

Golan to Pentrefelin Water Main Replacement, Porthmadog, Gwynedd

Archaeological Assessment



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Golan to Pentrefelin Water Mains Replacement, Porthmadog, Gwynedd.

Archaeological Assessment

Project No. G2296

Report No. 1106

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Written by: Robert Evans

Cover: The Gorseddau Tramway from the west

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SUMMARY

Gwynedd Archaeological Trust has been commissioned by Dŵr Cymru to carry out an archaeological assessment in advance of a renewal of the Water Mains between Golan and Pentrefelin, a distance of about 2.6m. The proposed water main renewal scheme is located between Golan and Pentrefelin, Gwynedd.

The assessment confirmed that there are known prehistoric funerary, ritual and settlement activity in the wider area, although there are none currently within easement route. There is also some evidence for settlement in the vicinity of the study area in later prehistoric times which may continue in use into Romano-British times. This would probably consist of enclosed or unenclosed round huts.

The assessment also confirmed that medieval settlement is noted in the area in the form of the former llys and church site at Dolbenmaen. In the wider area the surviving traces of medieval settlement are characterised by the presence of rectangular long hut platforms, in a dispersed settlement pattern. One of these, at Cae-Gwenllian, has been recorded west of the proposed scheme.

The area is characterised by post-medieval farming, primarily enclosed sheep and cattle farming. However, the wider area can also be seen within an industrial and urban context, typified by an assortment of mines and quarries, with their associated tramways and railways, as well as townships dating back to the medieval period and most likely beyond.

The archaeological assessment identified twelve features in the vicinity of the scheme, of which seven are likely to be impacted upon. All these sites are post medieval in date. The most significant of these are the site of the former Gorseddau tramway (Site 4), the bounded track (Site 5) and the Bron y Gadair Copper Mine (Site 12), the remainder being field boundaries and trackways. Recommendations for recording and reinstatement of these have been made.

There is a moderate potential however for the survival of relict prehistoric and medieval archaeology, below the ground based on the proximity of identified sites within the assessment area, observation of the geology in the trial pits, and the fact that the agriculturally improved nature of the fields means that sites may be present that are not visible above ground. An archaeological watching brief during groundworks has been recommended.

There is also some potential however for the survival of palaeoenvironmental remains in the more waterlogged areas. A palaeoenvironmental sampling programme has been recommended based on specialist advice.

1. INTRODUCTION

Gwynedd Archaeological Trust has been asked by *Dŵr Cymru* to carry out an archaeological assessment on land between Golan and Pentrefelin, Gwynedd, in advance of a proposed water main renewal (WMR). The length of the WMR is approximately 2.6km. It is located at a height of between 146.3m and 28.8m OD, between Golan and Pentrefelin, falling from the north-west to south east (Fig. 1). The route begins near Garnedd hir in the north (NGR SH 53334132), crosses the A487 near to Glan Byl, and it also crosses the former Gorseddau tramway (PRN 28503) before descending towards Dolwar in Pentrefelin, just north of the A497 (NGR SH 52293964), crossing a bridge over the Afon Cedron before meeting the A497 at Efail Fach, finally heading south-west along the A497(T) within the carriageway to SH51973925. For much of its route it follows the route of a minor road, although there are a number of off road sections. The easement is expected to be 15m wide (Houston *pers comm.*; Email dated 7th January 2012), and the site compound to utilise existing hard surfaces.

1.1 Acknowledgements

The staffs at Gwynedd Archives, Caernarfon and the National Library of Wales are thanked for their help with providing archive material. Ashley Batten and Jenny Emmett of Gwynedd Archaeological Planning Service are thanked for their help and guidance.

2. DESIGN BRIEF AND SPECIFICATION

Gwynedd Archaeological Planning Services (GAPS) has not prepared a detailed archaeological brief for this scheme but *Dŵr Cymru* have been in contact with GAPS and they have recommended an archaeological assessment, including a desk based study and walkover survey of the proposed scheme route.

Gwynedd Archaeological Planning Services will monitor the works and will be responsible for advising the Local Authority on the suitability of the work recommended and subsequently undertaken.

A desk-based assessment is defined as ‘a programme of assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate’. (*Standard and Guidance for Archaeological Desk-based Assessment*, IFA 2001{revised 2012}, 2).

The aims of the assessment as given in the specification are:

- to identify and record the cultural heritage within the defined study area;
- to evaluate the importance of what has been identified;
- to recommend ways in which impact upon the cultural heritage can be avoided or minimised.

To comply fully with the aims expressed above it can be necessary to undertake a programme of Field Evaluation following the Desktop study and Field Visit. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is therefore required. This typically takes the form of geophysical survey or trial excavation, although measured survey is also a possible option. A full programme of assessment and evaluation may therefore consist of:

- Desktop study
- Field walkover
- Initial report
- Field evaluation
- Draft report
- Final report

This phase of the project concerns the first three phases, and recommendations are made concerning further archaeological evaluation or mitigation.

3. METHODS AND TECHNIQUES

3.1 Desk top study

The desktop study comprised the consultation of maps, documents, computer records, written records and reference works, which form part of the Historic Environment Record (HER), located at Gwynedd Archaeological Trust (GAT), Bangor. The archives held by the Caernarfon Record Office and Bangor University were also consulted. Information about listed buildings was consulted by means of the CARN (Core Archaeological Index), which is the online index of the Royal Commission on Ancient and Historic Monuments, Wales. Relevant aerial photographs from the collection at RCAHM, Wales were examined.

The archaeological assessment studied a 100m wide area on either side of the proposed pipe route; the field walkover survey subsequently targeted a 25m buffer zone either side of the pipe route.

Sites, buildings and find spots listed in the regional HER were identified (Fig. 2), with PRN referring to the unique Primary Record Number given to each individual site. Two archaeological Assessments have been also been carried out close to the WMR route on two stretches of the A487(T) between Ty Cerrig, Dolbenmaen and Golan (Cooke 2009 and Evans 2012) and information obtained from these has been considered.

3.2 Field Search

The field search was undertaken on 18th December 2012, when the area of the proposed development, including the easement and a further 25m buffer zone, was examined, and geological test pitting was also observed. Notes were taken, sketches and measurements were taken of sites of potential archaeological interest and a photographic record was made. Weather was good for a site visit, although ground conditions remained somewhat waterlogged from recent wet conditions.

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 in Appendix 2.

4. ARCHAEOLOGICAL RESULTS

4.1 Topographic description

The proposed water main renewal section is located at a height of between 146.3m and 28.8m OD, between Golan and Pentrefelin, falling from the north-west to south east for a length of about 2.6km. The land on both sides of the A487(T) road is moderately level pasture land, although within a general north to south slope incorporating enclosed sheep and cattle grazing with dispersed farm settlement, although at the west of the scheme the land is low lying and boggy in the north-west south-east sloping valley of the Afon Cedron, with drainage channels present. The sides of the road are overgrown with brambles in places, interspaced occasionally with young trees, gorse bushes, and long grass. To the north of the road the topography rises and slopes uphill away from the flood plain. The hedgerows and *cloddau* form a regular pattern that appears to be generally 19th century in date.

The Cedron floodplain cuts through an area of primarily Ordovician rocks, and are 'contiguous with the complex syncline of Snowdonia which extends north-eastwards in the upland areas above Penmaenmawr and Conwy, and westwards to form the greater part of the Llyn peninsula' (Bassett & Davies, 1977). The study area also lies close to areas of contemporaneous igneous rocks to the east and a small band of intrusive igneous rocks to the west.

The route begins at Garnedd hir in the north (NGR SH 53334132), crosses the A487(T) near to Glan Byl, and it also crosses the former Gorseddau tramway (PRN 28503) before descending towards Dolwar in Pentrefelin, just north of the A497 (NGR SH 52293964), and then beyond the junction with the main road, the route runs south east along the A497(T) within the road carriageway. For much of its route it follows the route of a minor road, although there are a number of off road sections. The land on both sides of the road is mainly good pasture land, although within a general north to south slope. The landscape incorporates enclosed sheep and cattle grazing with dispersed farm settlement, with field boundaries of various dates, although in areas of the scheme the land is low lying (Figs. 4-5). The sides of the road are overgrown with brambles in places, interspaced occasionally with young trees, gorse bushes, and long grass. Some rock outcropping is also noted in this verge area, particularly in the southern part of the scheme approaching Pentrefelin.

4.2 Archaeological and historical background

4.2.1. Prehistoric and Roman sites

No sites dating from the neolithic period have been found within or close to the study area. To the west of the proposed scheme stands the probable bronze-age standing stone of Beudy Cil-Haul (PRN 192). The stone is an elongated glacial boulder measuring some 1.8m in height and 0.8m square, secured in place with packing stones. This may be associated with ritual activity, and evidence of funerary activity from the Bronze Age has also been identified. A cremation urn and burial (PRN 2337; SH 52004120) has been found at Llwyn-y-Mafon, 740m north-west of the study area. A find of a Bronze axe of this date has also been found at Tyddyn-Dicum-Uchaf (PRN 2380; SH 54204090).

Burnt mounds are generally regarded as being bronze-age in date. It is believed that they were used as a form of cooking food, although the possibility of a ritualistic purpose exists. An example of this type of structure can be found west of the western end of the scheme, a prehistoric burnt-mound known as Glan-Dwyfach (PRN 154 (NPRN 302,420) is located on

the eastern bank of the Afon Dwyfor, and it is possible that further sites of this type could be found in areas close to watercourses.

There is some evidence for settlement in the vicinity of the study area in later prehistoric times which may continue in use into Romano-British times. This would probably consist of enclosed or unenclosed huts, and an example of which has been identified at Bryn Braich-y-Saint (PRN 2362; SH 51294081), 1.2km south-west of the route. A rotary quern, which may be of Romano-British date, has been identified 730m east of the study area at Gwernddwryd (PRN 2356; SH 53154065), and a spindle whorl, of unknown but possibly broadly similar date has been found at Pentrefelin (PRN 4056; SH 52663985).

