
Afon Trweunydd Hydro-Power Scheme



Archaeological Record and Watching Brief 2007

GAT Project No. G1950

Report No. 693

October 2007

Afon Trweunydd Hydro-Power Scheme

Archaeological Record and Watching Brief

Report No. 693

Prepared for Shawater Limited

October 2007

By

John Roberts

Afon Trweunydd Hydro-Power Scheme

Figure List

Figure 1: Site Location

Figure 2: Proposed Development

Plates List

Plate 01: View East of Powerhouse Location

Plate 02: View West of Powerhouse Location

Plate 03: View East of Powerhouse Location during works. Shale-rich Subsoil exposed.

Plate 04: Site 03: View Southwest prior to works

Plate 05: Site 03: During Works. Note Pipe through Sheep Run

Plate 06: Site 03: View East from Railway Line During Works

Plate 07: Site 07: View East. Note low bank of stones in foreground forming terrace.

Plate 08: Site 07: View North. Note low bank of stones in foreground forming terrace.

Plate 09: Site 07: View East during works. Note exposed terrace, detailing stones

Plate 10: Site 07: Detail of Modern Drain close to terrace.

Plate 11: Site 08: View North. Site suggested by collection of sub-angular stones forming possible terrace

Plate 12: Site 09: View South of Enclosure.

Plate 13: Site 10: View south of enclosure (located in centre of image)

Plate 14: Site 10: View Northwest of Internal Enclosures

Plate 15: Site 10: Internal Enclosures (view Southeast)

Plate 16: Site 10: Detail of Internal Enclosure. Note use of natural boulder in foreground

Plate 17: Site 12: Location of Site during Works.

Plate 18: Site 13: View Southeast of Droveway/Sheepfold detailing slate pallisades

Plate 19: Site 13: View west detailing slate and wire fence/droveway

Plate 20: Site 13: View northwest detailing enclosure. Afon Treweunydd is in the foreground

Plate 21: Site 13: View southwest during works

Plate 22: Site 14: View northeast of enclosure/sheepfold. Afon Treweunydd is in foreground

Plate 23: Site 15: View north of sheepfold with slate pallisades. Note use of large natural boulder. Afon Treweunydd is in foreground

Plate 24: Watching Brief: Drystone wall breach near Site 15

Plate 25: Watching Brief: View southwest detailing pipe location

Plate 26: Watching Brief: Easement from powerhouse to Afon Treweunydd

TREWEUNYDD HYDRO-POWER SCHEME, GWYNEDD

ARCHAEOLOGICAL RECORD AND WATCHING BRIEF

Summary

An archaeological record and watching brief has been conducted by Gwynedd Archaeological Trust (GAT) during the construction of a hydroelectric power scheme. The power scheme incorporates a 1.5km buried pipeline that conveys water from an extraction point along the Afon Treweunydd to a powerhouse and outfall next to Bron-y-Fedw Uchaf Farm. An archaeological assessment undertaken by GAT in 2000 identified sixteen sites along the route, of which nine were likely to be impacted by the scheme. Six of the sites were post-medieval agricultural features and three were suspected buildings of unknown provenance. A photographic and written record was made of these features in accordance with the assessment, prior to construction. The subsequent watching brief of the pipeline route did not identify further archaeological activity, whilst the impact of the scheme on the known features was minimal.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by Shawater Ltd. to conduct an archaeological record and watching brief during the construction of a hydroelectric power scheme linked to the Afon Treweunydd. The riverside extraction point is located at SH54505480 and the powerhouse/outfall point is centred on SH57075414.

An archaeological assessment of the proposed route was undertaken by GAT in May 2000 (GAT Report 364). The report identified sixteen archaeological features within the corridor of the route or immediately adjacent. Most of the features were associated with pastoral agricultural practices, but some examples of early field systems were also identified (GAT Report 364: 12). A series of recommendations were contained within the report, including a detailed record of the potential early field systems and a watching brief during the construction to assess the impact of the scheme on the archaeological record. The alignment of the route was subsequently altered but the identified features were incorporated into the new design (prepared for Shawater by GAT, 02/05/07).

2 SPECIFICATION AND PROJECT DESIGN

No formal brief was provided by the local planning authority so the specification/design was based on the recommendations contained within the assessment report.

