Afon Wen Waste Water Treatment Works
Chwilog

Archaeological Assessment

GAT Project No. 1854
Report No. 551
October 2004

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Prepared for Symonds Group Ltd

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By

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AFON WEN WASTE WATER TREATMENT WORKS

ARCHAEOLOGICAL ASSESSMENT (G1854)

Summary
An archaeological assessment has been undertaken of an area of land at Afon Wen, Chwilog, in advance of the construction of a wastewater treatment works. Documentary research and field survey traces of 18th and 19th century field boundaries. The assessment raised the possibility of a medieval settlement and a medieval mill in the area but the location of these is not known.

1 INTRODUCTION

Symonds Group Ltd asked Gwynedd Archaeological Trust to undertake an archaeological assessment of a plot of land (centred on SH 4390 3735) to the south of Afon Wen, Chwilog, in advance of construction of a waste water treatment works (see fig 1).

2 SPECIFICATION AND PROJECT DESIGN

An initial report was requested from Gwynedd Archaeological Trust, assessing the likely archaeological impact of the plans and suggesting mitigatory measures.

The basic requirement was for a desk-top survey of the area of interest in order to assess the likely impact of the scheme on the archaeological and heritage features within the area. The importance of known archaeological remains was to be assessed and areas of archaeological potential to be identified. Measures to mitigate any impact on the archaeological resource were to be suggested.

Gwynedd Archaeological Trust's proposals for fulfilling these requirements were as follows:

a) to identify and record the cultural heritage of the area to be affected

b) to evaluate the importance of what was identified (both as a cultural landscape and as the individual items that make up that landscape)

c) to recommend ways in which damage to the cultural heritage can be avoided or minimised

3 METHODS AND TECHNIQUES

3.1 Desk-top Study

Consultation of maps, computer and written records and reference works relating to the study area and its environs, which make up the Sites and Monuments Record, was undertaken at Gwynedd Archaeological Trust. This included consulting the Caernarvonshire Inventory of the Royal Commission on the Ancient and Historical Monuments of Wales and other relevant secondary sources. Information about listed buildings was obtained from Cadw: Welsh Historic Monuments. Records (including early Ordnance Survey maps, tithe maps and schedules, estate maps and papers and reference works - see bibliography) were consulted in the Gwynedd County Record Office in Caernarfon. Aerial photographs had been studied for two previous assessments in this area (GAT reports 60 and 224), but no significant features were noted, so these were not consulted for the present assessment.

3.2 Field visit

The field visit was carried out on 27th October 2004. The aim of the field survey was to identify any earthworks or other features on the ground, and to assess the impact of the development on the historic landscape. The present condition of all sites identified was recorded. The field was under well grazed pasture and therefore the conditions were highly favourable to identifying earthworks.

3.3 Report

All available information was collated, and sites were allocated to a category of importance as defined below. Recommendations for further evaluation are given in the relevant sections of this report.

The categories listed below follow the guidelines given in *Planning and the Historic Environment: Archaeology* (Welsh Office circular 60/96). The allocation of a site to a category defines the importance of the archaeological resource of that site.

The following categories were used to define the importance of the archaeological resource.

Category A - Sites of National Importance.

This category includes Scheduled Ancient Monuments (SAMs), Grade I and II* (and some Grade II) Listed Buildings and sites of similar quality, i.e. those which would meet the requirements for scheduling or listing at the top two grades. There is a presumption in favour of preservation of all such sites and their settings should they come under threat. Such sites might include those that survive principally as buried remains.

Category B - Sites of Regional Importance

This includes sites that would fulfil the criteria for listing at grade II (if a building), but not for scheduling (if a relict archaeological site). Nevertheless, such sites are of scheduling or listing (grades I or II*), but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of District or Local Importance

These sites are not of sufficient importance to justify a recommendation for preservation if threatened, but nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and Damaged Sites

These are sites, which are of minor importance, or are so badly damaged that too little remains to justify their inclusion in a higher category. For these sites, rapid recording either in advance or during destruction, should be sufficient.

Category E - Sites needing further investigation

Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A-D, are temporarily placed in this category, with specific recommendations for further evaluation. By the end of the assessment there should be no sites remaining in this category.

Definition of field evaluation techniques

Field evaluation is necessary to allow the reclassification of the category E sites, and to allow the evaluation are areas of land where there are no visible features, but for which there is potential for sites to exist. Two principal techniques can be used for carrying out the evaluation: geophysical survey and trial trenching.

Field visit

This part of the assessment involves visiting the study area and its environs, assess any sites identified during the desk-based study, and to assess any other sites which may exist as above ground features. All sites noted are photographed and their present condition recorded.

Geophysical survey

This technique involves the use of a magnetometer, which detects variation in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetised iron oxides, which tend to be concentrated in the topsoil. Features cut into the subsoil and back-filled or silted with topsoil contain greater

amounts of iron and can therefore be detected with the gradiometer. Strong readings can be produced by the presence of iron objects, and also hearths or kilns.

Other forms of geophysical survey are available, of which resistivity survey is the other most commonly used. However, for rapid coverage of large areas, the magnetometer is usually considered the most cost-effective method. It is also possible to scan a large area very rapidly by walking with the magnetometer, and marking the location of any high or low readings, but not actually logging the readings for processing.

