

FAIRBOURNE WASTE WATER TREATMENT SCHEME

ARCHAEOLOGICAL ASSESSMENT

1. THE PIPELINE EASEMENT

Report No. 469



The Late Bronze Age bronze urn from Arthog
(National Museum of Wales)

Prepared for
Symonds Group Ltd

December 2002

By
G.H. Smith



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Gwynedd Archaeological Trust

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FAIRBOURNE WASTE WATER TREATMENT SCHEME

ARCHAEOLOGICAL ASSESSMENT

1. THE PIPELINE EASEMENT

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, this first part covers the pipeline easement, 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 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 within the proposed Waste Water Treatment Works area. No significant features will be directly affected, and mitigatory measures are mainly limited to avoidance or an intermittent watching brief. The exception is in one area of peat, close to where an important Bronze Age find was recorded in the 19th century. A comprehensive watching brief is recommended for the most sensitive part of this area, and time allowed for appropriate recording and sampling, as needed..

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 partly within the Snowdonia National Park and 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 19th century. Fairbourne is also an unusual example of a late 19th century 'new town', built to exploit the new fashion for tourism and was associated with an unusual complex of passenger tramways. The pipe-line route also adjoins a Site of Special Scientific Interest – the Mawddach Estuary (SSSI 1628, Code 31WVS) of which the Arthog Bog and Afon Arthog form part.

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

This was undertaken on two days, the 22nd and 28th 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. Most of the man-made features including field boundaries, drains and tracks are aligned north-west to south-east, while the pipeline route runs perpendicular to this and this means it will cut many modern features. Most of the route is open and easily visible, either short grass pasture or along existing tracks.

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.

The route was been divided into convenient topographic units according to the varying blocks of land traversed, fields, roads etc. as set out below. This makes it easier to discuss the general environmental impact of the construction and to refer to particular areas of the route.

3.2.1 Pipeline and construction area topography, land use and sub-surface descriptions.

L1 South of Friog to St. Cynon's Church. 0.30km.

Level improved pasture in reclaimed marsh, with deep drainage ditches, not properly maintained. Probably with underlying peat deposits.

L2 St Cynon's Church. 0.10km.

Level, following an old farm track around the base of the rocky knoll on which the church is built and which has been quarried around its periphery. The easement may run through bedrock here.

L3 St Cynon's Church to Windy Nook. 0.30km.

As L1.

L4 Proposed waste water treatment works site. 0.30km.

As L1.

L5 Proposed waste water treatment works site to Belgrave Road pumping station. 0.80km.

Level over poor pasture on partly improved marshland with peat underlying.

L6 Llyn Road and Penrhyn Drive North. 0.45km.

Level modern public highway, partly possibly over peat and partly over old beach deposits.

L7 Fairbourne Rly crossing and outfall. 0.10km.

Level over disturbed ground of track bed of existing narrow gauge railway and former tram way and beach deposits.

L8 Proposed waste water treatment works site to Marina Avenue. 0.6km.
Level along line of former tram way possibly over peat deposits.

L9 Proposed waste water treatment works site to Glasfryn Terrace. 1.05km.
As L1, cutting several drainage ditches.

L10 Glasfryn Terrace to Cambrian Rly level crossing. 0.35km.
Level along line of modern road over former tram way track bed which may overlie peat beds.

L11 Cambrian Rly level crossing. 0.10km.
Along line of modern road following line of former level crossing, which rises over the railway embankment which probably overlies clay, the peat having been excavated in its construction.

L12 Cambrian Rly level crossing to Mawddach Crescent. 0.90km.
Level along line of modern road, which lies on the track bed of a former tram way which may overlie peat beds.

L13 Cambrian Rly road bridge to Seion Terrace. 0.90km.
Level along line of track bed on embankment of former Dolgellau and Bala branch of Cambrian Railway, probably overlying clay.

L14 Seion Terrace to Bont Arthog. 1.25km.
As L1, cutting several deep drainage ditches and three partly embanked trackways, one of which was a former quarry tram way track bed.

L15 Bont Arthog to Wesleyan Terrace. 0.35km.
Level over peat. Crossing the Afon Arthog, its sea-banks and one deep drain.

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). 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 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 (Fig. 1a). 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 18th and 19th 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 11th 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 Ynysgyffyllog, in a demise (grant) of land of 1457 as Ynys y Keffloe (Higgon 1985, 10).

Settlement increased in the 18th 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 Ynysgyffyllog, date to the 18th 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 19th century. The earliest slate quarrying probably began in the 18th century at Arthog and there were eventually at least eight slate quarries, some of it mined. 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 (Feature 18, below) (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 (Feature 13, below).

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.

4.3 The Archaeological Survey (Figs 7 and 8)

Twenty one features were identified directly within the survey area, defined as the easement shown on the map supplied (Symonds 2002, Drawing No. 57753 LOC 1, Rev A). These are listed below with recommendations for further assessment and mitigatory measures, where appropriate. Other features close by, not directly affected, but which may be relevant to the work are listed separately.

Feature 1 St. Cynon's Church

SH61801274

Period: 20th century

Category: B. Impact: None

Set on a rocky knoll just north of the Fairbourne Hotel. The foundation tablet by the entrance on the north door laid in 1926. Consecrated in 1927. Built in Gothic style of local materials. It was a new foundation, not on the site of an earlier church and designed to serve the expanding new settlement of Fairbourne.

The easement runs at the foot of the knoll and does not intrude on the church boundary.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 2 Cambrian Railway cast iron gateposts

SH62001335

Period: 19th 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

Feature 3 Peat cutting faces

SH61501335 (C)

Period: 19th century

Category: D. Impact: Likely

A number of straight cuts and low faces can be seen on the north side of the main drain running towards the present Fairbourne pumping station. This general area is recorded as having been extensively cut for peat to supply Barmouth, prior to the coming of the railway, when coal became so cheap as to supplant peat as a fuel. Such peat-cutting remains are probably very extensive and although of interest are of low individual value.

