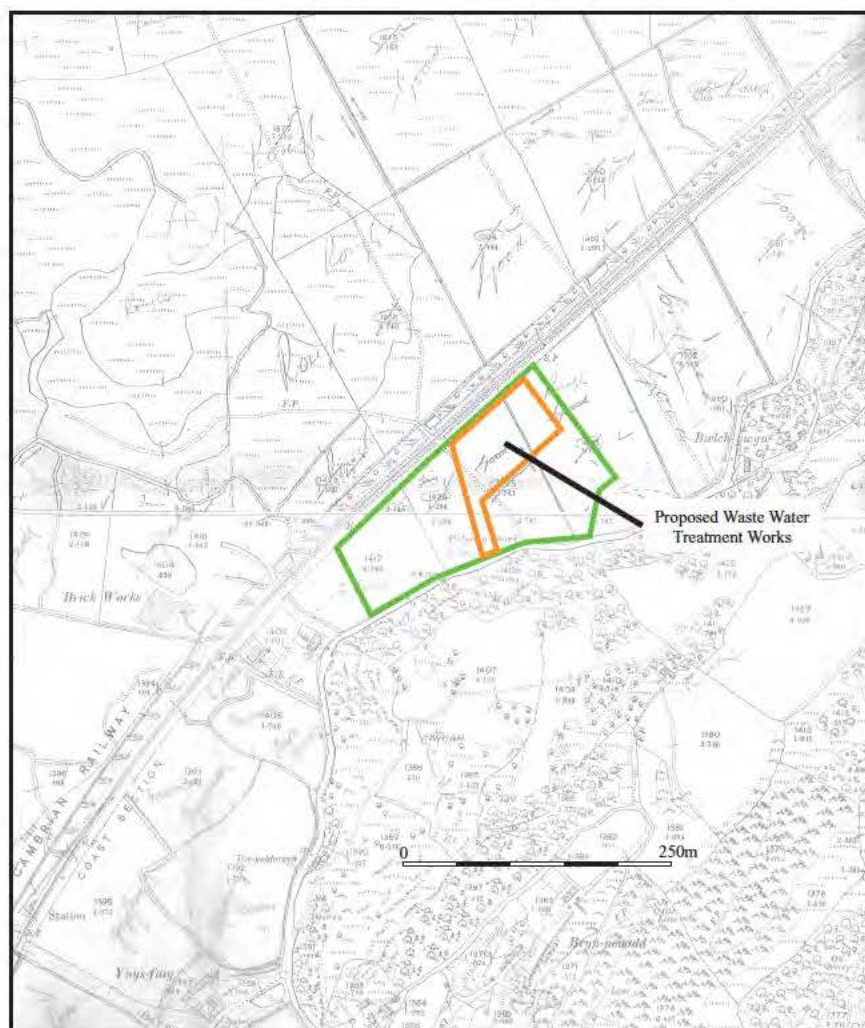


# FAIRBOURNE WASTE WATER TREATMENT SCHEME

## ARCHAEOLOGICAL ASSESSMENT

### 2. THE TREATMENT WORKS SITE



The McDougall brick works, Cambrian Railway and other features, c. 1890, in relation to the site of the proposed treatment works. After OS 1:2500, 1901.

Prepared for  
**Symonds Group Ltd**

December 2002

By

G.H. Smith



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# FAIRBOURNE WATER TREATMENT SCHEME

## 2. THE TREATMENT WORKS SITES

### ARCHAEOLOGICAL ASSESSMENT

**PROJECT NO. G1762**

Report No. 470

Prepared for  
Symonds Group Ltd

December 2002

By  
G.H. Smith

**Gwynedd Archaeological Trust**  
**Ymddiriedolaeth Archaeologol Gwynedd**



# **FAIRBOURNE WASTE WATER TREATMENT SCHEME**

## **ARCHAEOLOGICAL ASSESSMENT**

### **2. THE WASTE WATER TREATMENT WORKS SITE**

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# **FAIRBOURNE WASTE WATER TREATMENT SCHEME**

## **ARCHAEOLOGICAL ASSESSMENT**

### **2. THE WASTE WATER TREATMENT WORKS SITE**

#### **SUMMARY**

*An archaeological assessment was carried out in advance of construction of a waste water treatment works and associated pipelines at Fairbourne, Meirionnydd. The report is in two parts, the first part covers the pipeline easement, this, the second part covers the Waste Water Treatment Works site. The introductory, topographic and archaeological background sections and references are common to both documents. The assessment involved consultation of existing records and documents and a field search. Twenty two archaeological or historic features were identified within the overall easement area. Two were categorised as of national importance, three of regional importance, ten of local importance, four of minor importance or damaged/destroyed and two requiring further assessment. Of these none fell directly within the proposed Waste Water Treatment Works area although some close by are relevant. These are all discussed in part 1 of the report while only those relevant to the treatment works are repeated here. No significant features will be directly affected but because of the chance of hidden archaeological features further evaluation by trial excavation is recommended as a mitigatory measure.*

#### **1 INTRODUCTION**

Gwynedd Archaeological Trust was asked by Symonds Group to carry out an archaeological assessment in advance of construction of a waste water treatment works and associated pipelines at Fairbourne, Meirionnydd (Fig. 1). The area affected is shown on Symonds Drawing No. 57753LOC1 REV. A (Oct 2002). The main part of the proposed pipeline route extends from Arthog to Fairbourne and a branch joins this from Friog with another to Fegla Fawr, at the north-east. The total length of easement is about 6.5km, with a projected width of 15m, narrowing locally, with various extensions to join with existing properties. The pipe-trench will be c. 0.5m wide and 1.0m deep.

The area lies just outside the Snowdonia National Park but within a Landscape of Outstanding Historic Interest (HLW Gw 14, Mawddach). This designation reflects a wealth of archaeological and historic remains, of which the Cregennan area of Arthog, adjoining the pipeline route was identified as an area... 'favoured during the Bronze Age for ceremonial and ritual activity' (Cadw 1998, 121). There were also a lead mine and several small slate quarries and mines, well-preserved examples of the more local scale rural industries of the 19<sup>th</sup> century. Fairbourne is also an unusual example of a late 19<sup>th</sup> century 'new town', built to exploit the new fashion for tourism and was associated with an unusual complex of passenger tramways.

#### **2 SPECIFICATION AND PROJECT DESIGN**

The basic requirement was for a desk-top survey and field search of the proposed area, in order to assess the impact of the proposals on the archaeological features within the area concerned. The importance and condition of known archaeological remains were to be assessed, and areas of archaeological potential and new sites to be identified. Measures to mitigate the effects of the construction work on the archaeological resource were to be suggested.