Trial trenching

Buried archaeological deposits cannot always be detected from the surface, even with geophysics, and trial trenching allows a representative sample of the development area to be investigated. Trenches of an appropriate size can also be excavated to evaluate category E sites. These trenches typically measure between 20m and 30m long by 2m wide. The turf and topsoil is removed by mechanical excavator, and the resulting surface cleaned by hand and examined for features. Anything noted is further examined, so that the nature of any remains can be understood, and mitigation measures can be recommended.

Definition of Mitigatory Recommendations

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

None:

No impact so no requirement for mitigatory measures.

Detailed recording:

Requiring a photographic record, surveying and the production of a measure drawing prior to commencement of works.

Archaeological excavation may also be required depending on the particular feature and the extent and effect of the impact.

Basic recording:

Requiring a photographic record and full description prior to commencement of works.

Watching brief:

Requiring observation of particular identified features or areas during works in their vicinity. This may be supplemented by detailed or basic recording of exposed layers or structures.

Avoidance:

Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

Reinstatement:

The feature should be re-instated with archaeological advice and supervision.

4 ARCHAEOLOGICAL BACKGROUND

4.1 Topographic description

(Figure 1)

The study area site lies at an altitude of c. 10m OD on the southern coast of the Llŷn Peninsula. It is situated on the western bank of the river Afon Wen not far from its mouth. The study area is a long triangular field defined on the west by the embankment of a disused railway and on the east by a lane running next to the river. The Afon Wen forms the boundary between the parishes of Llanarmon and Llanystumdwy, with Aber-erch reaching the river at the southern end of the study area. A waste water pipe will run into the study area from the former DCWW depot. This is the subject of a separate assessment report.

The geology of the area is mostly Ordovician sedimentary rocks with igneous intrusions, such as that forming the Penychain peninsula just south-west of the study area (Bassett and Davies 1977, 19). Grey slates and mudstones of the Tremadoc series underlie the study area, with most of the intrusive rocks in the area being rhyolites (Smith and George 1961, 28; Roberts 1979). This land to the east of the Penychain headland on the banks of the river is some of the better quality land in the area (Gresham 1973, 343).

4.2 Archaeological and historical background

(Figure 1)

There is evidence of prehistoric activity in the area as four standing stones and three megalithic burial chambers are known from the parishes of Aber-erch, Llanarmon and Llanystumdwy (Bassett and Davies 1977, 35-36; RCAHMW 1960, 1964). No finds of this period are known from the immediate proximity of the study area, although a Bronze Age stone hammer and a Neolithic polished stone axe were found near Chwilog (PRN 2274, SH433 383; PRN 5761, SH430 380). Finds and sites dating from the Iron Age and Roman periods have not yet been discovered in the area but numerous hut groups from these periods are found elsewhere on the Llŷn Peninsula and it is likely that this area was also settled. The potential was demonstrated by the recent discovery near Pont Llwyn Gwyn of two circular banks, apparently hut circles of Romano-British or possibly earlier date (PRN 5732, SH42793688) (GAT Report 60).

The area was quite intensively settled in the medieval period, but although there is some documentary evidence of settlements little survives on the ground. The medieval townships of Pennarth (PRN 7345, SH429 376) and Chwilog (PRN 7349, SH435 383) were located to the north-west and north but the study area itself was probably located within the bond township of Penychen. This township became crown land soon after the Edwardian Conquest and Edward I spent a night there in 1284 on his way from Pwllheli to Caernarfon. He presumably stayed at the hall of the recently deceased lord of Penychen, Tudur ab Einion. To accommodate the king and his entourage the hall must have been substantial. Its site has not been conclusively located, but into the 19th century the name Llys Engan was associated with a ruinous cottage close to the sea between the Penychain headland and the mouth of the Afon Wen. Documentary records demonstrate that the demesne lands were situated on the coast on the best soil in the south-east corner of the township, so it is likely that the hall was also in this area. Unfortunately much of this land has been eroded into the sea and the site of the hall is almost certainly lost (Gresham 1973, 345). A mound called Tomen Pendorlan is located near the mouth of the Afon Wen (PRN 2270, SH44133706). This appears to be of natural origin, but may repay further investigation.

An archaeological assessment in advance of improvements to the A497 (GAT report 60) identified an area of earthworks to the south-east of Tyddyn Berth (PRN 5733, SH43753732), just the other side of the railway line from the study area. This is a large area of substantial earthworks, which appear too massive and too confused in plan to be connected with drainage. It is suggested that they may represent settlement remains, perhaps the main settlement of the township of Penychain. In 1590 there were 91 people living in 16 dwellings in Penychen, so this settlement could be relatively substantial (Gresham 1973, 348). A mill is mentioned at Penychen in the 1362 Extents, and Gresham sites this on the west bank of the Afon Wen, although it had decayed and disappeared by the 16th century and its location is now unknown (Gresham 1973, 345-6).

By 1784 the township belonged to Sir Thomas Wynn, the first Baron Newborough of Glynllifon, and the numerous small holdings were rationalised into larger farms; a single farm called Penychain included much of the original demesne land (Gresham 1973, 350), but not the study area (Glynllifon 8356).