Evidence for the Roman road from Segontium and Pen Llystyn to Tomen y Mur (PRN 17,599; SH 5255) has been noted 375m east of the WMR scheme. CAN YOU EDIT TO STATE THAT THE A487 IS THE ROUTE OF A ROMAN ROAD

4.2.2 Medieval

The study area lies within the medieval cantref of Dolbenmaen in the commote of Eifionydd, and formed part of the medieval townships of Penyfed (PRN 7376; SH 54004100) and at its western end of the township of Dolbenmaen (PRN 7,341 (NPRN 64,408). It straddles the later medieval parishes of Ynyscynhaearn (Fig. 4) and Penmorfa (Fig. 5), being mainly within the boundaries of the latter. To the west of the village and approximately 2km east of the proposed scheme is the grade II listed medieval parish church of St. Mary, Dolbenmaen (PRN 2,367 (NPRN 43,776 (listed building no. 4278). The church lies on a small by-passed section of the main road and stands within an irregularly shaped graveyard, and is approached through a grade II listed lych gate (listed building no. 21522). The medieval history of Dolbenmaen is further demonstrated by the castle mound (motte) (PRN 161 (NPRN 93,540 (SAM no. CN063) located to the south of the village. The castle mound and ditch stand on a low ridge running parallel to the river Dwyfor at a fordable crossing point on an important route way. Its architects may have been Norman or Welsh and its early history is uncertain. Later it formed the maerdref (administrative centre) of the commote of Eifionydd and is thought to have been one of the royal residences of the Welsh Princes until it was abandoned by Llywelyn Fawr around 1230 in favour of the newly constructed Criccieth Castle. The motte itself is 36m in diameter and about 6m high. Some loose masonry is all that remains to indicate the presence of any buildings on the flattened top of the mound. The possible site of a bailey, if one existed, is now covered by farm buildings and Plas Dolbenmaen which itself dates to the 16th to 18th centuries (GAT HER).

The surviving traces of medieval settlement are characterised by the presence of rectangular long hut platforms, in a dispersed settlement pattern. One of these, at Cae-Gwenllian, has been recorded 230m west of the proposed scheme (PRN 2365; SH 51994003). A platform house has also been identified at Craig y Gesail (PRN 185; SH 54064121), 780m east of the study area. Plough marks have also been identified at Bryn Hywel (NPRN 409106; SH 514417), which may be relict evidence of medieval ridge and furrow agriculture.

4.2.3 Post-Medieval and Modern

To the west of the proposed scheme in the village of Dolbenmaen are several post-medieval buildings of note. The closest is situated approximately 2km to the east of the western end of the scheme, and is Plas Holland, the old rectory affiliated with the medieval church of St. Mary. The building is mostly modern but has a northern wing dating to circa. 1700 and has gabled dormers and a very large chimney. Further post-medieval buildings within the village include the vicarage (PRN 5,259) and domestic dwellings, as well as Plas Dolbenmaen (PRN 5,257 (NPRN 16,741 (listed building no. 4280), a two-storey early 18th

Century house and associated barns (PRN 12,603 (NPRN 31,429 (listed buildings no. 4281). The Grade II listed Cefn-y-Meysydd Isaf farmhouse (listed Building no. 21523) lies 800m south of the study area.

In 1797, following the death of Richard Tavistock Price, attempts were made to sell of the Rhiwlas estate property in the area. The properties of *Cefn y Meusedd Isa*, *Garreg Felin*, *Bron y Gadair and Mill* and *Garreg Wen* were included in this sale, although they were not sold (Gwynedd Archives, X/Poole/2884). It was stated however in the notes accompanying the sale that the leased tenants ‘are bound to keep and leave the premisses in repair’ and to ‘sow and plant gorse and quicksets in the hedge rows, and to blast and remove unnecessary stones’. They were also required to carry out drainage works ‘three feet deep...to be piped and filled with stones, until the wet part of the farms become sufficiently drained (*ibid.*). This suggests that the agricultural improvement to the land, so evident on the ground, was being carried out in the late 18th century.

The 1838 tithe map and apportionment of Penmorfa indicates that some of the land within 500m of the proposed scheme belonged to Sir Joseph Huddart of Wern and also a certain John Jones, and further parcels of land was owned by William Ormsby-gore of Glyn Cywarch and Brogyntyn. The said gentleman acquired the lands through his marriage to Mary Jane Ormsby in 1815, who was the sole heiress of the Brogyntyn estate situated in the parish of Selatyn near Oswestry, who in turn inherited the lands from her grandfather William Owen, who is documented as purchasing the lands around Bryncir in 1736 (Brogyntyn estate records, 1951). Owen Griffith owned and occupied the property of Garnedd Hir, and a number of other independent landholders are noted, such as Thomas Jones of Cwm Meusydd Ucha . Some land was owned by Rowland Jones of Broom Hall, and Richard Watkin Price of Rhiwlas, nr. Bala, Meirionnyd, also owned Bron y Gadair. The details given on the tithe apportionment is given below, with the ‘Plan nos’ referring to the numbers on the tithe maps (Figs. 3a and 3b). The study area crosses the historic parishes of Penmorfa and Ynyscynhaearn and these are noted in the two tables below.

Table 1 Tithe Apportionment for the parish of Penmorfa

Landowner	Occupier	Plan Nos.	Name and Description of Land and Premises	State of Cultivation	Quantities in Statute Measure		
William Ormsby Gore	Cadwalader Williams		<i>Glan y Bwl</i>				
		136	House and Garden			1	10
		137	Llain Tan yr Ardd	Arable		3	25
		138	Weirglodd y Flaen Fynnon	Pasture		2	27
		139	Llain y hen Yscubor	Arable	1	2	31
		140	Can Tan y Beudy	“	2	2	12
		141	Cae Rodin	“	2	-	34
		142	Barn and Yard				11
		143	Lloch	Pasture		3	10
		144	Cae Calch	Arable	2	1	7
		145	Weirglodd Isaf	Meadow	5	1	24

		146	Gors Bach	Pasture	2	3	8
		147	Cae Maen	Arable	2	-	35
		148	Werglodd Newydd	Meadow	2	-	3
		149	Cae y Gorllan	Arable	1	2	23
		150	Weirglodd Garn	Meadow	5	-	12
		151	Cae Cowarch	Arable	2	3	11
		152	Cae yr Cerrig	"	1	1	37
		153	Cae Lon	"	2	3	27
Sir Joseph Huddart Kt	Owen Roberts		<i>Wern Dwyng</i>				
		527	Cae Yscybur	Arable	4	2	29
		528	Pwll March Baf	Meadow	2	1	15
		529	Cae Main	Arable	3	-	12
		530	Cae Square	"	2	3	9
		531	Clwt Bach	"	-	1	6
		532	Cae Tynlan	"	4	1	8
		533	Cae Slatter	Pasture		3	11
		534	Cae Tan Llwydach	Arable	3	-	6
		535	Cae Pwll	"	3	-	16
		536	Waste	Pasture	-	-	21
		537	Cae Weirglodd	3½ a Arable rest Meadow	7	1	9
		538	Weirglodd cefn Stabal	Meadow	4	-	28
		539	Weirglodd Goch	"	11	-	5
		540	Cae Main	Arable	2	1	20
		541	Cae Mawr	"	6	3	22
		542	Waen Bryn Poeth	Pasture	1	-	13
		543	Bryn Poeth Ucha	"	1	2	26
		544	Carreg Grech Bach	Arable	4	-	-
		545	Cae Withy Hendu	4a Arable rest Meadow	6	3	23
		546	Barn and Yard	Barn and Yard	-	-	10
		552	Llain Ddu	Arable	11	-	28
Owen Griffith	Owen Griffith		<i>Garnedd Hir</i>				
		1050	House Road and Waste	Road and Waste		1	12
		1051	Buildings and Garden	-		1	2
		1052	Barn and yards	-		1	6
		1053	Cae Lloft	Arable	2	3	-
		1054	Cae Radioe	"	3	2	3
		1055	Cae Ty Drawy Lôn	"	6	3	29
		1056	Ddol	"	4	1	11
		1057	Cae Main	"	3	1	14

		1058	Clwt yr Howell	Pasture	1	3	17
		1059	Cae Eithin	Arable	3	3	27
		1060	Weirglodd Bach Howell	Meadow	3	-	28
John Jones	R. Humphreys Morris Davies		<i>Carreg y Crech</i>				
		1329	House and Garden	Garden			36
		1330	-	"			26
		1331	Lloc	Pasture		1	29
		1332	Garden	Garden			18
		1333	Weirglodd	Meadow	1	2	9
		1334	Cae Bryn	Arable	1	-	38
		1335	Cae Pwll	"	1	3	29
		1336	Cae Ucha	"	1	3	16

Table 2 Tithe Apportionment for the parish of Ynyscynhaearn

Landowner	Occupier	Plan Nos.	Name and Description of Land and Premises	State of Cultivation	Quantities in Statute Measure		
Thomas Jones	Himself		<i>Cwm Meusydd Ucha</i>				
		170	House, Offices, Yards etc.			3	10
		157	Gors y Cwm	Pasture	1	-	16
		158	Gors	"	2	2	32
		159	Cae Gors	Arable	1	2	16
		160	Cae Swar	"	3	2	-
		161	Cae pwll budr	"	2	3	32
		162	Werglodd Ucha	Arable	3	1	28
				Meadow	3	1	20
		163	Cae mien	Arable	2	2	16
		164	Cae'r Hen Zeydu	"	3	2	-
		165	Cae Meira	"	2	1	8
		166	Cae bach nhfra	"	1	1	8
		167	Cae hir	"	4	1	8
		168	Cae'r allt	"	2	1	28
		169	Cae'r ffront	"	1	2	10
		171	Cae pistill	"	2	3	8
		172	Gors isa	"	3	1	12
		181	Cae isa	"	5	-	-
			<i>Tyddyn Scyborian</i>				
		259	House, Offices &c		-	3	4
		254	Gors	Arable	4	-	13
		255	Cae dan stabal	"	2	1	4
		256	Cae'r odyd	"	2	3	27

