gritty silt. Contained frequent small angular stones.
607	TR6	Roundhouse wall – A few large stones visible at the NE corner of the site, with cobbles (0608) either butting up or overlying them at the outside of the later field wall (0602). This may be part of the original structure/roundhouse, with further investigation necessary to establish the relationships.
608	TR6	Cobbled area within roundhouse – At present very little can be seen of these cobbles, number was allocated for the feature but further work needs to be done prior to correct interpretation
609	TR6	Wall at NW of site – Only 3 stones are visible of this possible wall, further work to establish as above context (0608).
610	TR6	Outer wall of roundhouse at south of site – The same applies to this context as (0608) and (0609), it needs further work to establish if we truly have a wall or the stones are purely co-incidental.
700	Ardda	Topsoil
701	Ardda	Natural
702	Ardda	Lynchet PRN 363814
703	Ardda	Stone field boundary PRN 36382
704	Ardda	Re-deposited natural
705	Ardda	Buried topsoil/ turf layer
706	Ardda	Earthen field boundary PRN 36382
800	SMS	Topsoil
801	SMS	Subsoil
802	SMS	Stone Field Boundary - Same as 303/304 – PRN 31954
803	SMS	Fill around wall [802]
804	SMS	Natural
805	SMS	Rubble/ stone concentration
806	SMS	Tramline bed - PRN 36387
900	WB	Possible rock cannon – PRN 55502

APPENDIX III: GAZETTEER OF SITES

PRN Number: 12957 NAME: Cottage and enclosure

Grid Ref: SH765066150

Period: Medieval/ Post-medieval

Part of the Ardda medieval township. The cottage and enclosures are not within the survey area so no work was carried out on them. However, the terraces running below and to the NE of the cottage (PRN 36384) were recorded.

PRN Number: 16321 NAME: Dolgarrog Hydro-Electric Plant

Grid Ref: SH7655167184

Period: Early 20th Century

The junction of pipes and valve house known as Marble Arch, after an iron gantry footbridge over the incline. The original Marble Arch had to be demolished as it was unsafe, with this arch being built at some point after 1925. Photographed, but not affected by main works.

PRN Number: 16322 NAME: Railway Incline

Grid Ref: SH7650167162 (Centred)

Period: 19th Century

The incline, aligned ENE-WNW, was initially built for the slate quarry tramway in the early 1860s and was in operation by 1864. It is first shown on the 1889 map. It was reused in 1907 to construct a railway for building the Llyn Eigiau dam, and again in 1917 to build the Llyn Cowlyd dam. It continued to be used during the early 20th century to take equipment up and down the escarpment. There was a winch and a ropeway on the incline in the 1950s. Much of the upper part of the incline is still well preserved and is located outside of the survey area. The lower half is cut down into the natural geology, with high, steep sides at the bottom, which gradually become shallower as the incline rises to the WSW, where it is located partially on a stone embankment. Partially truncated during the works by an access road running through its shallowest point.

PRN Number: 31890 NAME: Llyn Coedty Valve House

Grid Ref: SH75586672

Period: Modern

A small corrugated iron structure located at the foot of Llyn Coedty dam, with the pipe entering it. A concrete and stone wall surrounds the valve house on two and a half sides. It is used as a valve house for water exiting the dam and entering the pipe. Photographed, but not affected by main works.

PRN Number: 31893 NAME: Coed Sadwrn Track

Grid Ref: NGR SH75886707 (Centred)

Period: 18th Century or earlier

A trackway leading towards Coed Sadwrn, aligned roughly NW-SE. This is well defined on the western side of the gateway (PRN 31949), seen as a clear hollow-way with up to 1m high banks on either side for part of its route. As it approaches the gateway to the SE it peters out. It continues to the NW under the pipe until it meets the modern road. Shown in detail on the 1889 map, but the track is also marked on the 1816-1824 maps, and shown running from the gateway on the 1788 map. The area is overgrown and evidence for the continuation of the track to the east and SE may be visible underneath. The trackway was mostly truncated by the new pipeline, with only the shallower SE and NW ends remaining.

PRN Number: 31894 NAME: Llyn Coedty Leat

Grid Ref: SH75576673 to SH75686789, SH75666709 (Centred)

Period: Mid 20th Century

Llyn Coedty Leat, associated with the hydro-electric works, is orientated NE-SW running into Llyn Coedty reservoir from Rowlyn Isaf, in a concrete channel approximately 8m wide. It cuts through the former field systems of Bont Newydd and Ffrith Ddu. Constructed from pre-formed concrete slabs, it was built in two phases, a short section was built at the time of the dams construction, with the remaining majority built between 1955-8. The initials 'MAC' have been inlaid with pebbles into the mortar on the SE side of the leat. The trackway adjacent to the leat was in part the route of a tramway for the construction of the leat. The route of the leat and working spaces for its construction are marked on a map in the Sidney Colwyn Foulkes Collection and the route of the leat was designed by Colwyn Foulkes to minimise the impact on the landscape. Photographed, but not affected by main works.

PRN Number: 31897 NAME: Modern Bridge

Grid Ref: SH75756732

Period: Modern

A modern concrete bridge faced with stone crossing the leat. It must date from the construction of the leat in the 1950s as it is constructed perfectly in line with the top of the leat. It was built on the line of a road leading from the valley to the farms of Pont Newydd, Ffrith Ddu and Coed Ty Mawr, which may have medieval or post-medieval origins. Photographed, but not affected by main works.

PRN Number: 31898 NAME: Field Boundary

Grid Ref: SH75726718 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval meandering drystone wall in a fairly ruinous state. Up to two rough courses wide and high, with no evidence of any facing or core. The wall becomes more substantial towards the SW corner where a possible entranceway exists. Another possible entranceway is located towards its SE corner, although given the overall ruinous state of the wall it is impossible to be sure if these represent original entranceways or not. It probably forms the boundary to the Pont Newydd Cottage fields or paddocks and dates to the 18th century or earlier. Photographed and surveyed, but not affected by main works.

PRN Number: 31900 NAME: Field Boundary

Grid Ref: SH75696709 (Centred)

Period: 19th Century

A group of three drystone walls dating to the 19th Century, orientated NNE-SSW, ENE-WSW, and NE-SW respectively. The NE-SW aligned wall is fairly well preserved, along with the ENE end of the ENE-WSW aligned wall. The walls survive with a maximum of 13 courses (0.7m high) of loose rounded boulders. The NNE-SSW aligned wall is built close to, but not adjoining field boundary wall PRN 31898. There is a possible entranceway located at the NE end of the NE-SW aligned wall. The walls character appears to be of 19th century date and they probably form a later subdivision of the field boundary systems in the area. Photographed and surveyed, but not affected by main works.

PRN Number: 31902 NAME: Field Boundary

Grid Ref: SH75656699 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval slightly curving drystone wall orientated roughly north-south. Mostly surviving in a ruinous state, up to two courses high (0.6m), and 1.5m wide. Towards the south, close to the Ffrith Ddu farmhouse, the wall is better preserved, measuring up to 1m in height. It probably forms part of the early fields and paddocks associated with Ffrith Ddu farmhouse directly to the south, and may be of 18th century or earlier date. Photographed and surveyed, but not affected by main works.

PRN Number: 31905 NAME: Field Boundary

Grid Ref: SH75576690 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval wall orientated NW-SE. Rebuilt and straightened at the NW end where it survives up to five courses, 0.7m high and 1m wide. There is a possible entranceway between the rebuilt section at the NW end and the more ruinous wall to the SE. At the SE end the wall survives to a maximum of two courses, 0.7m high and 1.3m wide. Its character appears to be of 19th century date, and was most likely originally part of the wandering wall system around Ffrith-Ddu. The SE end of this wall has been removed, possibly during the construction work for the pipe. NE-SW aligned wall PRN 31909 runs perpendicular to the SE end of the wall but is not built into it. Photographed and surveyed, but not affected by main works.

PRN Number: 31907 NAME: Low Head Pipe

Grid Ref: SH75526674 to SH76566718

Period: Early 20th Century

A riveted and welded six foot pipe running from Coedty Reservoir to its junction with other pipes at Marble Arch, and thence down to the power station at the aluminium works. It was built on concrete piers and a plinth, and was completed in 1924. However, there were problems with the pipe and it failed under test and caused flooding in a village. The pipe was damaged in the flood of November 1925 and rebuilt by March 1927. There are numerous points along the pipe where water is leaking from it. Photographed prior to its complete removal.

PRN Number: 31908 NAME: Field Boundary

Grid Ref: SH75606678 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval drystone wall in very poor condition with trees growing along its length. Constructed of loose rounded boulders, on average two courses high, and aligned roughly NE-SW. A small stretch of wall survives in better condition, with a maximum height of 1m, towards the SW end. Makes use of natural stone outcrops where possible. Detailed on the 1889 map as a line of trees, so the wall must have been out of use by then. Photographed and surveyed, but not affected by main works.

PRN Number: 31909 NAME: Field Boundary

Grid Ref: SH75656692 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval drystone walls south of Ffrith Ddu farmhouse. Surviving up to three courses high (0.75m), and approximately 1m wide. Constructed from loose sub-rounded boulders. There is some tumble associated with the wall on the SE side. At its NE end the wall is in significantly better condition, with ten courses (1.5m) surviving. There is an entranceway towards the NE end where a path is shown on the 1st Edition OS Map of 1889. It runs perpendicular to boundary wall PRN 31905 but is not built into it. It is associated with a number of other, less well preserved walls, forming small rectangular fields with entranceways around the remains of the Ffrith Ddu farmhouse. These walls wander slightly and are probably of a pre-19th century date. Photographed and surveyed, but not affected by main works.

PRN Number: 31910 NAME: Field Boundary

Grid Ref: SH75726697 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval drystone wall probably associated with the Ffrith Ddu farmhouse. The wall is orientated NW-SE and survives up to four courses (1m) high, with an approximate width of 1m. It is constructed for sub-rounded and angular boulders, and slopes downhill to the SE where it is in a very ruinous state. A rough boulder, about 1.3m high and 0.4m wide, inscribed with a possible Latin Cross orientated slightly NNW-SSE, was located within the wall. The stone is broken along its western side. At its NW end it is abutted by boundary wall PRN 31900. Originally shown as continuing further to the NW on the 1889 1st Edition OS map, there is no evidence of this on the ground today. Photographed, but not affected by main works.

PRN Number: 31913 NAME: Terraced Field Boundary and Possible Trackway

Grid Ref: SH75746686 (Centred)

Period: 18th Century or Earlier

Terraced field boundary running SE-NW downslope. The field to the SW is about 1m higher than the field to the NE, and the terrace is revetted with stone facing, some of which has collapsed. At the SE end a slight linear hollow indicates a ditch or track on the NE side of the terrace. There are two gaps in the field boundary close to each other at the SE end, and roughly in line with the gap in the parallel field boundary PRN 31943, suggesting that one of these gaps represents an entranceway. This wall formed the SW boundary to 'Cae Bach' and the NE boundary to 'Cae tan Ty' as shown on the 1788 map. Cae Bach was under arable, while Cae tan Ty was given over to meadow and rough grazing in the 18th century. This boundary is shown on the 1889 map with a double line, which comparison with other boundaries indicates that the NE line represents a ditch. The boundary was therefore originally comprised of a wall and a ditch, shown draining directly into the river. No evidence of the ditch remains today. A track is shown on the 1889 map running down the SW side of this boundary leading from Coedty Mawr via a footbridge to Ffrith Ddu. Partially truncated by the SMS excavation which revealed no evidence of a trackway or ditch in the area. It measured 0.3m in height and 0.8m in width, and was formed with sub-angular stones laid on top of the natural geology.

PRN Number: 31916 NAME: Field Boundary

Grid Ref: SH75916707 (Centred)

Period: 19th Century

Two interconnecting 19th century drystone walls, aligned NW-SE, and NNW-SSE, and part of the boundary to Coed Sadwrn farm. A gateway (PRN 31949) and track (PRN 31893) are located at the intersection of these walls, with a rectangular structure (PRN 31948) abutting the northern side of the NW-SE aligned wall. The walls survive up to two rough courses wide (1m) and high (0.75m). The NW-SE aligned section roughly follows the line of an early boundary along the western side of 'Erw' and 'Tir Newydd' as shown on the 1788 map, while the NNW-SSE section runs along the line of the track to Coed Sadwrn (PRN 31893). A second possible entranceway is located in the NW-SE aligned wall adjacent to gateway PRN 31949, although given the rundown nature of this section of wall it may be just an area of collapse or possibly a more modern intrusion. A third possible entranceway is located on the NNW-SSE aligned wall. Photographed and surveyed, but not affected by main works as an overhead power line is in the vicinity so the area was fenced off.