There have been relatively few changes to the area since the 18th century and some of the early buildings survive along with the general layout of the fields and roads. The present A497 is approximately along the line of a route which would have been important since at least the 12th century and was turnpiked in 1803 by the Portin-llaen Turnpike Trust (Bassett and Davies 1977, 78, 164-166). John Evans' 1795 map of North Wales (figure 2)

shows the main road here along its present route, but does not show the lane up to Tyddyn Mawr, probably because it was too minor. The lane is shown on the tithe map in 1839 (figure 3). Minor improvements have taken place on the roads; between 1839 and 1889 the A497 seems to have been straightened, possibly when Afon Wen Terrace was built in the mid 19th century. In more recent times the southern end of the lane to Tyddyn Mawr has been altered so that it meets the main road at a right angle.

Plas y Nant, up river from the study area, (PRN 6340, SH43823792) is a grade II listed building dating from the 17th Century. Melin Ffridd-lwyd, marked on the first edition 25" OS map as a corn mill (figure 4), is shown on the 1839 tithe map, and is named on Evans' 1795 map (figure 2), giving it at least an 18th century origin. The mill was disused by 1917 (figure 6) and later incorporated in the former laundry buildings. Also on the tithe maps are Tyddyn Berth, Tyddyn Mawr, and the house next to the bridge, Pen-y-bont, then called Penbont Mawr. John Evans' map shows buildings that must be Tyddyn Berth and Tyddyn Mawr and marks the bridge.

The biggest change to the area was the arrival of the railways. A railway embankment runs down the western side of the study area. This is part of the Caernarvonshire Railway, which ran south from Caernarfon to join the Cambrian Railway along the south coast of the Llŷn at the mouth of the Afon Wen, where a station was built (NPRN 41469). This section of the Caernarvonshire Railway, built by 1860s the Cambrian Railways Company, was opened in September 1867 and the Cambrian Line was opened shortly after (Baughan 1991, 99). London and North Western Railways took over the Caernarvonshire line in 1871. After World War II the lines were busy as the Holiday Camp opened with at station at Penychain on the Cambrian Line. There was heavy traffic in summer on the Caernarvon Line as tourist excursions were run to Llanberis but passenger services ended in 1964 and the track was lifted in 1968 (Baughan 1991, 104-105).

4.3 Results of the desk-top study

The Sites and Monuments Record maintained by the Gwynedd Archaeological Trust confirmed that there are no identified sites within the study area. The schedule for the Llanarmon tithe award names the fields covering the study area as Rhos r'afon (parcel 980), Gorswen (parcel 981), Werglodd tan lôn (parcel 983), and Cae tan lôn (parcel 985), meaning 'waste land by the river', 'meadow below the road' and 'field below the road', respectively. Parcels 980 and 981 belonged to Tyddyn Berth and the rest to Tyddyn Mawr, and all were owned by Lord Newborough. The farmhouses associated with these holdings have been in their present places since at least the late 18th century.

The field pattern changes significantly between the tithe map of 1839 and the first edition OS map in 1889 because of the construction of the railway, but has changed very little since. Afon Wen Terrace was built by 1889, but was not present when the tithe map was drawn up.

4.4 Results of the field survey

The vegetation over most of the study area was closely grazed grass with occasional patches of longer vegetation. This provided ideal conditions for identifying earthworks. The railway embankment was heavily overgrown and access was not possible, but the stone remains of the railway bridge over the A497 can be clearly seen at the north-west corner of the site (plate 1). The field was gently and smoothly undulating as if it had been ploughed in the past, and notes from the assessment for the road improvement indicate that it was ploughed in 1993 when the field work was carried out. See figure 7 for the location of the features discussed below.

A broad scarp was seen curving down the eastern side of the study area until it turned sharply west at its southern end forming a well defined scarp c.1m high (feature 3, plate 2). This seems to represent the boundary between fields 983 and 980 on the tithe map, with the southern scarp being the south-eastern boundary of field 981 (figure 3). If the tithe map can been taken as accurate there was a sharp bend in the river at this point, which was straightened out when the railway embankment was built. A ditch marked the original route of the river and this is shown on the OS maps and is still visible today (feature 6). To the south of this was a small area of uneven ground (feature 4), which had probably never been ploughed. It was initially assumed that the unevenness may be outlying earthworks related to those on the other side of the railway (PRN 5733). However, if the course of the river had been straightened the unevenness almost certainly related to that process.

Two very slight linear hollows (feature 5) were noted that appeared to correspond to field boundaries shown on the 1889 map (figure 4). The current field boundary on the eastern side of the site is a mature hedge, which is replaced about half way down by a drystone wall. The southern-most stretch, south of the transverse ditch, is composed of traditional clawdd, earth and stone walling, but if the course of the river has been altered as

discussed above this can only be mid 19th century in date. The boundary by the railway is a modern fence, and that along the north side of the field is a hedge.

