# CWELLYN SERVICE RESERVOIR ARCHAEOLOGICAL RECORDING (G1135)

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Ymddiriedolaeth Archaeolegol Gwynedd Gwynedd Arcaheological Trust

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prepared for Dŵr Cymru - Welsh Water

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## CWELLYN SERVICE RESERVOIR

# ARCHAEOLOGICAL RECORDING (G1135)

Archaeological recording has been carried out at the dis-used railway station on the line of the former Welsh Highland Railway at Betws Garmon, near Caernarfon. The work investigated the character of the surviving foundations for the former railway as well as a nearby embanked tramway which served the Hafod-y-Wern quarry workings at the turn of the century.

## 1. INTRODUCTION

Welsh Water proposed to construct a new service reservoir at Tyddyn Sir Hugh farm approximately 0.5km to the west of the village of Betws Garmon, near Caernarfon. Welsh Water consulted the Gwynedd Archaeological Planning Service (GAPS) (in its role as the archaeological curator) to advise on the archaeological implications of the scheme. As a pipe trench associated with the scheme would cut through the line of the former Welsh Highland Railway and an embanked tramway line, GAPS recommended that an archaeological watching brief be carried out to record these features during ground disturbance by the contractors.

In March of 1995 Welsh Water contracted Gwynedd Archaeological Trust (Contracts Section; GAT) to carry out a programme of archaeological recording to address GAPS' recommendations.

Subsequently, because of the contractor's tight work schedule and the resultant limited scope for archaeological recording between excavation of the pipe trench and laying of the pipe, the project engineers (Acer Wallace Evans) requested that any necessary archaeological recording be carried out before work started rather than as a watching brief during the works. This was agreed with GAPS and the recording therefore ultimately took the form of an evaluation excavation.

## 2. BACKGROUND

The area of inquiry lies on the marshy southern floodplain of the Afon Gwyrfai on the north side of the A4085.

Pipework associated with the new reservoir is to connect with an existing water main which runs parallel to the former Welsh Highland Railway across the river floodplain. The installation of inlet, outlet, and washout mains between the existing water main and the reservoir requires the excavation of a trench 2.5m in width. The proposed development is to bisect features of the Welsh Highland Railway station at Betws Garmon and an embanked industrial tramway which served the Hafod-y-Wern slate quarry 0.5km to the south west.

# 3. THE PROJECT BRIEF

The Project Brief for archaeological recording of these features as recommended by GAPS was to involve a four stage work programme.

#### I. Desk top study

A rapid desk-top study to be carried out to allow the Welsh Highland Railway and Hafod-y-Wern Tramway to be put in to their historical context.

#### II. Field Survey

Written descriptions and photographic record to be made of the presently visible features and general shots showing the wider setting.

### III. Watching Brief

A watching brief to be carried out during excavation of the pipeline trench. Drawn and photographic record as appropriate.

### IV. Report

A written report to be produced outlining the results of the work.

# 4. METHOD AND TECHNIQUE

Due to the limited time available to carry out the fieldwork in advance of the commencement of construction work, a formal project design was not produced. The details of the archaeological work programme were agreed upon *verbally* between GAT and the project engineers Acer Wallace Evans.

I. A rapid desk top study was carried out through consultation of the Gwynedd Sites and Monuments Record. Map sources and literary sources were inspected. (See bibliography).

**II.** The existing features of the Welsh Highland Railway and industrial tramway were recorded with a combination of scaled colour and black and white photography at 35mm format. Written descriptions were made on standard GAT monument record forms involving a record of dimensions, setting and interpretation of features. The main features of the station and the location of trial trenches were surveyed with the use of Geodimeter Total Station.

III. In place of the originally specified watching brief, GAT supervised a machine excavator supplied by the project engineers in the excavation of two trial trenches to investigate:

*Trench A*: the survival and construction details of the former mainline and siding by the cutting of a trench at right angles to the features within the corridor of the proposed disturbance; and archaeological recording as appropriate.

*Trench B*: the survival and construction details of the former tramway embankment through the excavation of a trench at right angles to the feature within the proposed corridor of disturbance; and archaeological recording as appropriate.

The section through deposits excavated in trench A was recorded by use of EDM total station and context descriptions on standard GAT record forms. Recording in trench B was carried out with written description and measured sketch. Both trenches were photographed in black and white and colour at 35mm format.

# 5. RESULTS

### I. Desk Top Study

During the 19th and early part of the 20th century the region was the focus of widespread mineral and rock extraction which led to the development of the largest network of narrow gauge railways and industrial tramways in Britain. The proposed development was to affect two elements of the former system: The Welsh Highland Railway (formerly part of the North Wales Narrow Gauge Railway) and an industrial tramway linking slate extraction at Hafod-y-Wern (also known as Victoria) quarries to the mainline railway.