		257	Cae Pistyll	Meadow	1	2	38
		258	Cae dan Werglodd y twll	Arable	1	1	-
		260	Werglodd y twll	Meadow	1	-	-
				Arable	2	-	11
		262	Cae twll	Arable	1	3	6
		263	Cae'r lloian	Arable	1	2	11
		264	Winllan	Plantation	-	1	2
		265	Ddol	Arable	3	1	20
		266	Werglodd y coed	Pasture	1	3	29
		267	Cae newydd	Arable	3	-	14
		268	Bryn Eithin & cottages	Pasture	3	-	9
		269	Cae Garw	Arable	2	-	19
		270	Cae'r Bryn	Arable	2	3	26
		271	Cae canol	"	2	-	21
		272	Cae cur y clwt	"	2	-	2
		273	Cae pant	"	2	-	19
	Robert Jones and others. Trustees of the Independent Connection	261	Chapel House and Gardens	"	-	1	-
Rowland Jones Esq.	John Jones		<i>Nhyra Farm</i>				
		155	Cae ucha	Arable	2	3	27
		148	Gors bach	Pasture	2	-	27
		149	Werglodd	Meadow	8	1	24
		150	"	"	7	2	12
		153	Cae nhyra isa	Arable	4	2	18
		154	Cae hir	"	4	2	39
		156	Cae gosa lon	""	6	1	10
	Lowry Jones	152	Nhyra Isa cottage and garden		-	3	24
			<i>Bron y Gadair</i>				
Richard Watkin Price Esq.	Robert Jones	357	House, Offices & yards &c		-	2	1
		354	Cae'r Wal	Arable	4	-	27
		355	Llan'r Eval	-	-	2	15
		362	Werglodd dan y ffordd	Meadow	4	2	11
			<i>Cae Gwen Llian</i>				
Steed Guildstone Esq. in trust for the executors of James	Hugh Evans	204	House, Offices, Yard &c				

Bellamy Esq.							
		145	Gwaen y fran	Meadow	4	3	22
		147	"	Arable	1	2	-
		146	Gwaen y Scrán	Arable	2	3	34
	Ellis Owens		<i>Cefn Meusydd Isa</i>				
		182	Werglodd Bach	Meadow	2	2	8
		183	Cae bach ucha	Arable	1	2	35
		184	Cae mawr	Arable	3	1	4
		185	Cae zallen sur	"	3	1	26
		186	Cae'r Odyn	"	1	3	11
		187	Cae bach	"	1	-	7
		188	Cae'r leven	"	4	-	11
		189	Werglodd y Rhos	"	1	3	35
		190	Cae'r Mur	"	2	2	8
		191	Cae Glas	"	5	2	38
		192	Cae'r Lon	"	1	3	18
		193	Pen ucha Carregg Felin	Pasture	1	-	19
		196	Cae canol	Arable	2	-	39
				Pasture	1	-	-
		197	Cae Carreg felin	Pasture	2	-	32
			<i>Eisteddfa</i>				
	Humphrey Griffiths	194	Clwt Carreg Felin	Arable	-	1	14
		195	Clwt Felin Eithin	-	-	2	11
	Richard Owens		<i>Carreg y Felin</i>				
		144	House and Cae cefn ty	Arable	1	3	5
		143	Cae bach	Pasture	-	3	8

The vast majority of the activity to have taken place in the vicinity of the study area is farming. The flat and fertile lands to the east and west of the improvement scheme are particularly well suited to grazing pasture, and the field systems are depicted as having changed very little between the 1840's tithe map, first (1889; Fig. 4), second (1900) and third (1915; Fig. 5) OS maps and the modern day OS maps. Indeed, the 1840's tithe schedule lists the common usage of the lands around the scheme as being occupied by meadow, pasture or arable land, as can be seen today. The *cloddau* seem to form part of an 18th or early 19th century regular field system.

4.2.3.1 Industrial Activity

The track bed of the former Gorseddau tramway from the Prince of Wales Slate Quarry to the north is visible crossing the study area (Plate 4). It is clearly shown on the 1st edition 25 inch map of 1888, Caernarfonshire sheets XXXIV.6 and 7 (Fig. 4). The Tremadoc tramway (sometimes known as the *Llidiartyspytty Railway*) was built by William Madocks sometime before 1842, and possibly as early as the 1830s. It connected the ironstone mine at Llidiart Ysptyty to the harbour at Porthmadog. The ironstone mine was not successful and the tramway was extended to serve a nearby slate quarry owned by the *Bangor & Portmadoc Slate & Slab Co. Ltd.* In 1856 the Bangor & Portmadoc Slate & Slab company requested

tenders to extend the line 2¼ miles to the Gorseddau Quarry at Glan Bwll. The extended railway, completed in 1857, was known as the Gorseddau Tramway.

From the wharves at Porthmadog harbor the line curved through the town and ran alongside the Y Cyt canal to Tremadoc. From there a reversing neck marked the beginning of the extension towards Gorseddau. The route headed east through the village of Penmorfa where it passed under the main road in a short tunnel. At Henefail the line turned north past Ynys-y-Pandy and on to Gorseddau where a short incline lead into the quarry. The line ran a total distance of just over 8 miles and rose 900 feet in that distance. The tramway was replaced by the Porthmadoc and Gorseddau Railway in 1871, and had effectively closed by 1897 (Boyd 1998).

To the south of the study area, in the vicinity of Pentrefelin, are the remains of industrial activity which was very prevalent in the wider region in the late 18th and 19th centuries. These include a copper mine at Bron y Gadair (PRN 20,508; centered on SH52303930) 30m south of the study area, and a slate quarry at Pencraig (PRN 20,207; centered on SH 51903930), 80m south west of the study area.

The route passes the site of the former Tabor Independent Chapel (Feature 9; Plate 9). The Rhiwlas land in the area was sold to independent owners in 1938 and 1944, leaving us now with a patchwork of independently owned farms and properties.

4.3 Statutory and non-statutory designations

No listed buildings are located within the 25m north to south buffer zone along the study area. The nearest listed building is Cefn-y-Meysydd Isaf farmhouse (listed Building no. 21523), which lies south of the study area.

No Scheduled Ancient Monuments lie within 250m of the proposed scheme.

The eastern part of the scheme lies very close to the Snowdonia National Park (SNP) boundary at NGR SH 53664099. It would appear however that works associated with the WMR scheme itself would lie outside the SNP. The area lies outside to the west of the *Aberglaslyn* Landscape of Historic Interest in Wales (HLW (Gw) 7) (Cadw/ICOMOS 1998, 92-95).

Sites on the Gwynedd HER within 1.5km of the study area are listed in Appendix 1

4.4 The Archaeological Survey (Fig. 2)

The features are listed below and are located on Fig. 2 with recommendations for further assessment and mitigatory measures, where appropriate. The recommendations reflect the information currently provided by Dŵr Cymru, and assume impact only within the 15m impact buffer zone defined by Dŵr Cymru. Any change to the boundary of the proposed development area will require the recommendations below to be changed also.

Feature 1 Clawdd and Drystone Wall

PRN 36357 (Plate 2)

SH 53134115

Period: Post-medieval

Category: B Impact: Likely

A *clawdd* or stone clad field boundary. It follows a straight course south east - north west and then east from the road. It is constructed of small to large field stones forming a *clawdd*, which has been replaced with a Drystone wall to the north west. It may be 18th century or earlier in date and appears to have formed part of a pre 19th century field system. It is

shown on the Penmorfa tithe map of 1838 (Fig. 3a), and on the 1st edition 25 inch Ordnance Survey map of 1888 (Fig. 5).

Category: B Impact: Likely

Recommendations for further assessment: None

Recommendations for mitigatory measures: Basic recording

Feature 2 Clawdd

PRN 36358 (Plate 3)

SH 53084102

Period: Post-medieval

Category: B Impact: None

A *clawdd* or stone clad field boundary. It follows a slightly wandering course east - west from the minor road. It is constructed of small to large field stones forming a *clawdd*. It may be 18th century or earlier in date and appears to have formed part of a pre 19th century field system. It is shown on the Penmorfa tithe map of 1838 (Fig. 3a), and on the 1st edition 25 inch Ordnance Survey map of 1888 (Fig. 5) from which the current field pattern does not appear to have been changed.

The pipe route is proposed to run along the north side of the *clawdd*. There will not necessarily be any impact upon it.

Category: B Impact: Likely

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance or Basic recording

Feature 3 Glan Byl Farmhouse and outbuildings

PRN 36359

SH 52734101

Period: Post medieval

Category: B Impact: None

A farmhouse, shown on the 1838 tithe map of Penmorfa (Fig. 3a, Field 136), but now significantly altered. Glan Byl was formerly the property of the Brogyntyn Estate. It is likely to be originally late 18th or early 19th century in date. Outbuildings exist to the west and these are probably late 18th or early 19th century in origin also. They are described as a barn and yard (Field 142) on the tithe apportionment and form the core of the current complex of buildings. A modern cement works is also located at the site.

Category: B Impact: None

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 4 Gorseddau tramway

PRN 28503 (Plate 4)

SH 52864149- SH 53794058

Period: Post medieval

Category: B Impact: Considerable

The track bed of the former Gorseddau tramway, about 8m wide, from the Prince of Wales Slate Quarry to the north lies within the study area (PRN 25,573; SH 53244084 C). It is clearly shown on the 1st edition 25 inch map of 1888, Caernarfonshire sheets XXXIV.6 and 7 (Fig. 5). The Tremadoc tramway (sometimes known as the *Llidiartyspytty Railway*) was built by William Madocks sometime before 1842, and possibly as early as the 1830s, although it is not shown on the Tithe Map of 1840 (Fig. 3b). It connected the ironstone mine at Llidiart Ysptyty to the harbour at Porthmadog. The ironstone mine was not successful and the tramway was extended to serve a nearby slate quarry owned by the *Bangor & Portmadoc Slate & Slab Co. Ltd.* In 1856 the Bangor & Portmadoc Slate & Slab company requested tenders to extend the line 2¼ miles to the Gorseddau Quarry at Glan Bwll. The extended railway, completed in 1857, was known as the Gorseddau Tramway. The course

of the extended tramway is not visible close to the route, and is probably heavily disturbed, but may be encountered during the ground works near to SH 52664114.

