

Survey Commissioned
by
The National Trust Wales

Surveyed
by
I.P. Brooks
Engineering Archaeological
Services Ltd

Registered in England
Nº 2869678

Cwm Bychan Hydro Scheme

March 2015
EAS Client Report 2015/06

CONTENTS

Introduction

NGR

Location and Topography

Archaeological Background

SUMMARY

Methodology

Desk Top Study

Sources

Results

Walk Over Survey Results

Conclusions

Impact of the development

Recommendations

Acknowledgements

Appendix 1: Gazetteer

List of Illustrations

Figure 1: Location

Figure 2: Detail of the route

***Figure 3: Extract from the Beddgelert
Tithe Map of 1839***

***Figure 4: Combined extracts from the
Merioneth III SW and
Caernarvonshire XXVIII NW
1888 Ordnance Survey Maps***

***Figure 5: Extract from the Ordnance
Survey Merionethshire III.5 Map.
1889***

***Figure 6: Extract from the Ordnance
Survey Caernarvonshire XXVIII.9
Map. 1915***

***Figure 7: Extract from the Ordnance
Survey Caernarvonshire XXVIII.5
Map. 1915***

***Figure 8: Extract from the 1920 Sales
Catalogue***

***Figure 9: Extract from the Plan of the
Aerial Ropeway***

***Figure 10: Previous Archaeological
records***

Figure 11: Results of the Survey

***Figure 12: Sketch plan of Sheep Washing
Station 51450***

***Figure 13: Sketch plans of 415458, 41594
and 415459***

***Figure 14: Sketch plan of the Concrete
Blocks (41546) and associated
platforms***

***Figure 15: Proposed Construction
Method***

***Table 1: Summary of the fields in the
1920 Sales Catalogue***

***Table 2: Summary of the Existing
Records***

Introduction

NGR

Between: SH 59685 46195 and
SH 60229 47182

Location and Topography (Figures 1 and 2)

The National Trust plan to construct a hydroelectricity power scheme in the lower parts of Cwm Bychan. This will have an intake weir linked to a power house by approximately 1 km of 225 mm diameter black plastic pipe. There would also be a cable linking the scheme to the National Grid near to the cottage of Penygoes.

Cwm Bychan is within the parish of Beddgelert on the north western side of the hamlet of Nantmor. The site is accessed from the National Trust's Aberglaslyn carpark and runs from this carpark to a point just south of the Pwll Golchi Uchaf sheep washing station. The pipeline roughly mirrors the line of Afon Bychan, except at one point where the local topography forces the route to diverge from the line of the river.

At the southern end of the route the pipeline passes along the eastern side of a complex of archaeological features which were part of the copper processing plant constructed in the late 1920's before passing below a short railway tunnel beneath the Welsh Highland Railway.

Archaeological Background

In 1987 John Latham and Emma Plunkett-Dillon carried out a survey of the archaeological potential of the Aberglaslyn Pass Property which included Cwm Bychan. This work was carried out without the benefit of GPS technology and thus the accuracy of some of the features located is limited by the technology then available. The survey did stress, however the importance of the copper extraction and processing industry. There are a series of adits and extraction pits high in the valley which were linked to a processing plant, near to the Welsh Highland Railway, by an aerial ropeway. Unusually much of the aerial ropeway has survived, particularly in the

higher section of the valley where a series of pylons are to be found. The lower end of the ropeway is less well preserved, however remains of the initial processing plant including two buddles, two concrete tanks, two settling ponds and a series of concrete blocks and pads thought to be the bases of parts of the machinery do survive. There is also a cylindrical metal cage thought to be part of the tensioning mechanism for the ropeway and a stone revetted ramp also thought to be part of this mechanism.

Agricultural activity within the valley was also recorded with a series of sheep folds and washing stations and the cottage of Cwm Bychan itself.

It is intended only to bury the pipe at either end of the route. In the middle section (Figure 15) it is intended to lay the pipe on the ground without burying it. The buried section of the pipeline includes the area of the picnic site (part of the copper processing area) and where it crosses the footpath in the northern section of the pipeline. The turbine house will be in the northern end of the existing carpark and will be approximately 4 x 4 m in size. The cable linking the scheme to the National Grid will be buried in a trench approximately 100 mm wide and 400 mm deep (K Laws *pers. comm.*)

SUMMARY

A total of 27 features were recorded along the line of the pipeline. The majority of these were known from the previous survey by Latham and Plunkett-Dillon (1987), however 12 new records were generated. A number of the features within the copper processing area were also re-numbered in order to clarify the records.

The route appears to have only limited interference with the archaeological record, confined to the area within the copper working complex and the places where the route crosses the stone field walls of the valley

The visual impact of the pipeline, however, may be intrusive, particularly in the areas where the intention is not to bury the pipe.

Methodology

A restricted desktop study was undertaken, consulting the records of the Gwynedd County Archive in Caernarfon, The University of Bangor Archive and the Gwynedd Historic Environment Record. The digital resources of the Royal Commission on the Ancient and Historic Monuments of Wales (<http://map.coflein.gov.uk>) Historic Wales (<http://historicwales.gov.uk>) and the online catalogue for the National Library of Wales were also consulted. The National Trust provided a copy of the previous survey carried out by Latham and Plunkett-Dillon (1987).

The fieldwork took place on 21st February 2015. The proposed route of the pipeline was walked and archaeological features within 15 m of the proposed route were recorded. In two areas this zone of interest was extended to within 50 m of the route. The features located were recorded with a written description, digital photograph and if necessary sketch plan. A Garmin GPSmap 62S hand held unit was used to locate the features recorded. This has a minimum resolution of ± 2 m when using the WAAS/EGNOS correction.

Desk Top Study

Sources

Maps

Ordnance Survey Merionethshire III SW
Published in 1888

Ordnance Survey Caernarvonshire
XXVIII.NW. Published in 1888

Ordnance Survey Merionethshire III.5.
Published in 1889

Ordnance Survey Caernarvonshire XXVIII.5.
Published in 1915

Ordnance Survey Caernarvonshire XXVIII.9
Published in 1915

Caernarfon Archives

Tithe map and Schedule for the Parish of
Beddgelert 1839

XM/4170: Papurau Gelli'r Ynn

XM/4170/15 Agreement re Purchase of land
forming part of Cwm Bychan and
Gelli'r Ynn Farms. 20th April 1923

XM/4170/29. Copy of draft conveyance of
Cwmbychan

XM/4170/32. Bundle of Papers including the
Memorandum of Association and
correspondence of The Nantmor
Copper Company Ltd

XM/4170/51. Blue print of the final profile
and plan of the ropeway for the
Nantmor Copper Company Ltd 21st
March 1927

XM/4170/66. Grant of mineral rights in Cwm
Bychan for a period of 3 years 1924

XM/4170/109. Plan of Nantmor Copper mines
(no date)

XM/4170/205 Agreement between Mrs Emily
Jones and Twentieth Century Fox
Production Ltd. 15th May 1958

S/2100/9. Photo of John and Mary Williams,
Cwm Bychan. Pre 1920

University of Bangor Archives

Carter Vincent 2001. Draft Mortgage of the
farms and lands called Gelliryn Isaf,
Gelliryn Uchaf, Cwm Bychan,
Hafodllyn Uchaf, Ynys y Ferlas,
Hafod Garegog and Hendrefechan in
the Parish of Beddgelert. 1885.