PRN Number: 31918 NAME: Stone Structure/ Long Hut

Grid Ref: SH75976716

Period: Late medieval/ Early Post-medieval

Small rectangular stone built structure orientated NE-SW and measuring approximately 8.5m x 4.7m externally. It is built with a mix of rough coursed angular shale slabs and smaller stones, forming walls approximately 0.7m wide. The SE and SW walls are the best preserved, with the former terraced into the slope and standing roughly 1m high. The other two walls survive only at foundation level, with the NE wall having a line of facing stones surviving. The interior is full of rubble. The building runs along the slope rather than perpendicular to it, but has no other characteristics of a medieval long hut. Its preservation suggests an Early Post-medieval, rather than a medieval date. It was probably the house associated with a small farmstead including the adjacent enclosure (PRN 31929) to the NE, and it is located directly in line with a possible entranceway (PRN 31919) into that enclosure. Although the enclosure is shown on the maps there is no hint of a building here on the 1788 map. Photographed and surveyed, and fenced off so as to be avoided by the main works.

PRN Number: 31919 NAME: Entrance into Enclosure

Grid Ref: SH75986719

Period: Late medieval/ Early Post-medieval

A 2m wide gap on the SW side of a small enclosure (PRN 31929), opposite the remains of a long hut (PRN 31948). The gap in the drystone wall is roughly made, with a pile of stones located against the inside of the wall on the SE side, which appear to be the result of the construction or widening of the entranceway. A track runs through the gap into the enclosure from the long hut in the adjacent field, none of which are shown on the old maps. This entranceway may be part of the original enclosure, therefore demonstrating a contemporary nature between the enclosure and the long hut. However, the pile of stones adjacent to the entranceway, suggest that either it was widened at some point or that the entranceway was created within an existing wall. The relatively small size of the stone pile would suggest they come from the widening of an existing entranceway. Photographed and surveyed, but not affected by main works.

PRN Number: 31925

NAME: Trackway

Grid Ref: SH75956702 (Centred)

Period: Early 20th Century

Track running beside the Low Level Leat and presumably constructed in 1925 to service the leat. Reuses part of the Llyn Eigiau railway trackbed, and for most of its length follows the line of the Llyn Cowlyd tramway. Parts of the trackway are cut through natural stone outcrops which form high banks on either side of the track. Still in use today as a trackway. Photographed but not affected by main works.

PRN Number: 31927

NAME: Field Boundary

Grid Ref: SH76146713 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval denuded field wall with stones aligned roughly north-south. Some of the stones are large boulders up to 0.75m high and 0.75m wide, but no coursing survives. This wall is shown on the 1889 map as quite straight but looks slightly wandering on the ground. There is a gap roughly in the centre of the wall which may have been an entranceway. However, it is located adjacent to the pole for a modern overhead power line and it is possible that this gap was formed when the pole was erected. The wall is also shown on the 1788 map. The field to the east was called 'Cae Fynnon' and was arable in 1788. The field to the west was 'Erw' and was under pasture in 1788 despite the name, which suggests that it was originally enclosed for arable. Photographed and surveyed, but not affected by main works.

PRN Number: 31928

NAME: Former Drum House and Coed Sadwrn Railway Yard

Grid Ref: SH76366712

Period: Early 20th Century

Corrugated iron shed on the Llyn Cowlyd tramway identified by Jones and Gwyn as a drum house, formed as part of the Coed Sadwrn yard. The shed is built on a platform cut into a rocky outcrop above a level area that formed the small railway yard. The shed and the yard are shown on the 1913 map and were part of the railway system for the construction of the Llyn Eigiau dam. The shed was the probable location of a winch in the 1950s. There was also another small shed in this area in the 1930s, but this is not on the 1913 map and seems to be a late and temporary addition. Photographed but not affected by main works.

PRN Number: 31929

NAME: Sub-oval Enclosure

Grid Ref: SH75976721 (Centred)

Period: Late medieval/ Early Post-medieval

Sub-oval enclosure defined by low denuded walls, on average 0.3m high. Large naturally set boulders have been incorporated into the enclosure walls as well as a large natural stone outcrop on the SE side. There is a gap in the NE side that may be an entrance to match the one on the SW side. This route seems to have been used for access recently and the gap in the NE side is not as clear and convincing as that in the SW side, and may therefore have been made more recently so as to allow access through the enclosure. This enclosure is named as Erw Bach on the 1896 map, while on the 1788 map it is shown as a distinct enclosure but labelled as part of 'Erw', with 'Cae Bach' applied to a field much further west. The 'erw' name indicates a possible arable field, although on the 1788 map the area is shown as under pasture. Near the enclosures SW corner, it is joined to a field boundary wall (PRN 31959) which runs away to the SW. The remains of a wall continue to the NE at the NE corner of the enclosure, and is most likely part of the same field boundary system as PRN 31959, although this area of wall is only shown on the 1788 map suggesting it was out of use by 1896. A rectangular enclosure, most likely a sheepfold or similar, was also visible adjoining the outside of the enclosure along its NW edge, and running along the edge of a scarp. This enclosure was not shown on any map, and was not surveyed as the woodland surrounding it was too dense. The presence of these walls suggests a more developed field system in the area than shown on any of the maps. Only a small section of these field boundaries were truncated by the development and sections through them showed them to be a maximum of 1m high and 1.2m wide.

PRN Number: 31931

NAME: Tramway to Cwm Eigiau

Grid Ref: SH76056706 (Centred)

Period: 19th Century

Slate quarry tramway built to service two "small and unpromising" quarries exploited between 1825 and 1873. The tramway was constructed in the early 1860s and was in operation by 1864. The tramway was reused in 1907 to construct a railway for building the Llyn Eigiau dam. Work on the dam was completed in November 1910, and

in 1911 all plant was removed apart from the track on the incline through the woods. It was again reused in 1917 as the start of the tramway to build Cowlyd dam. Photographed but not affected by main works.

PRN Number: 31933 NAME: Leat and Related Drains

Grid Ref: SH76086691 (Centred)

Period: Early 20th Century

Upper leat built as part of the water catchment system for the hydro-power station built for the aluminium works. The leat was constructed between 1907 and 1911 and is shown on the 1913 map. The upper leats ran from the Afon Ddu and the Afon Porth-llwyd to a pipe that took the water down to the power station. There are two drains running down from the Afon Porth-llwyd branch of the leat, allowing overflow water to flow back into the river. Photographed but not affected by main works.

PRN Number: 31934 NAME: Incline and Water Pipe

Grid Ref: SH76476704

Period: Early 20th Century

Part of the water catchment system for the hydro-power station built for the aluminium works between 1907 and 1911. The incline is used to take the water in a pipe from the upper leat to the power station. It runs downhill for approximately 185m from a height of 269.66m OD to 232.53m OD. The incline is shown on 1913 map, although it does not indicate the pipe. The pipe was made redundant when the pipeline from Llyn Cowlyd was constructed in 1936-7, but is still used as part of the surge protection for the Coedty system. Photographed and surveyed, but not affected by main works.

PRN Number: 31943 NAME: Tumbled Field Wall

Grid Ref: SH75776692 (Centred)

Period: Early 19th Century

Low tumbled wall running SW-NW downhill. SE end is quite well defined, with a probable tram bed (PRN 36387) located adjacent on its SW side. The wall tapers out to the NW where it is most likely truncated by the modern pipe line. There are two gaps within the wall which may indicate two separate entrances, although excavation of these areas could not prove that these were or were not entrances due to the walls highly degraded state. Not completely straight, wanders slightly, and in parts is only visible as a stony scarp. This field was under arable in the late 18th century and this boundary is not shown on the 1788 map. It therefore seems to be a sub-division added in the 19th century as it is shown on the 1889 map. Approximately 60% (34m) of this wall was removed during the works, and this area was fully exposed and recorded. The wall measured 0.95m in width and a maximum of 0.55m high, and was constructed from sub-angular stones set on top of the natural geology.

PRN Number: 31948 NAME: Small Structure by Track to Coed Sadwrn

Grid Ref: SH75926706

Period: 19th Century

A small rectangular structure measuring approximately 6m by 5m, with a possible entrance on its SE side, although its walls are very badly preserved in this area. The walls survive to a maximum height of 0.5m. It abuts the main field boundary wall (PRN 31916). A couple of trees have heavily disturbed the structure. Not shown on any of the old maps, but its character is similar to the boundary wall and appears to be roughly contemporary. Most likely the structure was too small and/ or insignificant to be shown on the maps. Photographed and surveyed, but not affected by main works.

PRN Number: 31949 NAME: Gateway on Track to Coed Sadwrn

Grid Ref: SH75916707

Period: 19th Century

Gateway across the track to Coed Sadwrn (PRN 31893), constructed from two large unworked stones which form the gate posts. The tallest gatepost is 1.9m high and there are holes for hanging a gate on the western side of the stones. The 1889 map shows the track (PRN 31893) crossing the boundary wall (PRN 31916) here, but does not mark the gate as such. Photographed and surveyed, but not affected by main works.

PRN Number: 31950 NAME: Field Boundary

Grid Ref: SH76026714 (Centred)

Period: Late medieval/ Early Post-medieval

Natural scarp running SE-NW, revetted and regularised as a field boundary. The scarp is up to 4m high at its NW end, but much of this is natural. Towards the SE end the scarp disappears and the boundary is replaced by a simple tumbled wall. The top of the scarp at its highest is revetted with stone facing, now much tumbled. There are two possible entranceways located in the wall, one roughly central and one to the SE. These possible entranceways are used as farmers' tracks today and it is impossible to tell if they represent original entranceways or not. The central entranceway was expanded by approximately 3m during the works, but otherwise the wall remained untouched by the development. The wall measured approximately 1.7m in width, with a height of 0.4m and was constructed from sub-angular stones built on top of the natural geology. The 1896 map suggests that there were small enclosures on or against the rocky outcrop at the NW end of the boundary where it joins up with Enclosure PRN 31929. The map also names the field to the west of this boundary as 'Erw Bellaf' and that to the east as 'Erw Ty'. The 1788 map calls both sides of the boundary 'Erw', indicating arable fields.

PRN Number: 31951 NAME: Original Access Track to Pipe

Grid Ref: SH76086721 (Centred)

Period: Early 20th Century

The SW end of a NE-SW aligned trackway, which curves to the north and then joins the line of the pipe. At this point the trackway passes through a gap in the rock outcrops. The gap may have been a natural one that was improved, although a lot of stone clearance, if not actual quarrying of rock must have been done. No obvious traces of quarrying on rock face but this is heavily overgrown with lichen and moss. The track currently leads to a gate in a modern fence but extent of grass and moss growth and the lack of obvious tool marks on the rock face make it appear to be of some antiquity. However it is not shown on the old maps and does lead to the pipe. In places it can be seen that the surface of the track is covered with hardcore. There is a short section of track running from the main track to the west and curving to the top of a small rock outcrop overlooking the pipe. The relationship to the pipe, the presence of hardcore, and the absence from the old maps, suggests that this track was used for access while building the pipe and dates from the 1920s. Photographed but not affected by main works, although an extension of the trackway running through the field to the south was created during the works. No archaeology was uncovered in this area.

PRN Number: 31952 NAME: Former Locomotive Shed

Grid Ref: SH76406706

Period: Early 20th Century

Rectangular corrugated iron shed identified by Jones and Gwyn as a locomotive shed on siding on the Llyn Cowlyd tramway. Photographed but not affected by main works.

PRN Number: 31954 NAME: Field Boundary

Grid Ref: SH75816696 (Centred)

Period: Post medieval

A heavily denuded field boundary wall running NW-SE uphill for approximately 44m, with a large natural boulder forming part of it. The area around the wall is natural very stony and the actual wall itself is only 1-2 courses high and therefore difficult to see. All the stones have been laid on the natural geology. There is a possible entranceway at its NW end prior to its truncation by the modern pipe, although after full excavation it was impossible to tell if this was a proper entranceway or not. The wall is on the same alignment as other field boundaries in the area, but is not shown on any of the maps. Given its location and similarities to the nearby field boundaries, it is likely that this was built at some point after 1788 but went of use very quickly and its stone work was reused to build PRN 31943 at some point prior to 1889. This field may have suffered severely from erosion as it is shown on the 1788 map as being under arable, which currently seems unlikely with the quantity of stones.

PRN Number: 31957 NAME: Field Boundary

Grid Ref: SH75846699 (Centred)

Period: 18th Century or earlier

Denuded field wall running along the side of a tackway. Generally largely collapsed and consisting of one remaining course. However, one portion of the wall survives up to eight courses (1m) high. It formed the eastern boundary to a field called 'Cae Bach' on the 1788 map. This is shown as being under arable and belonging to Coed Sadwrn rather than Coedty Mawr, but seems to be a later enclosure than the fields clustered around Coed Sadwrn. Photographed and surveyed, but not affected by main works.