4.5 Site gazetteer

Feature 1 Roads
Category D
Impact: Minimal
The present road layout is of some antiquity but has been altered and improved and it is unlikely that traces of the original surfaces remain.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *None*

Feature 2 Field boundaries
Category D
Impact: Minimal
The outfall pipe is planned to cut through the wall towards the southern end of the study area, but this boundary is probably only mid 19th century in date. Most other boundaries around the study area are of similar date or more recent.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *None*

Feature 3 N-S scarp
Category C
Impact: Significant
A fairly well defined, rather sinuous scarp running roughly north-south down the eastern side of the study area (plate 2). This probably represents a field boundary and build-up of soil from ploughing dating from at least the 18th century and possibly earlier.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *Watching brief during development works with possibility for hand digging and sampling if this proves to be worthwhile.*

Feature 4 Possible earthworks
Category E
Impact: None
Uneven ground in very southern end of study area. While this might be earthworks related to settlement it is probably the result of earth moving related to the railway. If alterations in plan plans mean that this area is to be impacted further assessment would be necessary, but the current plan presents no threat to this area.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *None*

Feature 5 Remains of field boundaries
Category D
Impact: Significant
Two slight linear hollows run across the study area. These seem to correspond to boundaries on the 1889 map, which have gone by 1900. They post-date the railway, and so are of minimal importance.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *Watching brief*

Feature 6 Ditch
Category D
Impact: None
Ditch shown on early OS maps, possibly remains of original river course before construction of railway.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *None.*

Feature 7 Railway embankment
Category C
Impact: None
Embankment for Caernarvonshire Railway Line, opened 1867, track removed 1968 (plate 1).

Recommendations for further assessment: None
Recommendations for mitigatory measures: *None.*

Feature 8 Penychen mill
Category E
Impact: Unknown
Documentary records indicate the presence of a medieval mill on the west bank of the Afon Wen. The location of this is unknown.
Recommendations for further assessment: None
Recommendations for mitigatory measures: *Watching brief of major groundworks and of the line of the outfall pipe.*

4.6 General recommendations

Due to the possibility of medieval settlement and perhaps the location of a medieval mill in this area groundworks for the water treatment works, it is recommended that the access road and the outfall pipe should be subjected to an archaeological watching brief. This would include the watching briefs recommended for features 3 and 5.

5 BIBLIOGRAPHY

5.1 Archival sources

5.1.1 From Caernarfon Record Office
Tithe maps of Llanarmon (1839), Aber-erch (1840), and Llanystumdwy (1839)
Tithe schedules of Llanarmon (1841), Aber-erch (1844), and Llanystumdwy (1841)
Map of Glynllifon estate land at Penychain, Glynllifon 8356

5.1.2 From Bangor University Library
John Evans 2" map of North Wales (1795)

5.2 Unpublished Sources

Gwynedd Archaeological Trust, *A497 Abererch to Llanystumdwy road improvements: Archaeological assessment* (report 60, for Acer Environmental).
Gwynedd Archaeological Trust, *A497 Abererch to Llanystumdwy road improvements: Archaeological assessment* (report 224, for Hyder Environmental).

5.3 Published Sources

5.3.1 Ordnance Survey maps:
Caernarvonshire county series 25" ordnance survey XXXIII.14, XXXIII.15, XLI.2, XLI.3 (1889, 1900, 1917)

5.3.2 Monographs
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Roberts, B, 1979: *The Geology of Snowdonia and Llŷn: an outline and field guide.*
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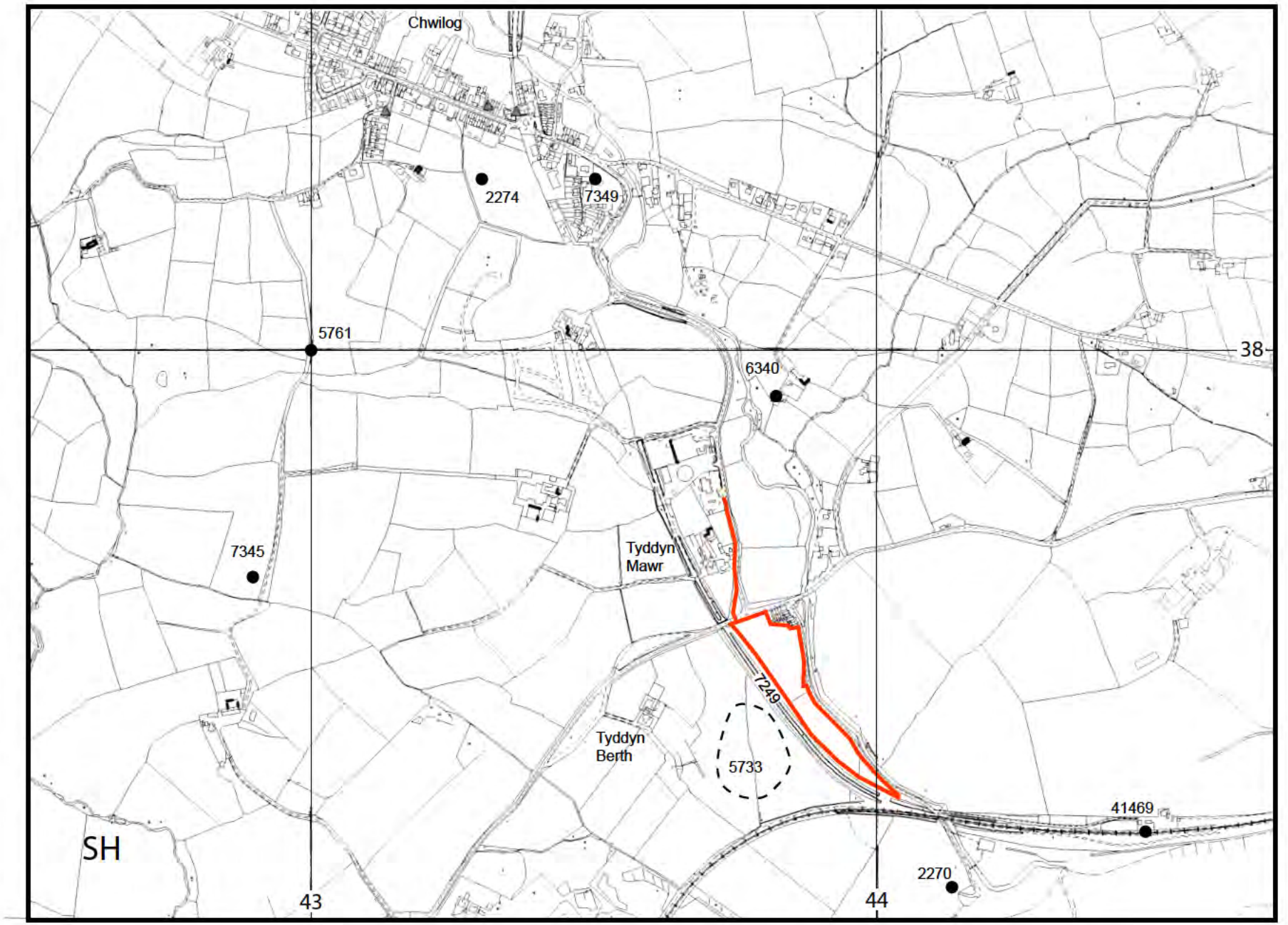