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

- Desktop study
- Field walkover
- Initial report

### 3 METHODS AND TECHNIQUES

#### 3.1 Desk top study

This comprised the consultation of maps, documents, computer records, written records and reference works, which form part of the Sites and Monuments Record (SMR), located at GAT, Bangor. The archives held by the Meirionnydd Record Office, Dolgellau were also consulted. Information about listed buildings was consulted by means of the CARN (Core Archaeological Index), the online index of the Royal Commission on Ancient and Historic Monuments, Wales.

Sites, buildings and find spots listed in the GAT SMR were identified within three zones: those within about 1km of the route were identified to give background information relevant to understanding the area, those within 100m, which might have direct relevance for understanding the easement area, and finally those directly on the easement route, which might be physically affected by construction (see Fig. 1a).

#### 3.2 Field Search

The route, including the site of the proposed waste water treatment works was visited on two days, the 22<sup>nd</sup> and 28<sup>th</sup> of November, 2002. The whole route was walked over and notes and photographs taken. It was noted that some areas are difficult of access, because they are transected by deep drainage ditches. The area of the proposed waste water treatment works however, was open pasture and easily visible.

Field notes were written up on recording forms, which summarised the Evaluation of importance, Impact and Recommendations for further assessment and Mitigation, in a manner suitable for database entry. These also provided a reference to the photographs, which were numbered and catalogued. The whole archive is stored with GAT under project No. G1762.

#### 3.3 Report

The available information was synthesised to give a summary of the archaeological and historic background and of the assessment and recommendations, as set out below. The separate features, their evaluation and recommendations are listed separately, and a summary of the overall assessment of the area is given at the end.

The criteria used for assessing the value of features was based upon those used by the Secretary of State for Wales when considering sites for protection as scheduled ancient monuments, as set out in the Welsh Office circular 60/96. The definitions of categories used for impact, field evaluation and mitigation are set out below.

##### 3.3.1 Categories of importance

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

*Category A - Sites of National Importance.*

Scheduled Ancient Monuments, Listed Buildings of grade II\* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both.

Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

*Category B - Sites of regional or county importance.*

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, 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.*

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

*Category D - Minor and damaged sites.*

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of 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.

### **3.3.2 Definition of Impact**

The impact of the road development on each site was estimated. The impact is defined as *none, slight, unlikely, likely, significant, considerable or unknown* as follows:

*None:*

There is no construction impact on this particular site.

*Slight:*

This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the feature, *e.g.* part of a trackway or field bank.

*Unlikely:*

This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

*Likely:*

Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.

*Significant:*

The partial removal of a site affecting its overall integrity. Sites falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

*Considerable:*

The total removal of a feature or its partial removal which would effectively destroy the remainder of the site.

*Unknown:*

This is used when the location of the site is unknown, but thought to be in the vicinity of the proposed road.

### **3.3.3 Definition of field evaluation techniques**

Field evaluation is necessary to fully understand and assess class E sites and to allow the evaluation of 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.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Geophysical survey is not thought to be suitable for the feature and subsoil types expected at Fairbourne/Arthog.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

#### ***3.3.4 Definition of Mitigatory Recommendations***

*None:*

No impact and therefore no requirement for mitigation measures.

*Avoidance*

Where possible, features which may be affected should be avoided. Sometimes this could mean a change in layout, design or route. More usually it refers to the need for care during construction to avoid accidental damage to a feature. This may be achieved by marking features or areas, for example with warning tape, before work starts, or in sensitive cases carrying out a watching brief.

*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.

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

*Basic Recording:*

A photographic record and full description, and limited measured survey where applicable.

*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.

## 4 ARCHAEOLOGICAL RESULTS

### 4.1 Topographic description

The underlying geology of the coastal flats around Fairbourne and the Mawddach estuary consists of Cambrian beds of siliceous sandstone, but overlaid by alluvium and peat. The hill land immediately to the south-west, however, consists of Ordovician shales into which have intruded bands of igneous basalt, quartz-dolerites and diorites (Smith and George 1961). The Mawddach is a drowned estuary, which formed within a deep glacial valley as sea-levels rose after the end of the last glacial period, from c. 10,000 BC. Tidal movement caused the build up of off-shore sand bars at the river mouth, eventually causing a major build up of alluvial sediment on the valley floor. The rock outcrops of Fegla Fawr, Fegla Fach and Ynysgyffyllog must once have been islands. Eventually marshes developed on the salt flats, leading to development of a thick peat cover. Elsewhere, such coastal peats have been shown to date from c. 6000 BC through to the first millennium BC. They are a valuable source of environmental information and in places have also produced much archaeological information.

### 4.2 Archaeological and historical background

The land here divides into two main topographic areas. First, the coastal flats around the Mawddach and second the steep hill slopes and plateau, above. The coastal flats have relatively few archaeological features or finds while the hill slopes and plateau are particularly rich in prehistoric settlement as well as and funerary and ritual features such as standing stones and cairns (Fig. 1a and Appendix 1). There are also a number of chance finds of individual objects including stone axes and hammers as well as bronze axes and querns (corn grinding stones). These all show that the Arthog area was an important one in prehistory and the concentration of funerary and ritual monuments on the Cregennan plateau suggests that this was a ceremonial centre (Smith 2001). As far as can be seen this was not focussed on any one particular monument or natural feature but spreads from the western end of the Cregennan lakes towards Cyfannedd. It seems to be closely connected with a major route passing through here, still followed by a minor road, its line marked by a number of prehistoric standing stones, including three groups of stones. The restricted plateau area beneath higher hills is quite similar to another important ceremonial area in Meirionnydd, that of Hengwm, above Llanbedr. The difference there is the presence also of Neolithic monuments while the majority of prehistoric activity at Cregennan appears to be Bronze Age. However, the presence of some Neolithic activity in the area is demonstrated by the chance find of two stone axes. One was found on Bwlchgwyn Farm at the foot of the slope, about 200m east of the proposed waste water treatment works site (Bowen and Gresham 1967, 26). The axe was of unusually large size, at 300mm long, twice the average length for such axes (although of normal width) and therefore probably impractical to use and of ceremonial nature. It was made of greenstone and therefore an import from afar, from either Cumbria or Cornwall. The other, of unknown rock type was found at Friog.