PRN Number: 31958 NAME: Trackway

Grid Ref: SH75896713 (Centred)

Period: 20th Century

A fairly modern trackway, approximately 2m wide, running ENE-WSW from the modern road to the entranceway within field boundary PRN 31959. A pathway is shown on the 1889 map running through this entranceway, but the trackway is on a different alignment and was likely created to allow access to the pipe in the 20th century. No evidence of the original pathway survives. This trackway was remade during the works and no evidence of an earlier trackway underneath was visible.

PRN Number: 31959 NAME: Field Boundary

Grid Ref: SH75926716 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval field boundary wall partially running along the top of a natural escarpment, aligned NE-SW. The wall is in a fairly ruinous state with a maximum of four courses surviving. A revetment of rounded boulders, approximately 1m high, is located within the escarpment area. A line of hazel and ash grows along the wall indicating a former hedge. Many of the hazel are old coppices and some trunks are bent showing where they were once laid. An entranceway is visible where a 20th century track runs (PRN 31958) through it, although the entranceway is most likely earlier. The wall joins up with enclosure PRN 31929 at its NE end and is most likely contemporary with it. Photographed and surveyed, but not affected by main works.

PRN Number: 31962 NAME: Access Track

Grid Ref: SH76246722 (Centred)

Period: Early 20th Century

One of several tracks that were probably built for the construction of the pipeline and are still used for access for maintenance. The southern end of this track was partially widened during the works.

PRN Number: 31963

NAME: Small enclosure against rock face

Grid Ref: SH76226722

Period: Post medieval

Small sub-rectangular enclosure built against a rock outcrop. Interior is level and the walls survive to no more than 0.7m high. The walls are very overgrown with bracken and difficult to see clearly. There may be a narrow entrance in the SE corner.

The field that this enclosure lies within is called Cae Lloiau (field of the calves) on the 1896 map, which raises the possibility that the enclosure may have been used for managing calves.

This site was to be fenced off and there was an assurance that there would be no disturbance near it. However disturbance related to widening the access track resulted in damage to part of the wall of the structure.

PRN Number: 31965

NAME: Drainage Channels

Grid Ref: SH76326726

Period: Later 20th Century

Later 20th century neatly revetted drainage channels running from the base of a boulder filled ravine and dividing into two channels. The channels are constructed from mortared field stone, with the base lined with stone. The channels are part of the overflow drain from the upper leat. Nearby is a reinforced concrete pipe running down the slope to the main pipe. This used to be attached to the main pipe as a surge pipe, releasing water pressure in case of flooding. This would have carried excess water up to the Low Level Leat. Photographed but not affected by main works.

PRN Number: 31966

NAME: Field Boundary

Grid Ref: SH76276723 (Centred)

Period: Late medieval/ Early Post-medieval

Fragmentary wall running along the top of the escarpment. Survives up to 0.5m high. Joins rock outcrop in places. Northern boundary to 'Cae Fynnon' as shown on the 1788 map. A 1m section of this field boundary was truncated by the works showing it to be built on top of the natural geology and formed from sub-angular stones with the use of natural outcrops of stone where available. This section was recorded as PRN 36378.

PRN Number: 31969

NAME: Small Farmstead

Grid Ref: SH76446723 (Centred)

Period: Roman? And/ or Late medieval/ Early Post-medieval

One definite and one probable building platform lay between a tumbled wall and the base of a low rocky escarpment. Some of the wall survives to a height of 0.5m but a large area of possible collapse is overgrown in the middle of the wall. There is a possible entranceway in the wall at its SE end where it meets the field boundary wall, aligned north-south. However, this area is heavily overgrown and it is impossible to be certain if this represents an original entranceway or not. The tumbled wall continues along to the west where it joins with a stone outcrop to form a natural boundary where it continues westward. The best defined platform is roughly rectangular in shape, measures about 10m x 3m, and lies parallel to the slope. To its east is a less well defined platform on the same alignment, and measuring about 5m x 2m. Given its smaller size it may represent a yard rather than for a building. To the north is a sub-circular enclosure c.6m in diameter, located on the edge of a sharp slope. There may have been an entrance in the SW side of the enclosure, but this area has been heavily disturbed by tree roots and it is impossible to be certain. A modern track giving access to the pipe cuts through this area and on the east side of the track is a low boundary wall with a roundhouse adjacent to it (PRN 36094). This boundary wall would have originally joined up with the walls to the west, which would have in turn joined up with boundary wall PRN 31971 to the south, but these relationships have been destroyed by the access track. The roundhouse has been tentatively dated to the Roman period and it is possible that the whole of the farmstead dates to that period as well, although the boundary walls may be of a later date. Photographed, surveyed, and fenced off to make sure it will not be affected by the main works.

PRN Number: 31971

NAME: Field Boundary

Grid Ref: SH76496718 (Centred)

Period: Late medieval/ Early Post-medieval

Late medieval/ Early Post-medieval field wall that becomes a terrace as it descends the slope. Most of its corner has been cut away by the modern trackway, but it continues on the other side of the incline. It generally appears as a low tumbled wall but becomes a terrace, 1m high, near the corner. Large oaks and coppiced hazel grow along the boundary. It would have originally joined up with the boundary wall of the farmstead (PRN 31969) to the north. This is shown on the 1788 map as the NE boundary of 'Bryn Kelin'. Small section (approximately 1m) of the field boundary was truncated for the widening of an access track. Shown to be built on top of the natural geology and constructed from sub-angular stones. Mostly grassed over now.

PRN Number: 31972

NAME: Possible Field Terrace

Grid Ref: SH76446709 (Centred)

Period: Late medieval/ Early Post-medieval

There is a small scarp about 7m wide running roughly east-west within the planning boundary and continuing to the east. It appears to turn slightly to the south at its western end, although it also peters out at this point and it is difficult to be certain. It may represent a terrace which has been enhanced and regularised by agriculture. Photographed and surveyed, but not affected by main works.

PRN Number: 31974

NAME: Stream Channel

Grid Ref: SH75726722

Period: 20th Century

Channel for stream passing under leat, roughly lined with boulders where the stream that has been channelled under the leat. Although this looks ancient it was presumably constructed when the leat was built, although some of the stream may have been canalised previously. Photographed but not affected by main works.

PRN Number: 32146

NAME: Possible Clearance Cairn

Grid Ref: SH75806723

Period: Unknown

A small, roughly circular mound measuring approximately 3m in diameter and with a height of 0.3m. Some stones visible although mostly grassed over. Located on a slight slope. May represent a clearance cairn. Photographed and surveyed, but not affected by main works.

PRN Number: 32148

NAME: Gallt y Rhiw Stone (Rock Cannon)

Grid Ref: SH76716650

Period: Post-medieval

A small rock cannon measuring 1m by 0.8m, located at the edge of a modern trackway. Mostly mossed over, containing numerous drilled holes. This stone has been previously identified by the Royal Commission on Ancient and Historical Monuments in Wales (NPRN 276535), but was not identified by them as a rock cannon. However, the number of holes and the location of the stone strongly support this interpretation. Photographed, surveyed, and fenced off so as to make sure it was avoided during the main works.

PRN Number: 32151

NAME: Possible Building Platform

Grid Ref: SH76676631 (Centred)

Period: Medieval?

A roughly rectangular set of loose stones measuring 3m x 1.8m x 0.8m high, located on a flat platform, terraced into the hillside. The platform itself measures approximately 10m by 8m. The stones and platform are aligned roughly NW-SE and may represent the remains of a building. Not shown on any of the old maps, which may suggest an early date, although it may be that the feature was too small and/or insignificant to be shown on the maps. The terrace measures approximately 20m by 11m, and slopes down by a maximum of 3m from NW-SE. Photographed and surveyed, but not affected by main works.

PRN Number: 32152

NAME: Ardda Enclosure II

Grid Ref: SH76596619 (Centred)

Period: Post-medieval

Small enclosure in ruinous state measuring approximately 15m by 12m. The walls survive with an average of three courses (1m) high, and a width of 1m. A large amount of stone rubble is located around the walls and within the centre of the enclosure. A possible stone step or entranceway is visible leading down into the enclosure from the NW at its NE corner. The area is heavily overgrown and it is likely that the remains of more walls exist underneath. The enclosure is attached to a field boundary wall which has been truncated by the modern trackway, but which would have originally joined up with PRN 36383 and PRN 36385 to the NNE and SSW respectively. To the SE the enclosure has been truncated by the leat. The enclosure is shown on the 1st Edition OS map. Photographed and surveyed, but not affected by main works.

PRN Number: 32154

NAME: Tai-isaf-Ardda Enclosure

Grid Ref: SH76466609 (Centred)

Period: Medieval?

An enclosure in a fairly ruinous state, covering an area measuring approximately 44m by 38m. The walls are mostly grassed over with only small sections, three to five courses (0.5m) high, still visible. A number of terraced platforms are located within the enclosure, with one containing a stone and cement trough. A large oval hollow, measuring 14m by 8m, and with a maximum depth of 1.8m, is located to the SW of the enclosure and may represent a pond. The NW wall, aligned NE-SW, continues to the NE where it joins up with the boundary walls associated with the Ardda cottage and enclosure PRN12957. A number of entranceways are visible within the enclosure. However, the ruinous state and overgrown nature of the area, along with the modern use of some of these entranceways, means it is impossible to be certain which ones are original, modern, or represent collapsed areas of wall. The whole enclosure is set within a NE-SW aligned terrace measuring between 1.2m and 2.6m deep. The enclosure is shown on the 1st Edition OS Map, except for the wall at the NE end which was not shown until the 3rd Edition in 1913, suggesting this was a later addition. Photographed and surveyed, but not affected by main works.

PRN Number: 32164 NAME: Incline

Grid Ref: SH77296611 (Centred)

Period: Modern

An incline built of sub-rounded boulders running SW-NE straight down the escarpment. It is about 1.5m wide at the top and survives to a height of up to 1.5m, although generally much lower. It has been surveyed for the digital OS map which shows it as being c.145m long. The incline is partially collapsed and covered in moss and appears to be of great antiquity but is not shown on the 1913 OS map or any earlier maps. It does appear on the 1974 1:10,000 map surveyed in 1967 and despite its appearance this is clearly a 20th century feature. It seems to have been built after the woollen mills went out of use so it seems not to be related to these and is most likely related to water board construction activity. The 1:10,000 map shows what appears to be a tramway running up the incline so it was presumably used to bring up materials either before or during the construction of the concrete road. A small section of the incline was truncated for the widening of the wall.

PRN Number: 36094 NAME: Possible Roundhouse

Grid Ref: SH76446723 (Centred)

Period: Roman?

A circular roundhouse and boundary wall which was excavated by GAT in 2012. A track giving access to the pipe cuts through this area and on the west side of the track is PRN 31969. The roundhouse is approximately 8m in diameter (externally), continuing underneath the trackway. The boundary wall is a later addition which was built on top of the roundhouse, most likely in the Late medieval/ Early Post-medieval period. The wall runs north-south before turning to the NE at its northern end and would have originally joined the boundary wall of PRN 31969 to the west, but the modern access track has truncated it here, although remains of the wall may exist underneath the trackway. To the NE the boundary wall incorporates a large natural stone outcrop before it is truncated by the modern water pipe. Dating for the roundhouse comes from a piece of 2nd to 4th century Roman pottery located underneath the floor of the roundhouse. This area was backfilled after the evaluation and the area fenced off so as to avoid any further disturbance during and after the works.

PRN Number: 36378 NAME: Field Boundary

Grid Ref: SH76246721

Period: Medieval/ Post-medieval

Short section of collapsed wall cut by access track to pipe, part of wall PRN 31966. A 1m section of this field boundary was truncated by the works showing it to be built on top of the natural geology and formed from sub-angular stones with the use of natural outcrops of stone where available.

PRN Number: 36379 NAME: Field Boundary

Grid Ref: SH76686645 (Centred)

Period: Medieval/ Post-medieval

Drystone wall in a very ruinous state, aligned roughly east-west and truncated in two places by the modern tracks running ENE-WSW. No evidence that the modern tracks incorporated an original entranceway. Survives up to two courses in height (0.75m), with a width of 1.2m. Mostly obscured by shrubbery or grassed over. Part of a system of field boundaries in the area and visible on the OS 1st edition map of 1889. Photographed and surveyed, but not affected by main works.

PRN Number: 36380 NAME: Possible Field Boundary

Grid Ref: SH76676640 (Centred)

Period: Medieval?