The recommendations consist of a programme of basic recording, detailed recording and watching brief, as shown in the table below (see Figure 1 for their location). The level of impact was based on the proposed route.

Site No	Site Name	Impact	Mitigation
1	Barn	None	Avoid
2	Water Wheel	None	Avoid
3	Dismantled Railway	Slight	Basic record
4	Sheep Shelter	None	Avoid
5	Sheep Shelter	None	Avoid
6	Denuded Wall	None	Avoid
7	Terrace	Possible	Detailed Record
8	Terrace	Possible	Detailed Record
9	Enclosure	Possible	Basic record
10	Sheepfold	Possible	Basic record

11	Sheepdrove	None	Avoid
12	Rectangular Structure	Possible	Detailed Record
13	Sheepfold and Droveway	Possible	Avoid or Basic record
14	Enclosure/ Sheepfold	Possible	Avoid or Basic record
15	Sheepfold	Possible	Avoid or Basic record
16	Slate Tip	None	Avoid

Detailed recording:

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

Basic recording:

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

Watching brief:

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

A basic record was recommended for Sites 3, 9, 10, 13, 14 and 15

A detailed record was recommended for Sites 7, 8 and 12

For a description of the individual features, see GAT Report 364.

3 METHODS AND TECHNIQUES

The recording of the features was undertaken on the 18th of June and the 27th of July 2007 and was completed using digital photography combination of written records.

The watching brief was undertaken between the 28th June and the 17th of September 2007. The watching brief monitored the excavation of the powerhouse plot, the easement route for the outfall and the route of the pipeline from the extraction point to the powerhouse. A 21-tonne 360°-tracked excavator was used throughout the watching brief.

The archive is held by GAT under the project number **G1950**.

4 TOPOGRAPHY

The route of the pipeline is located on a strip of Ordovician rocks of the Bala (Ashgill, Caradoc), Llandeilo and Arenig series, with intrusions of igneous beds of felsite to the north and northwest. The powerhouse and the outfall are located on improved land rising to the east. Near here, a curving, linear depression in the field marks the position of a bend in the Afon Treweunydd that was straightened during the twentieth century. The route of the railway line, to the northeast of the farm marks the end of the improved land, which is succeeded by waterlogged pasture supplanted with drainage channels feeding natural streams. Above this, on higher ground, is unimproved waterlogged ground characterised by reeds and coarse grass.

5 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

Historically, the site was located within the medieval administrative *cantref* of Arfon in the *commote* of Is Gwyrfaï and appears to have been isolated from contemporary townships (GAT Report 364).

The archaeological and historical background of the site is based around pastoral farming centred on Bron y Fedw Uchaf Farm. The extant archaeological features include numerous sheepfolds as well as potential earlier field systems (as suggested by Features 7 and 8). The general area was also part of the

Vaynol Estate, which operated a slate mine to the immediate southeast that was the largest in the district until its closure in 1916. The quarry utilised the North Wales Narrow Gauge Railway, opened in 1877, which is located partly within the study area.

6 RESULTS OF ARCHAEOLOGICAL RECORDING

The archive is held by GAT under the project number (**G1950**).

Each of the nine sites within the study area highlighted in the project design, as requiring basic or detailed recording, will be discussed separately.

A basic record was recommended for Sites 3, 9, 10, 13, 14 and 15

A detailed record was recommended for Sites 7, 8 and 12

Site 3: Dismantled Railway (NGR SH57195441)

Listed in GAT Report 364 as a: “revetted trackway, bounded on either side by a drystone wall. No rails area visible at present, but this was constructed as part of the North Wales Narrow Gauge Railway”.

The report was published in 2000 when the line was closed. It was subsequently reopened to passengers in 2003 following the complete reconstruction of the railway from Waunfawr to Rhyd Ddu by the Ffestiniog Railway Company. As such, this feature did not require a basic record as there was no direct impact on the feature by the pipeline. During the construction of the hydroelectric power scheme, the pipeline was carried beneath the railway line, utilising an extant sheep run as a permanent passageway (Plate 05).