Sales Catalogues 735. Particulars, plans and
conditions of sale of the major portion
of the freehold agricultural and
sporting property known as Hafod
Garregog. 23rd January 1920

Digital Resources

BT 31/32706/208335. No. of Company:
208335; Nantmor Copper Company
Limited. Incorporated in 1925.
Dissolved in 1948
([http://discovery.nationalarchives.gov.
uk/details/r/C5015654](http://discovery.nationalarchives.gov.uk/details/r/C5015654))

Supplement to the London Gazette, 11 June,
1917
([https://www.thegazette.co.uk/London
/issue/30124/supplement/5733/data.pd
f](https://www.thegazette.co.uk/London/issue/30124/supplement/5733/data.pdf))

Supplement to the London Gazette, 2
February, 1918
([https://www.thegazette.co.uk/London
/issue/30506/supplement/1597/data.pd
f](https://www.thegazette.co.uk/London/issue/30506/supplement/1597/data.pdf))

Release of messuages and lands called Havod
garregog and Cwm bychan in the
township of Nanmor, commote of
Ardudwy, co ..., 1550, Dec. 4.
(<http://cat.llgc.org.uk>) Item 280

Probate of the will of Zacheus Hughes of
Trevan, co. Caernarvon, and diocese
of Bangor, esq., lately deceased, 1744,
June 25. (<http://cat.llgc.org.uk>) Item
451

Will of Rice Jones of the parish of Llanfair
isgaer, co. Caernarvon and diocese of
Bangor, gent, 1746, Nov. 26.
(<http://cat.llgc.org.uk>) Item 354

Writ of execution of an order dated 18 July,
1809, relating to the entitlement of
Samuel and Mary Priestly, plaintiffs,
against Jane Hughes, Jane Wynne
Hughes, an infant, Richard Edwards,
Sir Robert Williams Vaughan, bart.,
William Griffith, William Williams
and John Griffiths, to the Trefan and
Hafod Garregog estates, counties
Merioneth., and Caernarvonshire
(<http://cat.llgc.org.uk>) Item D503

Edward Lloyd: will, 1728.
(<http://cat.llgc.org.uk>)
(WIAbNL)3650006

Richard Lloyd: will, 1736.
(<http://cat.llgc.org.uk>)
(WIAbNL)3650006

Ellis William: will, 1853
(<http://cat.llgc.org.uk>)
(WIAbNL)3650006

[http://www.archiveswales.org.uk/anw/get_coll
ection.php?coll_id=20135&inst_id=1
&term=nanmor](http://www.archiveswales.org.uk/anw/get_collection.php?coll_id=20135&inst_id=1&term=nanmor). Summary of the
Hafodgaregog and Trefan Estate
Records held by the National Library
of Wales

[http://www.nmrs.org.uk/resources/NMRSJoint
StockMetaliferrousCo.pdf](http://www.nmrs.org.uk/resources/NMRSJointStockMetaliferrousCo.pdf)

[https://www.thegazette.co.uk/London/issue/24
206/page/2476/data.pdf](https://www.thegazette.co.uk/London/issue/24206/page/2476/data.pdf)

[http://www.heneb.co.uk/ffestiniogcharacter/ffe
stlanengfol15.html](http://www.heneb.co.uk/ffestiniogcharacter/ffestlanengfol15.html)

<http://maps.nls.uk/view/102184039>
Merionethshire III SW map published
in 1888

<http://maps.nls.uk/view/101606943>
Caernarvonshire XXVIII NW
published in 1888

Published and Other Sources

Bick, D. 2003. *The old copper mines of
Snowdonia*. Landmark Publishing,
Ashbourne, Derbyshire

- Gresham, C.A 1969. The parish of Beddgelert. *Transactions of the Caernarvonshire Historical Society* 30, 21-28
- Gwn, D. 2006. *Gwynedd inheriting a revolution. An archaeological Industrialisation in North-West Wales*. Phillimore, Chichester, West Sussex.
- Hopewell, D. 2013. *Roman Roads in North-West Wales*. Gwynedd Archaeological Trust
- Latham, J. and Plunkett-Dillon, E. 1987. *Aberglaslyn Pass (Part 1. Cwm Bychan and Abgerglaslyn E)* Internal National Trust Report
- Lynch, F. 1988. Flints from Nantmor, Caernarfonshire. *Transactions of the Caernarvonshire Historical Society* 49, 173-174.
- Lynch, F., Aldhouse Green, S. and Davies, J.L. 2000. *Prehistoric Wales*. Sutton Publishing, Stroud, Gloucestershire.
- Smith, G.H. 2006. *A survey of prehistoric defended enclosures in North-West Wales. 2005-6: Gwynedd Dwyfor and Meirionnydd*. Gwynedd Archaeological Trust Report 634
- Supplement to the London Gazette, 11 June, 1917
- Supplement to the London Gazette, 2 February, 1918)
- Royal Commission on Ancient and Historical Monuments in Wales and Monmouthshire. 1960. *An Inventory of the Ancient Monuments in Caernarvonshire. Volume II: Central. The Cantref of Arfon and the Commote of Eifioydd*. HMSO

Results

Whilst there are no known prehistoric or Roman sites within the survey area, prehistoric finds have been made within the region. Three flint artefacts have been reported by Lynch (1988) as having been found within the village of Nantmor. The closest of these being only

350 m from the proposed development. Whilst essentially undated the size of the scraper within the group would suggest a possible Neolithic date. A partly polished axe, of Neolithic type, was also found at Gardd Llgaidd-y-dydd in Nantmor (RCAHMWM 1960, xli).