A faint scarp aligned approximately east-west and running downhill towards a spring. It measures on average 1m wide and 0.2m high, although it measures approximately 1m high at its western end. Truncated by a modern trackway. Not visible on any map and may represent a natural scarp rather than a field boundary. Targeted excavation of this feature where the road was to be widened showed no evidence of a structure, although this was at its shallowest point so there may be structural evidence elsewhere.

PRN Number: 36381 NAME: Possible Field Boundary

Grid Ref: SH76686636 (Centred)

Period: Medieval?

A slightly curving scarp, aligned approximately WNW-ESE and measuring between 1m and 2m wide. Very faint in places, between 0.1m and 0.7m (WNW end) high, with the occasional stone visible along its line. The scarp slopes down to the south at the western end, but to the north at the eastern end after the modern trackway truncates it. To the ESE it turns to the south where it runs into a natural, high scarp. Not visible on any map. May represent an old field boundary or a natural scarp. Targeted excavation of this feature where the road was to be widened showed no evidence of a structure, although this was at its shallowest point so there may be structural evidence elsewhere.

PRN Number: 36382 NAME: Field Boundary

Grid Ref: SH76656627 (Centred)

Period: Medieval/ Post-medieval

Grassed over drystone field boundaries, visible now as prominent stony scarps. Truncated by a modern trackway to the east and by the leat to the west. They are aligned east-west and north-south, with the N-S section truncated by a modern farmers track 3m wide. No evidence to suggest if this entranceway was original or not. A large concentration of stone rubble is located nearby which represents the collapsed and collected remains of these walls. Visible on the 1st Edition OS map, although the western most section is not shown, possibly suggesting that this was a later addition. Part of a series of field boundaries in the area, and the same as PRN 36383 located directly to the west, on the other side of the modern trackway. Targeted excavation of this feature where the road was to be widened showed it to be 1.8m wide and 0.43m high, with an earthen bank against northern side of the wall.

PRN Number: 36383 NAME: Field Boundary

Grid Ref: SH76616627 (Centred)

Period: Medieval/ Post-medieval

Grassed over drystone field boundaries, visible now as prominent stony scarps. Two sections of wall, three courses (1.1m) high are still visible, although most of the walls are not. Truncated by modern trackways to the north, south, and east., with no evidence to show if these tracks used existing entranceways or not. Approximately 0.5m high and up to 2m wide. Aligned roughly NNE-SSW, with a line of trees at the SW end. An E-W aligned section joins up with PRN 36382 to the east of the modern trackway. Would have originally joined up with the boundary walls associated with the enclosure to the SW (PRN 32152). Visible on the 1st Edition OS map and part of a series of field boundaries in the area. Photographed and surveyed, but not affected by main works.

PRN Number: 36384 NAME: Terraces

Grid Ref: SH76566619 (Centred)

Period: Medieval/ Post-medieval

A series of scarps forming flat terraces in the hillside associated with a cottage and its enclosures (PRN 12957). The scarps are approximately 3.5m high and are located running to the NE from the cottage to the nearby field boundaries (PRN 36383), as well as below the cottage to the SE. They are aligned approximately NE-SW and north-south. The modern trackway to the SE partly truncates the terraces and it is likely that the enclosure PRN 32152 located to the east would have originally been positioned on one of these terraces. The majority of these scarps are shown on the 1st edition OS map. Photographed and surveyed, but not affected by main works.

PRN Number: 36385 NAME: Field Boundary

Grid Ref: SH76496608 (Centred)

Period: Post-medieval

Drystone wall in good condition. Aligned roughly NE-SW and surviving up to five courses (1m) high, with a width of 1m. Located opposite enclosure PRN 32154 and most likely part of the field boundary system associated with this enclosure. Shown on the 1st Edition OS map continuing to the NE, and joining up with PRN 32152. Buttresses have been built on its SE side, most likely to prevent collapse into the leat which runs alongside it. Given its good condition, and the presence of the buttresses, it is most likely that this section of wall has been rebuilt at some point. A wire fence runs along its length, indicating a continued use of this boundary line. Photographed and surveyed, but not affected by main works.

PRN Number: 36386 NAME: Concrete Platform

Grid Ref: SH76096710 (Centred)

Period: 20th Century

A concrete pad measuring 2.2m by 3.7m, with a height of 1.2m. Two smaller parallel pads, containing iron rods, and measuring 1.75m by 0.35m are located directly to the east. Mostly overgrown. These are most likely part of a siding to the Llyn Eigiau railway. Photographed and surveyed, but not affected by main works.

PRN Number: 36387 NAME: Tramway Bed

Grid Ref: SH75756692 (Centred)

Period: Modern

Originally seen as a roughly rectangular feature consisting of low, grassed over ridges adjacent to field boundary PRN 31943. When exposed during the Strip and Map it was seen to be a probable tramway bed consisting of two parallel banks of stones and chippings. Eastern bank contains some mixed local stone (possible robbed from nearby field boundary walls) mixed with granite chippings. Western bank consists exclusively of chippings. Runs for approximately 12m. This was fully uncovered during the SMS excavation and completely removed by the main works.

PRN Number: 36556 NAME: Sheepfold

Grid Ref: SH75846699 (Centred)

Period: 19th Century

Full excavation revealed an approximately 13m long wall running NE-SW with a possible perpendicular wall crossing it at its SW end. Width was on average 1m, with the wall constructed from sub-angular stone measuring 20x15x10cms on average. Represents the remains of a sheepfold which has been truncated by the current pipeline directly to the NW. A Sheepfold is shown in this location on the 3rd Edition OS Map of 1913, but not on earlier maps. Completely removed by the main works.

PRN Number: 36557 NAME: Rock Cannon

Grid Ref: SH75916839 (Centred)

Period: Post-medieval

The rock cannon measures 1.8m by 1.55m as exposed and consists of 12 visible holes joined by channels (one visible hole is west of the fence). The rock cannon is drilled into a flat area of bedrock measuring c.2.8m by 1.8m to the east of the fence. The flat area continues to the west of the fence but only one hole was visible on this side as it has not been cleared. The holes are circular and vary slightly in size but seem to have been drilled with a 1 ¼ inch drill (32mm). All were partly infilled but the deepest measurable was 14mm deep. The holes are joined by a channel up to 20mm wide, which has a broad V-shaped profile and is up to 5mm deep. The hole on the west side of the fence was joined to the other holes but had no other channel running from it. Some of the holes had slight spalling around them showing that the cannon had been fired. Other cracks on the rock surface are natural fissures. One hole has been used to hold an iron fence post. This fence post and another to the south appear to be supports for some machinery that have been reused. This rock cannon is number 178 in appendix A of Jones, GR, 2002. The Rock Cannon of Gwynedd, published by the author, Blaenau Ffestiniog. This is listed as having 25 holes, but number 179 is listed as 12 holes and it is suspected that there has been an error and the number of holes has been confused between these sites. There certainly does not seem to be enough room to the west of the fence for another 13 holes. Fenced off and left in-situ within the layby created by the works.

PRN Number: 36558 NAME: Field Boundary

Grid Ref: SH7662666 (Centred)

Period: Medieval/ Post-medieval

Remains of a drystone wall in a very ruinous state. Only the bottom course remains which is formed from sub-rounded stones and natural boulders. Maximum of 0.6m high and 1.4m wide, aligned ENE-WSW. Part of the landscape of field systems in the area. WSW end truncated by an access road, section recorded and no further disturbance was done to this wall.

PRN Number: 36559 NAME: Field Boundary

Grid Ref: SH76466875 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly good condition. 3-4 courses high (0.5 – 1m) and 0.4-0.6m wide, formed with sub-rounded stones. A hedge grows along the top and the eastern side of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36560 NAME: Field Boundary

Grid Ref: SH76456876 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly good condition. 2-3 courses high (1m) and 0.6m wide, formed with sub-rounded stones and incorporating a number of large boulders (>1.5m diameter). A modern fence line and hedge run along the top of the wall. Stone revetted against bank to West/ North where the ground level is 1.5m higher than the road to the East/ South. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36561 NAME: Field Boundary

Grid Ref: SH76416859 (Centred)

Period: 20th Century

20th century wall in good condition. 1.3m high and 0.8m wide, formed with sub-rounded and sub-angular stones and topped with slabs and field stones as coping stones. Built within last four years. Forms the boundary between the road and a field, and most likely constructed from the remains of adjacent field boundary PRN 36562. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36562 NAME: Field Boundary

Grid Ref: SH76416859 (Centred)

Period: Post-medieval

Remains of a field boundary wall, surviving as a low grassy ridge, 0.15m high and 0.7m wide. Runs adjacent and parallel to modern field boundary PRN 36561 which was most likely constructed with the stones from this wall. Would have been part of a larger system of field boundaries in the area and constructed when the road was originally built. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36563 NAME: Field Boundary

Grid Ref: SH76136877 (Centred)

Period: Post-medieval

Post-medieval drystone wall/ revetment in fairly ruinous state and reinforced by a modern fence. 1m high and 0.7m wide, formed with sub-rounded cobbles and boulders. Forms the boundary between the road and a field, and part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36564 NAME: Field Boundary

Grid Ref: SH76146874 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly good condition. 1-1.75m high and 1.3m wide, formed with sub-rounded stones and a stone rubble core. Larger cobbles (>0.4m diameter) have been used to fill in the gap between the wall and the hillside to the East. A hedge runs along the top of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36565 NAME: Field Boundary

Grid Ref: SH75916847 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly good condition. 1.5m high and 0.5m wide, formed with sub-angular stones. A hedge runs along the top of the wall. Stone revetted against field, only slight earthen bank on the road side. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 36566 NAME: Field Boundary

Grid Ref: SH75926846 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly poor condition. Maximum 3-4 courses high (1m), formed with sub-angular cobbles and boulders. Runs perpendicular to PRN 36565 but does not join up with it – ends in a natural outcrop of boulder. Forms the boundary between two fields and part of a larger system of field boundaries in the area. Possibly earlier than the boundary walls built for the roadway. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38168 NAME: Field Boundary

Grid Ref: SH75936843 (Centred)

Period: Post-medieval

Post-medieval hedgerow, 1.2m high running along a natural ridge of bedrock. Forms the boundary between the road and a field, and most likely planted at the same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38169 NAME: Field Boundary

Grid Ref: SH75916839 (Centred)

Period: Post-medieval

Post-medieval bank, 1.1m high constructed when the road was built and forming the boundary between the road and the field. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38170 NAME: Field Boundary

Grid Ref: SH75936834 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly good condition, sections of which have been recently re-built. 1m high and 0.6m wide, formed with angular and sub-rounded stones, up to 0.5m long at the base. A blackthorn hedge runs along the top and side of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38171 NAME: Field Boundary

Grid Ref: SH75886827 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly ruinous state. 1.2m high and between 0.7 and 1.4m wide, formed with sub-rounded and sub-angular stones. Fairly collapsed with material built up against its Western side forming a grassy bank. A modern fence line and hedge run along the top of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38172 NAME: Field Boundary

Grid Ref: SH75846799 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly poor condition. 1m high and 1.3m wide, formed with sub-rounded stones and a rubble stone core. A modern fence line runs alongside the field side of the wall and a hedge runs along the top of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38173

NAME: Field Boundary

Grid Ref: SH75786793 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly good condition. 3-4 courses high (1m) and 0.5m wide, formed with sub-angular stones and incorporating a number of large stones at base and a number of natural boulders. A modern hedge runs along the top of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38174

NAME: Field Boundary

Grid Ref: SH75776790 (Centred)

Period: Post-medieval

Post-medieval drystone wall in fairly ruinous condition. Maximum 1.2m high and 0.7m wide, formed with sub-rounded and sub-angular stones, with larger (0.7m long) stones at base. Partially a revetment wall in places. Rebuilt in places. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38175

NAME: Field Boundary

Grid Ref: SH75746777 (Centred)

Period: Post-medieval

Post-medieval drystone free standing wall turning into a revetment wall to the south in fairly good condition. 1.2m high and 0.8m wide, formed with sub-rounded stones and incorporating a number of larger stones at the base. Signs that a hedge would have originally been incorporated into the wall but no longer exists. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38176

NAME: Field Boundary

Grid Ref: SH75766750 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly good condition. Between 0.5 and 1.55m high and 0.8m wide, formed with sub-rounded stones and incorporating a number of larger stones (>0.5m long). Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38177

NAME: Field Boundary

Grid Ref: SH75776747 (Centred)

Period: Post-medieval

Post-medieval drystone revetted wall in fairly good condition. Maximum 0.9m high (roadside) and 0.9m wide, formed with fairly small (<0.5m long) sub-rounded stones. Not finished on top, and partially collapsed in places. Remains of a hedge in places. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38178

NAME: Field Boundary

Grid Ref: SH75766740 (Centred)

Period: Post-medieval

Post-medieval revetment wall in fairly ruinous condition. 1.5m high and 2m wide, formed with sub-rounded stones set into the bank. Most of the stone has been removed so mostly only the bank remains. Some evidence that it originally incorporated a hedge, but little survives now. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 38179

NAME: Field Boundary

Grid Ref: SH75846725 (Centred)

Period: Post-medieval

Post-medieval drystone wall in a fairly ruinous condition. Maximum 1m high and 0.8m wide, formed with sub-rounded and sub-angular boulders up to 0.8m long, and with an earthen core. Mostly tumbled down and not finished on top. A modern fence line runs along the top of the wall. Forms the boundary between the road and a field, and most likely constructed at same time as the road. Part of a larger system of field boundaries in the area. Partially truncated as part of the road widening, photographed and recorded prior to and after truncation.