Site 7: Terrace (NGR SH57445432)

A terrace comprising a line of stones thought to be part of a relict field system (GAT Report 364). Further inspection, as part of the detailed record for the current report, identified the terrace as comprising large sub-angular stones forming a rectangular-shape (Plates 07 and 08). The terrace utilised a natural northeast to southwest slope, with the longest length of the terrace, 20.70m, running across the slope. A 10.50m long return then ran up the slope, followed by a second return, 3.0m long, running across the slope (Figure 02). The width of the terrace varied between 0.50m and 0.80m. On the eastern side (the location of the 10.50m length of wall) a 2.0m long bank stretched away from the terrace.

A short length of bank was also located, c.6.0m to the south of Site 7 (Plate 07). This terrace comprised a line of grass covered, 27.0m in length, running towards a stream. The pipeline route bisected this feature and proved it was a large stone-filled drain of post-medieval provenance (Plate 10).

The function of the terrace could not be determined during the project. The pipeline route removed part of the bank attached to the east facing part of the terrace but did not affect the composition of the terrace. The bank comprised organically-rich soil indicative of a waterlogged environment (it appeared to have built up naturally rather than as a purpose built bank). A photographic record was maintained during this event (Plate 09). The removal of the bank enabled an inspection of a short length of the east-facing elevation, which appeared to be a loose conglomeration of medium to large sized sub-angular stones (<0.80m long), set into the natural. It was unclear if all examples were structural and/or clearance dumps.

Site 8: Terrace and Walling (NGR SH57535431)

A short, curving length of terracing with stone revetting. The GAT assessment report (GAT Report 364) described the terrace as c.50.0m in length and 0.60m in height with an associated 10.0m long denuded wall and various field clearance cairns. The pipeline route did not affect the site and was located a considerable distance to the southeast. A photographic record was taken of the site for the archive (Plate 11).

Site 9: Enclosure (NGR SH57875443)

An enclosure, constructed of roughly built drystone walling of medium sized sub-rounded and sub-angular boulders (<0.60m in size; Plate 12). The site is oval in shape and 10.0m x 6.0m in size, with walls standing between 0.20m and 0.90m in height (dependant on extent of decay). The width of the walling varied but measures up to 1.00m. The site is located c.7.00m to the southwest of Site 10.

Site 9 was not affected by the construction of the pipeline.

Site 10: Sheepfold and Sorting Pens (NGR SH57445432)

A large D-shaped enclosure (80.0m x 60.0m; Plate 13) enclosing three smaller interconnected enclosures (for the purposes of this report: A, B & C; Plate 14). The main enclosure comprises drystone walls (up to 1.00m in height) built from sub-rounded and sub-angular stone and is located across a north to south orientated slope within semi-improved pasture.

The internal enclosures/sorting pens are located towards the northwestern end of the main enclosure:

- Internal enclosure A: 5.0m x 3.0m, oval-shaped. Entrance may have been through internal enclosure B. As with B, the enclosure utilised a natural boulder as part of the structure (Plate 16).
- Internal enclosure B: 5.0 x 6.0m, oval shaped. Wall height is a maximum of 1.10m and width of 0.80m. The 0.50m wide entrance is at the southwestern end. The structure utilises a natural boulder as part of the structure and is interlinked with internal enclosure A (Plate 16).
- Internal enclosure C: 10.0 x 10.0m, oval-shaped. Wall height is a maximum of 1.10m and width of 0.80m. The enclosure is accessed from B, to which it is linked. A separate entrance is located at the southern end of the enclosure.

The site is recorded on the 1876 and 1895 Vaynol Estate Maps and is marked on the 1888 and 1915 Ordnance Survey maps as a “sheepfold”.

The pipeline route ran to the immediate northwest of the site, but did not impact directly on the structures. The pipeline was monitored in this area during construction.

Site 12: Rectangular Structure (NGR SH58185467)

A possible rectangular structure comprising low grassed over stony banks <0.20m high, forming a sub-rectangular plan, 7.0m x 4.50m in size with a northeast to southwest orientation. GAT Report 364 also described internal facing with an uneven hollowed interior, with traces of a track skirting the south side of the feature. The general area is stony and is perennially waterlogged. The site is not recorded on any available maps but was thought to be the remains of a medieval structure (GAT Report 364: 8). An inspection of the area for the current report did not identify these features except for a possible stony bank to the south of the pipeline route. It appeared the area had become overgrown in the interim. A photographic record was maintained of the area during the works (Plate 17). No further features were forthcoming.