A perforated stone artefact (PRN 3386), possibly a mace head, has been reported as having been found in the Pass of Aberglaslyn. This artefact was donated to Bangor Museum, however has since been lost. Perforated implements are typically of Bronze Age date, however the form of this artefact is unknown. Slightly further away a hoard of about fifty bronze rapiers were found 'in a rock' near Sygun in 1688. This was the largest hoard of Bronze Age weapons found in Britain, unfortunately only seven have survived (Lynch *et al* 2000, 108)

The prehistoric enclosure at Beudy-Newydd (SH60604617) is an enclosed hut circle settlement (Smith 2006, 6) approximately 800 m to the east of the route.

The Roman Road between Segontium and Tomen y Mur (RR68) probably passes to the south and west of the proposed route. Whilst the line of the Roman road has been traced from Segontium to Croesor and between the Vale of Ffestiniog and Tomen y Mur the evidence for the route of the road between these points is sparse with no consensus (Hopewell 2013, 42 – 43).

During the medieval period, Nantmor, rather than being part of Beddgelert parish is said to have been an outlying part of the parish of Llanfair-juxta-Harlech (Gresham 1969, 26). How this link developed between two parcels of land some 18.5 km (11.5 miles apart) is uncertain, however it gives access to some of the early documentary evidence including the wills of Edward Lloyd from 1728 and Richard Lloyd from 1736. Both of these people are recorded to have been from Cwmbychan, Llanfair-juxta-Harlech, Merionethshire and are assumed to be the tenant of the property at that time.

The earliest documentary record is dated 1550 and concerns the release of messuages and lands called Havod garregog and Cwm Bychan

between Owen ap Gruffith ap Res, son and heir of Gruffith ap Res ap Gruffith (deceased) and Morys Gethyn ap Ievan ap Rys and Hugh ap Lewe ap Morys (National Library of Wales 280)

Cwm Bychan was part of the Hafod Garegog estate. Hafod Garegog was owned from the fifteenth century to the eighteenth century by Rhys Goch Eryri and his descendants (<http://www.heneb.co.uk/ffestiniogcharacter/ffestlanengfol15.html>)

In 1744 Cwm Bychan was mentioned in the probate of the will of Zacheus Hughes of Trevean who was expecting to inherit Cwm Bychan on the death of his cousin Rice Jones (National Library 451), however Rice Jones left Cwm Bychan to Jane Owens of Trevean after the death of his wife Grace Lloyd in 1746 (National Library 354). Jane was the daughter and sole heiress of Morris Wynne of Hafod Garegog. She married Zacheus Hughes thereby combining the estates of Hafod Garegog and Trefan. (http://www.archiveswales.org.uk/anw/get_collection.php?coll_id=20135&inst_id=1&term=nannor).

Zaccheus and Jane's heir was their son, John Wynn Hughes (1760-1795) who married Jane Jones. Jane was a minor when she married and after John Wynn's death the marriage was declared void in 1808 following a lawsuit between Samuel Priestley, whose wife Mary was a cousin of John Wynn Hughes, and the Hughes family. John Wynn and Jane's daughter, Jane Wynn Hughes was deemed to be illegitimate and Mary Priestley became the rightful heir of Trefan. The writ of execution for this legal dispute (National Library D503) is dated 1809.

When Mary died in 1845, the estate was split up between her two sons. Samuel received Trefan and the bordering lands, while John inherited the Hafod Garegog estate and the three farms in Cwm Ystradllyn (http://www.archiveswales.org.uk/anw/get_collection.php?coll_id=20135&inst_id=1&term=nannor).

The Beddgelert Tithe map of 1839 (Figure 3) defines the whole of Cwm Bychan as a single plot (Plot 24). It was owned by Mrs Mary

Priestly and the tenant was Jane Williams. The area of the farm was 285 Acres 2 Rods. (115.34 Ha) with a tithe payment of £1.8.00 per year'. A will of 1853 suggest that an Ellis William inherited the tenancy on the death of Jane.

In 1883 there is draft mortgage between Rev Henry Samuel Priestly of Gwalchmai, Anglesey (and vicar of Tallyllin, Anglesey) and Major John Owen Jones Priestley of Hawarden on the farms of Gelliryn Isaf, Gelliryn Uchaf, Cwm Bychan, Hafodllyn Uchaf, Ynys y Ferlas, Hafod Garegog and Hendrefechan for the sum of £3000. The debt was the result of the mismanagement of John Priestley who died in 1881 (Bangor Archives, Carter Vincent 2011). A further £1500 was required to be raised in order to service the original debt.

At some time before 1920 the ownership of the Hafod Garegog Estate passed to F.J Lloyd Priestly who referred to himself as Lieutenant Colonel. This, however was a temporary rank achieved during the First World War (Supplement to the London Gazette, 11 June, 1917) with his true rank being only Captain. He resigned his commission on 3rd February 1918 because of ill health (Supplement to the London Gazette, 2 February, 1918)

On the death of F.J. Lloyd Priestley in 1919 the estate, including Cwm Bychan, was sold in an auction on 23rd January 1920 (Figure 8). At that time Cwm Bychan was tenanted by O.C Owen and Catherine Jones for an annual Rent of £15.0.0 plus the tithe payment of £1.10.6. The farm covered an area of 105 Acres, 24 Rods and 38 Perches (approximately 42.5 Ha) and had the right to pasture 190 sheep on the mountain sheep walk. The holding was detailed as in Table 1.

Plot	Name	Acres	Rods	Perches
1266	Park	25	2	21
1579	ditto	40	0	6
1613	Winllan	1	1	12
1606	ditto	5	2	5
1604	Cae Turnpike	0	2	0
1604a	Field	0	0	36
1604b	Field	0	1	17

Plot	Name	Acres	Rods	Perches
1605	Field	1	1	33
1580	Field	0	1	6
1581	Field	3	0	18
1582	Field	8	2	15
1584	Gorlan	0	1	26
1602c	Field	0	2	26
1602b	Field	1	1	34
1602	Field	1	3	39
1601	Gardd Penygroes	0	1	23
1599	Coed Penygroes	0	1	11
1600	Park	18	1	31
1602a	Railway embankment	0	1	39
Total		105	24	38

Table 1: Summary of the fields in the 1920 Sales Catalogue.