PRN Number: 55502

NAME: Possible Rock Cannon

Grid Ref: SH75876715 (Centred)

Period: Post-medieval

A possible rock cannon located during the road watching brief. It had only one drilled hole and no channels or spalling, suggesting that it may have been a rock cannon that was started and not finished, or that it served another, unknown purpose. This was removed by the works but not retained.

PRN Number: [58770](#)

NAME: Field Boundary

Grid Ref: SH77336628 (Centred)

Period: Medieval/ Post-medieval

Post-medieval drystone wall in fairly good condition. 4-5 courses high (1.3m) and 1.2m wide, formed with sub-angular stones and incorporating a number of smaller stones as its core. No evidence of original entranceway so possibly truncated when access road built. Part of a larger system of field boundaries in the area. Approximately 2m of the wall was truncated as part of the widening of the access road in this area.

APPENDIX V: DRAWING REGISTER

Drawing #	Description	Scale
1	Plan of Trench 01	1:20
2	North facing section of Wall [104]	1:10
3	Plan of Trench 02	1:20
4	Plan of Trench 03	1:20
5	Plan of Trench 04	1:20
6	Plan of Trench 05	1:20
7	NE facing section of field boundary [402]	1:20
8	Section of field boundary [503]	1:20
9	NEW facing section of sondage through trench	1:10
10	Plan of Trench 06 (Northern part)	1:20
11	Plan of Trench 06 (Southern part)	1:20
20	Section of field boundary/ scarp PRN 36380	1:10
21	Section of field boundary PRN 36381	1:10
22	Plan of field boundary PRN 36382	1:20
23	Section of field boundary PRN 36382	1:10
24	Section of field boundary PRN 31954	1:10
25	Section of field boundary PRN 31954	1:20
26	Section of field boundary PRN 31929 (NE end)	1:10
27	Section of field boundary PRN 36378	1:10
28	Section of field boundary PRN 31913	1:10
29	Section of tramline base PRN 36387	1:20
30	Section of field boundary PRN 31943	1:10
31	Section of field boundary PRN 31950	1:10

11 FIGURES AND PLATES

FIGURES:

FIGURE 01: SITE LOCATION

FIGURE 02: FEATURES ALONG NORTHERN ACCESS ROAD

FIGURE 03: FEATURES WITHIN WESTERN PART OF MAIN SITE

FIGURE 04: FEATURES WITHIN CENTRAL PART OF MAIN SITE

FIGURE 05: FEATURES WITHIN EASTERN PART OF MAIN SITE

FIGURE 06: FEATURES WITHIN ARDDA TOWNSHIP AREA

FIGURE 07: DIGITALLY RECTIFIED PLAN OF FIELD BOUNDARY PRN 31954

FIGURE 08: WNW FACING SECTION OF FIELD BOUNDARY PRN 36382

FIGURE 09: NW FACING SECTION OF FIELD BOUNDARY PRN 31929

FIGURE 10: PRN 31969: ROUNDHOUSE SITE

FIGURE 11: LOCATION OF ROCK CANNON PRN 36557

FIGURE 12: PLAN OF ROCK CANNON PRN 36557

FIGURE 13: SHEEPFOLD PRN 36556 LOCATION

PLATES:

Plate 01: Field Boundary Wall PRN 36382. View from the West

Plate 02: Field Boundary Wall PRN 31929. View from the North

Plate 03: Southeast Facing Section of Field Boundary Wall PRN 31929

Plate 04: SSE Facing Section of Field Boundary Wall PRN 31950

Plate 05: Field Boundary Wall PRN 31954. View from the Southeast

Plate 06: Tramway PRN 16322. View from the ENE

Plate 07: Incline PRN 32164. View from the Northeast

Plate 08: Tram Bed PRN 36387. View from the NNE

Plate 09: Section of Pipe PRN 31907. View from the Southeast

Plate 10: Rock Cannon PRN 36557. View from the South

Plate 11: General View of Sheepfold PRN 36556. View from the Southwest

Plate 12: Trackway PRN 31893. View from the Southeast

Plate 13: Former access track through possible roundhouse settlement PRN 31969, showing bund. View from the south-east

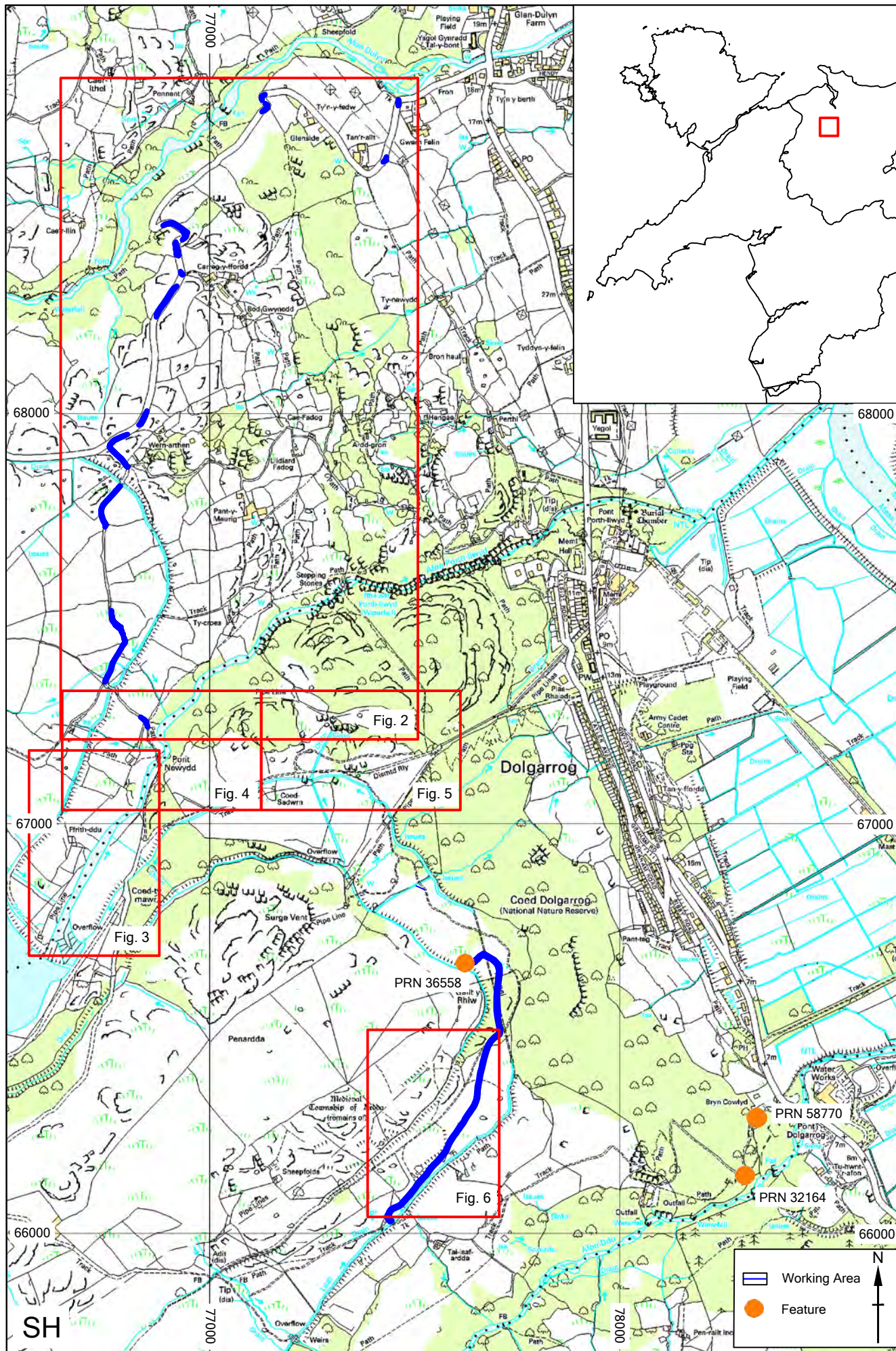
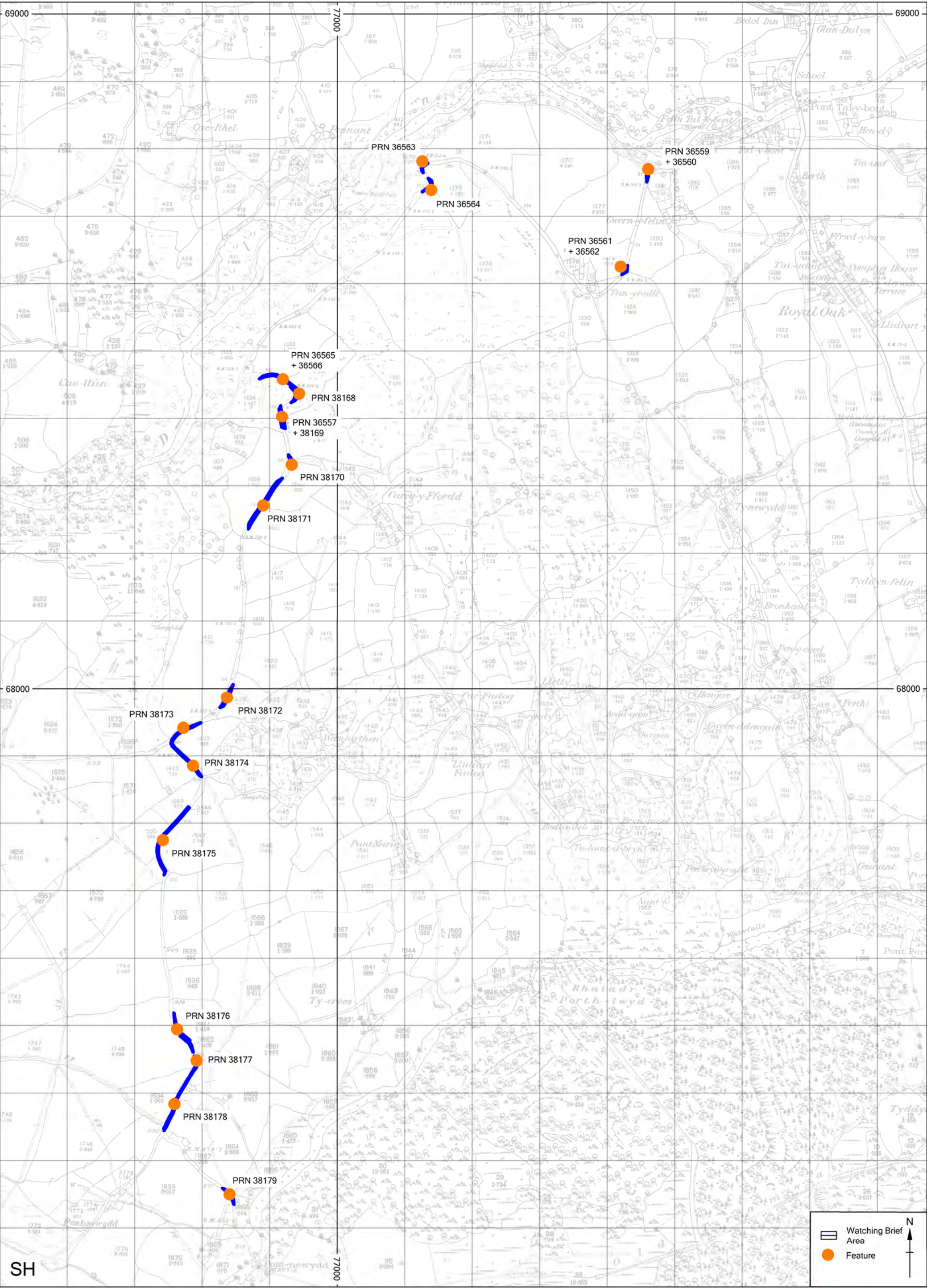
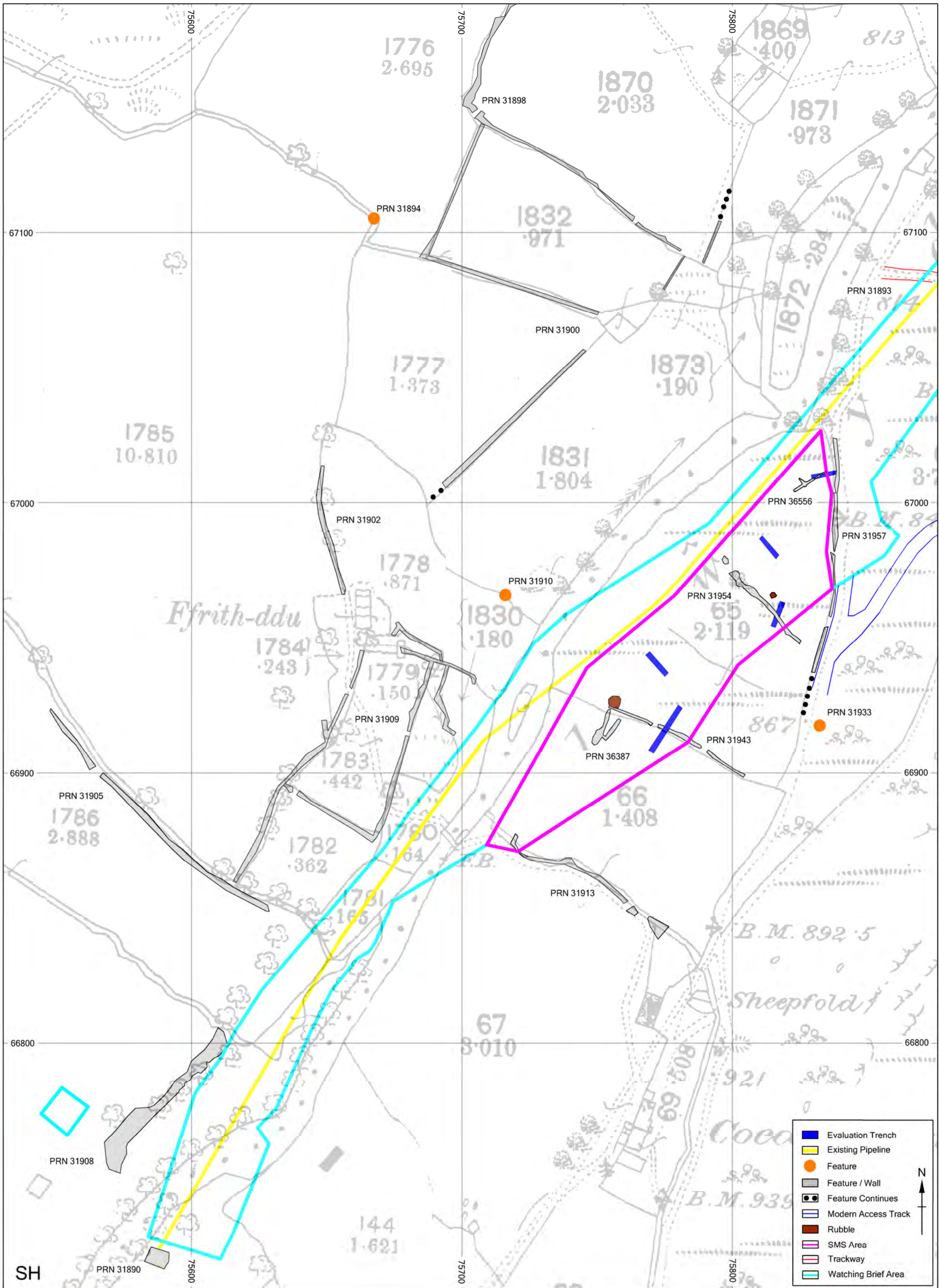