With regard to the Bronze Age, however, there are a number of chance finds recorded in the Gwynedd SMR (Appendix 1). A stone axe hammer was found on Bwlchgwyn Farm, mentioned above, and another at Fegla Fawr, both probably imports. Four bronze axes of various types have also been found, all on the slopes between Fairbourne and Arthog. Two were found on Bron-Lletty-Ifan Farm, one at Braich-y-groes-wen and one at Goleuwern quarry. These were of Middle and Later Bronze Age type. In the lowland, close to Arthog, a rare and important bronze urn of a Late Bronze Age type was found (Fig. 4) (Lewis 1840). These all demonstrate that the area was important in the second and first millennia BC. This is further supported by archaeological surveys carried out at Deildref (Kelly 1987), Cyfannedd Fawr (Kelly 1977) and Cregennan (Barfoot 1993) which have all added to the total of previously known cairns and settlements. More recently new cairns, cup-marked stones and standing stones have been identified in the same areas (Smith 2001). All of this activity occurred on the hill land and represents a relict ancient landscape retaining areas of ancient irregular field patterns as well as settlement sites and routes. Some of it is on plateau, but some of it is on quite steeply sloping land, unsuitable for modern agriculture and there is a considerable area of mature deciduous woodland that is registered as Ancient Woodland (i.e. in existence before c. 1750) (Garnett and Richardson 1989, No. AW106).

In contrast, the lowlands present a total different landscape, with no prehistoric features and only one prehistoric find, that of the bronze urn, mentioned above, to show that there was any early activity there (Fig. 1a). The lack of evidence suggests that these peat areas were still inaccessible marshland, probably with little value except for wildfowling. It was only with a surge in land enclosure and improvement in the 18<sup>th</sup> and 19<sup>th</sup> century, and drainage that the marshes were made usable. Up to that time there were only small areas of settlement clinging to the foot of the hill land along the coast road. The parish church was at Llangelynin,

several kilometres away and the only recorded township was Cregennan. Some of the houses do have medieval origins, however. At Pant-y-llan, Arthog is a rectangular enclosure, Llys Bradwen, reputed to be the court (llys) of Bradwen and his son Ednowain ap Bradwen in about the 11<sup>th</sup> century AD. The hill lands were probably well settled in the medieval period and there are a number of small house platforms that are probably of that period, but there was little settlement on the coastal fringe, the only record of that period being of Ynysgyfflog, in a demise (grant) of land of 1457 as *Ynys y Keffloe* (Higgon 1985, 10).

Settlement increased in the 18<sup>th</sup> century when the estate of Pwll-Arthog, later called Arthog Hall began to develop, the marshes were drained and the post road would have been improved (Higgon 1985). The toll-house still survives at Friog where the important road to the Barmouth ferry branched off. The oldest surviving houses, apart perhaps from Ynysgyfflog, date to the 18<sup>th</sup> century, for example the row of cottages about 500m west of Bont Arthog. There was probably a bridge here in medieval times but it was recorded as being ruinous and out of repair in 1744 and a new bridge (the present one) had been built by 1804 when it was mentioned by Richard Fenton on one of his tours of Wales (1804-1813). Nevertheless, the area was still very sparsely populated and rural, as shown by the first edition OS one inch map of c. 1838 (Fig. 2) and the Tithe map of 1840 (Fig. 3). In the lowland, activity was still limited to the use of the Barmouth ferry from Penrhyn Point north of Fairbourne, the marshes had drainage ditches but apparently were still not enclosed. The area did not develop as a port because the sand bars obstructing the Mawddach and the lack of a populous hinterland. A survey of creeks and harbours of 1565 and 1567 instituted for the suppression of piracy reported ‘Abermawe being likewise a Haven, having no habitation, but only four houses... And there is neither shippen or vessell that belongeth to the same haven, but only two little boottes that the said Res ap Res and Harry ap Eden’ do use to carry men over that passage...’ (Thomas 1970, 135). However, the Mawddach became a busy shipbuilding area for small coastal trading ships from about 1785 to 1836, the last ship being built in 1865. Ships were built at several places along the estuary, including Penmaenpool but there is no record of any built in the Arthog area (Lloyd 1979, 1980 and 1981). However, several mines and quarries started up in hill land in the early 19<sup>th</sup> century. The earliest slate quarrying probably began in the 18th century at Arthog and there were eventually at least eight slate quarries and mines (Appendix 2). The first mention of mineral prospecting was in 1827 and the Cyfannedd Fawr lead and silver mine was worked successfully between 1851-63 but closed by 1887 (Foster-Smith 1977). There were several other mines and quarries open between about 1840-1870 with one slate quarry continued working until 1928 (Richards 1991). These provided hundreds of jobs and many houses were built during this period as well as chapels. Most of the mined or quarried material was carted to shipping points and taken by boat to Barmouth for transfer to larger vessels. One of the local shipping points was a stone quay on the Arthog creek (Figs 2 and 3). However, the construction of the Cambrian railway provided a fresh impetus and had reached Barmouth junction by 1865, the Barmouth bridge and the link to Dolgellau and Bala being opened in 1867. However, only one quarry, that at Arthog built a tramway directly to the railway with a siding which became Arthog station in 1870, although the quarry had already closed in 1869, the tram track-bed becoming the access road to the station (Richards 1991).

With the opening of the railway the west coast began to develop as a holiday resort area. Barmouth expanded rapidly and the picturesque Mawddach estuary was targeted by speculative builders. The land east of Barmouth railway bridge, including adjacent hill farms, was bought by Solomon Andrews of Cardiff who had already successfully developed Pwllheli along with a passenger tramway. He began in 1899, building three terraces of houses, the largest and most impressive of which was Mawddach Crescent, using stone from Tyddyn Sieffre quarry, from which he built a 3-foot gauge horse drawn tramway along to the coast to Mawddach Crescent (Fig. 5). After construction work this was converted to a passenger line, using old tram cars from Cardiff, with links to the main railway at Mawddach Junction station, to the south end of the Barmouth railway bridge (for pedestrians). It operated until about 1903, the track bed then becoming just a road (Andrews 1976, Boyd 1965).

West of the Barmouth Bridge the land was bought by McDougall (of self-raising flour fame) and begun in 1890 by construction of a brick and tile works and from this a 2 foot gauge horse-drawn tramway (Fig 6) leading to a halt on the Cambrian main line that eventually became Fairbourne station and then as far as Penrhyn Point for the Barmouth ferry (Fig. 5). This carried materials to construct the core of the present Fairbourne, which was named by McDougall. The estate was sold off in 1911 and in 1916 the tramway was transformed into the Fairbourne Miniature Railway, which has continued under various owners and modifications to the present (Boyd 1965).