The sales was subject to the conditions of a Take Note dated 26th June 1918 between F. J. Lloyd Priestly and Richard Hughes, W.R. Hughes, J.J. Owen and others for a term of three years with an option for a lease for 21 years for working mines or minerals. Cwm Bychan was bought by Owen Cadwaladr Owen of Gelli'r Farm

In 1923 there was an agreement to sale a strip of land to the Snowdon Mountain Tramroad and Hotel Company Ltd by Owen C. Owen of Gelli'r Farm for £1650. The sale allowed Owen to retain a way leave for the transmission of Electric Energy to work said mines and minerals (XM/4170/15) suggesting that at least a limited amount of copper extraction was taking place. More details of the sale were given in a copy of the draft conveyance in an exercise book owned by Owen Cadwaladr Owen. Cwm Bychan farm is said to have covered 110 Acres 2 Rood, 37 Perches (approximately 44.5 Ha) and had the right to graze 190 sheep on Cwm Bychan Mountain Sheepwalk

On 13th November 1933 a conveyance between Owen Cadwaladr Owen of Gellirynn and the Snowdon Mountain Railway Ltd. was signed. Once again the area of the farm of Cwm Bychan was stated at 110 Acres 2 Rods 37 Perches (approximately 44.5 Ha). The area

transferred related to the section belonging to the Porthmadog, Beddgelert and South Snowdon Rail Company Ltd referred to in the take note dated to 26th June 1918.

In 1958 parts of Cwm Bychan were used for the filming of "The Inn of the Sixth Happiness" including the use of the rail embankment as a camera platform and the construction of sets within the valley. The agreement between Mrs Emily Jones and Twentieth Century Fox Production Ltd for right of entry to Cwm Bychan Farm to film survives in the Gwynedd Archives as part of the Papurau Gelli'r Ynn (XM/4170/205)

Apart from the agricultural activities Cwm Bychan was notable for the copper mining and processing in the valley. The majority of the extraction took place in the upper reaches of the valley, although the later processing plant is within the survey area. The first mining in the valley is thought to date from 1720 (Bick 2003, 68) although the heyday was probably between 1782 and 1802 (ibid 69). The relationship between the activity in Cwm Bychan and the copper mine of Sygun (on the northern side of Blwch y Sygyn) is uncertain, however a Mr Tregoning is known to have supervised both Sygun and Nantmor.

Bick (2003, 69) assumed that the Cwm Bychan Silver Lead and Mining Co., operating between 1870 and 1875, worked the Nantmor deposits. However their registered offices were in Machynlleth, Montgomeryshire and it therefore likely that they were associated with Cwm Bychan, Darowen, Montgomeryshire. (<http://www.nmrs.org.uk/resources/NMRSJoinStockMetaliferrousCo.pdf>)

The features which survive within the survey area are related to the short term attempt at copper production in the late 1920's and early 1930's. On 10th September 1925 the memorandum of association of the Nantmor Copper Company Ltd was issued (XM/4170/32), however it was not until 1927 that a lease between Owen C Owen and Nantmor Copper Company Ltd was signed. This lease was an unusual document as along with the financial terms there was a requirement to employ six local men.

1927 was also the first report of the Nantmor Copper Company Ltd which stated that the Ropeway was completed, but there was a need to modify the concentration plant as it failed to produce the 20% copper promised. The ropeway was designed and built by R. White and Sons of Widnes Lancashire and the blue prints for this structure has survived within the Gwynedd Archives (XM/4170/51). It is not certain if any real extraction took place, or if only the spoil heaps of the existing adits were reworked. Indeed Gwyn (2006, 88) suggests that the whole enterprise was fraudulent with the investment in 'state of the art' processing and transport systems being a smoke screen to discourage potential investors from exploring the mine itself. The relationship between the company and the land owner proved to be somewhat fractious with a series of letters persevered within the Papurau Gelli'r Ynn (XM/4170) in the Gwynedd Archives.

On 11th March 1930 the licence to work the mines were revoked, however O.G Owen signed a new lease on 31st December for a period of 42 years after the Nantmor Copper Company went through a process of refinancing. This proved to be short lived with a solicitor's letter in 1931 demanding that the company pay the yearly rent of £50 and to comply with the requirement to employ six local men. By 12th November 1931 this was backed up by a seizure notice for goods to the value of £75. O.G. Owen were not the only creditors as on the 9th December 1932 Snowdon Mountain Railway claimed for arrears of rent from between 1927 and 1930. Inevitably this resulted in an auction of the assets of the Nantmor Copper Company Ltd in 1932 which raised only £93.2.4

The company continued to legally exist for a short period. A memo from the Registrar of Companies to O.G. Owen stated that the Nantmor Copper Company was dissolved on 4th December 1934 however the company was not formally removed from the register until 1948. (<http://discovery.nationalarchives.gov.uk/details/r/C5015654>).

The local archives, consulted, only have limited mapping of the survey area. The earliest map located is the tithe map of 1839 (Figure 3) this however gives little detail

beyond the boundaries between the holdings. Cwm Bychan is plot 24 and this is outlined in red on Figure 3.

The earliest detailed mapping located was the First Edition six inch map published in 1888, but surveyed in 1887 (Figure 4) covered by the maps Merionethshire III SW and Caernarvonshire XXVIII NW. This includes a number of features which are not represented on later mapping. This mapping was carried out before the railway was constructed, thus it does not appear. The cottage is labelled as "Ty cwm bychan" a name which is truncated in later mapping. Of particular interest is the track and footpath marked on the eastern side of the stream. This leads from a ford, north of the cottage, towards a sheepfold. It then runs immediately adjacent to the eastern bank of the stream extending beyond the extent of the survey. The northern end of this footpath is more clearly seen on the Merionethshire III.5 map of 1889 (Figure 5) where it appears to lead to a platform with remains of a structure associated. It is likely that this footpath was related to the early exploitation of the copper resources of the valley forming the main route to export any ore.

The Ordnance Survey mapping published in 1915 and surveyed between 1912 and 1913 is covered by the maps Caernarvonshire XXVIII.9 (Figure 6) and Caernarvonshire XXVIII.5 (Figure 7). These maps are key in dating the construction of the initial stages of the railway as the embankment is marked as "Railway in course of construction". The farm of Cwm Bychan consists of the main house with a small building to the north east which is assumed to be either a pig sty or "Ty Bach". There is also another building to the south west of the house whose function is uncertain. Whilst it is most likely this was a field barn or animal house, the small extension on the north western gable may suggest the presence of a chimney. The footpath seen on the earlier mapping survives at its southern end with the same ford giving access to the eastern side of the stream. The footpath terminates, however at a field barn and is not shown on the northern mapping (Figure 7)

The map associated with the sales catalogue for Hafod Garegog Estate (University of Bangor Archives, Sales Catalogues 735) in

1920 (Figure 8) appears to be based on pre 1915 mapping with the line of the railway having to be added. It appears to show a building on the eastern side of the stream near to the cottage of Cwm Bychan. It is not certain what is being depicted and it is possible that this was a mistake in the mapping.