#### The Welsh Highland Railway (WHR)

The line of the WHR superseded the system first established by the North Wales Narrow Gauge Railway Company (NWNGR) in the 1870's. The NWNGR opened for passenger and goods traffic between Dinas Junction and Rhyd Ddu in stages between 1877 and 1881. The

system also comprised a branch line from Tryfan Junction to Bryngwyn. The lines operated with intermittent success until both closed to passenger and goods services during the 1st. World War. Betws Garmon Station, the main elements comprising a simple stone built station building, signal box, and siding, lay some way outside of the small hamlet itself.

In 1922 the former NWNGR was incorporated in to the WHR which ran from Porthmadog Harbour to Dinas Junction. Both passenger and goods services were operated until the last train ran in 1937.

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## Betws Garmon Station

The station itself saw some minor alterations during the lives of the two railway companies. When first established by the NWNGR in the late 19th century, the station comprised the stone station building and signal box. In 1902, following the resurrection of operations at Hafod-y-Wern a looped siding joining to the quarry tramway branch was laid behind the platform and station building. These continued in use until the closure of the NWNGR in 1916. During the refurbishment of the railway by the newly formed WHR in the 1920's, the quarry extension and the northern end of the siding were dismantled as were the signal devices. The station continued in use until the closure of the WHR in 1937.

## II. Field Survey (Figure 2)

The main fabric of Betws Garmon station was found to be in reasonable condition. The station building itself survives as a well constructed stone building 9.0m x 5.0m in dimension. Walls survive to almost their original height on 3 sides while the north facing side is substantially collapsed and robbed.

The route of the main line is defined by the platform edge on the south side which is visible as a low kerb of slate blocks all but overgrown by turf, and on the north side by the break of slope forming an embanked edge above the marshy ground bounding the nearby river. The extent to which the raised area occupied by the station and railway is a natural topographical feature or a prepared embanked terrace was not apparent. (See Below: Investigation in Stage III)

The siding formerly looping behind the station building was visible as a very shallow linear depression some 1.8m in width. To the rear of the station building it is possible to make out slight depressions in the turf cover forming sub-rectangular scoops left following the removal of the railway sleepers.

To the south of the former siding and adjacent to it several rough slate slabs were exposed through the turf cover indicating a possible pathway or area of laid hard-standing adjacent to the siding.

16m to the north of the station building on the south side of the former main line are the remnants of a rectangular bolted fixing identified by the arrangement of sheared iron bolts protruding the turf cover. This identifies the location of the former signal box serving the station approach.

## III. Trial Trenches

## i) Trench A

A trench 19m x 1.5m was excavated by machine under the supervision of GAT in a SW/NE direction 10m to the south of the station building to provide a profile through the possible man made embankment and the route of the main line and siding. (See figure 3).

The nature of the raised ground upon which the station stands was found to be of natural glacial and/or alluvial origin comprising a series of clay, clay-silt, and shingle deposits (009).

On the northern edge of the natural slope some material had been used to extend the natural bank for the purposes of the railway. This was found to be limited to 0.5m width of dark brown silty clay (008) overlaid by a further dump of very dark brown course sandy silt (008A).

The foundation for the railway line itself was represented by a thin spread of course stone chippings (007) cut into a slight depression in the underlying geology.

Evidence for the railway siding c.5.0m to the southwest consisted of a shallow depression in the embankment profile. Context 003/006 was a deposit similar to 008A which was spread within the depression and to the northeast in a low bank. Course stone chippings (002) levelled the depression to form the foundation for the tracks.

To the southeast of the siding the geology was sealed by a thin spread of poorly sorted stones (005) which appeared to be associated with an area of hard-standing within the precinct of the station. To the northwest of the trench several worn slate slabs protruded through the surface adjacent to the line of the siding but were not in evidence within the recorded section. The origin of the stone deposit 005 remains slightly ambiguous and could indeed be of natural origin.

Intrusive cultural material was absent from all deposits excepting the turf cover 001 from which two large iron nails were recovered.

#### ii) Trench B

A trench 5.0m x 1.5m (see Fig. 2) was excavated by machine to bisect a low embankment which formed the foundation for the quarry tramway. The man-made embankment, which measured 1.5m in width on top and 3.0m at its base, stood to a height of 0.6m above the surrounding ground surface. The make-up of the feature was identified in section as consisting of a single deposit of waste slate in fragments up to 0.5m in size in a matrix of yellowish brown clayey gravel. The embankment appeared to have been laid directly over the former ground surface.

The embankment was covered in a thin turf. No details regarding the track or sleeper arrangements were apparent.

## 6. CONCLUSIONS

The project has been successful in recovering information regarding the construction of the two railway systems. Perhaps the most surprising discovery was the limited foundation preparation that was apparent for the NWNGR/WHR lines. A thin spread of stone chippings was the only evidence for this preparation, with the relatively soft underlying clays taking the weight of the traffic.

The embankment upon which the line of the WHR runs at this point was discovered to be of natural origin and merely strengthened and steepened on its northern edge by dumped material in order to support the railway line.

The quarry tramway embankment was found to be of simple design consisting of a single phase of dumping of slate waste to provide support for the tramway wagons.

The archaeological investigation ensured that no important elements of the railway and tram line would be destroyed by the development and a full record was made of those elements which will be disturbed.

# 7. ACKNOWLEDGEMENTS

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