Category: B Impact: Considerable

Recommendations for further assessment: *Topographic Survey of tramway embankment within the 15.0m scheme impact zone prior to the commencement of works and Detailed Recording of Embankment*

Recommendations for mitigatory measures: *If open cut excavation to be carried out where the pipe route crosses the tramway, the section across embankment should be cleaned and recorded to understand the construction techniques. This should include a scaled drawn section.*

Feature 5 Drystone wall bounded track

PRN36360 (Plates 5 and 6)

SH 52634081-SH52474089

Period: Post medieval

Category: B Impact: Considerable

An access track approximately 2.1m wide, bounded by drystone walls constructed of local, mainly rounded, fieldstone boulders. It extends ENE for about 200m. On the Ynyscynhaearn tithe map of 1840 it is shown as an access track to the field and open area identified as *Gors y Cwm* (field 157), which formed a part of the marshy *Rhyd Rhos* (Fig. 3b). It is thus likely to have formed a bounded access track for farmers to get their animals onto the common grazing land. By the 1889 1st edition Ordnance Survey map, when the common land had been enclosed, the track is shown as forming an access way to the farm of *Llyn y Mafon Isaf* (Fig. 5). The walls are therefore likely to 18th century in date or earlier.

Recommendations for further assessment: *None*

Recommendations for mitigatory measures: *Basic Photographic and Descriptive Recording of walls. If open cut excavation to be carried out where the pipe route crosses the trackway, the section across the walls and trackway should be cleaned and recorded to understand the construction techniques. This should include a scaled drawn section. The walls should be sympathetically reinstated after the pipe work has been carried out.*

Feature 6 Clawdd

PRN 36361 (Plate 7)

SH 52494077

Period: Post-medieval

A *clawdd* or stone clad field boundary. It follows a regular course west to east from the road. It is constructed of small to large field stones. It is shown on the Penmorfa tithe map of 1838 (Fig. 3a) and on the 1st edition 25 inch Ordnance Survey map of 1888 (Fig. 5). It may be 18th century or earlier in date and appears to have formed part of a pre 19th century field system.

Category: B Impact: Likely

Recommendations for further assessment: *None*

Recommendations for mitigatory measures: *Basic recording*

Feature 7 Clawdd

PRN 36362 (Plate 8)

SH 52444066

Period: Post-medieval

Category: B Impact: Likely

A *clawdd* or stone clad field boundary, 120m SSW of feature 6. It follows a regular course west to east from the road. It is constructed of small to large field stones. It is shown on the Penmorfa tithe map of 1838 (Fig. 3a) and on the 1st edition 25 inch Ordnance Survey map of 1888 (Fig. 5). It may be 18th century or earlier in date and appears to have formed part of a pre 19th century field system.

Recommendations for further assessment: *None*

Recommendations for mitigatory measures: *Basic recording*

Feature 8 Garnedd Hir Farmhouse

PRN 36363

SH 53124128

Period: Post medieval

Category: B Impact: None

A substantial post-medieval farmhouse.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

**Feature 9 Tabor Congregational Chapel Site PRN 36364, NPRN 7117
(Plate 9)**

SH 52263996

Period: Post medieval

Category: B Impact: None

A post-medieval Nonconformist Chapel site, formerly a Congregational Chapel, later used by the Independants. The chapel building has been demolished, but the platform on which the chapel was sited and the graveyard survive. There is an early 20th century memorial to a minister from the chapel building reset into the boundary wall.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

**Feature 10 Drinking Well for Animals at Entrance to Tyddyn Ysguboriau
PRN 36365 (Plate 11)**

SH 52263980

Period: Post medieval

Category: B Impact: None

A drinking well located in the boundary wall at the entrance to Tyddyn Ysguboriau

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

Feature 11 Bridge over the Afon Cedron PRN 36366

SH 52303962

Period: Post medieval

Category: B Impact: None

A small bridge on the minor road crossing the Afon Cedron in Pentrefelin about 40m north of its junction with the A497(T). It is probably of late 18th or 19th century in date, with a modern parapet, and may be a remnant of the pre Turnpike era.

Recommendations for further assessment: None

Recommendations for mitigatory measures: The carriageway surface will be cut through for the pipe trench excavation, but it is likely that disturbed ground will be encountered, which any archaeology can be recorded as part of the Watching Brief.

Feature 12 Bron y Gadair Copper Mine PRN 20508

SH 52303930

Period: Post medieval

Category: B Impact: None

A post-medieval copper mine site. It lies beyond the boundaries of the works as the WMR is within the carriageway at this point.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Avoidance

4.5 Aerial Photographs

The following aerial photographs were examined, dating from 1946 and 1973. No additional archaeological sites were identified, although the route of the A487(T) prior to its improvement was noted, and the landscape was shown to have undergone only limited changes since then, with the exception of the Glan Byl cement works and also the caravan park, which can be shown to have expanded and developed from that time.

- RAF 106G UK 1467 frame 3175, taken 3rd May 1946
- RAF 106G UK 1469 frame 4268, taken 4th May 1946
- Ordnance Survey 73/020 frame 207, taken 21st March 1973

5. SUMMARY OF ARCHAEOLOGICAL POTENTIAL

5.1 Location Summary

The land over which the WMR route crosses on both sides of the road is pasture land with a small amount of woodland, although within a general north to south slope incorporating enclosed sheep and cattle grazing with dispersed farm settlement, although at the west of the scheme the land is low lying and boggy in the north-west south-east sloping valley of the Afon Cedron. There is a caravan park and cement works located at Glan Byl.

The fields on the north (Garnedd Hir) side of the road slope gently east-west on the lower slopes. South of the A487(T) the grassland has been markedly improved, and the route is crossed by the Gorseddau tramway. The route then falls over more marginal land down to Pentrefelin, with the final section of the route within the road carriageway.

5.2 Environmental Remains and Soil Morphology

The soil morphology has been observed in five 1m deep geomorphological test pits examined during the archaeological walk over, as they were being dug at the same time. Beneath about 0.2m of mid orangey brown topsoil a reddish brown glacial silty clay and gravel was observed higher up the slope, overlying light yellowish blue grey shale and clay, which was observed throughout and is thought to be a glacial deposit. No rock outcropping was noted in the test pits although present in other parts of the scheme.

There is considered to be some potential for the survival of palaeoenvironmental remains, as the central portion of the scheme runs through an area of wet low-lying land where peat deposits may be preserved, particularly in the area close to sites 6 and 7. The survival of palaeoenvironmental remains in the drier areas is unknown. It is suggested that advice from a specialist regarding its potential is sought in advance of works, with reference to any geotechnical information available.

5.3 Artefactual Potential

The potential for the survival of medieval or earlier artefacts is unknown, but it is possible that medieval might be encountered, although no specific sites of increased potential have been identified on the WMR route as part of the assessment. It is likely however that post-medieval artefacts would be present in greater concentrations close to Glan Byl Farmhouse, the Gorseddau Tramway and on the approaches to Pentrefelin.

6. SUMMARY OF RECOMMENDATIONS

6.1 Summary of Specific Recommendations

Number	Name	Importance	Impact	Recommendation for further evaluation	Mitigation recommendations
1	Clawdd and Drystone wall	B	Likely	None	Basic Recording
2	Clawdd	B	Likely	None	Basic recording, including a drawn section of the breach in the clawdd
3	Glan Byl farmhouse and outbuildings	B	None	None	Avoidance
4	Gorseddau Tramway	B	Considerable	Topographic Survey of tramway embankment within the 25m scheme impact buffer zone prior to the commencement of works and Detailed Recording of Embankment	If open cut excavation to be carried out where the pipe route crosses the tramway, the section across embankment should be cleaned and recorded to understand the construction techniques.
5	Boundary walls and track	B	Considerable	None	Basic Photographic and Descriptive Recording of walls. If open cut excavation to be carried out where the pipe route crosses the tramway, the section across the walls and trackway should be cleaned and recorded to understand the construction techniques.
6	Field Boundary	B	Likely	None	Basic Recording
7	Field	B	Likely	None	Basic Recording

	Boundary				
8	Garnedd Hir Farmhouse	B	None	None	Avoidance
9	Tabor Chapel	B	None	None	Avoidance
10	Drinking Well	B	None	None	Avoidance
11	Bridge over the Afon Cedron	B	Likely	None	Recorded as part of Watching Brief
12	Bron y Gadair Copper Mine	B	None	None	None

6.2 General Recommendations

In addition to the specific recommendations given above the following scheme wide general recommendations are made.

- As there is some potential for the identification of below ground archaeological remains as the route crosses improved agricultural fields, it is recommended that an **Intensive Watching Brief** be carried out during the off road groundworks for this project, and a **Partial watching brief** would be adequate for those sections of the route along the current road carriageways (as defined in Appendix 2).
- It is recommended that boundary walls and *cloddau* be rebuilt in a sympathetic manner where they have been breached.
- It is recommended that a programme of environmental sampling be carried out in suitable areas of the route to test for paleoenvironmental remains, *subject to specialist advice*. A possible area for this is shown on Figure 2.

7. CONCLUSIONS

The proposed water main renewal section is located at a height of between 146.3m and 28.8m OD, between Golan and Pentrefelin, falling from the north-west to south east. The land on both sides of the A487(T) road is moderately level pasture land, although within a general north to south slope incorporating enclosed sheep and cattle grazing with dispersed farm settlement, although at the west of the scheme the land is low lying and boggy in the north-west south-east sloping valley of the Afon Cedron, with drainage channels present.

There is good archaeological evidence of prehistoric funerary, ritual and settlement activity in the wider area. There is also some evidence for settlement in the vicinity of the study area in later prehistoric times which may continue in use into Romano-British times. This would probably consist of enclosed or unenclosed huts.

Medieval settlement is noted in the area in the form of the former *llys* and church site at Dolbenmaen. The castle mound and ditch stand on a low ridge running parallel to the river Dwyfor at a fordable crossing point on an important route way. 'Its architects may have been Norman or Welsh and its early history is uncertain. In the wider area the surviving traces of medieval settlement are characterised by the presence of rectangular long hut platforms, in a dispersed settlement pattern. One of these, at Cae-Gwenllian, has been recorded west of the proposed scheme.

The dominant cultural context within the area in the post-medieval period is rural farming, primarily enclosed sheep and cattle farming. However, the wider area can also be seen within an industrial and urban context, typified by an assortment of mines and quarries, with their associated tramways and railways, as well as townships dating back to the medieval period and most likely beyond.

The archaeological assessment identified twelve archaeological features in the vicinity of the scheme, of which seven are likely to be impacted upon. All these sites are post medieval in date. The most significant of these are the site of the former Gorseddau tramway (Site 4), the bounded track (Site 5) and the Bron y Gadair Copper Mine (Site 12), the remainder being field boundaries and trackways, and a bridge. Mitigation in the form of recording, and subsequent reinstatement, has been recommended for these.