Figure 1: Location of study area (in red) showing SMR sites in the area (scale 1:1000)

Figure 2: Part of John Evans' 1795 map of North Wales
(Tyddyn Berth, Tyddyn Mawr and Melin Ffridd-lwyd in red)

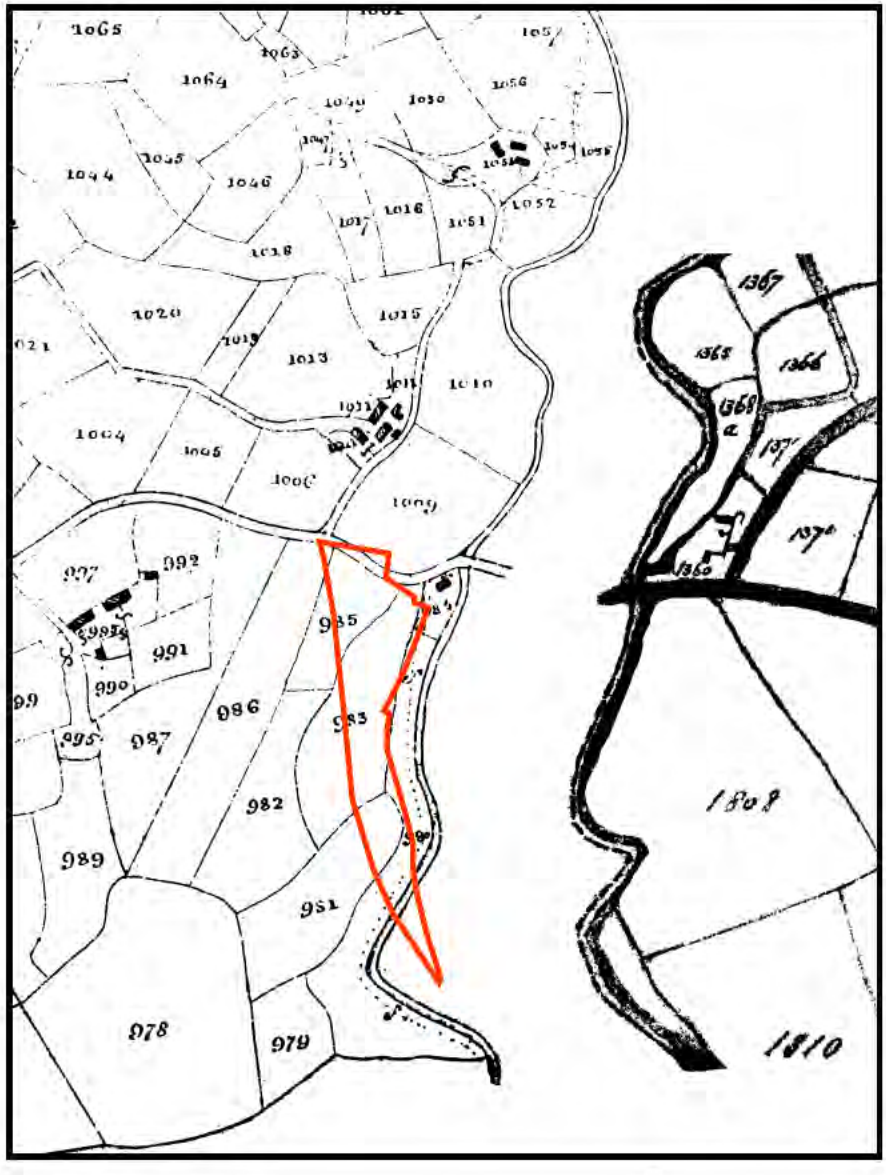

Figure 3: Parts of the tithe maps for the parishes of Llanarmon (left) and Llanystumdwy (right), both 1839

