MONA TO LLANGEFNI TRANSFER SYSTEM

ARCHAEOLOGICAL RECORDING AND WATCHING BRIEF

Report No. 316



Prepared for DWR CYMRU March 1999

Ymddiriedolaeth Archaeolegol Gwynedd Archaeological Trust

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1. INTRODUCTION

Dwr Cymru are constructing a new pressure pipeline to transfer waste water discharges between a new pumping station to be built at NGR SH42207580, to the north of Mona Industrial Park, and the existing pumping station at NGR SH46107470 to the south-west of Bryn Cefni Industrial Park. The contractors J U Bowen (Construction) Ltd undertook the work.

An archaeological assessment of the route was carried out in October 1998 (GAT Report No. 310) which contained recommendations for field evaluation and mitigation. The former involved geophysical survey at two locations, which was undertaken in January 1999 (GAT Report No. 314), and the latter involved the carrying out of a watching brief during construction.

Gwynedd Archaeological Trust (Contracts Section) submitted a project design and quotation for this archaeological work which was accepted. Gwynedd Archaeological Planning Service acting as independent advisors to Dwr Cymru, monitored the work.

2. ARCHAEOLOGICAL AIMS

Gwynedd Archaeological Trust was employed to carry out a watching brief during all phases of the work at sites 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14 as identified in GAT Report No. 310. A further area was identified for archaeological assessment at the western end of the route where the pipeline had been re-routed to the north of the original line. In addition a watching brief was to be carried out over the entire length of the pipeline after topsoil stripping.

3. METHODOLOGY

3.1 Watching Brief

The route of the pipeline was examined during and following the fencing and topsoil stripping between 27th January and 26th February 1999. Work began at Penyrallt and at the Site office at Cae'r Bwl and proceeded in both east and west directions. Topsoil stripping was completed in the western section by the 18th February. Most of the eastern section was complete by 17th February apart from the two fields between the A5114 to Llangefni and the old railway line. This area had been disturbed during the construction of the access road to Bryn Cefni Industrial Park so was of no archaeological interest.

The pipeline was also examined at intervals during the course of excavation and backfilling of the pipe trench between 12th February and 26th February. Work began to the west of the road at Penyrallt proceeding west and from the road at Cae'r Bwl proceeding east.

3.2 Recording

Features identified during topsoil stripping were recorded photographically on Kodak Gold 200 film with an accompanying written description.

4. TOPOGRAPHY

The proposed pipeline extends for just over 2.5 miles from a new pumping station, to be located to the north east of Mona Industrial Park at SH42097595, to Dwr Cymru's existing pumping station to the south west of Bryn Cefni

Industrial Park at SH46107465. The route of the pipeline crosses a rural landscape of shallow river valleys and low ridges, extending in height from <5m OD, close to Afon Cefni in the east, to c. 70m OD on the ridges at Penyrallt and Canol-rhos.

The western end of the route passes through two large fields to the summit of a ridge at Pydew. The route then passes through two small fields before crossing two ditches, the most easterly of which forms the parish boundary. There are four large fields before the summit of the highest ridge at Penyrallt. This western section of the route drains into Afon Gwna which has its outlet at Aberffraw. The next section traverses three large fields to the east of Penyrallt and a series of small fields between the two minor roads to the north of Rhostrehwfa. There are larger fields to the east of the Site Office at SH44347504 between Cae'r Bwl and the railway line at SH45957465. The eastern section of the route drains into Afon Cefni with an outlet at Malltraeth.

The underlying geology of this area belong to the Mona Complex consisting mainly of the Gwna group of rocks mantled with a varying thickness of glacial drift (Richards 1972, 9). Gwna Green-schist occurs along most of the route with a few outcrops of Spilitic Lavas and Albite-diabases around Pydew, some Quartzite just west of the B4422 and a few small outcrops of Church Bay Tuffs just west of the A5114. An outcrop of a limestone/granite rock with quartz intrusions was encountered close to the surface just east of the communications mast at Cae'r Bwl. These rock strata are all oriented from the southwest to the northeast. A geologically recent alluvium deposit occurs along the valley between Pydew and Trehwfa Bach.

The soils exposed during the topsoil stripping and trenching phases of the work were all derived from glacial drift and consisted mainly of the Trisant Brown Earth Group with pockets of the Gaerwen Brown Earth Group around Trehwfa Bach, Penyrallt and most of Gwernhefin. Small areas of the Gesail Gley Group are found at Trehwfa Bach and on the eastern side of Penyrallt. Where the underlying rock is at depth these soils overlie the glacial deposit of boulder clay.