There is also some potential however for the survival of relict prehistoric and medieval archaeology, below the ground based on the proximity of identified sites within the assessment area, observation of the geology in the trial pits, and the fact that the improved nature of the fields means that sites may be present that are not visible above ground. An **intensive archaeological watching brief** during groundworks has been recommended in areas of higher archaeological potential, and a **partial watching brief** in areas of lesser potential.

There is also some potential however for the survival of palaeoenvironmental remains in the more waterlogged areas. A **palaeoenvironmental sampling** programme has been recommended, to be undertaken in advance of main groundworks, based on specialist feedback.

8. ARCHIVE

The archive consists of historic maps, plans and aerial photographs, along with notes and digital images taken on the field visit. The archive is currently held by GAT under project code **G2296**.

One copy of the bound report will be sent to the GAPS archaeologist, and a further copy sent to the HER Archaeologist at the curatorial division of Gwynedd Archaeological Trust, Bangor, for deposition in the Regional HER. A copy of the report will be provided to the National Monument Record, Royal Commission on the Ancient and Historic Monuments of Wales, Aberystwyth.

9. REFERENCES AND OTHER SOURCES CONSULTED

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RCAHMMW 1956 An Inventory of Ancient and Historic Monuments for Caernarfonshire. Vol 2: Central

Smith, B. and George, T.N. 1961 British Regional Geology- North Wales

Gwynedd Archives, Caernarfon

Tithe maps and Apportionments of the Parishes of Penmorfa 1838 and Ynysynhaearn 1840

X/Poole/2884 Particular of the Estates of Richard Tavistock Price Esq. Deceased, in the Township of Gest in the Parish of Ynyscyhaearn, in the County of Caernarfon- Advertised to be Sold by Auction at Penmorfa, in the said County, on Monday the 18th Day of September 1797

GAT Historic Environment Record

Ordnance Survey maps:

1888 First Edition County Series XXXIV.06 and 07

1900 Second Edition County Series XXXIV.06 and 07

1915 Third Edition County Series XXXIV.06 and 07

RCAHM Wales Aberystwyth

Aerial Photographs

Sortie: 106G/UK/1467 Date: 03/05/1946 Frames: 3173

Sortie: 106G/UK/1469 Date: 04/05/1946 Frames: 4266 and 4268

Sortie: Cardiff 72-269 Date: 18/07/1972 Frames 151

Sortie: Ordnance Survey 73/020 frame 207, taken 21st March 1973

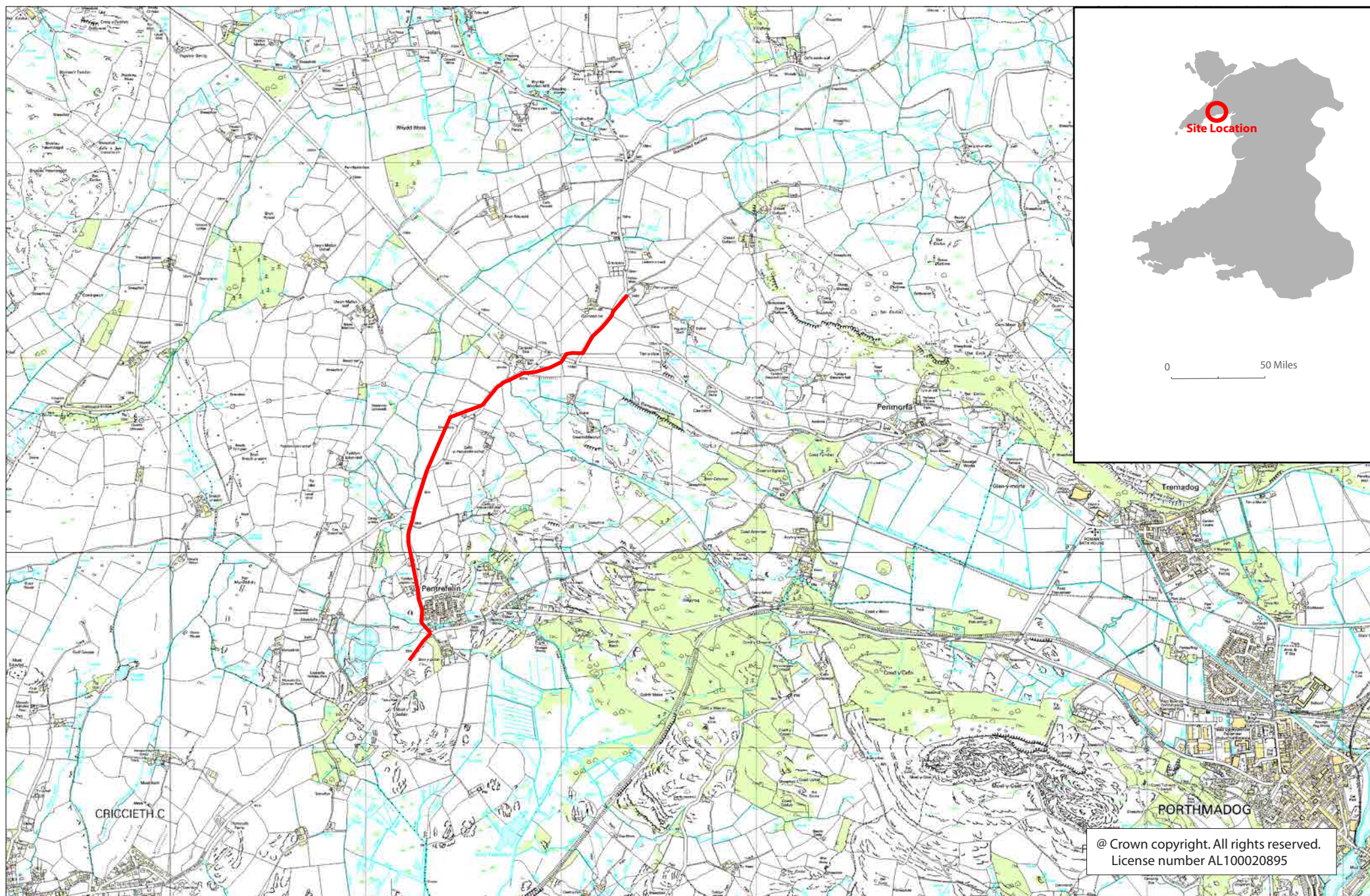


Fig. 1 Site Location. Base map taken from the Ordnance Survey 1:10 000 series sheets SH 53 and SH54. The WMR route is overlain in red. Scale 1:25 000

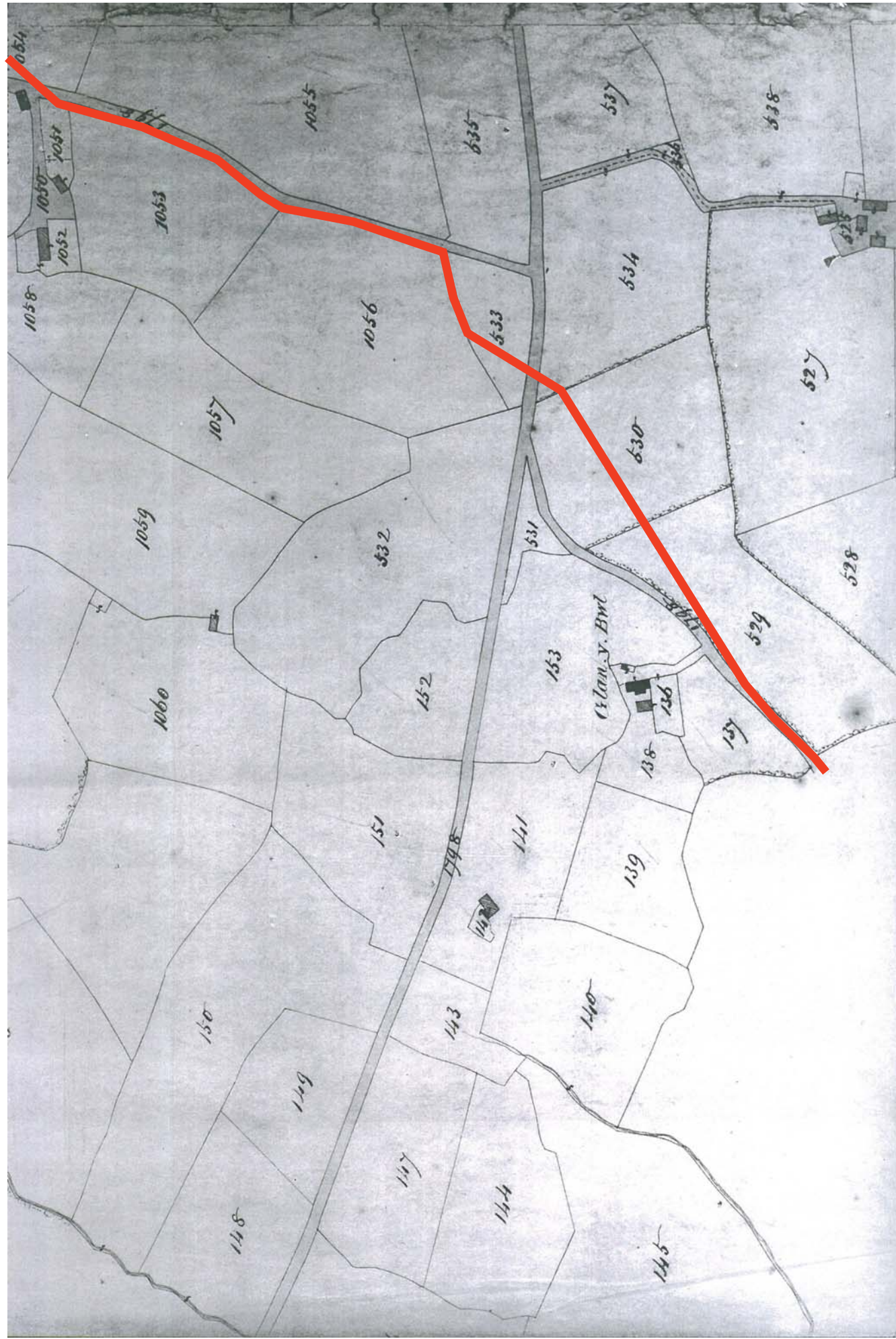


Fig 3a Ynycyhaearn Tithe Map of 1838 (Part III), with the approximate northern part of WMR route outlined in red (Gwynedd Archives). Not to Scale