There is surprisingly little mapping of the copper working features. The blue print of the ropeway (XM/4170/51) shows little detail of the plan, concentrating on the profile. An undated map (XM/4170/109) shows the line of the aerial ropeway (Figure 9), but no detail of the processing works. The ropeway appear to terminate just above the cottage of Cwm Bychan.

Archaeological Records

The Gwynedd Historic Environment Record were consulted for relevant records together with the records of the National Trust.

The digital resources of the Royal Commission on the Ancient and Historic Monuments of Wales (<http://map.coflein.gov.uk>) and Historic Wales (<http://historicwales.gov.uk>) were also consulted.

The results are shown in Table 2 and Figure 10

Clearly the most complete survey was that of the National Trust Archaeologists in 1987 (Latham and Plunkett-Dillon) and it is unfortunate that this data has not been incorporated into the Historic Environment Record held by the Gwynedd Archaeological Trust and only partly into the National Monuments Record held by The Royal Commission on the Ancient and Historical Monuments of Wales.

The biggest group of records are those associated with the copper processing plant to the south and east of the remains of the cottage of Cwm Bychan. A range of features have been recorded including a series of concrete block and pads, two buddles, two concrete water tanks and two possible settling ponds. Various features associated with the aerial ropeway were also recorded. At the southern end the feature described as a “Jetty or Trackway” (NT 41596) is interpreted as part of the tensioning mechanism for the ropeway

together with the metal cage (41595) which was originally found in the stream Latham and Plunkett-Dillon 1987, 10). It is thought that the cage was filled with rocks and was used to provide the tension to a trolley sitting on the “jetty”. This seems to be an overly complex arrangement when the same effect could have been achieved by the simple use of a windlass. Further up the valley a series of pylon bases were recorded.

The agricultural features are largely confined to the cottage of Cwm Bychan itself (41592) and a series of sheep handling facilities. The Royal Commission adds two sheep washing stations called Pwll Golchi Uchaf and Pwll Golchi Isaf (NPRN 413472 and 413473) and a series of field barns and enclosures (NPRN 413475, 413477 and 413577). Only one of these features, the sheep washing station (NPRN 41373, Pwll Golchi Isaf) is near to the proposed route.

The railway was only recorded as part of the Gwynedd Historic Environment Record with the embankment to the east of of Gelli'r Ynn Isaf being given the PRN 57253.

Table 2: Summary of the Existing Records

NT ID	NPRN	PRN	Site Name	Grid Ref	Site type	Date
41541	413266		Cwm Bychan Aerial Ropeway and Associated Mill	SH 60410 47540 - SH 59780 46320	Aerial Ropeway	Post Medieval
41552			Cwm Bychan Clearance Cairn	SH 59930 46500	Cairn	Post Medieval
41553			Cwm Bychan Clearance Cairn	SH 59950 46480	Cairn	Post Medieval
41567	413572	24925	Cwm Bychan Sheep Fold	SH 59750 46510	Sheep Fold	Post Medieval
41579			Cwm Bychan Barn	SH 59740 46300	Barn	Post Medieval
41581			Cwm Bychan Level	SH 60050 47170	Level	Post Medieval
41584			Cwm Bychan Field Barn and Enclosures	SH 59970 46850	Barn	Post Medieval
41588			Cwm Bychan Sedimentation Pits	SH 59780 46270	Settling Pits	Post Medieval
41589			Cwm Bychan Buddles	SH 59780 46280	Buddles	Post Medieval
41590			Cwm Bychan Concrete Platforms	SH 59780 46300	Three concrete platforms	Post Medieval
41591			Cwm, Bychan Rectangular Tanks	SH 59790 46310	Two rectangular tanks	Post Medieval
41592			Cwm Bychan, Cottage	SH 59780 46310	Building	Post Medieval
41593			Cwm Bychan Concrete Platforms	SH 59790 46320	Two Concrete Platforms	Post Medieval
41594			Cwm Bychan Concrete Strip	SH 59780 46330	Concrete strip	Post Medieval
41595			Cwm Bychan Tensioner Cage	SH 59780 46330	Tensioner Cage	Post Medieval
41596			Cwm Bychan Jetty or Trackway	SH 59820 46320	Jetty	Post Medieval
41598			Cwm Bychan Pylon Base	SH 59900 46560	Pylon Base	Post Medieval
41599			Cwm Bychan Pylon Base	SH 60100 46910	Pylon Base	Post Medieval
41600			Cwm Bychan Pylon Base	SH 60130 46990	Pylon Base	Post Medieval
41601			Cwm Bychan Pylon Base	SH 60220 47130	Pylon Base	Post Medieval
	413472		Pwll Golchi Uchaf	SH 60260 47200	Sheep Wash	19th Century
	413473		Pwll Golchi Isaf	SH 59804 46500	Sheep Wash	19th Century
	413475		Aberglaslyn, Cwm Bychan, Field Barn and Enclosure	SH 59970 46550	Field Barn	Post Medieval
	413477		Aberglaslyn, Cwm Bychan, Enclosure	SH 60360 46680	Enclosure	Post Medieval

NT ID	NPRN	PRN	Site Name	Grid Ref	Site type	Date
	413576		Aberglaslyn, Copper Mine Adit	SH 59740 46300	Adit	Post Medieval
	413577		Aberglaslyn, Barn	SH 59740 46300	Barn	19th Century
		24925	Sheepfold, Cwm Bychan	SH 59751 46506	Sheep Fold	Post-Medieval
		31732	Highland Railway Tunnel, Aberglaslyn	SH 59663 46391	Railway Tunnel	Post Medieval
		57253	Railway Cutting, E of Gelli'r Ynn Isaf	SH 59841 46161	Railway Cutting	Post Medieval
		57254	Railway Embankment, N of Tyrpeg Bach	SH 59772 46228	Railway Embankment	Post Medieval

Survey Results

The field survey was confined to a limited corridor typically 30 m wide centred on the proposed route of the pipeline. The results are shown on Figure 11 and are summarised in Appendix 1. A total of 27 features were located, 12 of which had not previously been recorded. In addition six features were renumbered to allow for more detailed recording.

Two main activities were represented by the features recorded, these are related to either the agricultural exploitation of the valley or the copper extraction and processing works.

Central to the agricultural exploitation of the valley is the remains of the cottage of Cwm Bycham (45192). The building was approximately 5 x 12 m in size with a chimney on its north eastern gable end and probably two doors in the east facing wall. The date of the original construction of the cottage is unknown, however the chimney and fireplace appears to have been added to a pre-existing structure suggesting that the original building may have an early origin. It was occupied until at least 1920 and the Gwynedd Archive contains a photograph of the last occupants, John and Mary Williams (XS/2100/9). Presumably the construction of the copper processing works and the aerial ropeway in 1927 meant that the cottage was abandoned at that time.