Land use along the pipeline is primarily agricultural with an emphasis on pasture for cattle and sheep. Some of the fields contain improved grassland while others, usually containing frequent rock outcrops, remain as rough grazing. Small pockets of deciduous woodland are found to the west of the A5114 at SH45407470C and just west of the B4422 at SH44287503. Field boundaries are mainly stone-faced earth banks, sometimes with ditches on either side and surmounted by scrub hedges. There are a few low dry-stone walls particularly around Pydew farm with mortared stone walls adjoining the roads in several places. Other boundaries include hedges and post and wire fences.

The route of the pipeline crosses four roads at right angles. The most easterly is the A5114 running from the main A5 Holyhead road into the centre of Llangefni. The next is the B4422 running from the A5 to join the B5109 to the west of Llangefni. This road would appear to predate the A5 as it is shown on the 1799 map running north south from the B5109 to Llangristiculus (Evans 1799). The pipeline also crosses a minor road which runs parallel to the B4422 joining the B5109 350m further west. The westerly road is a minor road running from the A5 just east of Mona Airfield to Bodffordd. The pipeline also crosses a disused railway line to the south of Llangefni.

5. RESULTS

5.1 Archaeological Assessment of Section of New Route

The alignment of the pipeline was changed at the western end of the route. Originally it had changed direction in the middle of the field to the west of the Pydew farm track and continued west south west to cross the minor road to Bodffordd at SH42157555. The new route also changed direction at the same point but continued north-northwest to the east side of the Bodffordd road at SH42207585. This section was examined before topsoil stripping but the only feature of any archaeological interest was a large boulder at the western end of the route and illustrated in Plate 3. This natural boulder was used as a gatepost at SH42187594 but may represent the re-use of a prehistoric standing stone. The dimensions of the stone are 1.5m high, 0.5m thick and 0.75m wide at the base tapering to 0.2m at the top. Although very close to the new pumping station this feature should be unaffected by the pipeline.

5.2 Watching Brief

A watching brief was carried out during topsoil stripping from 27th January to 18th February and during trenching from 12th February to 26th February. The stripped easement was 15-18m wide along most of the route with tracks

and boundaries remaining unferced. The clarity of the interface between topsoil and subsoil was good along most of the route with the topsoil varying in thickness from < 0.1m to > 0.5m.

Various features were noted and recorded by photograph and written description. Some of these features had been noted in GAT Report No. 310 as requiring a watching brief while others were identified during topsoil stripping. Only those sites that proved significant have been included in this report using, where appropriate, site numbers allocated in GAT Report No. 310 and records of other features observed are lodged in the site archives located at GAT. The features are described as they occur along the route of the pipeline from west to east.

Due to the re-routing of the pipeline the line of the old road and the two of the old field boundaries (Sites 1 & 2 in GAT Report No. 310) are no longer affected by the scheme. The field boundary at SH42447587C ran along a stretch of the route which was waterlogged and a drainage ditch was excavated on the south side of the easement. It was therefore impossible to identify this feature.

Pydew farm track (Site 3 in GAT Report No. 310) was only slightly disturbed when the 1m wide trench was dug $\rho \ell N$ for the pipe. There was an area of disturbance in the field to the south of Pydew farm. This was interpreted as part 6 2190 of the soakaway system for the cesspit in the centre of the field. A quantity of Buckley ware was found in this area suggesting 18th-19th century occupation. A stone lined well is located in a natural hollow in the field 14m to the east of the pipeline easement at SH42587562. This feature is illustrated in Plate 4. $\rho \ell N = 62191$

The wide curvilinear track identified at Cae'r-gog (Site 5 in GAT Report No. 310) showed four slight hollows, <0.1m deep, running north south across the easement and filled with dark brown topsoil. These could indicate the use of the track for transporting peat by sledge from the turbary to the south to the settlement further north but could also indicate later plough marks. The boundary to the west of the track was identifiable as a stone spread running north south across the easement and the narrower track along the eastern boundary also showed as a stone spread. No dateable evidence was obtained from the area.

The pipeline had been re-routed to avoid the burnt mound identified in the Archaeological Evaluation (GAT Report No. 314). The easement was relocated to the north of this feature as shown in Plate 2. The linear feature identified to the east of the burnt mound during the Geophysical Survey showed as a shallow earth filled ditch crossing the easement during topsoil stripping. No further features were identified during work in this area.

The farm track at Penyrallt (Site 6 in GAT Report No. 310) was very muddy and frequent tracking across it by heavy machinery obliterated the possibility of identifying earlier surfaces. Several features were identified in the field to the east of Penyrallt but not considered to be archaeologically significant. Trenching across the other track at Penyrallt (Site 7 in GAT Report No. 310) was missed.