Fig. 1: Site Location





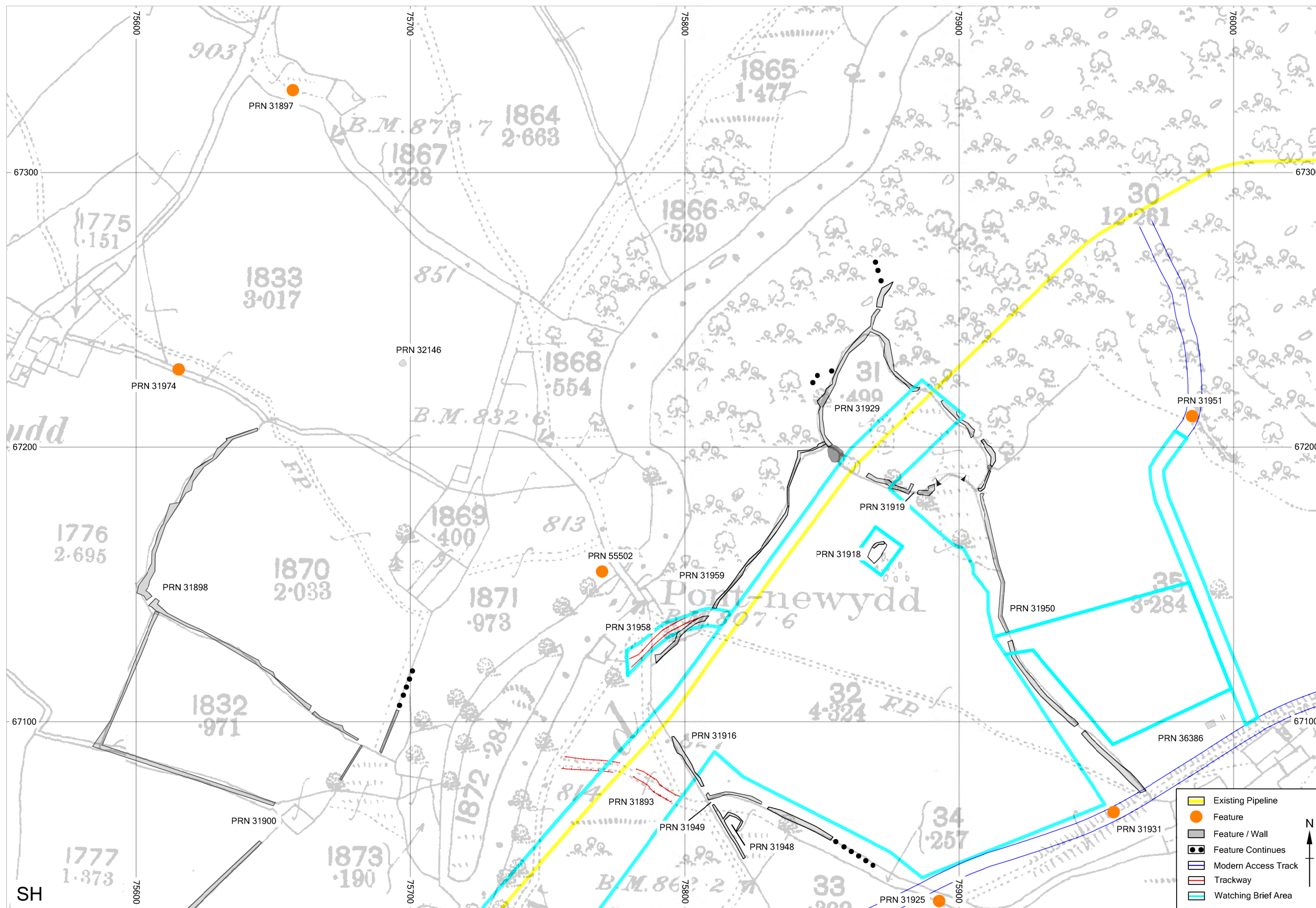
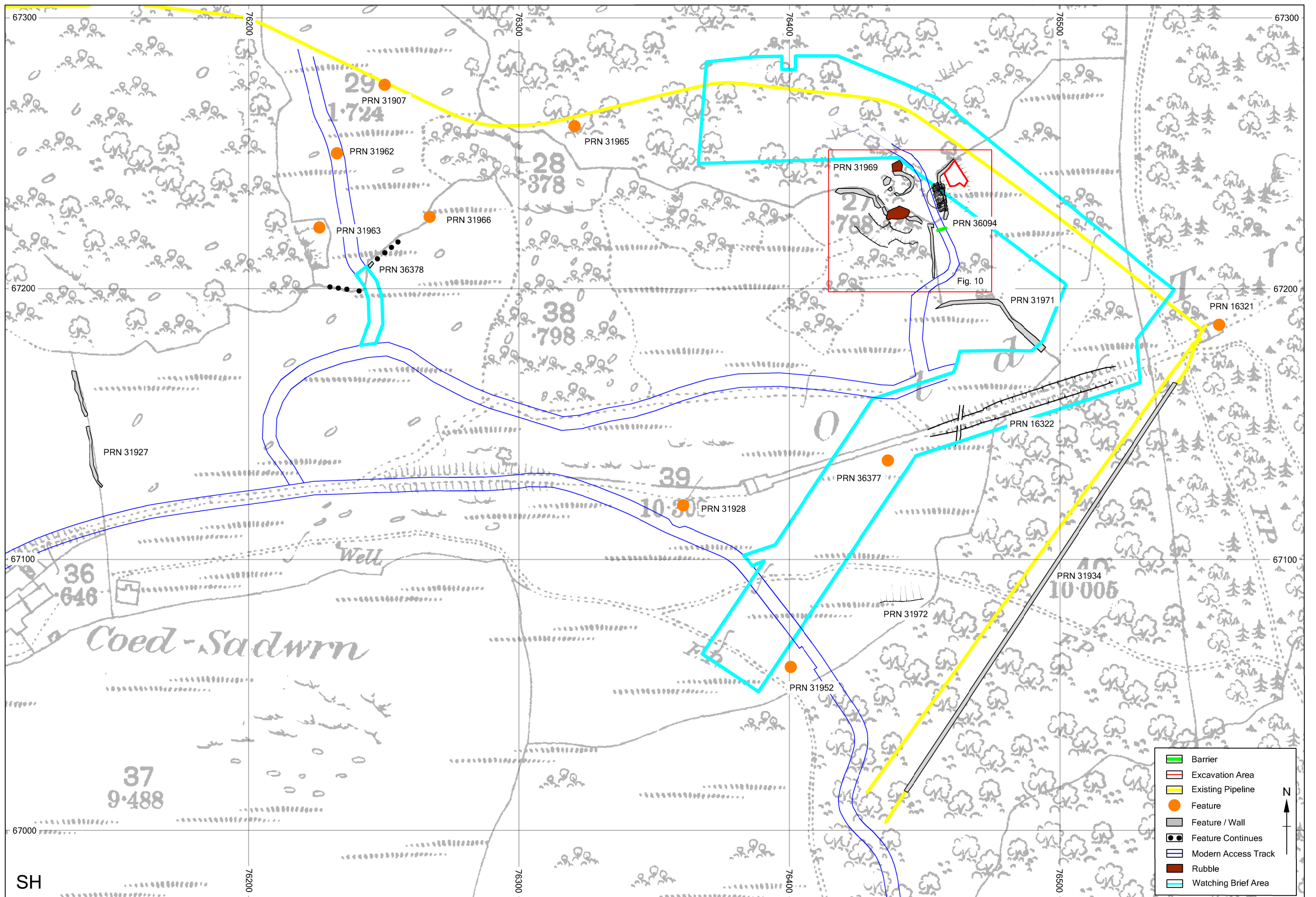


Fig. 4: Features Within Central Part of Main Site. Overlain on the OS 1st Edition 25 Inch Map (1889)