Minor industrial features.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 4 Fairbourne wastewater outfall vent pipe (Fig. 9)

SH61061360

Period: 19th century

Category: C. Impact: Likely

A cast-iron outfall vent pipe on the access chamber in the sea-wall, immediately north of Fairbourne. The pipe is a decorative casting but the pipe itself is partly rusted through because the base seems to have been kept painted, but not the pipe itself. The casting inscription on the base reads 'Ham Baker & Co. Limited Engineers Westminster'

A Victorian feature of local historical interest but in poor condition.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 5 Anti-tank defences (Fig. 10)

SH61051355 (C)

Period: Mid-20th century

Category: A. Impact: Unlikely

A long line of large, square concrete blocks line the seaward side of the sea-wall at Fairbourne, remains of World War II anti-tank landing defences. They are well preserved and now quite a rare example of such defences. They must have been made *in situ*. Efforts to remove them, as an eyesore to the tourist trade after the end of the war had to be abandoned because of their size and weight. However, by the existing sewage outfall one or two are missing or subsided into the beach, possibly as a result of relaying the outfall. Even if a new outfall were to be built it may be possible to insert it without disturbing any blocks.

Possibly now so rare and such a complete example as to be of national value, awaiting assessment by the current 'Defences of Britain' project.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 6 McDougall tramway track bed (Fig. 6)

SH61801317 (C)

Period: 19th century

Category: C. Impact: Nonet

This is the track bed of a tramway built by McDougall (of self-raising flour fame) as part of his venture to create a holiday village here, eventually named Fairbourne. The tramway was built in 1890 to take bricks from a specially built brick and tile works and other materials offloaded from the Cambrian Railway to build the first houses of Fairbourne. It was then used for passenger traffic until at least 1903 before being sold in 1911 and replaced by the Fairbourne Miniature Railway. This length specifically served the brick works (Feature 7) and was abandoned after the construction of Fairbourne, the tramway then running just from Fairbourne Station to Penrhyn Point (for ferries to Barmouth).

The tramway track-bed, which provides a raised area, is now used as footpath. There are no tramway features left and the track bed is not of any historical or amenity value, except for its route, which will not be affected.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 7 McDougall Brick and Tile Works (Fig. 6)

SH61751316

Period: 19th century

Category: D. Impact: None

The brick works, consisting of a large clay pit with adjoining buildings and tramway sidings is marked on the 1901 OS 1:2500 map. It was built c. 1890 by McDougall to provide materials for his construction of Fairbourne. It was served by a horse-drawn tramway (Feature 6). The brick works has been demolished and the clay pit infilled. The field is now fairly level pasture with only a few slight irregularities marking where the buildings once were.

Now of no historic value as all structural evidence has gone (apart from the tramway track-bed) and the clay pit has been back-filled.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 8 Stone-built field drains

SH63101358 (C)

Period: 19th century

Category: D. Impact: Significant

There are numerous straight, parallel raised linear features in the fields here. By comparison with other similar features that have been exposed close to Arthog (Feature 18), these are stone-lined and capped field drains that have been raised above the modern surface due to shrinkage or erosion of the peat. They must originally have been at least 0.50m lower. Probably laid in the mid 19th century.

These are minor and common agricultural features of little historic value although they will be damaged by trenching. Normally field drains would be replaced as a matter of course, but these are now more of a hindrance to agriculture and probably no longer function as useful drains so the farmer may not be concerned.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 9 Solomon Andrews tramway track bed

SH63001370 (C)

Period: 19th century

Category: C. Impact: Significant

This is the track bed, on a slightly raised embankment, for a horse-drawn tram way of 3 ft gauge, that ran from the quarry at Tyddyn Sieffre south of the Arthog road. It may have been first used to supply materials for the construction of the Cambrian Railway, Mawddach railway bridge between 1965 and 1867. Most of it was built by Solomon Andrews of Cardiff, for a tram way to build speculative holiday houses at Fegla Fawr and afterwards for passenger traffic. His general aim was to create a holiday resort in a similar way to the eventually successful, rival Fairbourne. O'Connor (2000) says that the tram way was not used in construction of the railway, but solely built and used by Andrews, although the source is not quoted. This may be true, as there was some antagonism from the railway which wouldn't let Andrews build a link to the main line by the south end of the Barmouth railway bridge and he was forced to build a new embankment across the marsh to the west of Fegla Fawr. The track bed has since been used as a motor track, crossing the former Cambrian Railway by a gated crossing a little to the west of the original tram crossing which was not allowed a proper railed junction there, the wagons having to cross on flat trolleys.

The line of the tramway is of local value but not the structure itself.

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

Feature 10 Stock loading ramp

SH63021396
Period: 19th century
Category: C. Impact: Unlikely

A brick and stone built fenced platform at the south edge of the Cambrian Railway where there is a link between the Barmouth and Dolgellau lines. It is a ramp for loading stock, particularly sheep. Shown on the 1901 OS 1:2500 map.

One of the few surviving features of the Dolgellau Branch line. Unlikely to be affected as it lies just to one side of the pipeline route.

Recommendations for further assessment: None
Recommendations for mitigatory measures: Avoidance

Feature 11 Cambrian Railway pedestrian gate

SH63021410
Period: 19th / 20th century
Category: C. Impact: Unlikely

A wooden picket gate for pedestrians at the north side of the gated crossing to Fegla Fawr, of the Cambrian Railway, Dolgellau branch line, just east of the Morfa Mawddach junction station. It is wired shut now but has remains of the weighted pulley, self-closing mechanism. As it is wooden it is probably 20th not 19th century.

A small feature but of local interest because there are no other timber features of the Dolgellau line surviving here (closed 1962). Unlikely to be affected as it lies to one side of the easement.