Fig 3b Ynncyhaearn Tithe Map of 1840, with the approximate WMR route outlined in red (Gwynedd Archives). Not to Scale

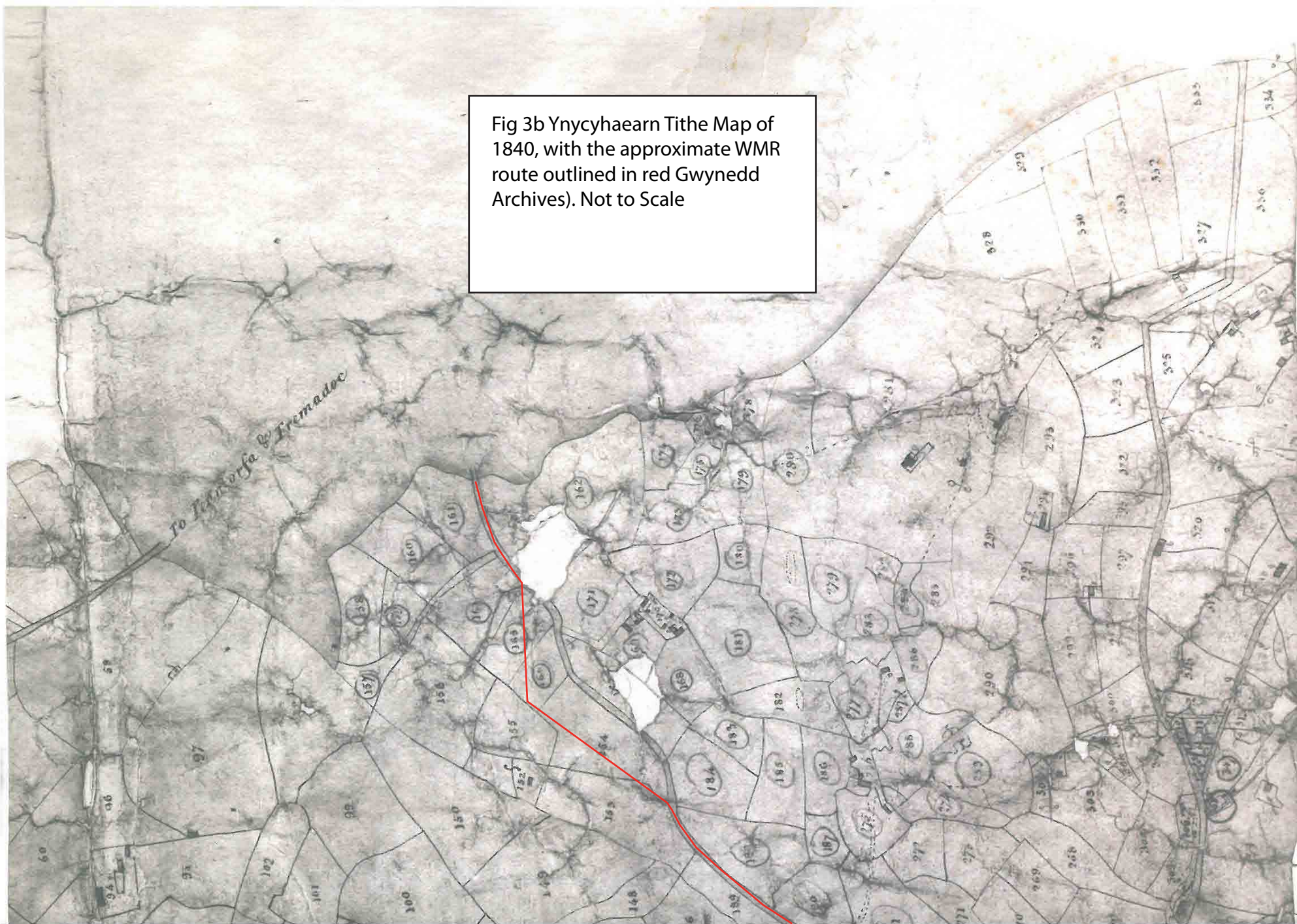




Fig. 4 Ordnance Survey 25 inch 1st edition map of 1889, Caernarvonshire Sheets XXXIV.6,7,10,11. The Golan to Pentrefelin WMR route overlain in red. Scale 1:16 000 at A4

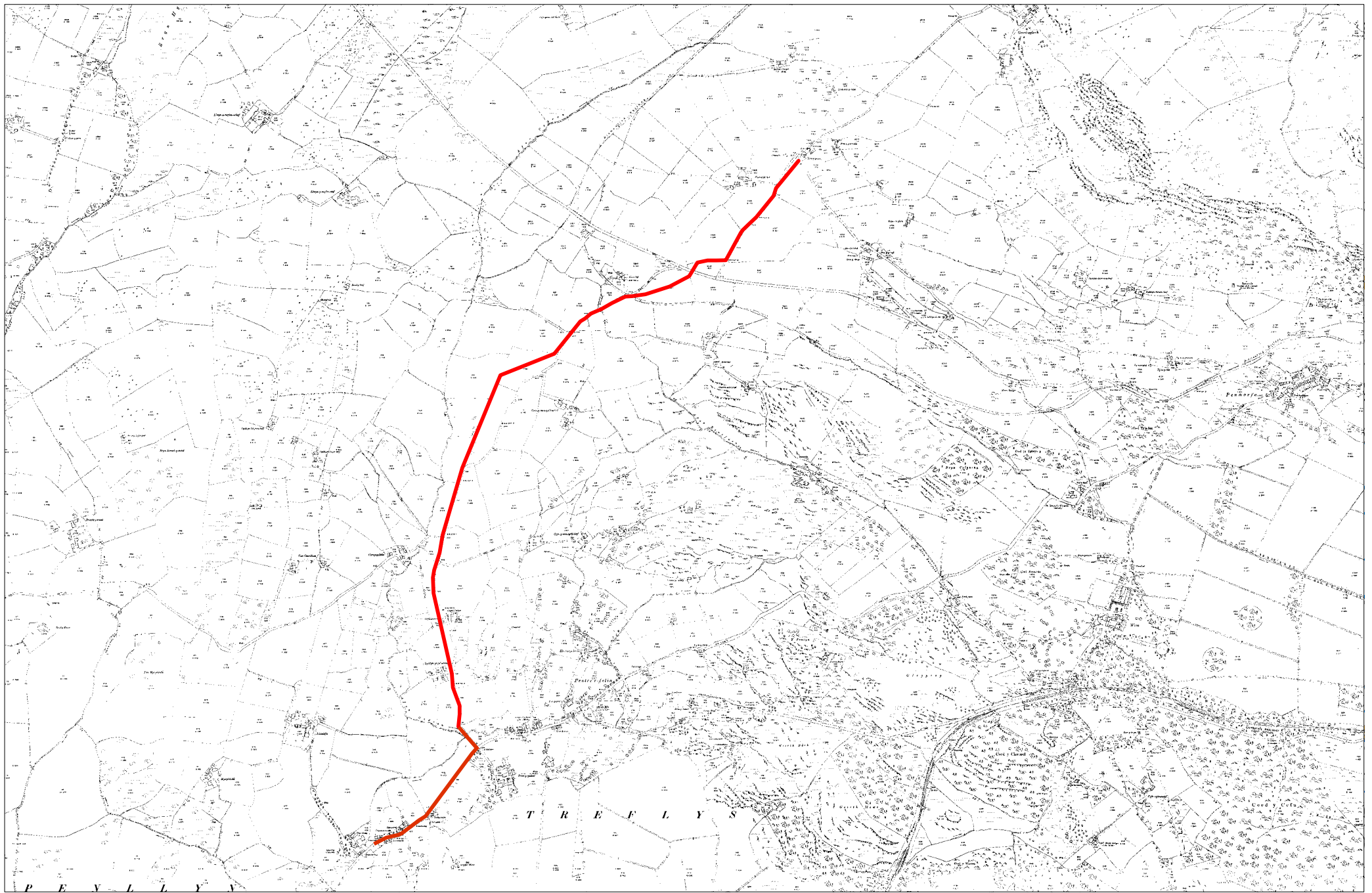


Fig.5 Ordnance Survey 25 inch 3rd edition map of 1915-1916, Caernarvonshire Sheets XXXIV.6,7,10,11. The Golan to Pentrefelin WMR route overlain in red. Scale 1:16 000 at A4

PARTICULAR

OF THE

Estates of Richard Tavistock Price, Esq. deceased,

In the Township of Gest, in the Parish of Ynyscynhayarn, in the County of Carnarvon;

ADVERTIZED

TO BE SOLD BY AUCTION,

At Penmorfa, in the said County, on Monday the 18th Day of September, 1797.