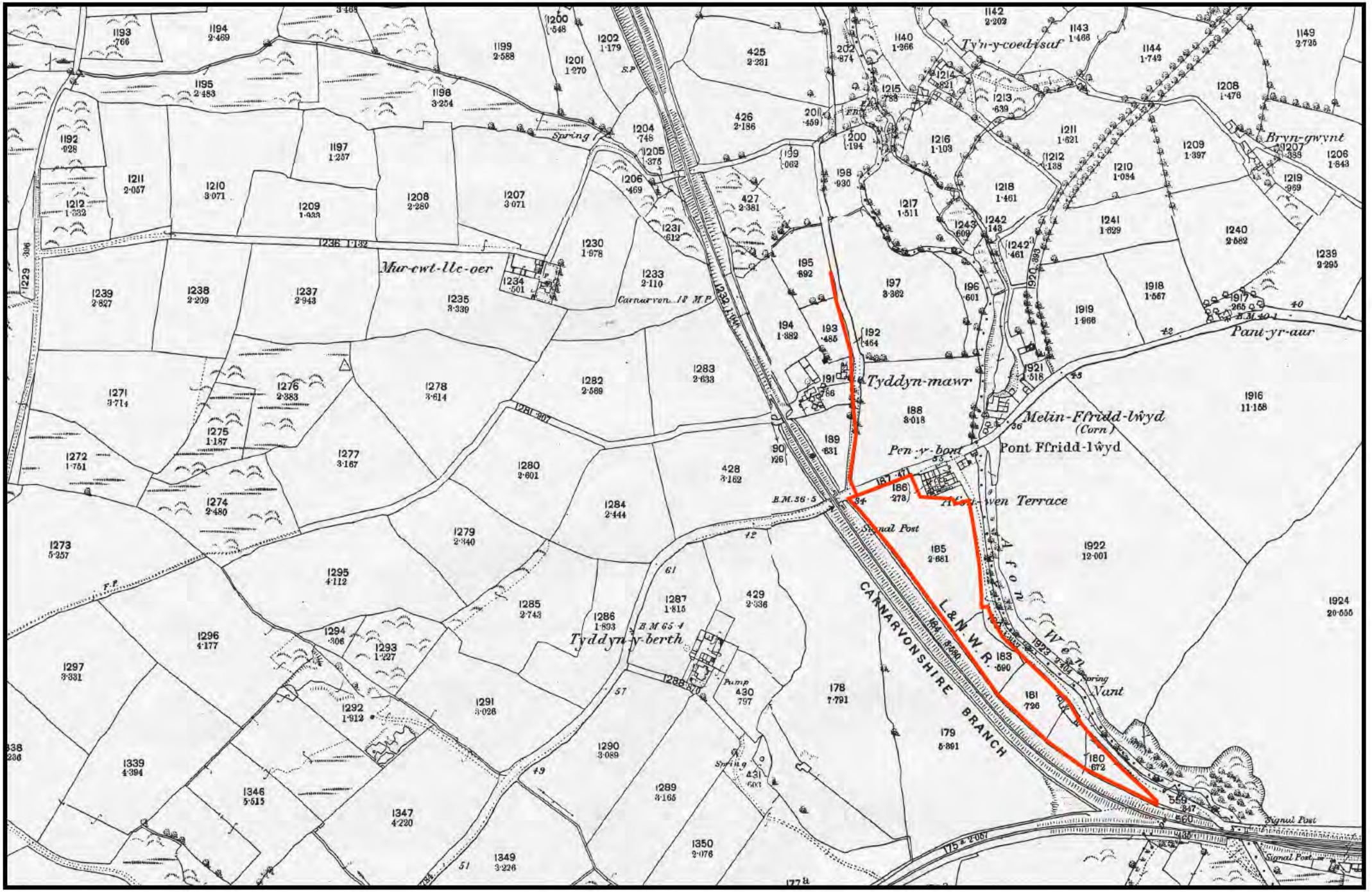

Figure 4: First edition 25" OS map (1889). (Study area in red).