Recommendations for further assessment: None
Recommendations for mitigatory measures: Avoidance

Feature 12 Solomon Andrews tramway track bed (Fig. 11)

SH63001418 (C)
Period: 19th century
Category: C. Impact: Significant

A continuation of Feature 9. The track bed of a horse-drawn tramway to Fegla Fawr, now covered by a modern road although some intact lengths of track bed survive close to the Cambrian Railway crossing and at the south-west side of Fegla Fawr. A couple of pieces of tram rail survive near to the railway crossing, one used as a post for a 'Private Road' notice.

An extensive feature but with little intrinsic interest. It is the line of the tramway itself that is of interest and that will be maintained. There are no specific features of the tramway surviving. For instance, there were 11ft high cast-iron lamp-posts for oil lamps at intervals along the track (O'Connor 2000, 5). These must have been taken for scrap, along with the rails. However, it is possible that some rail shoes could have been left in, below the modern road surface, and these could turn up during trenching.

Recommendations for further assessment: None
Recommendations for mitigatory measures: Occasional watching brief

Feature 13 Sentry boxes (Figs 12 and 13)

SH63181466

Period: Late 19th/Mid-20th century

Category: A. Impact: Unlikely

Two sentry boxes on either side of the Fegla Fawr track (former tram track bed) just below Bron Fegla house. Apparently designed to imitate large masonry gate pillars. Six-sided with conical roofs of mass concrete inset with panels of beach pebbles with moulded imitation ashlar quoins. They each have a simple slit doorway and a very small eye-level viewing slit, meant to be not easily seen. Built of mass concrete. The insides of the roofs have clear shuttering impressions. There is a pair of drilled holes inside, probably for brackets for a field telephone. They are set on rough concrete plinths. The eastern box, probably built on peat, has subsided and leans to the east. There are no WWII graffiti and no sign of any contemporary gate or barrier. Although there is no early record of them, the ornate and non-functional design, contrasting sharply with the crude functional buildings of the camp makes it a possibility that they were constructed for Solomon Andrews around 1899 as privacy or security features for the Mawddach Crescent area, which was otherwise rather isolated and open to trespassers. For instance, there were (presumably timber) stables for the tramway horses somewhere just north of the sentry boxes, below Fegla Fawr, and perhaps the tram cars were stored there too.

These are a rare, unusual and complete survival, in good condition, possibly unique. They may be regarded as of national value when incorporated in the Defence of Britain project. They should not be affected as they lie to either side of the pipeline route but care needs to be taken to avoid accidental damage by earthmoving machinery. They already have a few grooves from passing vehicles.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance and Watching brief

Feature 14 Royal Marines training camp (Fig. 14)

SH63201480 (C)

Period: Mid-20th century

Category: B. Impact: Unlikely

Situated to the east and north-east of Fegla Fawr are numerous rectangular concrete foundation platforms and attendant features including the sentry boxes (Feature 13), oil tank stands, footpaths, walls and drains. The extensive features were not fully investigated although a sketch plan of the whole lay-out is printed in O'Connor (2000). This was a Royal Marines' training camp, codenamed 'Iceland', built in 1941, later used for more general training of gunners and engineers, used very briefly after the war and then demolished (O'Connor 2000).

This is of particular interest in the light of the current Defence of Britain project. It provides features of wider than just local interest, although unlikely to be affected by the pipeline, which will probably avoid the structures out of necessity.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 15 Cambrian Railway track bed and embankment

SH63401400 (C)

Period: 19th century

Category: B. Impact: Slight

The embanked track bed for the Cambrian Railway, Dolgellau Branch, opened 1867. It has been re-laid as a footpath/cycleway and there are no features left on the track bed itself.

The line of the railway is of regional value but this won't be affected by pipeline construction. The structure itself will be affected but this is not in itself of value.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 16 Track way

SH63781440 (C)

Period: Post-medieval

Category: C. Impact: Likely

A straight track crossing the marsh to the estuary edge. An old route, this, or more probably the adjoining drain is shown on the first edition of the OS 1 inch map, c. 1838, before the construction of the Cambrian Railway and still retained as a public right of way. Probably part of 18th century drainage of the marshes. There seems no particular reason why a route should be provided just here as there are no routes leading to it, or houses at its landward end, so it probably relates to the land ownership divisions.

The pipeline will cut through the track and drain but as these are extensive linear features they are not of value in themselves and will have to be reinstated as part of the modern agricultural landscape.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Reinstatement

Feature 17 Track way

SH63871446 (C)

Period: Post-medieval

Category: C. Impact: Likely

A distinctive, embanked straight trackway. Marked on the first edition of the OS 1 inch map c. 1838, before the construction of the Cambrian Railway. Possibly built as a farm access track to the drained marshes, although why here is not apparent. There are no obvious routes to it or nearby houses. The track does not run to the estuary edge, like Feature 16, but runs as far as a drainage dyke that runs westward from the Afon Arthog and on the 1838 map seems to join up with a continuation of another track, Feature 18. As it is built on an embankment considerable work went into its construction. Possibly it connected with a tidal cut and provided access to boats for loading and unloading.

The pipeline will cut through the track way embankment but as an extensive linear feature it is not in itself of interest and will be reinstated as part of the modern agricultural landscape.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Reinstatement

Feature 18 Track way and tram way track bed

SH64141460 (C)

Period: Post-medieval

Category: C. Impact: Likely

A straight track way leading from close to where the Cregennan road meets the main coast road, to a small creek at the outlet of the Afon Arthog. The track is marked on the first edition of the OS 1 inch map, c. 1838, before the construction of the Cambrian Railway (opened 1867, closed 1964). Because of its possible relation to the Cregennan route it could have medieval or early post-medieval origins rather than being just part of 18th or 19th century work. There is also an old lime kiln by the track way and the head of the creek, which was associated with a quay at the creek, or the railway. The track was used for a horse-drawn tram way from the

Arthog quarry to a siding on the newly opened Dolgellau railway in 1867 but the quarry ceased working in 1869. Later the track was utilised as an access road to the Arthog Station on the Dolgellau branch of the Cambrian Railway. Before the railway was built the track provided access to the Arthog creek, probably for loading/unloading of small boats. At the south end of the track there is a small row of cottages, the oldest in the neighbourhood. One of these is named Pen Cei – ‘Head of the quay’, which probably refers to the track way and its connection with a quay on the creek.