During the Second World War a camp for Royal Marines was built close to Fegla Fawr and the houses of Mawddach Crescent were also taken over for offices and accommodation. The camp consisted of about a dozen Nissen huts and a cinema and was first used in commando-style training with landing craft and later for artillery and engineering training. All the buildings were demolished soon after the war and materials were

dumped into the sea just west of the Crescent (O'Connor 2000). However, all the concrete platform foundations of the camp still survive, along with various minor features, including drains, paths etc as well as two unusual sentry boxes.

The Cambrian Railway, Dolgellau and Bala branch line closed in 1964 and has recently been converted to a footpath and cycleway (the Mawddach Trail) and there are very few original railway features left.

## 5 THE ARCHAEOLOGICAL ASSESSMENT

### 5.1 Introduction

The proposed treatment works covers an area of approximately 100 by 50m, c. 5000 sq. m (0.5 ha), plus an access road. The easement area includes most of two adjoining two fields, about 2 or 3 ha in total. The site lies in a level field of improved pasture (Fig. 8) in reclaimed marshland maintained by a series of parallel drainage ditches connecting in a grid to the sea. Many of these have been neglected and are silted up level with the field surface. Only the main drain for the area, the Fairbourne stream has been kept clear. It is likely, but not certain that there is peat below this field

### 5.2 The Archaeological Survey (Fig. 7)

There are no recorded archaeological features or finds from this area and only one visible feature that has some archaeological value, described below. However, the peat that probably lies below the field consists of preserved horizons and organic remains dating back over several thousand years. There is a low chance of finding significant archaeological remains in these deposits, as is the case with the majority of the pipeline route. However, here widespread stripping of any peat deposits is likely to take place before construction and this has a much greater chance of producing archaeological deposits than the narrow pipeline trench. Such deposits would be likely to be evidence of light timber structures or trackways similar to those recorded on the coast of the Severn Estuary. The remainder of the easement area around the proposed treatment works, including the access road, is of a similar nature to the above, that is with no known or visible archaeological features but probably with underlying peat.

#### Feature 2 Cambrian Railway cast iron gateposts (Fig. 9)

SH62001335

Period: 19<sup>th</sup> century

Category: D. Impact: Unlikely

Two cast iron gateposts flanking the farm track level crossing. Still in use to support the railway boundary fence with the adjoining field.

One of few surviving original features of the Cambrian Railway and worth retaining.

**Recommendations for further assessment: None**

**Recommendations for mitigatory measures: Avoidance**

### 5.3 Recommendations

#### 5.1 Impact of construction on the Landscape of Outstanding Historic Interest

The Mawddach Landscape of Outstanding Historic Interest covers the estuary of the Mawddach, together with surrounding land from Barmouth in the north, to Penmaenpool in the east and, to the south of the estuary, the land from Penmaenpool to Cader Idris, south to Allt Llwyd and west to Llangelynin. This landscape was recorded as of historic interest partly for the range of prehistoric monuments lying between the Cregennan plateau and Llwyngwril and partly for the well preserved remains of 19<sup>th</sup> century quarrying and mining on the slopes below Cregennan. All these lie on the hill slopes away from the proposed treatment works, which does not come into contact with the specific known elements of the prehistoric landscape. However, a potential has been identified for finds from the lowland peat here, mainly because of the find of a rare Late Bronze Age bronze urn from the peat near Arthog in the early 19<sup>th</sup> century (Fig. 4) (Hawkes and Smith 1957, Hemp 1960), and partly because of the known intensity of prehistoric activity on the hill-slopes close by (Fig. 1a).

The Register of Landscapes of Outstanding Historic Interest states that... 'The Register should be seen as a positive tool for making necessary change rather than preventing change, and a way of assisting the new to fit

in with the old' (Cadw 1998, xxxix). The structure of the treatment works itself will have a general impact on the visual qualities of the landscape, which is generally low-lying and level, with no tall structures. However, the area is close to the Dolgellau-Tywyn coast road and to Fairbourne, both with 20<sup>th</sup> century development and the areas close to the road are not visible from the Cregennan plateau area, where can be found the majority of the prehistoric features. The Cambrian Railway embankment also provides a major modern structural element in the landscape.

## **5.2 Impact of construction on individual archaeological or historic features**

There are no previously recorded archaeological sites or find spots here and only one visible feature of a historic nature, adjoining the construction site on the north side. This is a pair of 19<sup>th</sup> century cast iron railway gate-posts on the north side of the gated crossing of the Cambrian Railway embankment. These are recorded as of minor value but with avoidance recommended.

With regard to the proposed construction area itself, it is possible that underlying peat could preserve prehistoric remains. Field evaluation by means of a number of machine-cut trial trenches is therefore recommended because it is impossible to evaluate the area properly on surface evidence alone. Non-intrusive evaluation, such as geophysical survey would not be suitable for timber remains. Other evidence such as pre-construction geological bore-hole results would also be useful in making a full assessment. For example, it is possible that there is no peat here but only clay. Clay was certainly dug for the McDougall brick works 300m to the west, although it may have first removed a layer of peat. Peat observed in a newly dug drainage ditch at the east end of the pipe-line route showed about 1m depth (see Report Part 1, Fig. 16) and all of this depth would be likely to be disturbed or removed during construction.

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## **Documentary sources**

### **1. GAT Sites and Monuments Record**

Tithe map for the parish of Llangelynin, c. 1840, copy.

OS 1 inch first series, 1838, reprint.

OS 1:2500 first series, sheets Merioneth 36-10, 11,14, 15.

OS 1:10,000 series map sheets.

Kelly, R.S. 1977. Cyfannedd Fawr Pre-afforestation Survey.

Kelly, R,S, 1987. Daildref pre-afforestation survey, GAT, FW 15.

Cadw 1995. Register of Buildings of Special Architectural or Historic Interest for the community of Llangelynin.

### **2. Meirionnydd Record Office, Dolgellau**

Local files for Fairbourne and Arthog of photographs, cuttings and private papers.

Published sources as listed above.