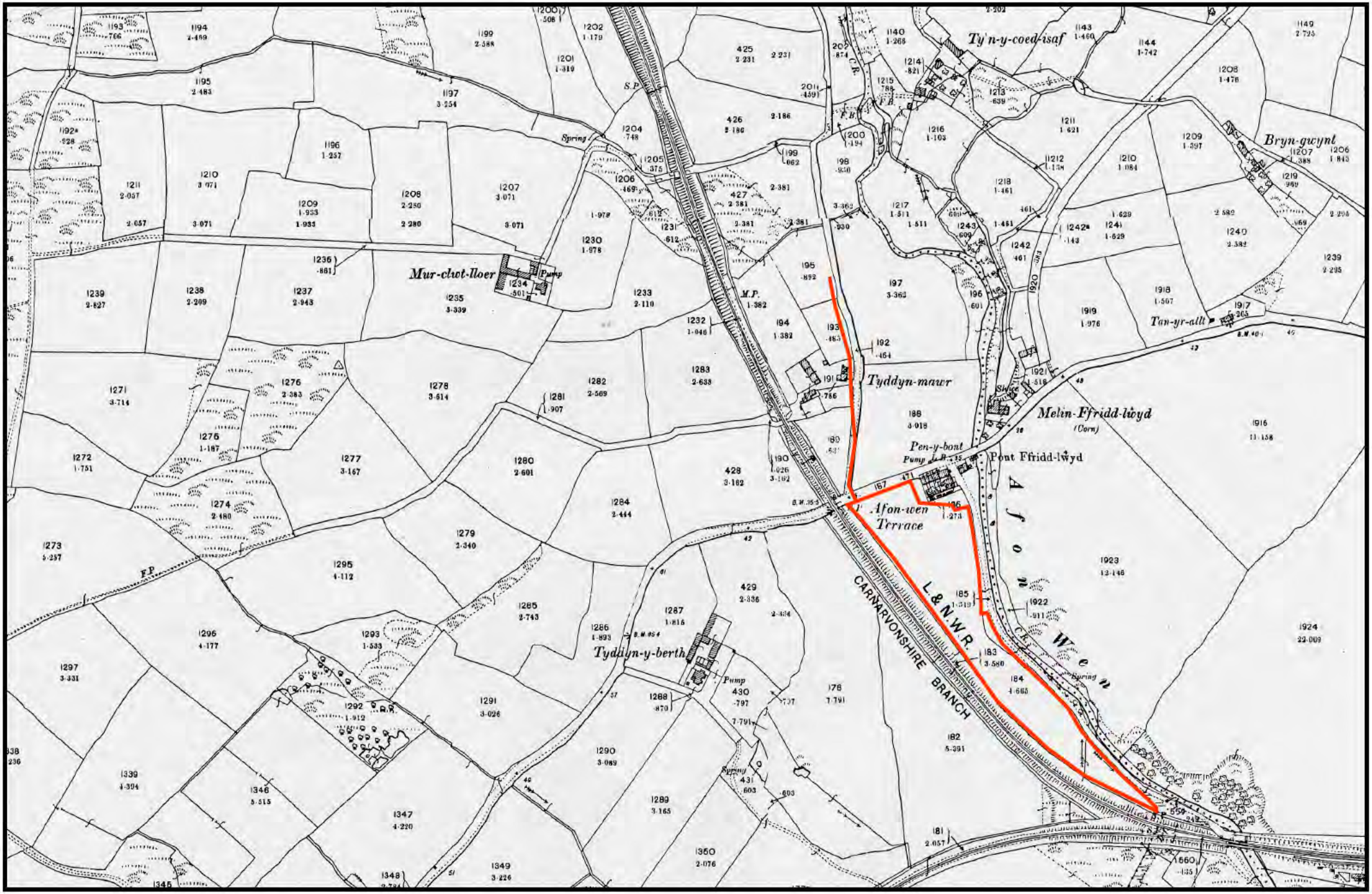

Figure 5: Second edition 25" OS map (1900). (Study area in red).