The track way will be cut by the pipeline. The possible early date of its construction is of interest and it will be worth observing for possible dating evidence.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Watching brief and reinstatement

Feature 19 Stone-built field drains

SH64401460 (C)

Period: Post-medieval

Category: D. Impact: Significant

A series of straight parallel drains are visible in most of the fields close to Arthog, similar to those of Feature 8. These are partly exposed by shrinkage or erosion of the peat into which they are set, which has left them raised up slightly above the field surface and now a hazard to ploughing. Where exposed they can be seen to be stone-lined and capped. Probably part of land improvement as part of the Ty'n y coed estate.

The drains are extensive and not of individual interest but may need to be reinstated as part of the existing field drains.

Recommendations for further assessment: None

Recommendations for mitigatory measures: None

Feature 20 Cast iron gate posts (Fig. 15)

SH64501475

Period: 19th century

Category: C. Impact: Unlikely

A pair of quite decorative cast iron gateposts stand in the middle of the meadow here although the fence they supported (and gate) have long gone. The boundary is marked on the 1901 OS 1:2500 map. They must belong to 19th century land improvements as part of the Ty'n y coed estate.

The posts are a minor feature but of local interest. The posts have been preserved in what is now a landscaped private garden cum nature reserve. They flank an old track that may be used for the easement and should not be affected but need to be avoided. The owner is conservation-minded and would probably wish to see them preserved.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 21 Peat beds (Figs 15 and 16)

SH64551486

Period: Prehistoric

Category: E. Impact: Significant

This meadow is considered to be that where a rare and valuable find was made in 1826. This was the Nannau bronze urn, a Late Bronze Age object of c. 700 BC, now in the National Museum of Wales. The circumstances of its discovery are not known, but described as ‘in a turbary’ indicating peat cutting. However, it seems that

most peat cutting took place further out in the open marshes, while these fields close to the settlement were enclosed, drained and used as pasture. Perhaps the descriptions means just 'in a peat bed' and if in this field would most likely have come from drainage ditching or field drain laying and this means that any associated finds, surfaces or structures would still remain, whereas if found during peat cutting all could have been removed. The location, close to the Arthog creek may well be significant as the nearest accessible point for sea-going boats to the upland part of Arthog which is very rich in Bronze Age funerary and ritual features such as cairns and standing stones and seems to have been an important ceremonial centre (Cadw 2001).

The context of such a rare and valuable find needs to be observed. The context itself is of interest and there could be other associated finds. Timber remains are a possibility. There is clearly a good depth of peat here. A freshly machine-dug ditch was observed in the adjoining field to the north-east, with over a metre of peat, at the base of which were (natural) woody remains.

Any cutting of the peat here is very sensitive and needs to be monitored although similar peat beds are probably to be found over the whole part of the pipeline easement from Arthog to Friog, where it runs through the level Morfa and prehistoric finds are a possibility at any point. Excavation by machine needs to be done in a controlled manner accompanied by an archaeological watching brief. Water logging may make it difficult to produce a detailed record but such a record will need to be produced if any artefacts are found. If this happens than environmental sampling, and possibly a specialist visit will be needed. As a minimum, radiocarbon dating of the peat is desirable, to test its association with the previous bronze urn find.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Prior machine excavation of the pipe-line trench under archaeological supervision, together with basic or detailed recording, as required. Sampling and dating of deposits.

Feature 22 Mound/Knoll

SH64681475

Period: Unknown

Category: E. Impact: Significant

A rather discrete tump or knoll is marked here on the 1901 OS 1:2500 map, where the eastern terminal of the pipeline is. It is now obscured by bushes, a modern garage and a septic tank. It does not seem to fit with the natural topography here, but could be just an outcrop or perhaps is a slate waste tip from quarrying a platform for the construction of the nearby terrace of house and chapel.

Although of unknown origin and not known to be of value there is a possibility that it is a man-made feature and it would be worth observing the construction works here.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Watching brief

5 SUMMARY AND 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 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 Llwyngwrl and partly for the well preserved remains of 19th century quarrying and mining on the slopes below Cregennan. All these lie on the hill slopes away from the proposed pipe-line and the pipeline route does not come into contact with the specific elements of the prehistoric landscape and once constructed will be invisible and cause no change to the setting of those monuments. However, it does come into contact with elements of the post-medieval landscape.

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). A summary of the impact on individual archaeological or historic features is provided below (5.3). It is considered that overall, the direct impact of construction on individual features relating to the historic landscape is moderate, in that most of those features are of low value, or can be avoided. The wider impact on the integrity of the landscape is considered to be low in that, once constructed, the pipe-line will be hidden from view

5.2 Impact of construction on individual archaeological or historic features

5.2.1 Prehistoric features

There are several features that will be affected by construction, as summarised below (5.3) but the most significant impact is that which cannot easily be assessed, that is the larger part of the route which cuts through lowland peat deposits. The peats occupy most of the lowland plain, but probably vary in depth, according to the profile of the underlying clays and in others may have been truncated by widespread post-medieval peat-cutting for fuel. In others they may have removed to allow construction, for instance of the Cambrian Railway track-bed. In greater or lesser depth they are likely to be present along the majority of the pipeline route. They were exposed at the east end of the pipe-line route, where a newly dug drainage ditch was observed (Fig. 16). This showed 1m depth of peat, which is about the depth at which the waste water pipe will be laid. Closer to the Arthog creek, an underlying valley profile probably means that the peat will be deeper. Peat can also be inferred to exist under most of the fields between Arthog and Friog because stone-lined drains have become raised to the surface in the pasture, probably because the underlying peat has shrunk due to drying after drainage. Peat is also present immediately east of Fairbourne, where it has been dug out during ditch cleaning, and where there are traces of post-medieval peat-cutting (Feature 3).