Site 13: Sheepfold and Droveway (NGR SH58265464)

Located at the base of a steep slope on the west bank of Afon Treweunydd and incorporated with a field boundary wall which forms part of the south side. A funnelled droveway, comprised of slate and wire fence on the north side (Plate 19), leads to a counterscarp revetted, sub-circular sheepfold, divided into three compartments by slate pallisade walls (Plate 18). The feature covers a length of c.50.0m from the river to a metalled trackway (Plate 20). In common with Feature 18, there is an opening at the river edge facing an abutment – probably for a slate or wooden bridge – on the opposite bank. The site is marked on both the 1888 and 1915 Ordnance Survey maps as a sheepfold. The slate and wire fence was in a state of disrepair.

The slate and wire fence was “breached” during the excavation of the pipeline trench (Plate 21). No underlying features were identified however.

Site 14: Terrace (NGR SH58445482)

A large sub-oval enclosure, 75.0m x 30.0m in size, situated along the sloping west bank of the river, which incorporated a smaller sorting/lambing pen (SH58425468) at the southwest corner (Plate 22). The smaller single compartment, 20.0 x 10.0m, is accessed via a driveway, defined by a line of boulders, that segregates the west end of the main enclosure from the larger eastern side. Built of drystone construction and incorporating a number of large erratic boulders, the walls stand to over to c.1.50m high on average. Outside the main enclosure to the west are traces of a number of small terraced platforms, which form the riverbank at this location. This site is recorded on both the 1888 and 1915 Ordnance Survey Maps.

The pipeline route did not affect the site.

Site 15: Sheepfold (NGR SH58525484)

A small sheepfold formed from the apex of boundary walls and slate and wire fencing, comprising two compartments. A large glacial boulder was utilised towards the south end of the riverbank facing elevation (Plate 23). The site is located c.20.0m east of Site 14 and is marked both on the 1888 and 1915 Ordnance Survey Maps as a “sheepfold”.

The pipeline route did not affect the site. A drystone wall several metres to the north was breached (Plate 24).

7 RESULTS OF THE WATCHING BRIEF

The watching brief was undertaken between the 28th June and the 17th of September 2007. The watching brief monitored the excavation of the powerhouse plot, the easement route for the outfall and the route of the pipeline from the extraction point to the powerhouse. A 21-tonne 360°-tracked excavator was used throughout the watching brief.

The pipeline route was excavated without an easement as the ground was too waterlogged: short lengths of the route were opened to the width of the machine bucket (1.60m) and the pipe was dropped in and sealed with the upcast material. An easement was used between the outfall from the powerhouse to the Afon Trewenydd, where an area, 10.0m wide and 200.0m long was stripped for the pipeline (Plate 26).

Pipeline Route

The 1.50km pipeline route was monitored with a partial watching brief (defined as “when appropriate”, IFA. 2001. *Institute of Field Archaeologists 2001 Standard and Guidance for an archaeological watching brief* para. 3.2.10).

Sites 3, 7, 9, 10, 12, 13, 14 and 15 were not directly impacted by the pipeline but the groundworks were monitored to assess any potential features associated with the sites. No associated activity was identified for any of the sites during the course of the works: the pipe trenches were limited to glacial and/or colluvial activity. A photographic record was maintained.

Site 3 (Railway), the pipeline passed below the railway, through a former sheep run (Plate 05). No archaeological activity was identified within the localised area. A photographic record was maintained.

Site 13 (Sheepfold and Driveway), the pipeline breached a slate and wire fence associated with the sheepfold (Plate 21). The fence was in a state of disrepair prior to works. No underlying features were identified. A photographic record was maintained.

The Powerhouse

The powerhouse was located c.20.0m east of Bron-y-Fedw Uchaf Farm and was monitored with a partial watching brief (defined as “when appropriate”, IFA. 2001. *Institute of Field Archaeologists 2001 Standard and Guidance for an archaeological watching brief* para. 3.2.10). The powerhouse was terraced into a low-lying slope (Plates 01 and 02).

The machine strip of the building plot for the powerhouse was supervised, which revealed a thin deposit of topsoil (<0.20m), atop a shale-rich subsoil/colluvium (<0.15m) (Plate 03). Beneath the subsoil was an outcrop of Ordovician stone.