**APPENDIX 1 List of sites around the waste water treatment scheme recorded in the Gwynedd Sites and Monuments Record (See also Fig. 1a)**

**1. Archaeology and buildings** (A – approximate location only, C – centre of extensive site)

a. Within the easement area of the treatment works

Nil

Within the easement area of the pipeline

7273 Fairbourne  
7274 Fairbourne railway  
7275 Tank defences, Fairbourne.

b. Within 100m of the easement of the treatment works

Nil

Within 100m of the easement of the pipeline

4337 Stone tool (axe) findspot, Bwlchgwyn  
4878 Bronze bucket findspot, Ty'n y Coed, Arthog (A)  
4879 Stone axe-hammer findspot, Bwlchgwyn  
4883 Bronze Age perforated axe-hammer fragment, Fegla Fawr  
4892 Rotary quern upper stone

c. Within 100m to 1km of the easement of the treatment works

4337 Stone tool (axe) findspot, Bwlchgwyn  
4879 Stone axe-hammer findspot, Bwlchgwyn  
4881 Unlooped bronze axe. Bron-lletty-Ifan (A)  
4892 Rotary quern upper stone  
7272 Mawddach Junction station  
7273 Fairbourne  
7275 Tank defences, Fairbourne  
12896 Corn drying kiln

Within 100m to 1km of the easement of the pipeline

49 Llys Bradwen, medieval site  
3286 Bronze palstave, Bron-lletty-Ifan  
4861 Medieval house ruins  
4862 Stone gun, 19<sup>th</sup> C  
4872 Cairn and cist, NW of Pen y Garn  
4873 Bryn Seward standing stones  
4874 Possible round cairns  
4875 Possible round cairns  
4876 Hut circle, Bryn Seward  
4877 Looped bronze axe, Goleuwern Quarry  
4880 Neolithic polished axe, Friog (A)  
4881 Unlooped bronze axe. Bron-lletty-Ifan (A)  
4882 Looped bronze axe, Braich y groes wen  
4886 Hut circles, SE of Mynydd Graig Wen  
4887 Probable Iron Age defended settlement  
4890 terraces, probably natural  
4891 Cup-marked stone  
4897 Round hut and field wall  
4900 Clearance heaps and possible burial cairns (A)

4910	Cairn, Bryn Seward
4915	Cyfannedd Fach homestead
5718	Field system (C)
7272	Mawddach Junction station
7601	Possible kerb cairn, Bryn Seward
12727	Barmouth railway bridge
12894	Kerb cairn, Bron-lletty-Ifan
12895	Cup-marked stone, Bron-lletty-Ifan
12896	Cairn/corn-drying kiln

## 2. Industry and minerals

- a. Within the easement area of the treatment works

Nil

Within the easement area of the pipeline

Nil

- b. Within 100m of the easement of the treatment works

Nil

Within 100m of the easement of the pipeline

20375	Quarry, Ty'n-y-coed, Tip, Level, Railway.
20369	Quarry, Bwlch Gwyn
20373	Quarry, Tyddyn Sieffre.
20567	Level, 'Tap twr', Arthog.

- c. Within 100m to 1km of the easement of the treatment works

20368	Quarry, levels, Friog.
20369	Quarry, Bwlch Gwyn
20370	Quarry, Bryn Neuadd
20371	Quarry, Bryn Gwyn
20373	Quarry, Tyddyn Sieffre.

Within 100m to 1km of the easement of the pipeline

20366	Quarry, incline, levels, Henddol.
20367	Quarry, incline, levels, Golwern
20368	Quarry, levels, Friog.
20370	Quarry, Bryn Neuadd
20371	Quarry, Bryn Gwyn
20374	Shafts, Cyfannedd
20376	Quarry, Arthog
20566	Level, 'Murddyn', Arthog.
20568	Slate quarry, Cyfannedd Fawr.
20573	Lead/copper/gold mine, 'Anna Maria', Friog.

**APPENDIX 2 List of buildings around the waste water treatment scheme of special architectural or historic interest sites recorded by Cadw (1995) or RCHMW (CARN on-line index)**

**Arthog**

Arthog Terrace, Status II, late 19<sup>th</sup> C, Rec. 44/D/1-12(4). NGR SH 64021438 to 64081442  
Arthog Hall, Buildings and Lodge, Status II, 1833 on an earlier building Pwllarthog c. 1700. Rec. 44/D/13(4). NGR SH 64211447. Rec. 44/D/15(4). NGR SH 64431457. Rec. 44/D/16(4) and Rec. 44/D/17(4). NGR SH 64451443.  
Arthog Vicarage (Glan y Wern), Status II, 1837. Rec. 44/D/14(4) NGR SH 64331454.  
St. Catherine's Church, Status II, early 19<sup>th</sup> C chapel. Rec. 44/D/18(4). NGR SH 64561462.  
Bont Arthog (Pont Pwll-arthog), Status II, late 18<sup>th</sup> C. Rec. 44/D/19(4). NGR SH 64581462.  
Ty'n y Coed house, Status II, farmhouse c. 1860. Rec. 44/D/25(4). NGR SH 64731463.