Two sheep washing stations occur in the lower reaches of the valley, one of these was called Pwll Golchi Isaf (515450) and is within the corridor. The other (Pwll Golchi Uchaf) (<http://map.coflein.gov.uk>) is just outside the survey area at the northern end of the route. Pwll Golchi Isaf (Figure 12) consists of a pen angular enclosure approximately 6 x 4.7 m in size with a rectilinear area running down to the stream defined by a mixture of dry stone walls and a natural rock face. Associated with this feature is a weir within the stream (415451) which was used to produce the pool at the end of the rectangular enclosure.

At SH 60190 46886 a prominent earthen mound (415448) was recorded. This was approximately 12 x 5 m in size standing to a height of approximately 1 m. It is located in a

markedly wet area and probing did not suggest that the mound had a stone core. Thus it is likely that this mound probably acted as a peat drying stack.

The remaining features from the agricultural exploitation of the valley were a series of dry stone walls, particularly on the eastern side of the stream. There is some evidence that these walls are from different phases of activity based on the style of stonework, level of survival and the relationship between two of the walls. It is clear that the relatively well built wall 415449 cut the line of the much more tumbled wall 415446 and is therefore of a later date. The proposed pipeline crosses several of these walls which will require the reconstruction of these features if they are damaged.

The features associated with the exploitation of copper within the valley are concentrated at the southern end of the proposed route, near to the railway. They are universally related to the last phase of copper exploitation in the late 1920's and early 1930's. At the northern end of the proposed pipeline, however, two metal fragments from the aerial ropeway were located. 41601 at SH 60219 47123 appear to be part of the ropeway support system and was probably originally on top of a pylon. 415447, however, appear to have been part of the suspension mechanism for a container. It was located at SH 60193 47094. Both of these object are directly on the line of the proposed pipeline and will have to be avoided and protected during construction. Care should also be taken that other fragments of the aerial ropeway are not hidden in the undergrowth.

The group of features at the southern end of the proposed pipeline form the remains of the copper processing plant and lower terminal of the aerial ropeway. The works appear to have taken advantage of the slope with the ore moving down the slope as it became more processed. Thus the remains appear to occupy a series of terraces. At the northern end of the complex is the remains of the aerial ropeway terminal and what is assumed to be the tensioning mechanism. The concrete block with two metal fittings (415459) is assumed to be the final support for the aerial ropeway. The metal fittings are assumed to have held the stanchions supporting the end of the ropeway.

This block is noticeably at an angle to the other remains in the area (Figure 13), presumably this is related to the line of the ropeway.

To the east of 415459 is a large stone revetted platform 9 m long and 2.6 m wide. The top of this platform is level, thus whilst the western end is at local ground level, the eastern end is 2.2 m above the stream. Latham and Plunkett-Dillon (1987, 10) suggest that it was the base for a trolley which in turn was part of the tensioning system for the aerial ropeway. The weight for the tensioning system was probably provided by the metal cage with a pulley wheel on top (41595) which was originally found in the stream.

The function of the two large concrete block (41594) is uncertain, however they are likely to be related to the unloading of the baskets from the ropeway and the initial processing of the ore. The largest of the blocks is 2 m wide and 5.9 m long whilst the smaller block is 1.75 m wide and 2.8 m long. It is likely that whatever activity is represented by these blocks is related to the possible flywheel pit (415458) to the west. The sides of the possible pit are defined by two concrete structures with metal fittings suggesting the locations of the bearings for the wheel.

On the next terrace are two concrete tanks (41591 and 415457) which are assumed to be the header tanks for the buddles further down the complex. 41591 is 4.1 x 2.2 m in size and at least 0.8 m deep, whilst 415457 is 4.95 x 2.1 m in size and at least 0.95 m deep. Both tanks were originally partly dug into the natural slope and partly faced with stone walling, although much of this walling is now missing.

Below the tanks are two concrete bases (415456) which sit on two platforms cut into the hillside (Figure 14). The function of these blocks is uncertain, however it is possible that they were enclosed within a building defined by the platforms. The largest platform is approximately 16 x 9 m in size whilst the smaller is approximately 8 x 7 m. One possibility is that these structures were associated with the crushing of the ore and preparing it for the buddles below. To one side there is a further concrete slab (41590) which also sits within a platform which is partly

defined by fragment of dry stone walling. The block is 5.8 x 1.4 m in size whilst the platform is approximately 10 x 6.4 m in size. Once again it is possible that there was a light structure covering these features.

There are two buddles on the site located one above the other. The upper buddle (415455) is partly revetted into the hillside and is 5.5 m in diameter. It appears to have had an outfall on its southern side which lead into the lower buddle (41589). There is no obvious signs for the drive mechanism which might have sat on the natural rock platform above the buddle. The lower buddle is of a slightly different design. A low concrete wall defines an area 5.9 m in diameter. At its centre is a “beehive shaped” concrete block with a metal pivot on its top. This was the support for the buddle arms. The drive for the buddle was probably supported on a gantry over the structure and two areas cut out from the sides of the pan probably shows the location of the gantry support. It is possible that this buddle is part of the modification to the extraction process suggested in the first report of the Nantmor Copper Company Ltd (XM/4170/32).

Below the buddles are two sub-rectangular pits (41588 and 415454) which are assumed to be settling pits. Both of these features have smaller areas at their western end which are separated from the main ponds by the remains of possible walling. 415454 is clearly fed from the buddle 41589 into the smaller of the ponds. It is likely that this small pond was designed to capture the initial heavy sediments whilst the lighter sediments were allowed to settle in the larger pond. No signs of an outfall was recorded in either of the settling tanks, although a slight linear hollow in their south eastern corners may mark the system for discharging the water into the stream. It is not certain as to what the relationship between the upper settling tank (415454) and the lower tank (41588) is. Probably 415454 fed into 41588, although there is no evidence for this.

The only feature not related to either the agricultural exploitation of the copper industry is the railway embankment and tunnel (415453) which gives access to the site

Conclusions

There is evidence for two main areas of activity within Cwm Bychan. Firstly, fairly standard upland agriculture with a small tenanted farm and associated structure largely concerned with the management of sheep. Whilst the current remains are all probably post-medieval in date there is a possibility that the cottage of Cwm Bychan may have a late Medieval or sub-Medieval origins. It is noticed that the chimney and fireplace at the north eastern end of the building has been added to a pre-existing building and that the Hafod Garegog estate, of which it was once part, is thought to have existed in the fifteenth century (<http://www.heneb.co.uk/ffestiniogcharacter/ffestlanengfol15.html>). Indeed there is direct documentary evidence for Cwm Bychan in the release dated 1550 (National Library of Wales 280). The online catalogue of the National Library of Wales suggests there are more extensive record of the Hafod Garegog estate which may prove to illuminate the development of Cwm Bychan further.