No archaeological features were identified within the confines of the powerhouse plot. A photographic record was maintained during the works.

Outfall Easement

The easement measured 10.0m in width and 200.0m in length and was the location of the outfall pipe leading from the powerhouse to Afon Treweunydd. The route was monitored with a partial watching brief (defined as “when appropriate”, IFA. 2001. *Institute of Field Archaeologists 2001 Standard and Guidance for an archaeological watching brief* para. 3.2.10) and was visited during initial topsoil stripping.

No archaeological features were identified within the confines of the easement: the topsoil was extant to a depth of 0.15m and was followed by a shale-rich subsoil (Plate 26). A photographic record was maintained during the works.

8 CONCLUSION

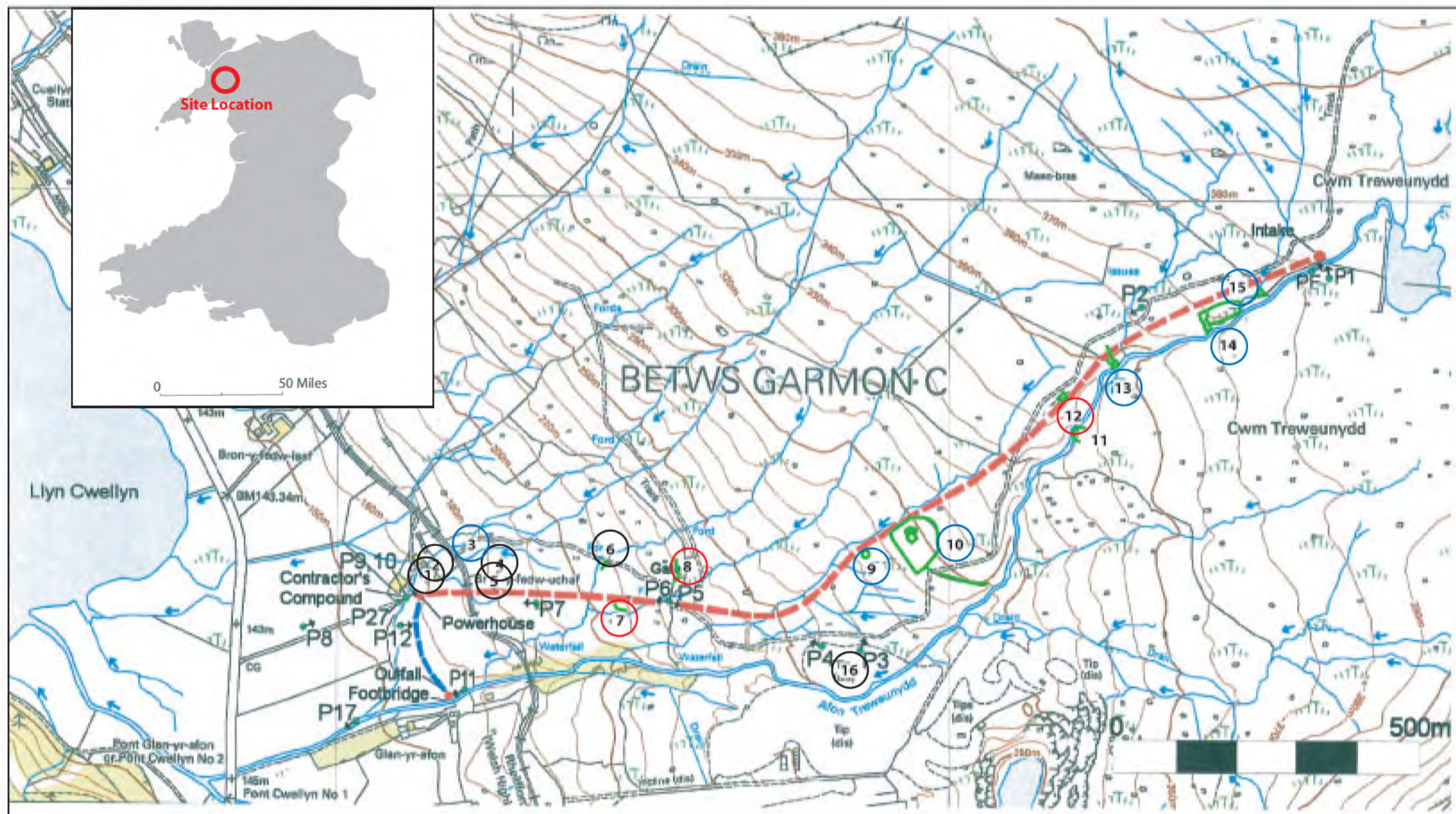
The majority of the sites highlighted in GAT Report 364 were not directly affected by the pipeline route. The only examples were Sites 3, 7 and 13: the railway, a terrace and a sheep enclosure/droeway respectively. In the case of the railway, an existing sheep run was used to channel the pipe, whilst for the terrace, a bank of organic-rich soil was removed and the terrace exposed. For Site 13, the denuded slate and wire fence was partially breached. No associated features were identified with Site 7 or Site 13.