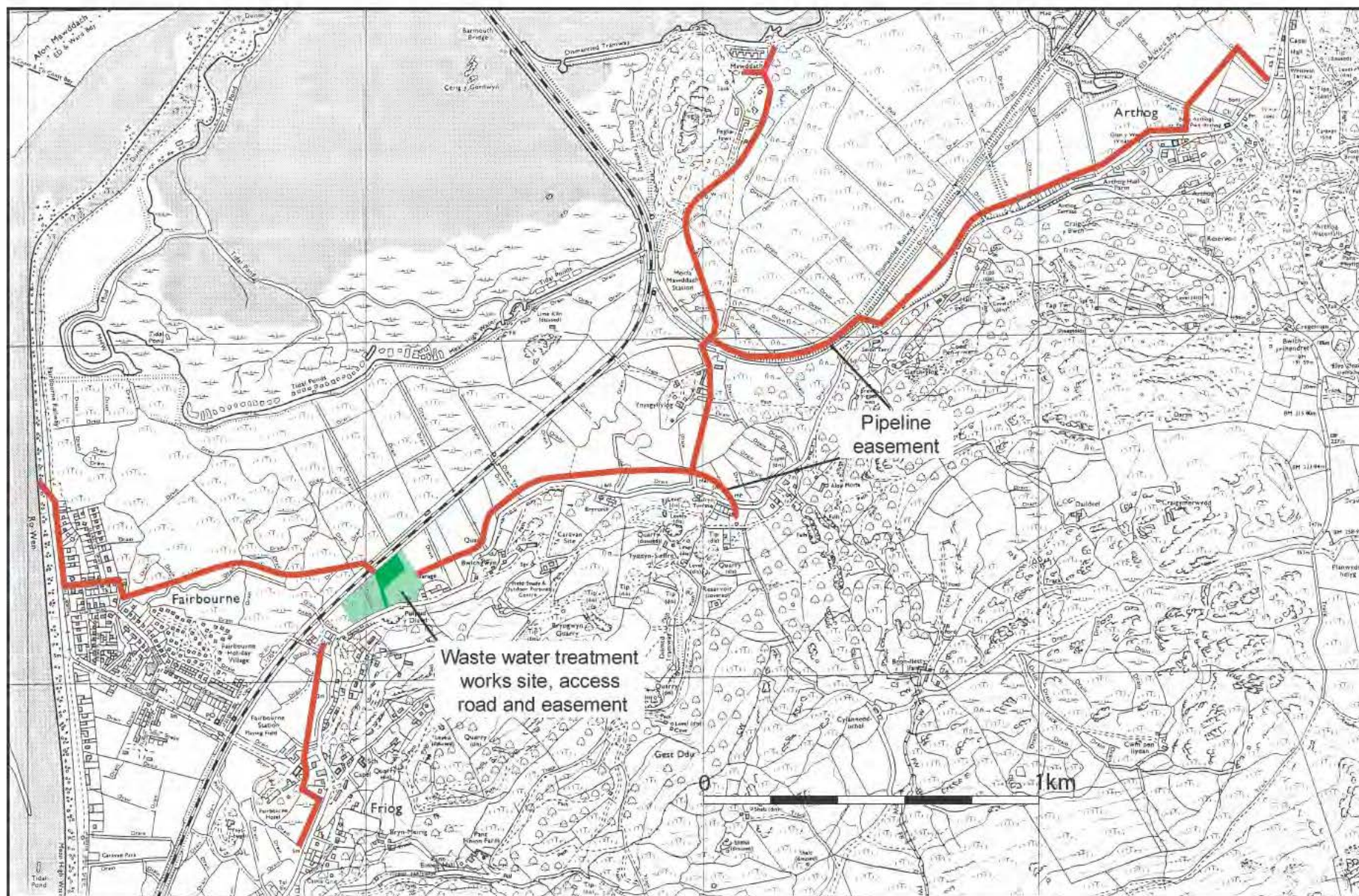
**Friog**

Toll-house, Status II, end 18<sup>th</sup> C. Rec. 44/D/31(3). NGR SH 613121.  
New Inn, Status II, mid 19<sup>th</sup> C. Rec. 44/D/32(3). NGR SH 61561222.

**Other buildings listed by RCHMW**

Arthog Railway Station, mid 19<sup>th</sup> C.  
St. Cynon's Church, Fairbourne, early 20<sup>th</sup> C.  
Morfa Mawddach ponds, tidal pools, post-medieval.



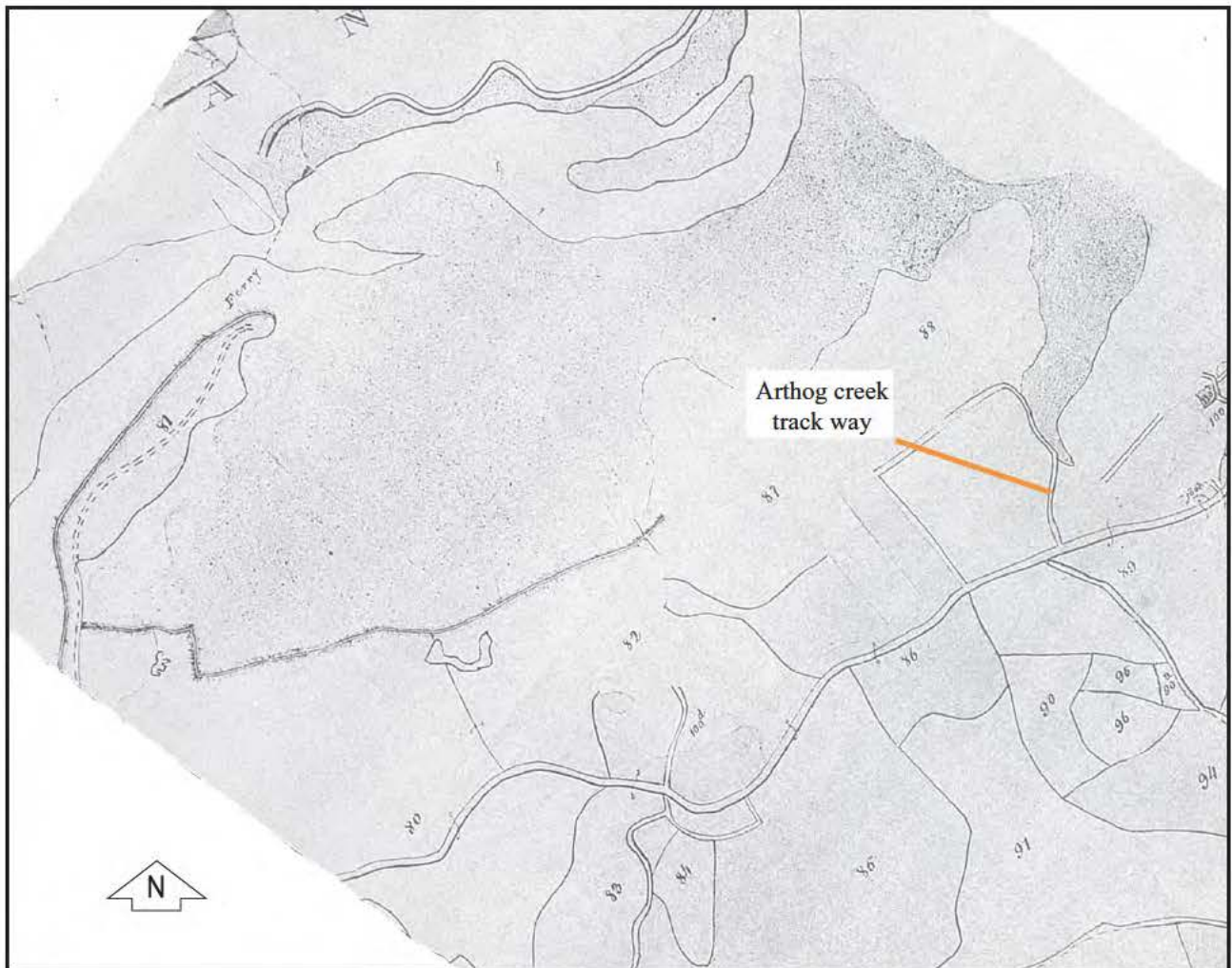


Fairbourne Waste Water Treatment Scheme: Fig. 1 General location of proposed work areas.  
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Fairbourne Waste Water Treatment Scheme:  
 Fig. 2 OS One-inch to a mile, First edition, c. 1838