Mr Williams at Bryn Goleu reported finding fragments of stone axes in the southern part of his field at SH44607505. This field was observed during the archaeological assessment to be 1 - 1.5m higher than the field belonging to Cae'r Bwl to the southwest. The watching brief showed this difference to be geological. The area was observed during all phases of the work including the digging of two holes for wooden posts carrying warning flags above the electric cables. There was no indication of ground disturbance and the only artefact found was a square-shanked iron nail of possible medieval date.

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Both farm tracks at Cae'r Bwl (Site 8 & 9 in GAT Report No. 310) were located on rock outcrops with no stratigraphy to indicate earlier surfaces. The field entrance at SH44757500 was widened to allow access for the machinery but the sandstone pillar to the northeast was not affected.

The hollow at SH45207476, identified in the Archaeological Evaluation (GAT Report No. 314) as being of probable geological origin, was largely outside the easement corridor and did appear to be a natural feature. The topsoil stripped easement of this area is shown in Plate 1. The track on the summit ridge at SH45287476 (Site 10 in GAT Report No. 310) was located on solid rock found just below the surface which extended from c. 10m to the west of the track to c.20m to the east. This rock extended to the south of the farm building (Site 11 in GAT Report No. 310) G2US 7 so no earlier activity could be ascertained in this area either from topsoil stripping or trenching.

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Permission for a trench across the railway line (Site 12 in GAT Report No. 310) at SH45977465 was refused. It was therefore decided to create a tunnel beneath the line through which to lay the pipe. This meant that there was no damage to the track.

6 SUMMARY

The initial assessment of the proposed route of the pipeline identified a total of 14 sites of which 10 were within the easement corridor. The recommendations for mitigatory measures outlined in GAT Reports Nos. 310 & 314 were put into effect and, with the co-operation of Dwr Cymru and J U Bowen, the pipeline was re-routed to avoid the burnt mound at Penyrallt.

A number of burnt mounds have been excavated in Britain, and they are all substantially similar, consisting of a mound of burnt and fractured stone which makes up over 90% of their content, the remaining material being dark clay/silt with charcoal inclusions (Hedges, 1975). Although the function of burnt mounds is somewhat enigmatic, and indeed they may have served a number of functions, there is little doubt that the burnt stone is a result of heating stones in a fire, and then using the hot stone to heat water in an adjacent pit. The mound is formed by the disused stone, which can only be used three or four times before the fracturing and splitting of the stone caused by the sudden change in temperature reduces the effectiveness of the stone to transfer heat. The mounds are nearly always located adjacent to a water supply, usually a stream or a spring. A high percentage of excavated burnt mounds exhibit several periods of use but the calibrated radiocarbon dates from the majority of sites suggest periods of use during the Bronze Age c. 2500 BC - 1250 BC (Hodder & Barfield, 1991). Below is a table of Radiocarbon dates obtained from charcoal samples found during the excavation of burnt mounds by Gwynedd Archaeological Trust in recent years.

	Site Details	Lab No. and Details	Radiocarbon Age BP	Age in Cal. BC	
				(1 sigma)	(2 sigma)
	G1506 Cefn Hendre	Beta - 114179	3220 +/- 100	(1605-1400)	(1705-1265)
	G1474 Figin Fawr	Beta - 106684	3770 +/- 60	(2280-2050)	(2350-1985)
	G1339 Gwalchmai	Swan - 125	3650 +/- 70	(2140-1940)	(2280-1870)
	G1352 Nant Porth	Swan - 140	3290 +/- 60	(1670 - 1510)	(1740-1440)
	G1317 Llanbedrgoch	Swan - 124	2840 +/- 70	(1130-910)	(1260-840)

The site at Cefn Hendre was in use during the middle of the second millennium BC comparable in date with the site at Nant Porth. The other sites indicate the continuing usage of similar technology from the end of the third millennium BC through to the beginning of the first millennium BC. The Bronze Age date suggested by Hodder & Barfield is therefore confirmed in these North Wales examples. Although no dating evidence was obtained from the burnt mound at Penyrallt it is likely that it dates from the same period.

A number of minor features were identified during the watching brief for which photographic and written records are lodged with the archive held at Gwynedd Archaeological Trust.

7. ACKNOWLEDGEMENTS

Gwynedd Archaeological Trust would like to thank all those involved on the scheme for their co-operation. Particular thanks are due to David Gosling and Glyn Thomas of Dwr Cymru and Frank Lawson of J U Bowen for their support and help.

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Plate 1 - Topsoil stripped easement to the west of field barn at Gwernhefin



Plate 2 - Realignment of easement to avoid burnt mound at Penyrallt



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Plate 3 - Gatepost at the west end of the pipeline route



Plate 4 - Stone lined well to the southeast of Pydew

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