The peats probably developed during the latter part of the post-glacial period as sea-levels rose to those of the present day. They can be seen as a series of old land surfaces in which, because of their waterlogged nature, there will be a good environmental record of the prehistoric period. They occur over a very large area and so form more of a geological deposit, of nature conservation value, but in small areas of no particular identifiable archaeological significance. However, they may also contain remains of specific human activity. As marshland, the area would not have been the site of permanent settlement but in recent years extensive remains of seasonal prehistoric settlement have been found in the peats of the Severn Estuary (Bell *et al* 2000). In addition, remains of individual items have been found elsewhere, such as Mesolithic flint points, in association with animal carcasses, presumed to result from hunting activities, as well as fish-traps, tracks, jetties and boats.

Occasionally more spectacular finds of metalwork in peat may represent ceremonial deposits such as the finds from Llyn Cerrig Bach, Anglesey and Flag Fen, Peterborough. In the area of the present study, the Late Bronze Age urn from Arthog may be part of such a deposit. Its exact location, context and circumstances of discovery in 1823 are not known. However, its size and completeness suggest that it was not a discard or casual loss. It could have contained a cremation burial or it could have been part of a larger deposit, whether ceremonial or a deliberately hidden hoard. If it were, then it seems likely that other objects would have been found at the same time, but this is uncertain. It was recorded as being found 'in a turbary' and this suggests in a peat cutting bed and any associated finds should have been uncovered if a whole area was being cut for peat. However 'a

turbary' can just mean an area of peat, not necessarily being cut, so it could have been found while cutting a drainage ditch, for instance, and other objects, or evidence could survive.

The Arthog creek is tidal and was still used for loading of slate up to the mid 19th century. Its flooding into adjoining fields is only prevented by a high sea-bank. The fact that this tidal water approaches very close to the adjoining hill-slopes makes it accessible and very useful. The bronze urn would have been a very valuable object. Its location, in the vicinity of the Arthog creek is probably significant. Considering the intensity of Bronze Age funerary and ritual features on the Cregennan plateau close by, and the natural route followed by the road connecting Cregennan to Arthog, close to the creek, an association between them is likely (Figs 2 and 3). There is some evidence of prehistoric settlement in the Cregennan area, but it is slight compared to the evidence of prehistoric funerary and ritual activity. It seems more likely that this was a centre to which people came from a wide area. If there were ceremonial deposits of metalwork then we might expect them to be in the Cregennan area, not in the lowland, so a single deposit for funerary purposes or for concealment seems perhaps most likely. However, the evidence suggests that the Arthog creek may have been an important focus for communications in prehistory and there is a likelihood of other finds there, whether more metalwork, or of timber remains such as trackways or jetties.

The pipe-line route in the vicinity of the Arthog Creek is identified as the area of greatest potential for survival of evidence of prehistoric activity. It is therefore recommended that a comprehensive watching brief is carried out during trenching of the route between Feature 18 and Feature 22, at the east end of the route (Fig. 8). It is also recommended that during pipe-trenching along this part of the route, time is allowed for archaeological recording and sampling. For the area further away from the creek, prehistoric activity can be expected to have been sparser, such as chance losses associated with hunting or wildfowling. In addition, peat is likely to be shallower and survival of organic remains may be reduced because of the drying out of peat in drained and improved fields. An intermittent watching brief is therefore recommended as more appropriate in these areas.

5.2.2 Post-medieval features

With regard to features of more recent date, the area is one that is surprisingly complex because of the presence of several tramways, railways and tracks. The archaeological remains associated with these are principally the track beds, of which the Solomon Andrews tramway and the Arthog Quarry tramway are the more important. A comprehensive watching brief should be maintained during excavation of these features, together with recording of a section through the remains and observation for associated finds.

The important Second World War sentry boxes at Fegla Fawr (Figs 12 and 13) require a watching brief to be maintained to ensure safety of the structures, although the anti-tank defences at Fairbourne (Fig. 10) should remain unaffected. The majority of the remaining features can be avoided, or are of insufficient value to warrant further work.

5.3 Summary of recommendations for mitigatory measures

Nil	Features 1,3, 6, 7, 9, 15 and 19.
Avoidance	Features 2, 4, 5, 10, 11, 14 and 20.
Avoidance with watching brief	Feature 13 (WWII sentry boxes).
Re-instatement	Features 16 and 17 (Trackways).
Intermittent watching brief	Feature 12 (Tramway).
Intermittent watching brief	Peat beds in areas L1-5, L9, L14
Comprehensive watching brief and Reinstatement	Feature 18 (Trackway and tramway).
Comprehensive watching brief with detailed recording and sampling	Between Features 18 and 22 (Afon Arthog peat beds).

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1. GAT Sites and Monuments Record

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

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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

- 7273 Fairbourne
- 7274 Fairbourne railway
- 7275 Tank defences, Fairbourne.

b. Within 100m of the easement

- 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
- 7272 Mawddach Junction Station

c. Within 100m to 1km of the easement

- 49 Llys Bradwen, medieval site
- 3286 Bronze palstave, Bron-lletty-Ifan
- 4861 Medieval house ruins
- 4862 Stone gun, 19th 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)
- 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

Nil

b. Within 100m of the easement

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

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 recorded by Cadw (1995) or RCHMW (CARN on-line index)