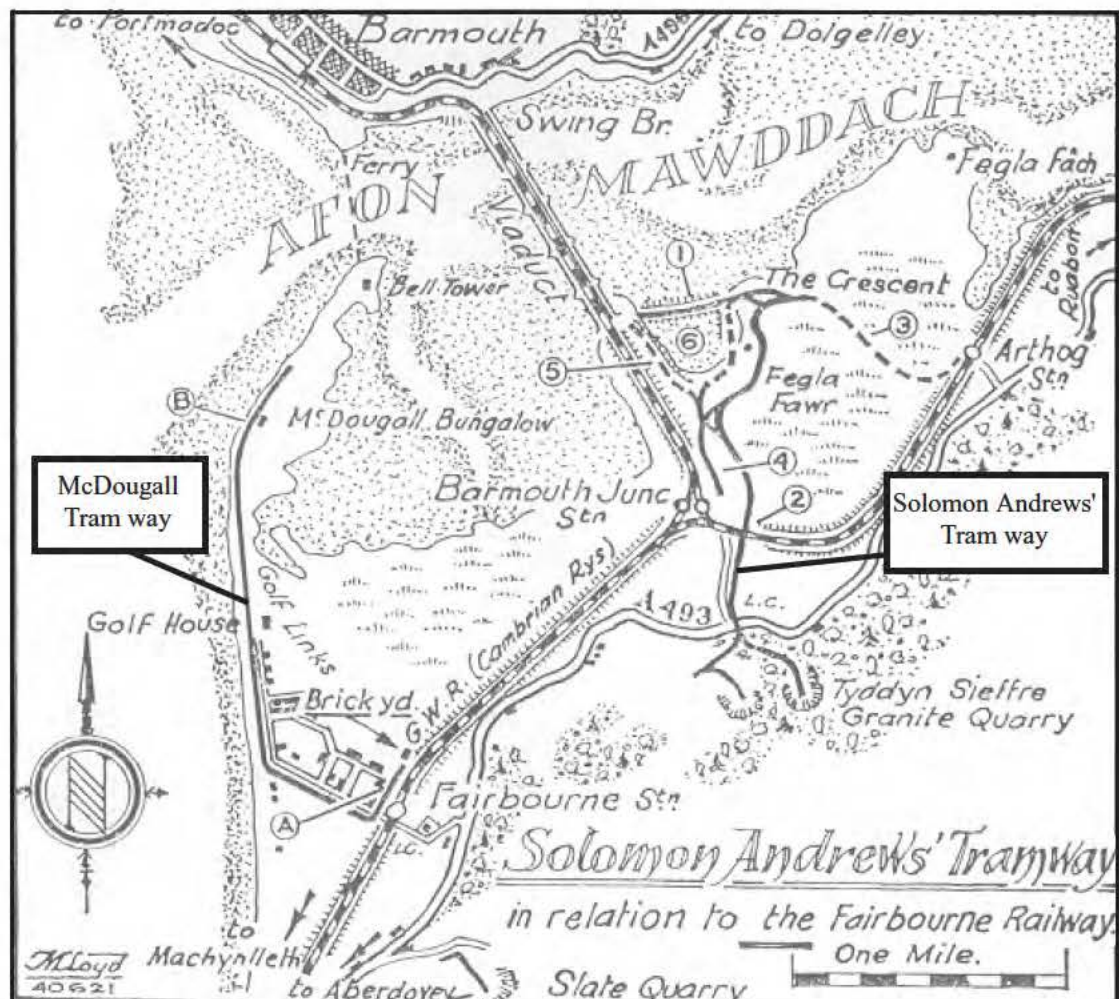
Fairbourne Waste Water Treatment Scheme:  
Fig. 3 Llangelynnin tithe map, 1840, c. 2 inches = 1 mile





Fairbourne Waste Water Treatment Scheme:  
Fig. 4 The Late Bronze Age bronze urn from Arthog.  
National Museum of Wales (Savory 1980, Plate IV a).