The level of survival of the copper processing plant and its associated aerial ropeway is unusual. Whilst each of the element of this complex may be only of local interest, when combined they make this an important survival of a short lived, speculative enterprise from the period between the two World Wars. In such it is surprising that this complex has not been scheduled and should be considered for legal protection.

Whilst the processing plant is not as well preserved as the well-known remains of the aerial ropeway further up the valley, there is sufficient surviving to deduce the activities which were planned to be carried out. A topographic survey of the remains carried out with the help of a suitably qualified industrial archaeologist should help to clarify the relationship between the various remains and suggest a function for some of the enigmatic concrete blocks.

Impact of the Development

The route of the proposed pipeline will inevitably impact on the archaeological record of the Cwm Bychan. The intention only to bury the pipe selected points will minimise the direct impact to specific points, however the presence of a pipe above ground will also have an indirect impact. (Figure 15)

Within the picnic area it is intended to bury the pipe. Whilst it is intended to avoid the known features the line of the route runs between the settling tanks (41588 and 415454) and the stream. It is not known where the outfalls from these features is, however it is likely that there was a pipe or channel which fed the excess water back into the stream which will be cut by the proposed route.

At the northern end of the pipeline the proposed route conflicts with two fragments of aerial ropeway (41601 and 415447). These should not be disturbed and the pipe routed around these features. Care should also be taken that any other metal objects buried in the undergrowth be avoided, or at least not damaged. One possible way of minimising this risk would be to carry out a metal detector survey in the area between the inlet and the point where the route crosses the stream. It is also intended to bury the pipe at this end of the route. The First Edition Ordnance Survey Maps (Figure 4) shows a footpath on the eastern bank of the stream; whilst no structure was recorded in the walkover survey it is possible that remains of the footpath may survive and thus at least an intermittent watching brief is recommended.

Where the pipeline crosses any of the dry stone walls, particularly on the eastern side of the stream, there will also be a direct impact. If possible the pipeline should be modified to take account of any areas where the walls are already collapsed in order to minimise the damage. It is also recommended that any damage is made good. This will require the detailed recording of the crossing points before any damage takes place so that the reconstruction of the wall can, at least, imitate the original appearance.

The indirect impact of the scheme is more difficult to determine. The presence of a black

pipe 225 mm in diameter snaking across the landscape could be argued to have an indirect impact on the setting of the archaeological features within the survey area and beyond. This is particularly notable where the pipeline runs under the railway (415453) and adjacent to the sheep washing station (515450). It could be argued that where the pipeline runs through the woodland to the east of the stream is not generally used by the general public and for most of the year it would be invisible within the undergrowth, however running the pipe above ground seems an inelegant response.

It is not certain how the equipment to construct the pipeline and the inlet weir will be transported to site. Care should be taken to assess any route taken so that any damage to the archaeological record is minimised. This is particularly important if a route outside that assessed in this survey is taken.

Recommendations

There are a number of general recommendations which can be made in addition to the management recommendations noted in Appendix 1.

1. Any ground works are subject to an archaeological watching brief. This is particularly important where the pipeline crosses the picnic area within the copper processing complex. The level of the watching brief should be determined based on the archaeological risk, however, an intensive watching brief should take place in the picnic area.
2. Where the pipeline crosses any stone wall, it should be recorded before any damage takes place and the damage put right after the pipe has been laid.
3. If possible the pipeline should be routed to make use of any existing gaps in the stone walls.
4. The fragments of the aerial ropeway (41601 and 415447) should be avoided in the detailed routing of the pipe.
5. A metal detector survey in the area between the inlet and the point where the


route crosses the stream should be considered.


6. At least an intermittent watching brief be carried out on any groundworks between the intake and the point where the pipeline crosses the dry stone walls along the eastern side of the stream.
7. The route used by any construction equipment up the valley should be assessed to reduce any potential damage.


Acknowledgements


This report was commissioned by Kathy Laws for the National Trust. She also provided the existing archaeological data for Cwm Bychan. Thanks are also due to the staff of the various archive offices and the Historic Environment record for their support.

Appendix 1: Gazetteer

National Trust ID 41588	Site Name Cwm Bychan Settling Tank 1	Grid Reference SH 59775 46269
NPRN	PRN 3792 (part of)	Period Modern
Description Rectangular pond 4.8 x 2.6 m in size and up to 0.5 m deep, with a second pond 2.3 x 2.6 m in size to the west. There is some sign of stone walling in the northern face. Probable settling pond associated with the extraction of copper. Related to a very similar pond immediately to the north. No obvious sign of an outfall, but a slight linear hollow to the SE may make the outfall to the stream		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat Adjacent to the works
Management Recommendations Watching brief on any works near to this site		
Photograph Cwm Bychan 13	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 41589	Site Name Cwm Bychan Buddle 1	Grid Reference SH 59782 46281
NPRN	PRN 3792 (part of)	Period
Description Circular buddle defined by a low concrete wall 5.9 m in diameter with a central boss or pivot point of concrete in the form of a "beehive" shaped concrete block 1 m in diameter with a metal pivot point in the top of the block. Possible cut outs either side of the pan may have gave access or may have been the support positions for the superstructure. Drainage point to the south leading to settling tank 2. Probably fed from Buddle 2 (415455) above.		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Avoid		
Photograph Cwm Bychan_15 Cwm Bychan_16	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 41590	Site Name Cwm Bychan Possible industrial building	Grid Reference SH 59780 46304
NPRN	PRN 3792 (part of)	Period Modern
Description Large concrete slab 5.8 x 1.4 m in size siting within a larger (10 x 6.4 m) flat platform which is revetted into the hillside on three sides by a maximum of 0.8 m. Some remnants of dry stone revetting wall survives in places		
		
Significance Local	Condition Poor	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat Trees growing within the structure
Management Recommendations Remove trees and prevent regrowth		
Photograph Cwm Bychan_19	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 41591	Site Name Cwm Bychan Rectangular Tank 1	Grid Reference SH 59798 46317
NPRN	PRN 3792 (part of)	Period Modern
Description Rectangular water tank 4.1 x 2.2 m in size and at least 0.8 m deep. Partly dug into the natural slope and partly built up. There was a stone outer wall which has been largely lost. This is one of a pair of tanks with Tank 2		
		
Significance Local	Condition Poor	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Maintain in an open area, prevent regrowth		
Photograph Cwm Bychan_24 Cwm Bychan_26 Cwm Bychan_27	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 41592	Site Name Cwm Bychan Cottage	Grid Reference SH 59779 46319
NPRN	PRN	Period Post Medieval


Description


Rectangular stone built cottage 5 x 12 m in size with a protruding gable end chimney which appears to have been a later addition. Sitting on a platform partly cut into the hillside this building is on a completely different alignment to the industrial remains around it. Very poorly preserved with the exception of the chimney gable which stands to a height of 1.5 m. Two possible doorways to the east. This building was being lived in prior to 1920.