Arthog

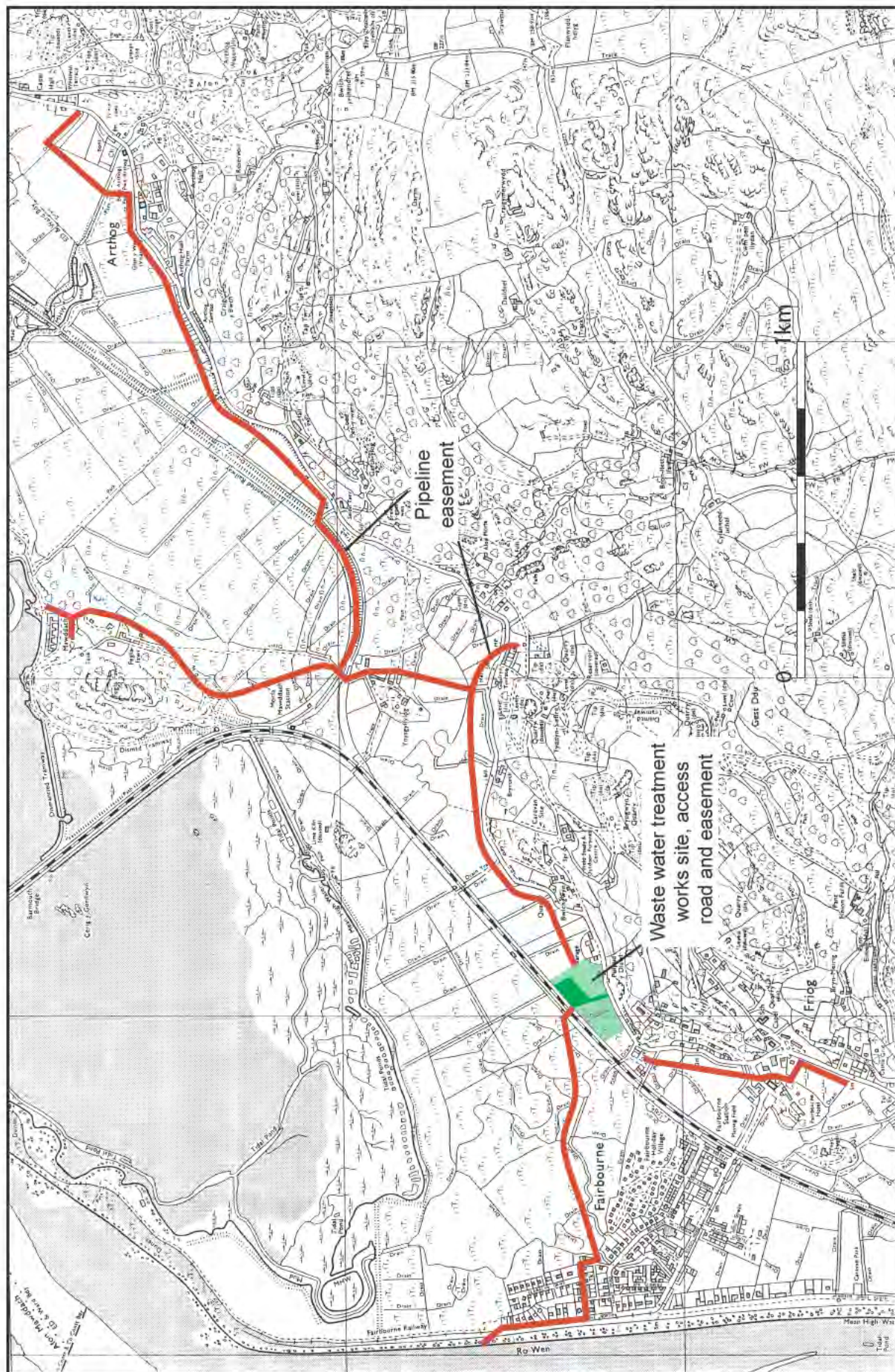
Arthog Terrace, Status II, late 19th C, Rec. 44/D/1-12(4). NGR SH 64021438 to 64081442
Arthog Hall, Buildings and Lodge, Status II, 1833 on an earlier building Pwllarthog c. 1700. Rec. 44/D/13(4). NGR SH 64211447. Rec. 44/D/15(4). NGR SH 64431457. Rec. 44/D/16(4) and Rec. 44/D/17(4). NGR SH 64451443.
Arthog Vicarage (Glan y Wern), Status II, 1837. Rec. 44/D/14(4) NGR SH 64331454.
St. Catherine's Church, Status II, early 19th C chapel. Rec. 44/D/18(4). NGR SH 64561462.
Bont Arthog (Pont Pwll-arthog), Status II, late 18th 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 18th C. Rec. 44/D/31(3). NGR SH 613121.
New Inn, Status II, mid 19th C. Rec. 44/D/32(3). NGR SH 61561222.