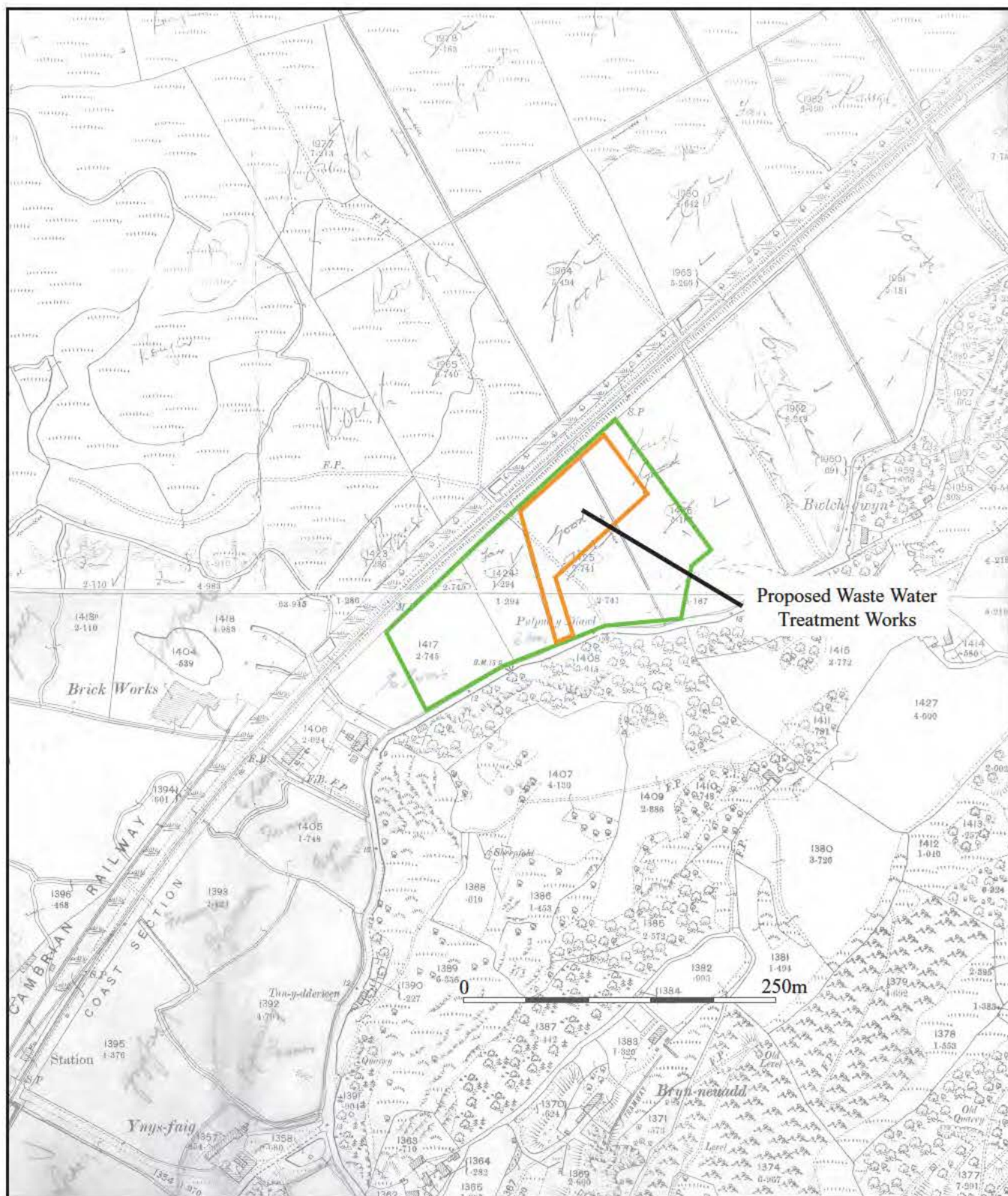




Fairbourne Waste Water Treatment Scheme:

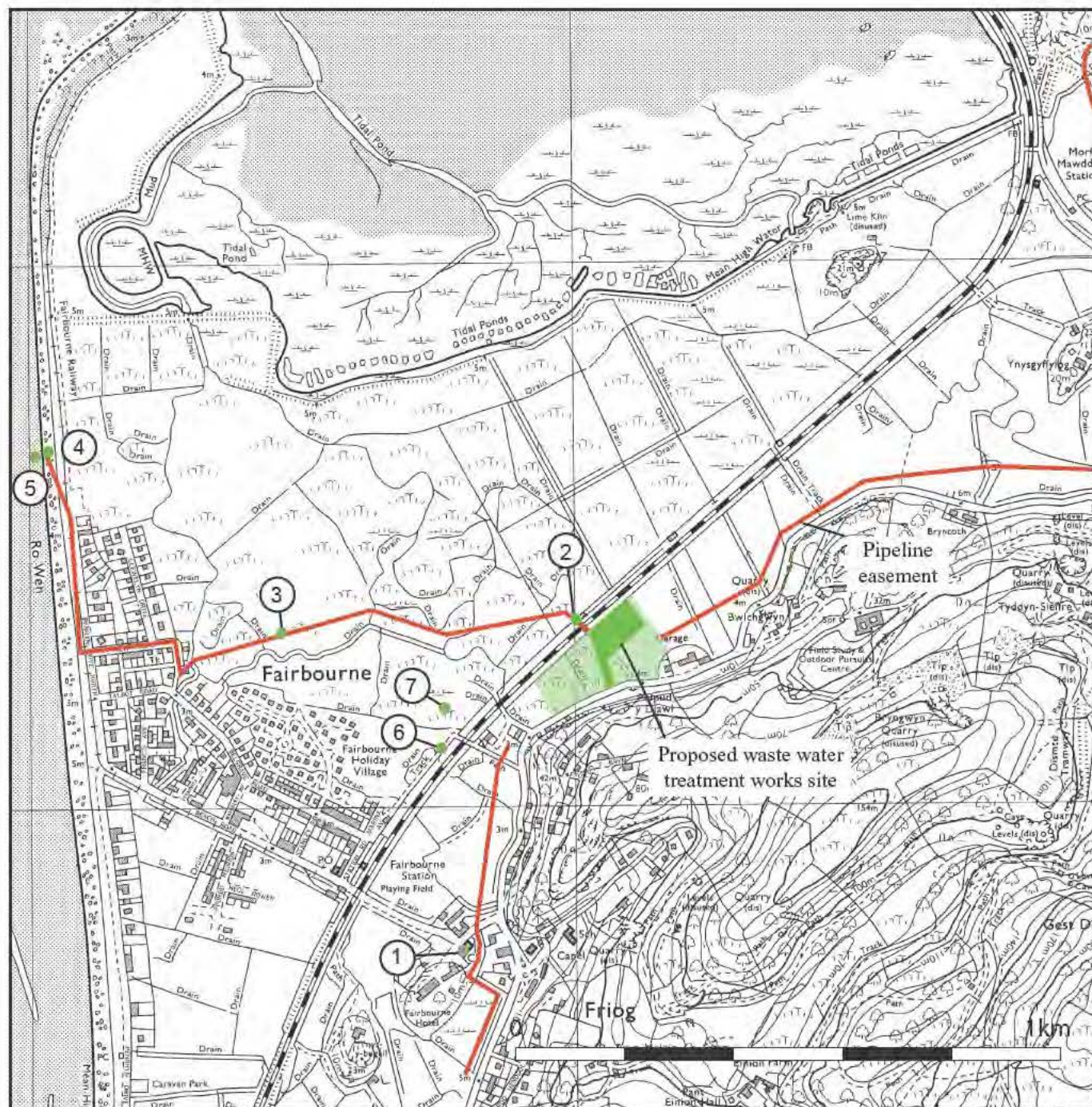
Fig. 5 Solomon Andrews and McDougall tram ways, and the Cambrian Railway, c. 1900.

After Boyd (1965), annotated GAT 2002.



Fairbourne Waste Water Treatment Scheme:  
 Fig. 6 The McDougall brick works, Cambrian Railway and other features, c. 1890,  
 in relation to the site of the proposed treatment works. After OS 1:2500, 1901.





### Fairbourne Waste Water Treatment Scheme:

Fig. 7 Pipeline West and the proposed Treatment Works site: Archaeological features 1-7.

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Fairbourne Water Treatment Scheme:  
Fig. 8 Southern site for proposed waste water  
treatment works, from south-west



Fairbourne Water Treatment Scheme:  
Fig. 9 Northern site for proposed waste water  
treatment works, from south-east





Fairbourne Waste Water Treatment Scheme:  
Fig. 10 Site for proposed waste water  
treatment works, from south-west



Fairbourne Waste Water Treatment Scheme:  
Fig. 11 Cambrian Railway gate-post, Feature 2,  
by proposed waste water treatment works site.  
Scale with 20cm divisions



Fairbourne Waste Water Treatment Scheme:  
Fig. 12 McDougall tram way, c. 1900, Feature 6 (from Boyd 1965)





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