Lots.	Tenants Names.	Names of Tenements.	Quantities.	Yearly Rents.	Crown Rents claiming out of the Premises.	Acres of Land in the Leases.	OBSERVATIONS.
2045 <i>James Jones</i>	William Owen,	Drws y ddeugod,	A. R. P. 74 0 38	£. s. d. 11 11 0	None.	49	Lease for Tenant's Life, who is bound to drain annually 10 Roods. <i>no sale</i>
1246 <i>John Jones</i>	Griffith Jones,	Llwyn y mafon uchaf,	247 3 0	34 0 0	6 8	57	Lease for Tenant's Life, who is bound to drain annually 16 Roods. <i>no sale</i>
1247 <i>John Jones</i>	David Parry,	Llwyn y mafon isfa,	120 2 9	32 0 0	4 5 1/2	49	Lease for Tenant's Life, who is bound to drain annually 15 Roods. <i>no sale</i>
1248 <i>John Jones</i>	John Jones,	Tyddyn Yallwyn,	44 0 0	10 0 0	0 3 4	57	Lease for Tenant's Life, who is bound to drain annually 10 Roods. <i>a high</i>
1249 <i>John Jones</i>	Hugh Evans,	Cae Gwelliwn,	49 3 33	17 0 0	0 3 4	57	Tenant at Will. <i>no sale</i>
1250 <i>John Jones</i>	Ann Griffith and William Parry,	Eifeddfa,	110 3 36	22 0 0	0 7 0	57	Lease for Griffith Life, who is bound to drain annually 13 Roods. <i>no sale</i>
1251 <i>John Jones</i>	Owen Ellis,	Cefn y meufydd isfa,	97 0 23	20 0 0	0 11 6	64	Lease for Tenant's Life, who is bound to drain annually 13 Roods. <i>no sale</i>
1252 <i>John Jones</i>	Robert Roberts,	Twll y Cae,	32 2 19	9 0 0	None.	79	Lease for Tenant's Life, who is bound to drain annually 10 Roods. <i>no sale</i>
1253 <i>John Jones</i>	Owen Evans,	Gareg feien,	218 0 4	42 0 0	None.	79	Tenant at Will. <i>no sale</i>
1254 <i>John Jones</i>	Mrs. Mary Jones,	Bron y gader and Mill,	272 2 84	50 0 0	0 11 0	54	The Rev. Owen Jones, } Tenant bound to drain annually 15 Roods. <i>no sale</i> Mrs. Griffith } <i>no sale</i>
1255 <i>John Jones</i>	John Roberts, Successor to Robert Owens Widow	Glau y morfa bach,	135 3 7	13 0 0	0 10 0	27	Lease for the Tenant's Life, who is bound to drain annually 10 Roods. <i>no sale</i>
1256 <i>John Jones</i>	Owen Roberts,	Garreg Wen,	168 0 26	31 0 0	0 7 0	67	Lease for Tenant's Life, who is bound to drain annually 30 Roods. <i>no sale</i>
1257 <i>John Jones</i>	Humphrey Williams,	Llanerch y Gell,	329 1 3	51 0 0	1 3 4	51	Lease for Tenant's Life, who is bound to drain annually 30 Roods. <i>no sale</i>
1258 <i>John Jones</i>	Griffith Roberts,	Tyddyn llwyn,	76 2 35	18 0 0	0 4 7	51	Tenant at Will. <i>no sale</i>
1259 <i>John Jones</i>	John Roberts,	Pen y clogwyn,	101 0 33	24 10 0	0 6 8	56	Ditto. <i>no sale</i>
1260 <i>John Jones</i>	Roseland Thomas,	Ty whyn yr Bwlch,	367 2 13	32 0 0	0 9 6	56	Lease for Tenant's Life, who is bound to drain annually 18 Roods. <i>no sale</i>
1261 <i>John Jones</i>	William Roberts,	Llidiary Spury,	124 0 33	36 0 0	0 3 4	54	Tenants at Will. <i>no sale</i>
1262 <i>John Jones</i>	John Evans,	Ynusadog Cottage,	158 2 36	18 0 0	0 8 4	54	Lease for Tenant's Life, who is bound to drain annually 14 Roods. <i>no sale</i>
1263 <i>John Jones</i>	Richard Humphreys,	Tan r all uchaf,	376 0 28	70 0 0	1 6 8	65	Lease for Tenant's Life, who is bound to drain annually 30 Roods. <i>no sale</i>
1264 <i>John Jones</i>	Owen William,	Cwm Mawr,	376 0 28	70 0 0	1 6 8	65	Lease for Tenant's Life, who is bound to drain annually 30 Roods. <i>no sale</i>

The Tenants pay the above Crown Rents, as well as all Leys and Taxes, over and above their respective reserved Rents.

The Leased Tenants are bound to keep and leave the Premises in Repair, having Timber in the Rough allowed.

They are also bound to fow and plant Gorse and Quicksets in the Hedge Rows, and to blast and remove unnecessary Stones.

All the draining is agreed to be three Feet deep, and to be piped and filled with Stones, until the wet Parts of the Farms become sufficiently drained.

Leased Tenants are bound to consume and use all the Produce on the Premises, and to grind their Corn at the Landlord's Mills.

The Lessees forfeit their Leases by feigning, affixing, mortgaging, or pledging their Leases, and by becoming Insolvent.

The Lessor, his Heirs and Assigns, at Liberty to work Mines, Collieries, &c.

John Jones, Part of Ynyscynhayarn attached from Lot 15

Fig. 6 1797 Sale Catalogue of Richard Tavistock Price's land in Ynyscynhaïarn (Gwynedd Archives, X/Poole/2884)



Plate 01: General view of WMP route looking south from Garnedd Hir. Scale 1m



Plate 02: View of *clawdd* field boundary (Site 1), from the east



Plate 03: View of *clawdd* from the east (Feature 2).



Plate 04: View of Gorseddau Tramway from the east (Feature 4). Route shown with overlaid red line



Plate 05: View of wall bounded access track (Feature 5) from the south east .



Plate 06: View of north wall elevation (Feature 5), with Glan Byl Cement Works in the background . Scale 1m



Plate 07: View of boundary wall (Feature 6), from the north-west. Scale 1m



Plate 08: View of boundary wall (Feature 7) from the east southeast . Scale 1m



Plate 09: View of Tabor Chapel graveyard and reset Memorial Plaque, viewed from the south. Scale 1m



Plate 10: View of Trail Hole 2 from the south . Scale 1m



Plate 11: View of Animal Drinking Well at entrance to Tyddyn Ysgyboriau. Scale 1m



Plate 12: General View looking south towards Pentrefelin

APPENDIX 1

Sites on the Gwynedd HER database, Listed Buildings and Scheduled Ancient Monuments (SAM), within 1.5km of the study area

PRN	NAME	NGR	TYPE	PERIOD	STATUS
11996	Carreg-felin	SH53383983	BUILDING	Post-Medieval	Listed Building
12563	Clenennau, Barn	SH53164246	BUILDING	Post-Medieval	Listed Building
158	Clenennau (Medieval House), Golan	SH53164246	HOUSE	Medieval	-
181	Settlement (Medieval), Gesail Gyfarch	SH54154192	DESERTED RURAL SETTLEMENT	Medieval	-
185	Platform House, Craig y Gesail	SH54064121	HOUSE PLATFORM	Medieval	-
189	Inscribed Stone ("CVNALIPI"), Gesail Gyfarch	SH54024170	INSCRIBED STONE	Early Medieval	Scheduled Ancient Monument
1300	Standing Stone, Pentrefelin	SH52663968	STANDING STONE	Prehistoric/Post-Medieval	
2356	Rotary Quern, Findspot, Gwernddwryd	SH53154065	FINDSPOT	Roman	-
2357	Roman Copper Cake, Findspot, Clenenney	SH53204246	FINDSPOT	Roman	-
2365	Homestead, Cae-Gwenllian	SH51994003	ENCLOSED SETTLEMENT	Roman	-
2377	Cremation Urn & Burial, Site Of, Llyn-y-mafon-isaf	SH52004120	FINDSPOT	Prehistoric	-
2380	Bronze Axe, Findspot, Tyddyn-dicwm-uchaf	SH54204090	FINDSPOT	Bronze Age	-
4056	Spindle Whorl - Findspot, Pentrefelin	SH52663985	FINDSPOT	Prehistoric	-
5260	House - Clwt y Ffolt, Dolbenmaen	SH53104220	HOUSE	Post-Medieval	Snowdonia National Park
7376	Penyfed Medieval Township	SH54004100	TOWNSHIP	Medieval	-
17599	Roman Road, Segontium-Pen Llystyn-Tomen y Mur	SH52553973	ROMAN ROAD	Roman	-

PRN	NAME	NGR	TYPE	PERIOD	STATUS
20207	Slate Quarry, Pencraig	SH51903930	QUARRY	Post-Medieval	-
20508	Copper Mine, Bron y Gadair	SH52303930	QUARRY	Post-Medieval	-
28503	Gorseddau Tramway	SH54994073	TRAMWAY	Post-Medieval	-

APPENDIX 2

Definitions of terms used within the report

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 usually be no sites remaining in this category. In this case several areas of unknown potential have been allocated to this category.

Definition of Impact

The impact of the proposed development on each feature 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 works.

Definition of field evaluation techniques

Field evaluation is necessary to fully understand and assess most 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. Topographic survey may also be employed where sites are thought to survive as earthworks.

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. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

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.

Definition of Mitigatory Recommendations

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

None:

No impact so no requirement for mitigatory measures.

Detailed recording:

This requires a full photographic record and measured survey prior to commencement of works.

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

Basic recording:

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

Strip, Map and Sample:

The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such a manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

Watching brief:

This is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

Avoidance:

Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

Reinstatement:

The feature should be re-instated with archaeological advice and supervision.

APPENDIX 3

**Reproduction of Gwynedd Archaeological Trust Project Design for
Archaeological Assessment (January 2013)**

GOLAN TO PENTREFELIN WATER MAINS RENEWAL

PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT

Prepared for

DŴR CYMRU

January 2013

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

GOLAN TO PENTREFELIN WATER MAINS RENEWAL

PROJECT DESIGN FOR ARCHAEOLOGICAL ASSESSMENT (G2296)

Prepared for DŵR CYMRU, January 2013

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1. INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *DŴR CYMRU* to provide a cost and project design for carrying out an archaeological assessment in advance of proposed works at the location of the existing GOLAN TO PENTREFELIN WATER MAINS RENEWAL (WMR).

The WMR scheme measures c.2.6km in length and is centred on NGR **SH52144068** between the villages Golan and Pentrefelin, northeast of Criccieth, Gwynedd (as indicated on client drawings **NP2900429 -120** to **NP2900429 -123**). The proposed easement width is currently 15m (Dŵr Cymru email correspondence dated **07/01/13**).

According to client drawings **NP2900429 -120** to **NP2900429 -123** (reproduced as Figure 01) the route starts at NGR **SH53254124** on a local road outside the entrance to Garnedd Hir Farm and then continues 280m south-southwest down a local road, turning westwards for 120m, following a field boundary, before crossing the A487 Road and continuing along an alignment parallel to Tabor Lane for 340.0m before turning further westwards and running southwest for 590.0m to rejoin Tabor Lane, running alongside the lane for 450.0m and then continuing inside the lane from the entrance to Cefn-Derwen Farm for another 400.0m, reaching the junction of Tabor Lane and the A497, before terminating 480.0m to the southwest, along the A497 at NGR **SH51983927** outside a property named Bryn Hyfryd. The WMR will partly utilise a new route and will be located in close proximity to the existing main, which, according to client drawings **NP2900429 -120** to **NP2900429 -123** was established between 1930 and 1962, as a series of 3-inch and 4-inch water mains. The 480.0m stretch between the Tabor Lane/A497 junction and the Tabor Lane property will be located along the route of an existing 4-inch main (cf. **NP2900429 -123** reproduced as Figure 01).