A partial watching brief across the length of the scheme did not identify any further archaeological activity. Whilst the pipeline route covered a large area, the pipe trenches were very narrow as no easement was used (except for the outfall). However, the watching brief did reinforce that the monitored area was marginal land which saw little exploitation, except for pastoral farming and, in the local area, slate quarrying.

9 SOURCES CONSULTED

IFA. 2001. *Institute of Field Archaeologists 2001 Standard and Guidance for an archaeological watching brief*.

Jones, S. and Dutton, L. A. 2000. *Treweunydd Hydro-Power Scheme: Archaeological Assessment* (G1570). Report No. 364



Archaeological Features on the map are in GREEN

Site 1: Barn
 Site 2: Water Wheel
 Site 3: Dismantled Railway
 Site 4: Sheep Shelter
 Site 5: Sheep Shelter
 Site 6: Denuded Wall
 Site 7: Terrace
 Site 8: Terrace

Site 9: Enclosure
 Site 10: Sheepfold
 Site 11: Sheepdrove
 Site 12: Rectangular Structure
 Site 13: Sheepfold and Driveway
 Site 14: Enclosure/Sheepfold
 Site 15: Sheepfold
 Site 16: Slate

Sites 7, 8 and 12 Required a Detailed Record
 Sites 3, 9, 10, 13, 14 and 15 Required a Basic Record

YMDORRDLAITH
 ARCHAEOLÓGOL
 GWYNEDD

**GWYNEDD
 ARCHAEOLÓGOL
 TRUST**

Craig Beuno, Ffordd y Garth, Bangor, Gwynedd, LL57 2RT
 Ffôn: 01248 352535. Ffacs: 01248 370925. email: gat@heneb.co.uk

Figure 1: Site Location
 (Scale on Map)