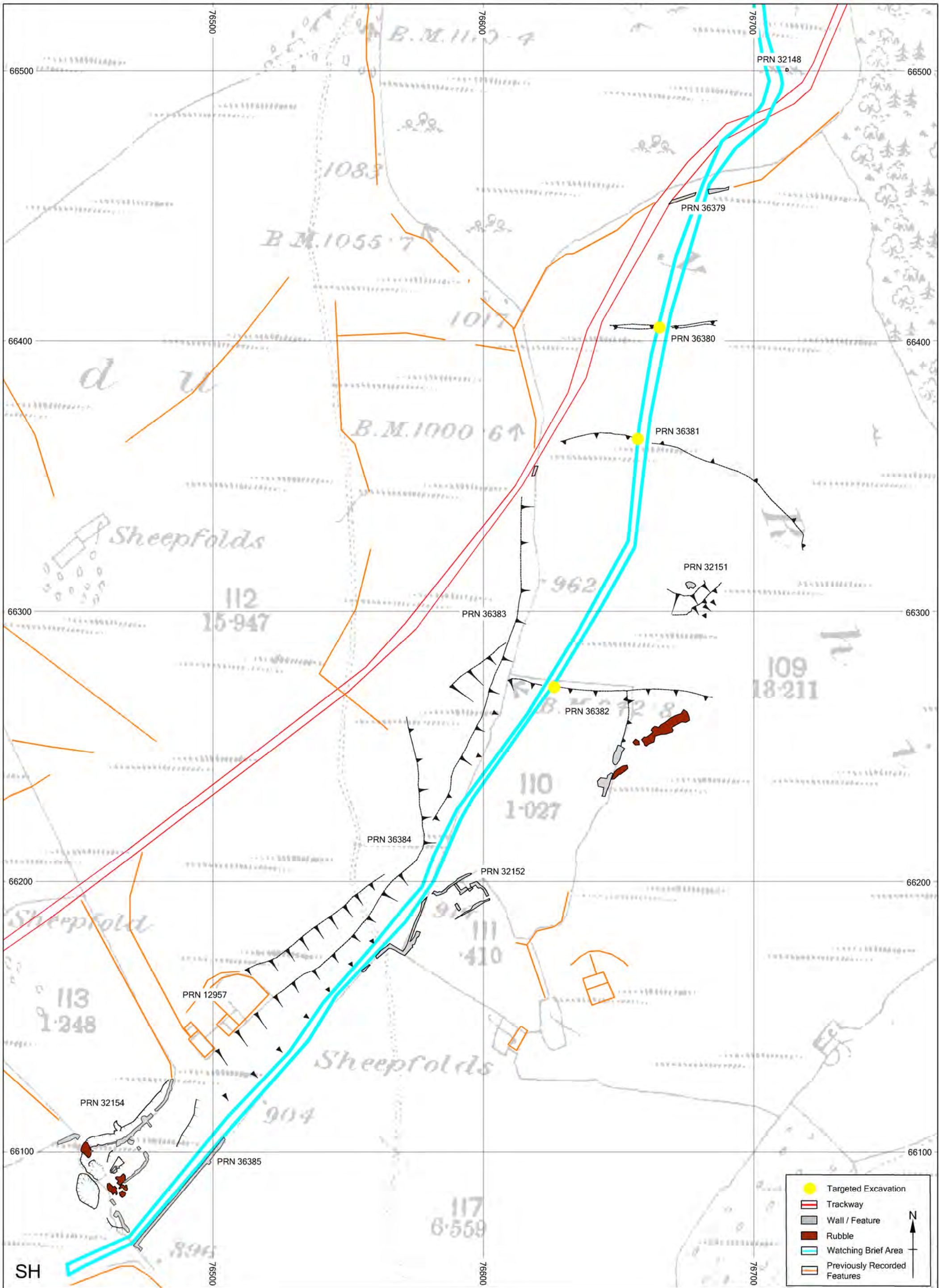
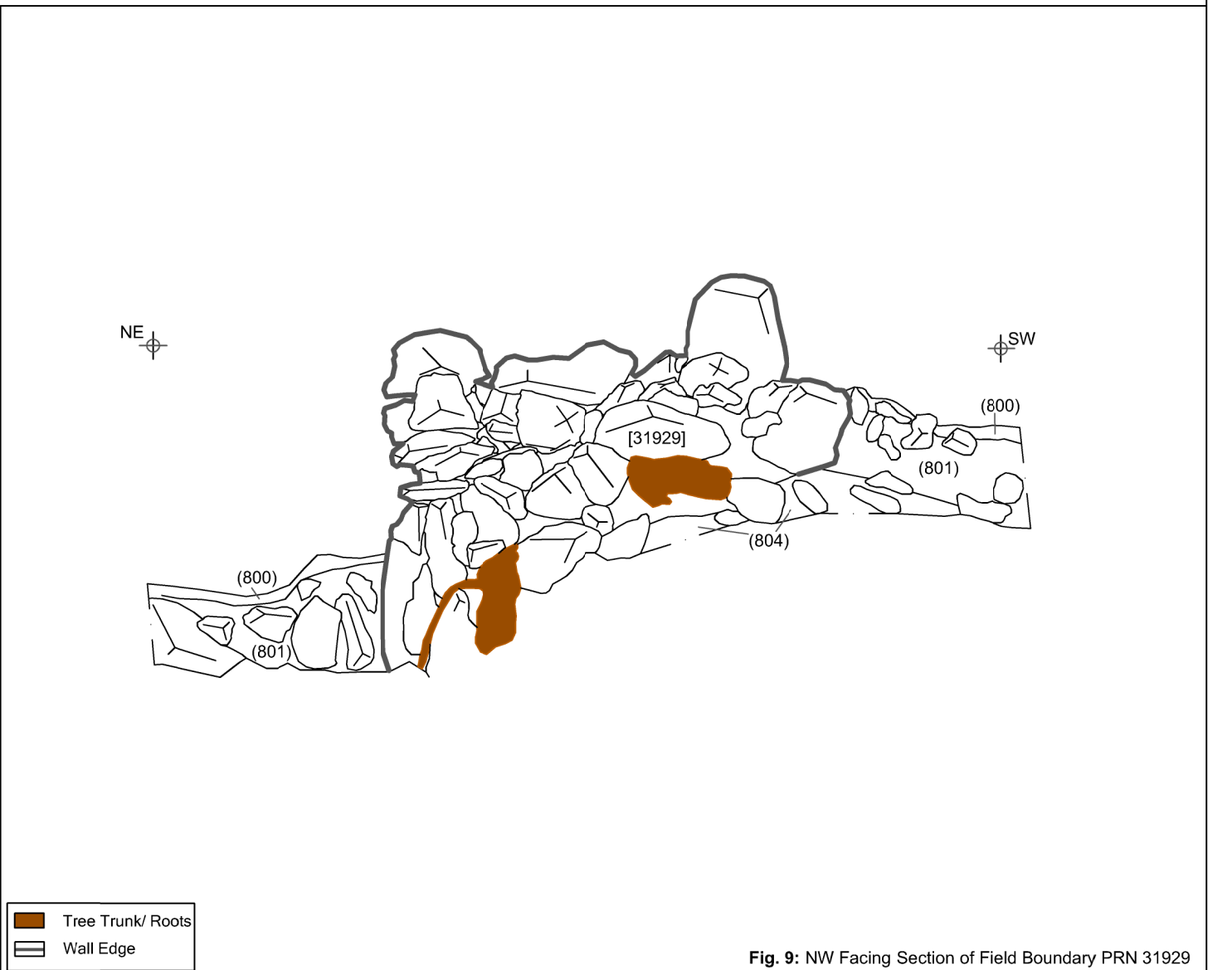
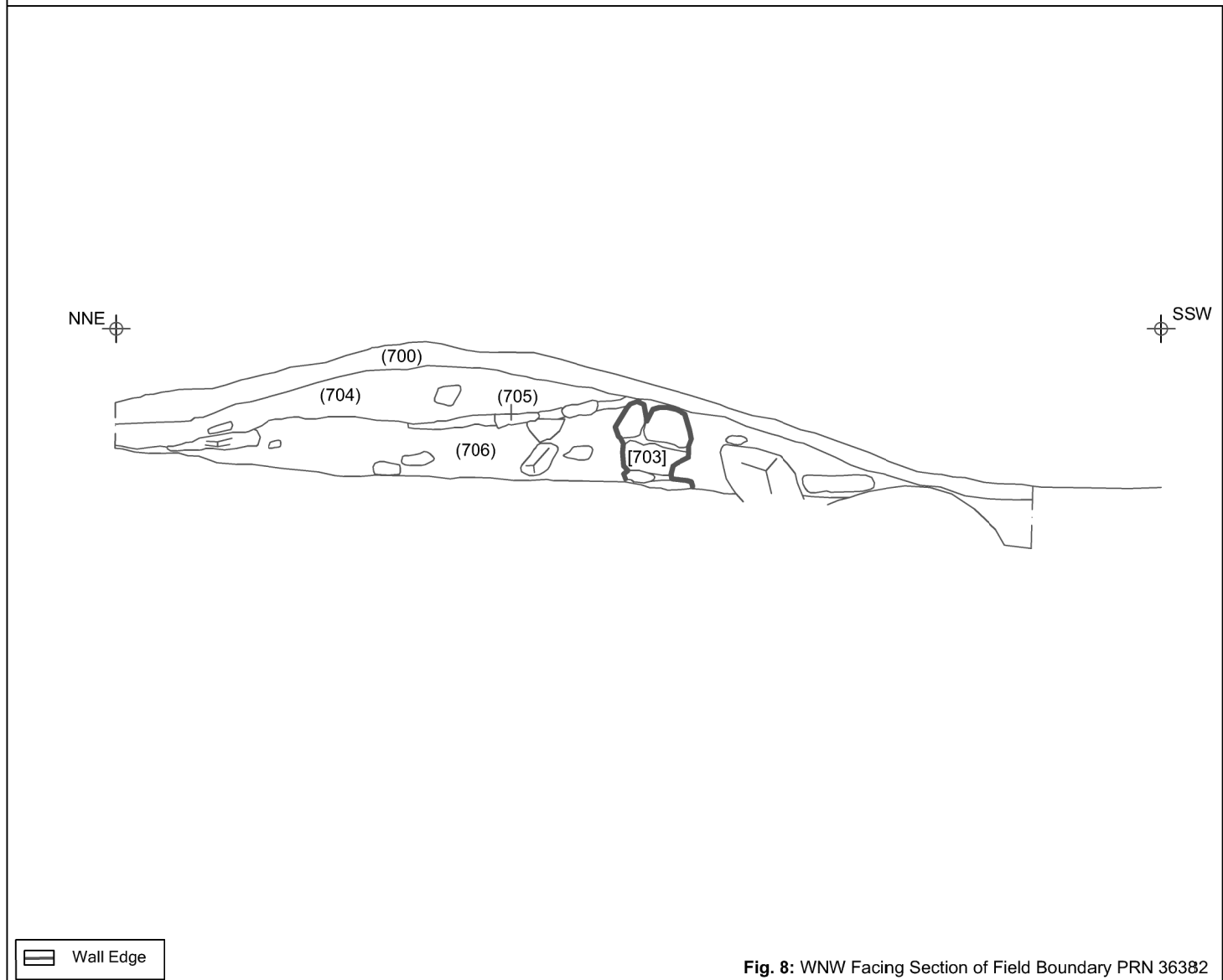
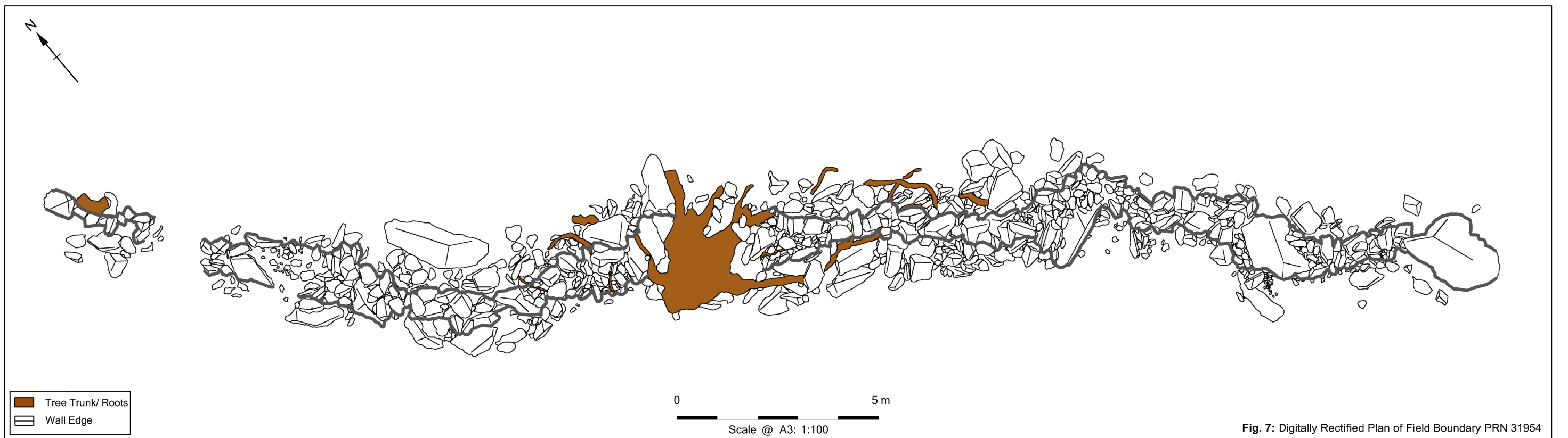


Fig. 6: Features Within Ardda Township Area. Overlain on the OS 1st Edition 25 Inch Map (1889)