Other buildings listed by RCHMW

Arthog Railway Station, mid 19th C.
St. Cynon's Church, Fairbourne, early 20th 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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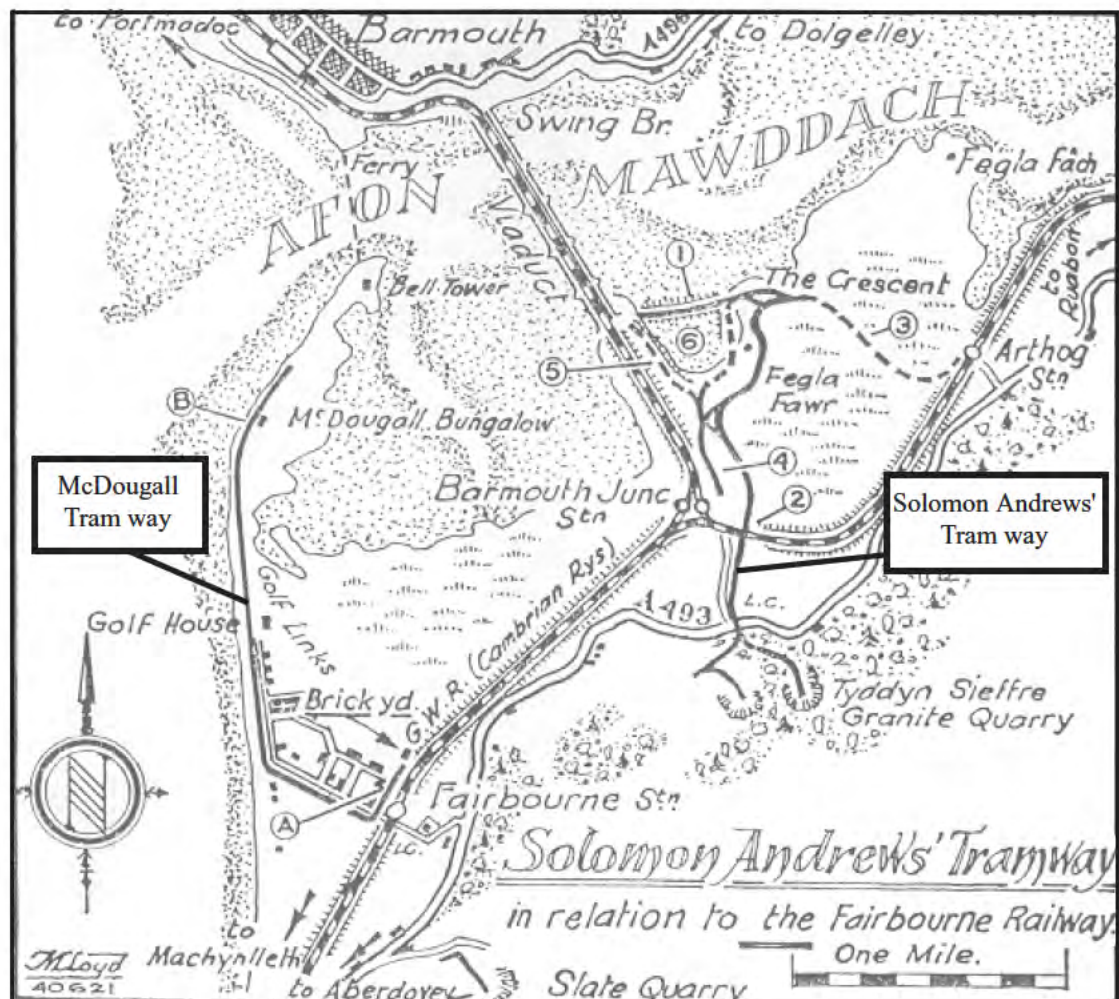
Fairbourne Waste Water Treatment Scheme:
 Fig. 2 OS One-inch to a mile, First edition, c. 1838



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



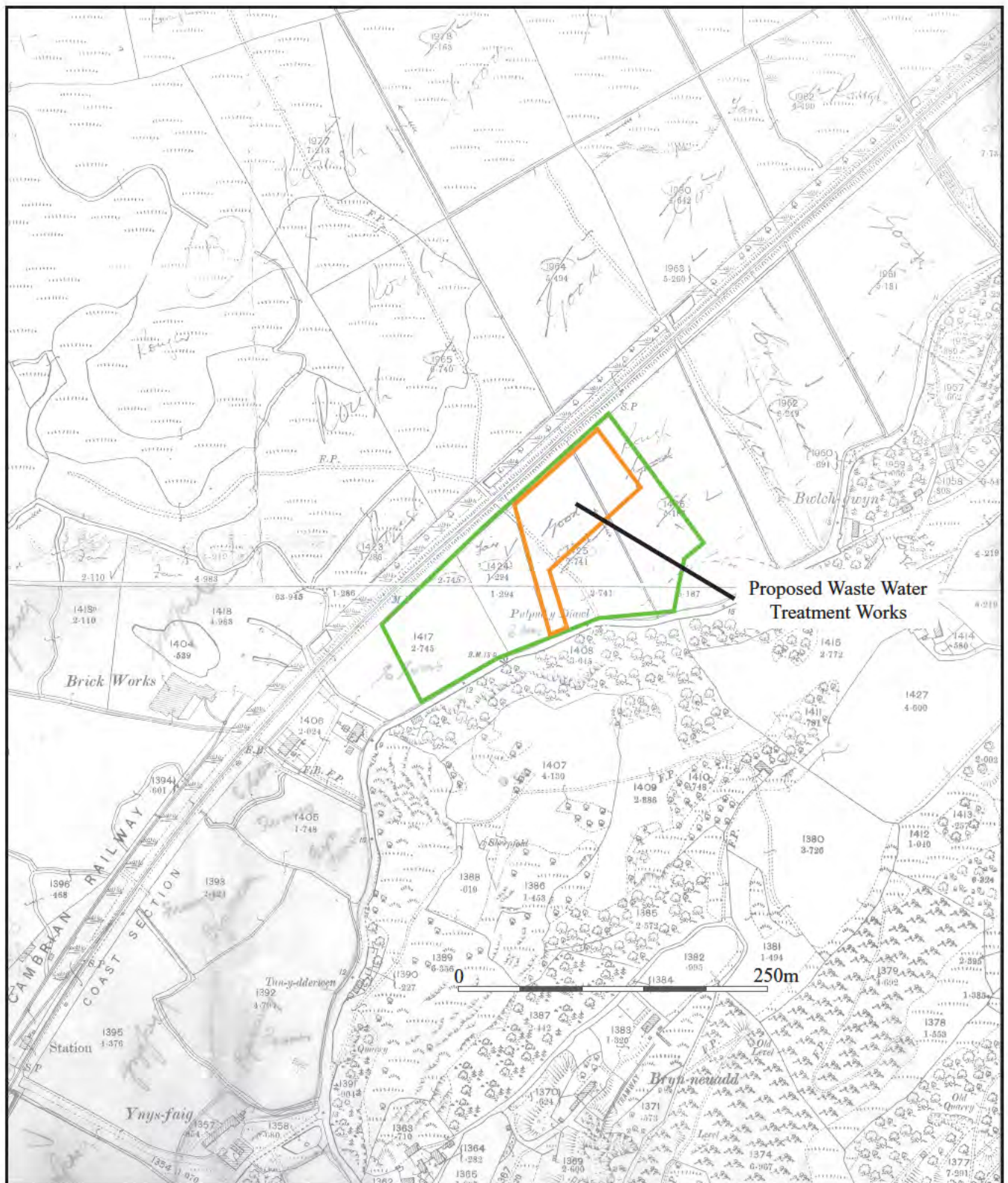
Fairbourne Waste Water Treatment Scheme:
Fig. 4 The Late Bronze Age bronze urn from Arthog.
National Museum of Wales (Savory 1980, Plate IV a).