Gwynedd Archaeological Planning Services (GAPS) have requested “an archaeological assessment before construction...for this scheme (as) it covers an extensive area of farmland with a potential for prehistoric activity indicated by recorded discoveries in the locality” (email correspondence dated **05/11/12**). The content of this design must therefore be approved by Gwynedd Archaeological Planning Service in line with *Institute for Archaeologists* guidelines specified in *Standard and Guidance for historic environment desk-based assessment* (Institute for Archaeologists, 1994, rev. 2001, 2009 and 2011 http://www.archaeologists.net/sites/default/files/node-files/DBA2010working%20draft_0.pdf).

2. ARCHAEOLOGICAL AIMS

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets and, in England, the nature, extent and quality of the known or potential archaeological, historic, architectural and artistic interest. Significance is to be judged in a local, regional, national or international context as appropriate” (IFA 2011, 4)

The aims of the assessment are:

- to identify and record the cultural heritage within the defined study area;
- to evaluate the importance of what has been identified;
- to recommend ways in which impact upon the cultural heritage can be avoided or minimised.

To comply fully with the aims expressed above it can be necessary to undertake a programme of Field Evaluation following the Desktop study and Field Visit. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is therefore required. This typically takes the form of geophysical survey or trial excavation, although measured survey is also a possible option. A full programme of assessment and evaluation may therefore consist of:

- Desktop study
- Field walkover
- Initial report
- Field evaluation
- Draft report
- Final report

This design is for the first **three** phases only, and recommendations will be made for any field evaluation or appropriate mitigation required.

3. ARCHAEOLOGICAL BACKGROUND

The proposed WMR route crossed the current A487 Road, 120.0m south of the scheme start point: the route of the A487 is listed in the regional Historic Environment Record (HER, Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) as part of the Roman road from Segontium and Pen Llystyn to Tomen y Mur (PRN **17599**). A rotary quern findspot, which may be of Roman date, has been identified 650.0m east of the route at Gwernddwryd (PRN **2356**), and a spindle whorl, of unknown but possibly broadly similar date has been found at Pentrefelin (PRN **4056**), 410.0m northeast of the scheme end point. Cae-Gwenllian Homestead (PRN **2365**), also of Roman date is located 220.0m west of Tablor Lane, towards the southern end of the scheme route.

The study area lies within the medieval cantref of Dolbenmaen in the commote of Eifionydd, and formed part of the medieval townships of Penyfed (PRN **7376**) and at its western end of the township of Dolbenmaen (PRN **7341**).

Bron y Gadair Copper Mine (PRN **20508**), of post-medieval date is located to the immediate southeast of the scheme end point. Pencraig Slate Quarry, also of post-medieval date is located 79.0m west of the scheme end point.

4. PROGRAMME OF WORK

4.1 Introduction

The project will take into account:

- The history of the site
- The potential impact of the proposals on archaeological remains
- The potential impact of the proposals on the setting of sites of archaeological importance
- The requirements for further assessment in the form of non-intrusive and intrusive field evaluation/further archaeological mitigation.

The assessment will incorporate a 100m wide area on either side of the WMR route; the field walkover survey will target a 25m buffer zone either side of the route.

Client drawings **NP2900429 -120** to **NP2900429 -123** indicate 18No trial pits along the proposed route, designed to confirm ground conditions and the location of any services. GAT will utilise any relevant information available from the trial pits within the archaeological assessment, particularly in terms of stratigraphy and composition of deposits.

The project will be undertaken in four stages:

- Desk-based assessment
- Field visit
- Report compilation
- Project archive

4.2 Desk-based assessment

The desk-based assessment will involve a study of the following records

The regional Historic Environment Register (HER) at Gwynedd Archaeological Trust (GAT) Craig Beuno, Bangor, Gwynedd LL57 2RT) will be examined for information concerning the study area. This will include an examination of the core HER, and secondary information held within the record which includes unpublished reports, the 1:2500 County Series Ordnance Survey maps, and the National Archaeological Record index cards. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth, SY23 1NJ) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.

Information about Listed Buildings and Scheduled Ancient Monuments from Cadw will be examined in the regional HER, with supporting information from Cadw if required. The Register of Outstanding and Special Historic Landscapes and the Register of Parks and Gardens will be checked, and also the location of World Heritage Sites.

Secondary sources will be examined, including the Inventories of the Royal Commission on Ancient and Historical Monuments for Wales, and works held within the regional libraries. Indices to relevant journals, including county history and archaeology society journals and national society journals such as *Archaeologia Cambrensis* will be checked. Also at this stage 19th century topographical dictionaries, antiquarian tours and trade directories will be examined where relevant.

Evidence from aerial photographs will be collated. Vertical and oblique collections held by the NMR, CCW and Welsh Assembly Government will be considered for examination. All photographs examined will be listed in the assessment report.

Archive maps, where relevant, will be consulted in the regional archive (Caernarfon Record Office, Council Offices, Shirehall Street, Caernarfon, Gwynedd, LL55 1SH). This will include the relevant tithe map and information from Land Tax Assessments. If relevant antiquarian prints and photographs from the national and regional archives will be examined.

Results from previous archaeological work will be reviewed. These results, combined with the results from the desk-based assessment and field survey will be used to assess environmental potential, faunal potential and artefactual potential of the study area.

Consideration will be given to the impact of the scheme on the known archaeological resource and suitable mitigation measures will be proposed for protecting this resource, including avoidance of all known features and fencing of same, if applicable. Any such mitigation measures would need to be approved in advance by GAPS.

4.3 Field survey

4.3.1 Walkover

This part of the assessment will involve a walkover of the study area and assessing the sites identified during the desk-based study. Any additional sites noted will also be assessed. The location of potentially well-preserved environmental deposits will be noted.

The aims of this stage of the work are to:

- verify the results of the desk based assessment
- identify any further archaeological sites which may exist as above ground features
- assess the potential for the preservation of below-ground archaeology
- assess the impact upon the historic landscape
- photograph and record the present condition of all sites noted.

Access onto land is to be arranged by the Clients.

4.4 Field Evaluation

Following desk-based assessments field evaluation work may also be required in order to further assess the presence or absence of remains, their extent, nature, quality and character before determining the appropriate mitigation strategy, whether it be preservation *in situ*, archaeological excavation or a combination of the two. This will be discussed in the assessment along with alternative archaeological mitigation.

The evaluation may include:

- geophysical survey.
- a programme of trenching and/or test pits to investigate the proposed area in more detail.

Recommendations for any field evaluation considered necessary will be contained within the assessment report. Specific attention will be paid during the assessment as to the

suitability of the geology for geophysical survey. Any proposed evaluation measures would need to be approved in advance by GAPS.

4.5 Data processing and report compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

Non-technical summary

1. Introduction
2. Aims and purpose
3. Project Design
4. Methods and techniques, including details and location of project archive
5. Archaeological Background
6. Results of assessment in the form of a gazetteer
7. Assessment of impacts
8. Proposals for field evaluation and/or mitigation
9. Summary and conclusions
10. List of sources consulted.

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included. Photographs of relevant sites and of the study area where appropriate will be included.

A draft copy of the report will be sent to Gwynedd Archaeological Planning Service (GAPS) and to the client prior to production of the final report.

4.6 Definition of category of importance

To assess the importance of sites and to allow the appropriate mitigatory action to be proposed for each, a framework of categories will be used with each site allocated to a particular category according to its relative importance:

Category A - Sites of National Importance.

This category includes Scheduled Ancient Monuments and Listed Buildings (Grade I and II*) as well as those sites which would meet the requirements for scheduling (ancient monuments) or listing (grade I and II* and certain grade II) 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 Importance

These sites are those which would not fulfil the criteria for scheduling, but may include Listed Buildings at grade II. They are sites 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. Sites that are Listed have legal protection, and it is recommended that all listed buildings are preserved *in situ*.

Category C - Sites of District or Local Importance

These sites are not of sufficient importance to justify a recommendation for preservation if threatened, but nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and Damaged Sites

These are sites which are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For these sites the most appropriate mitigation is often rapid recording either in advance or during destruction.

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. This category can also apply to areas as well as to individual sites.

5. DISSEMINATION AND ARCHIVING

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled, and cross-referenced, and lodged in an appropriate place within six months of the completion of the project. The location is to be agreed with the Curatorial Archaeologist.

Copies of the report will be sent to the regional HER; archaeological curator (GAPS) and the client.

The results of the assessment will be published in a suitable journal (e.g. Archaeology in Wales) if relevant.

6. PERSONNEL

The work will be managed by a Senior Archaeologist within GAT Contracts Section. The work will be undertaken by one of the Trust's Archaeologists experienced in the relevant skills/periods required. Full details of personnel involved, with *curricula vitae*, can be supplied upon request.

7. HEALTH AND SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (2006). Risks will be assessed prior to and during the work. All staff will be issued with required personal safety equipment, including high visibility jacket, steel toe-capped boots and hard hat.

8. *INSURANCE*

Liability Insurance - Aviva Policy 24765101CHC/00045

- Employers' Liability: Limit of Indemnity £10m in any one occurrence
- Public Liability: Limit of Indemnity £5m in any one occurrence
- Hire-in Plant Insurance: £50,000.00 any one item;
£250,000.00 any one claim

The current period expires 21/06/13

Professional Indemnity Insurance – RSA Insurance Plc 201102552/1208

- Limit of Indemnity £5,000,000 any one claim

The current period expires 22/07/13

9. *OTHER*

Any queries concerning the above should be directed to Principal Archaeologist Mr John Roberts at the Gwynedd Archaeological Trust Offices, Garth Road, Bangor. Telephone (01248) 352535 ext. **229**.

10. REFERENCES

Dŵr Cymru Drawings **NP2900429 -120** to **NP2900429 -123**

Dŵr Cymru email correspondence dated **07/01/13**

Gwynedd Archaeological Planning Services email correspondence: **05/11/12**

Historic Environment Record, Gwynedd Archaeological Trust Offices, Garth Road, Bangor, Gwynedd LL57 2RT

Standard and Guidance for historic environment desk-based assessment (Institute for Archaeologists, 1994, rev. 2001, 2009 and 2011)

http://www.archaeologists.net/sites/default/files/node-files/DBA2010working%20draft_0.pdf



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