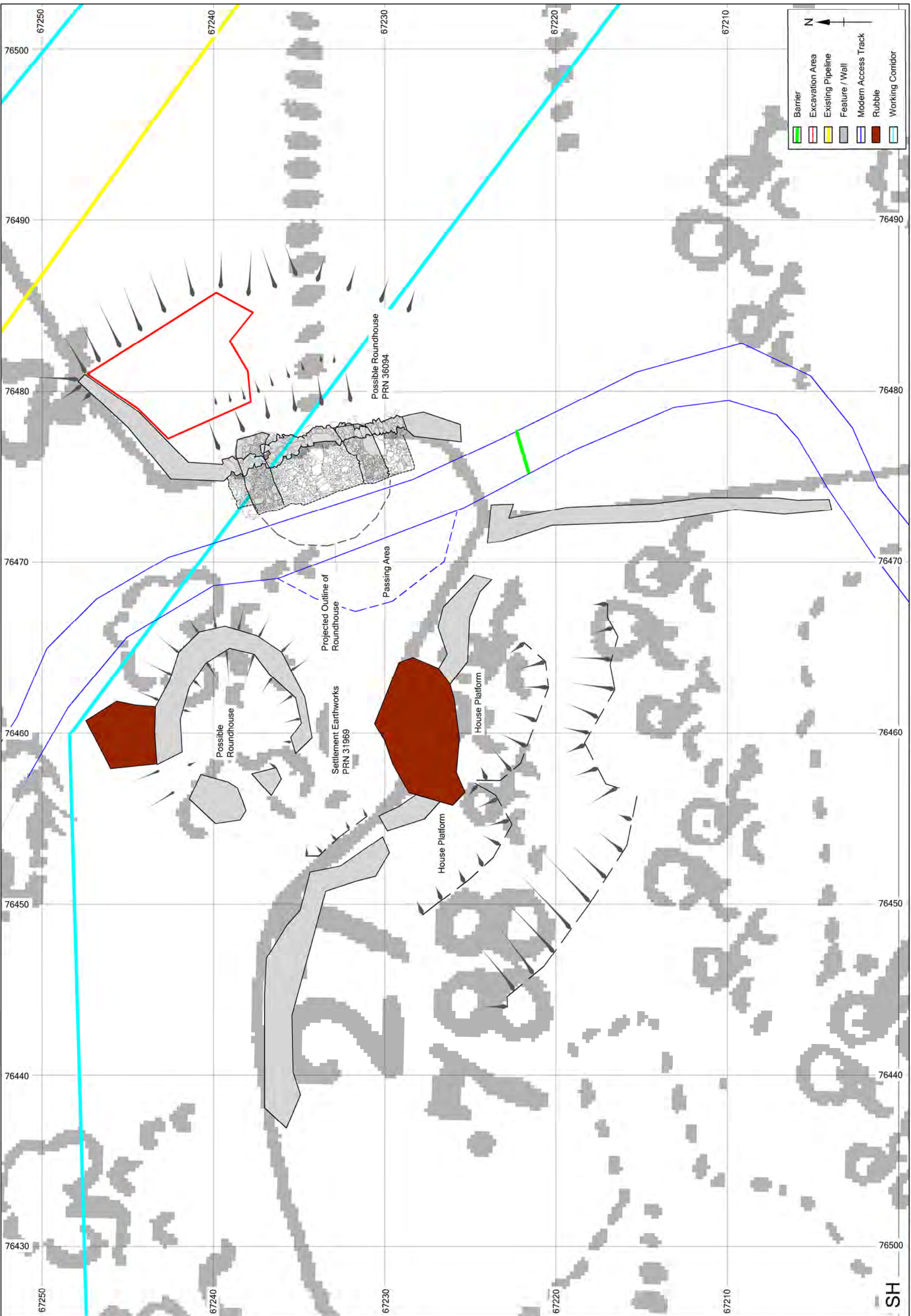
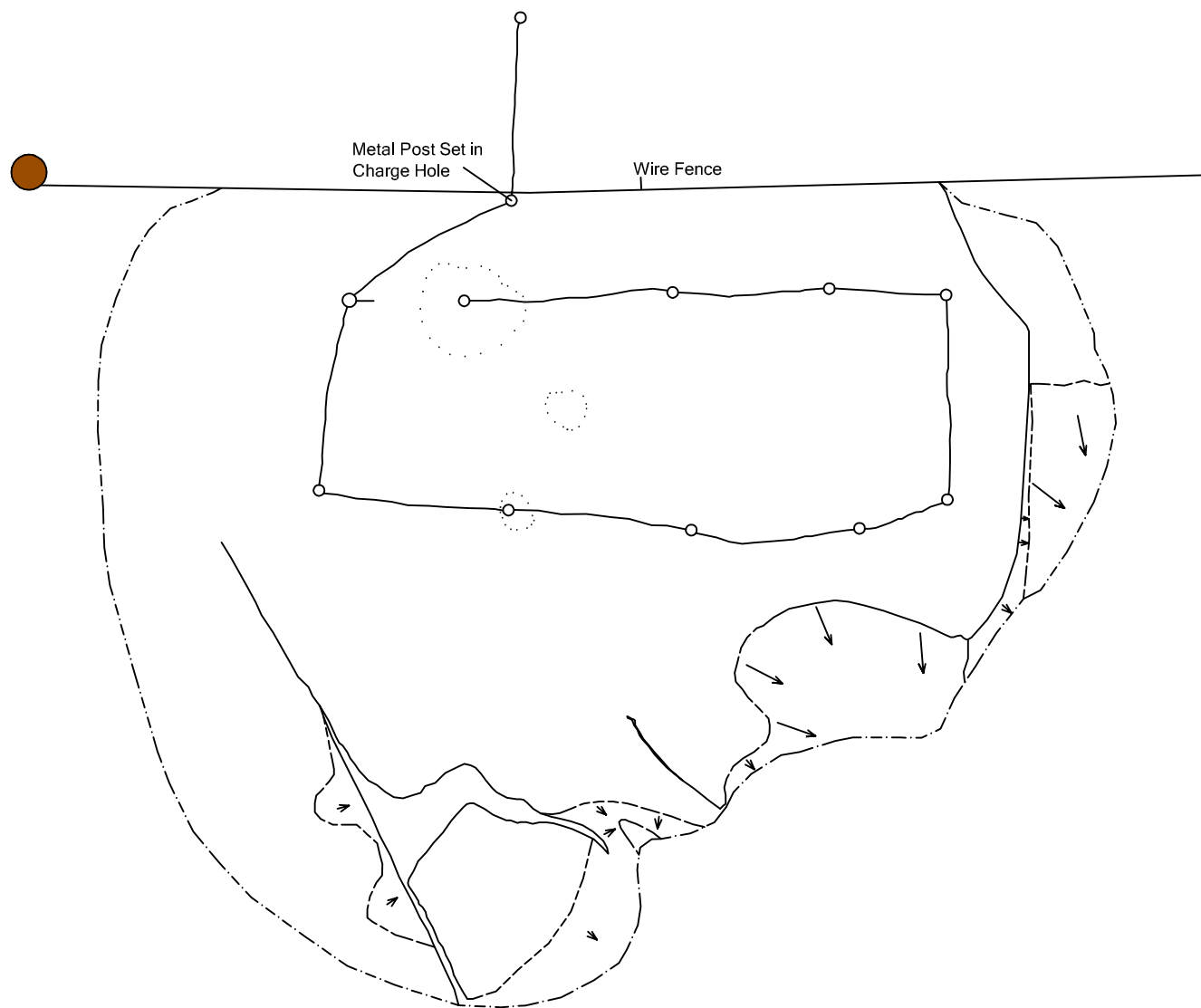
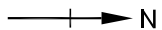


Fig. 10: PRN 31969: Roundhouse Site. Overlain on the OS 1st Edition 25 Inch Map (1889)



Fig. 11: Location of Rock Cannon PRN 36557



- Edge of Cleared Area
- Edge of Flat Surface
- Fence Post
- Charge Hole
- Spalling

0 1 m
Scale @ A4: 1:20

Fig. 12: Plan of Rock Cannon PRN 36557



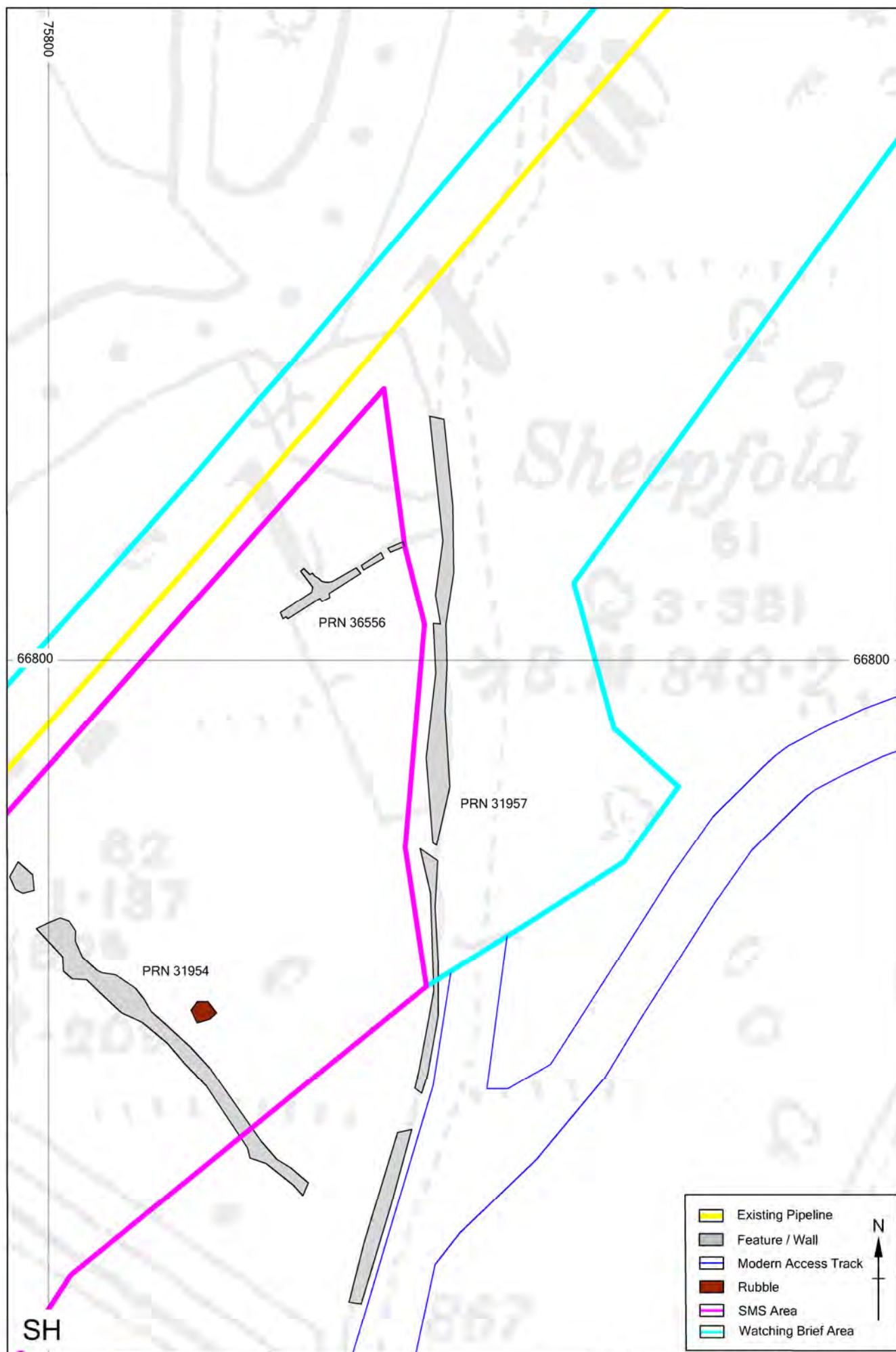


Fig. 13: Sheepfold PRN 36556 Location Overlain on the OS 3rd Edition 25 Inch Map (1920)



Plate 01: Field Boundary Wall PRN 36382. View from the West



Plate 03: Southeast Facing Section of Field Boundary Wall PRN 31929



Plate 02: Field Boundary Wall PRN 31929. View from the North



Plate 04: SSE Facing Section of Boundary Wall PRN 31950



Plate 05: Field Boundary Wall PRN 31954. View from the Southeast



Plate 06: Tramway PRN 16322. View from the ENE



Plate 07: Incline PRN 32164. View from the Northeast



Plate 08: Tram Bed PRN 36387. View from the NNE



Plate 10: Rock Cannon PRN 36557. View from the South



Plate 09: Section of Pipe PRN 31907. View from the Southeast



Plate 11: General View of Sheepfold PRN 36556. View from the Southwest



Plate 12: Trackway PRN 31893. View from the Southeast



Plate 13: Former access track through possible roundhouse settlement PRN 31969, showing bund. View from the south-east



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