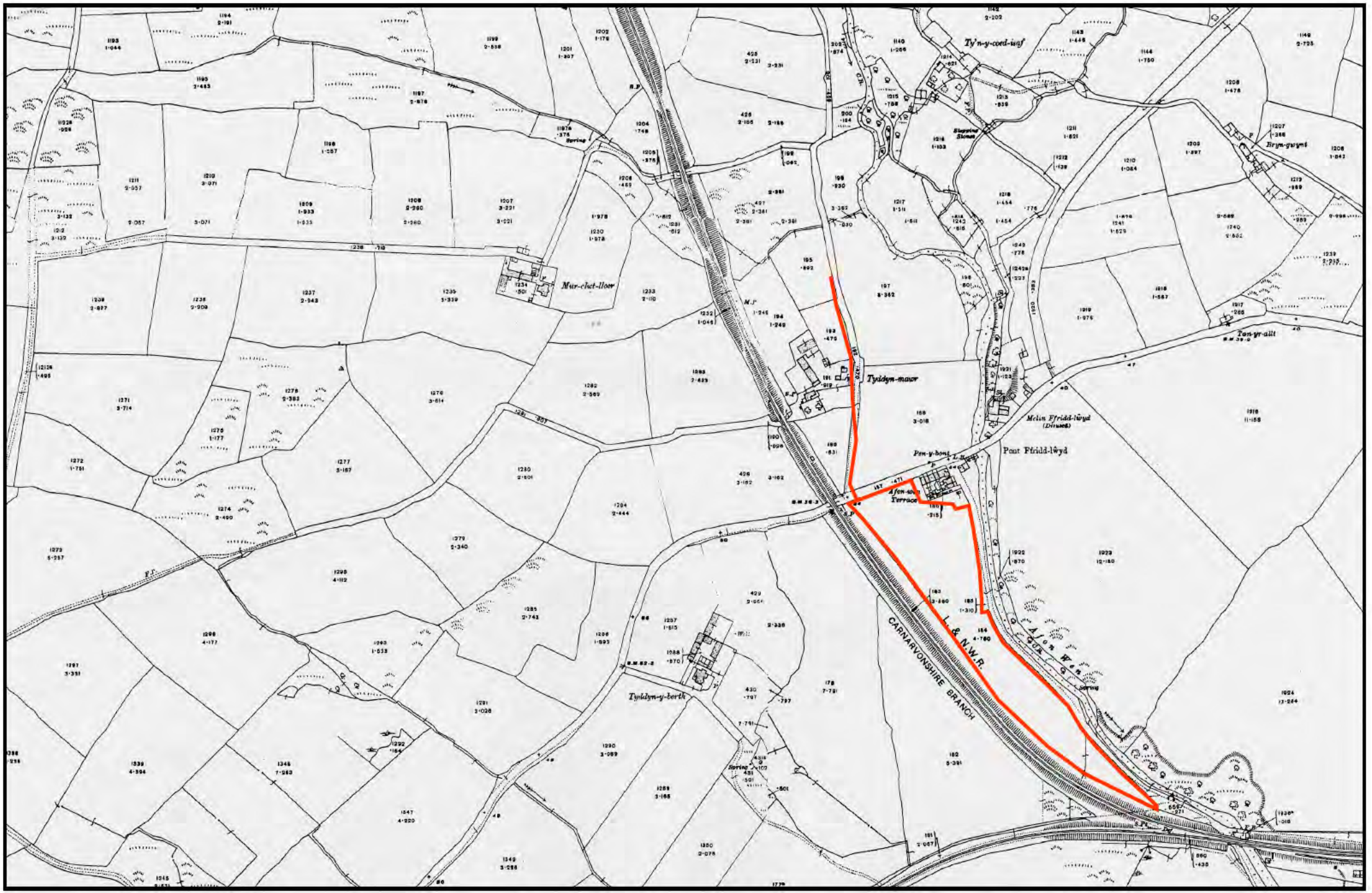

Figure 6: Third edition 25" OS map (1917). (Study area in red).

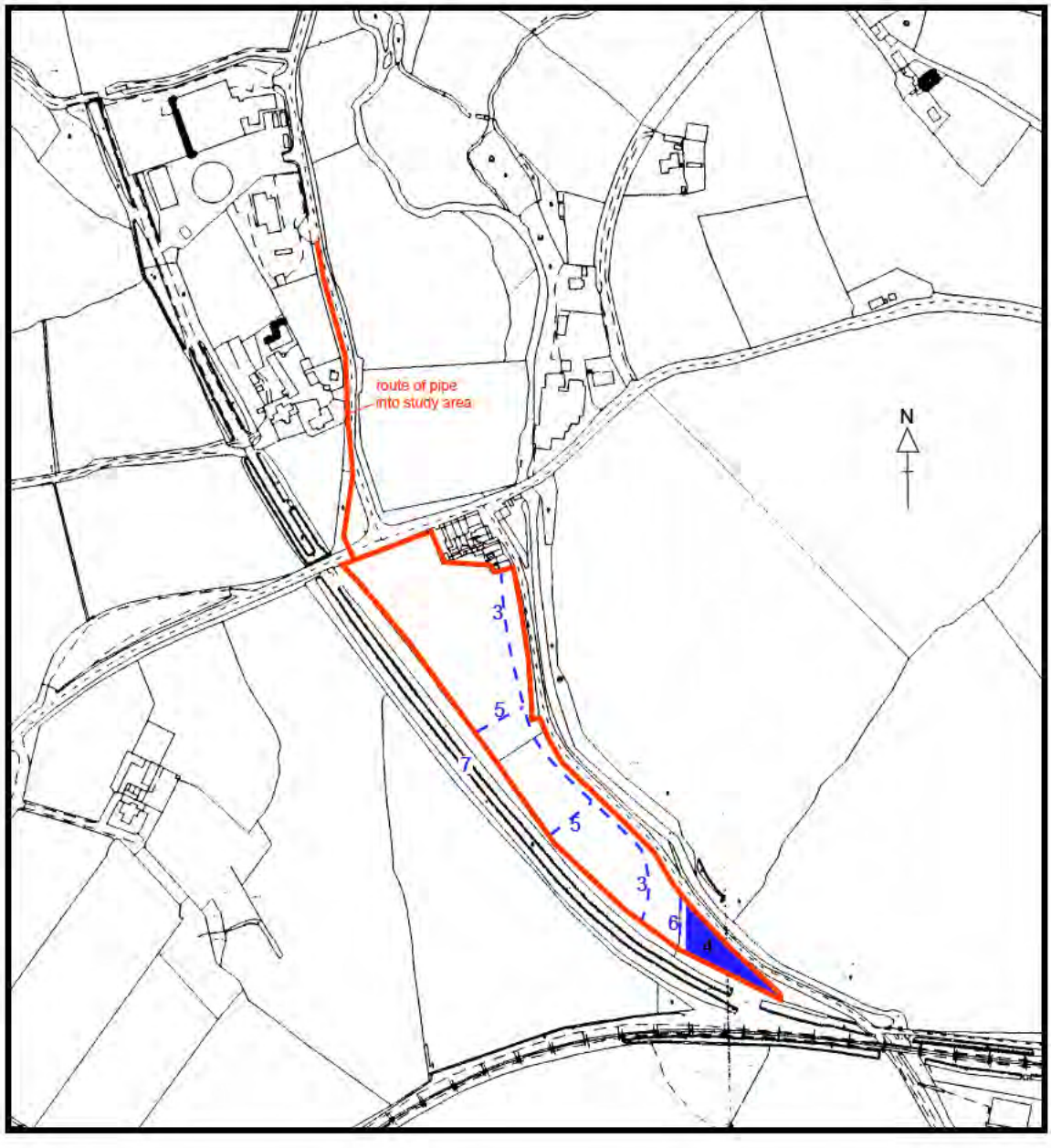

Figure 7: Study area showing features in gazetteer (scale 1:500)

Plate 1: Remains of railway bridge over A497, from north-east

Plate 2: Feature 3 looking south, also showing general character of the study area