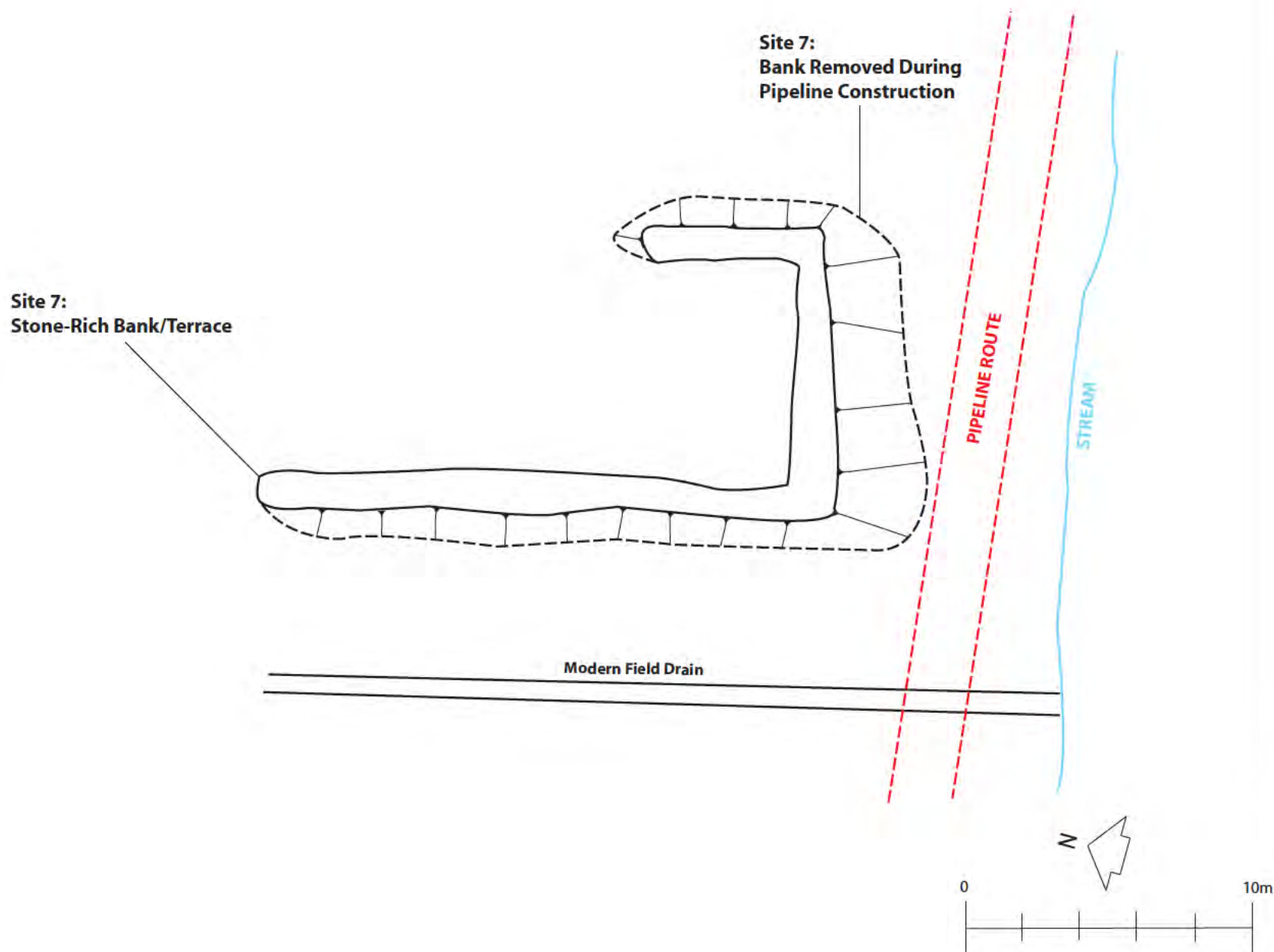


Figure 2: Site 7
Scale: 1:200
(For the location of Site 7 See
Figure 1)



Plate 01: View East of Powerhouse Location



Plate 02: View West of Powerhouse Location



Plate 03: View East of Powerhouse Location during works. Shale-rich Subsoil exposed.



Plate 04: Site 03: View Southwest prior to works



Plate 05: Site 03: During Works. Note Pipe through Sheep Run



Plate 06: Site 03: View East from Railway Line During Works



Plate 07: Site 07: View East. Note low bank of stones in foreground forming terrace.



Plate 08: Site 07: View North. Note low bank of stones in foreground forming terrace.



Plate 09: Site 07: View East during works. Note exposed terrace, detailing stones



Plate 10: Site 07: Detail of Modern Drain close to terrace.



Plate 11: Site 08: View North. Site suggested by collection of sub-angular stones forming possible terrace



Plate 12: Site 09: View South of Enclosure.



Plate 13: Site 10: View south of enclosure (located in centre of image)



Plate 14: Site 10: View Northwest of Internal Enclosures



Plate 15: Site 10: Internal Enclosures (view Southeast)



Plate 16: Site 10: Detail of Internal Enclosure. Note use of natural boulder in foreground



Plate 17: Site 12: Location of Site during Works.



Plate 18: Site 13: View Southeast of Droveway/Sheepfold detailing slate pallisades



Plate 19: Site 13: View west detailing slate and wire fence/droeway



Plate 20: Site 13: View northwest detailing enclosure. Afon Treweunydd is in the foreground



Plate 21: Site 13: View southwest during works



Plate 22: Site 14: View northeast of enclosure/sheepfold. Afon Treweunydd is in foreground



Plate 23: Site 15: View north of sheepfold with slate pallisades. Note use of large natural boulder. Afon Treweunydd is in foreground



Plate 24: Watching Brief: Drystone wall breach near Site 15



Plate 25: Watching Brief: View southwest detailing pipe location



Plate 26: Watching Brief: Easement from powerhouse to Afon Treweunydd