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.



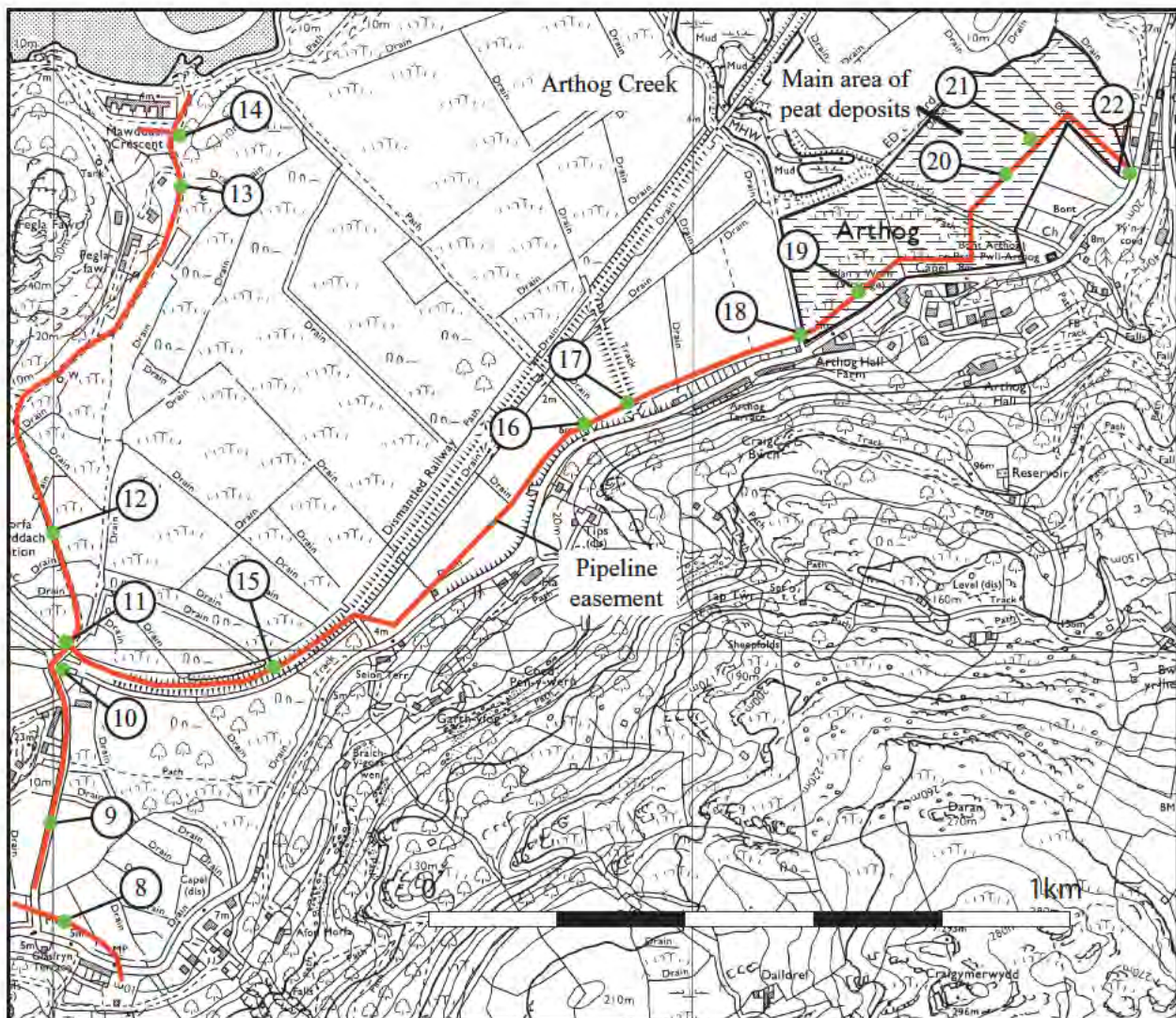
Fairbourne Waste Water Treatment Scheme:
Fig. 6 The McDougall brick works, Cambrian Railway and other features, c. 1890,
in relation to the site of the proposed treatment works. After OS 1:2500, 1901.



Fairbourne Waste Water Treatment Scheme:

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

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Fairbourne Waste Water Treatment Scheme:

Fig. 8: Pipeline East, Archaeological features 8-22.

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Fairbourne Waste Water Treatment Scheme:
Fig. 9 Outfall vent pipe, Feature 4. Scale with 20cm divisions



Fairbourne Waste Water Treatment Scheme:
Fig. 10 Outfall vent pipe, Feature 4 and Anti-tank defences, Feature 5



Fairbourne Waste Water Treatment Scheme:
 Fig. 11 Solomon Andrews' tram way track bed, Feature 12,
 north of the Mawddach Junction gated crossing. 1m scale



Fairbourne Waste Water Treatment Scheme:
 Fig. 12 Sentry boxes , Feature 13, east of Fegla Fawr. 1m scale



Fairbourne Waste Water Treatment Scheme:
Fig. 13 Sentry box detail, Feature 13, east of Fegla Fawr. 1m scale



Fairbourne Waste Water Treatment Scheme:
Fig. 14 Concrete hut base, Royal Marine camp 'Iceland', Feature 14
and Sentry boxes, Feature 13 in background, east of Fegla Fawr. 1m scale



Fairbourne Waste Water Treatment Scheme:
Fig. 15 Cast iron gate posts, Feature 20
and possible location of the Arthog Bronze Age urn find, Feature 21. 1m scale



Fairbourne Waste Water Treatment Scheme:
Fig. 16 Exposed peat beds in a recent drainage ditch, close to the find spot of the Arthog
Bronze Age urn find, Feature 21. 1m scale



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