Significance Regional	Condition Poor	Survival Bad
Stability Slow Deterioration	Vulnerability Low	Threat Tree regrowth
Management Recommendations Maintain as an open area, prevent regrowth. Remove adjacent tree if possible		
Photograph Cwm Bychan_28	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 41594	Site Name Two concrete blocks	Grid Reference SH 59794 46327
NPRN	PRN 3792 (part of)	Period Modern
Description Two large concrete blocks, one 2.0 x 5.9 m in size and the other 2.8 x 1.75 m both standing proud of the ground by up to 0.75 m. Various metal fitting in the top of both blocks		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Maintain in open are		
Photograph Cwm Bychan_30	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 41595	Site Name Cwm Bychan Tensioner Cage	Grid Reference SH 59801 46329
NPRN	PRN 3792 (part of)	Period
Description Circular metal cage 1.15 m in diameter and at least 2.15 m high. The central metal frame extends higher and has two pulley wheel. Thought to be the counter balanced for the aerial ropeway. Not <i>in situ</i> .		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Maintain in cleared		
Photograph Cwm Bychan_32	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 41596	Site Name Cwm Bychan Jetty or Trackway	Grid Reference SH 59808 46329
NPRN	PRN 3792 (part of)	Period Uncertain probably Post Medieval
Description Stone revetted platform 2.6 m wide and 9 m long extending from the area of the bottom of the aerial ropeway towards the stream where it reaches a height of 2.2 m above the ground. Dry stone revetting with sub- angular stones up to 0.4 m in size. Probably part of the tensioning mechanism for the aerial ropeway		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat Stream at the base
Management Recommendations Monitor the stability of the structure		
Photograph Cwm Bychan_33 Cwm Bychan_34	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 41601	Site Name Aerial Ropeway fragment	Grid Reference SH 60219 47123
NPRN	PRN 3792 (part of)	Period Modern
Description Two iron pulleys on the remains of a metal frame, part of the aerial rope way system. Not in situ as no sign of the pylon base was recorded		
		
Significance Local	Condition Good	Survival Good
Stability Stable	Vulnerability High	Threat On route
Management Recommendations Avoid		
Photograph Cwm Bychan_03, Cwm Bychan_05	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415445	Site Name Cwm Bychan wall 1	Grid Reference SH 60256 47192 - SH 260248 47137
NPRN	PRN	Period Post medieval
Description A dry stone wall, up to 1.5 m high and 0.6 m thick running parallel to the stream from the possible sheep washing station NPRN 413472 before turning to the south west and running up hill. Constructed of local angular blocks with some larger boulders towards it base.		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Medium	Threat On edge of working area
Management Recommendations Avoid during construction		
Photograph Cwm Bychan_01	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415446	Site Name Cwm Bychan Wall 2	Grid Reference SH 60247 47139 - SH 60023 46668
NPRN	PRN	Period Post medieval
Description Dry stone wall snaking along the eastern side of the valley, linking in to the better preserved wall 1. Local angular stone blocks generally less than 400 mm in size although incorporating natural boulders up to 1.5 m in size. This feature appears to be cut by Wall 3 (415449)		
		
Significance Local	Condition Poor	Survival Moderate
Stability Slow Deterioration	Vulnerability Moderate	Threat Crossed by route
Management Recommendations Use existing gaps if possible, if not record in detail and re-instate		
Photograph Cwm Bychan_02	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415447	Site Name Aerial Ropeway fragment 2	Grid Reference SH 60193 47094
NPRN	PRN 3792 (part of)	Period Modern
Description Two small pulley wheels on an iron frame originally used to suspend a container from the aerial ropeway. Not <i>in situ</i>		
		
Significance Local	Condition Good	Survival Good
Stability Stable	Vulnerability High	Threat On Route
Management Recommendations Avoid		
Photograph Cwm Bychan_04	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415448	Site Name Cwm Bychan Mound	Grid Reference SH 60190 46886
NPRN	PRN	Period Uncertain
Description Oval mound 12 x 5 m in plan and up to 1 m high within an area of wet, peaty ground. Steep sides and a relatively flat top would suggest this is man-made. Possible peat drying stack. Probing did not suggest a stone core		
		
Significance Good	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Maintain in current condition		
Photograph Cwm Bychan_06	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415449	Site Name Cwm Bychan Wall 3	Grid Reference SH 60066 46655
NPRN	PRN	Period Post Medieval
Description Well maintained dry stone wall up to 1.5 m high and 0.6 m thick built of angular stone blocks which are generally less than 0.4 m in size, but incorporating boulders up to 1 m in size. This wall clearly cuts Wall 2 (415446) and must therefore be later.		
		
Significance Local	Condition Variable, generally good	Survival Good
Stability Slow Deterioration	Vulnerability High	Threat Route crosses wall
Management Recommendations If possible use existing gaps. If not fully record and reinstate		
Photograph Cwm Bychan_07	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 515450	Site Name Pwll Golchi Isaf	Grid Reference SH 59840 46502
NPRN 413473	PRN	Period Post Medieval
Description A pen angular enclosure approximately 6 x 4.7 m in size with a rectangular enclosure (11 x 4.5 m) attached to the west leading down to a pool below a waterfall. The level in the pool is maintained by a weir. The oval enclosure appears to be earlier and is constructed of dry stone slabby block up to 0.7 m in size. The wall is 0.5 m wide and stands to a height of about 1 m. The rectangular enclosure is of similar blocks, but stands to 1.2 m and on its northern side incorporates a natural rock face. Associated with 515451		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat Adjacent to the route
Management Recommendations Avoid. Remove trees near to the site and maintain in open conditions		
Photograph Cwm Bychan_08	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415451	Site Name Weir	Grid Reference SH 259827 346504
NPRN	PRN	Period Post medieval
Description Boulder built weir associated with the sheep washing pool to 415450		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat Erosion from the stream
Management Recommendations Monitor for stability		
Photograph Cwm Bychan_09	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415452	Site Name Cwm Bychan Wall 4	Grid Reference SH 59826 46472 - SH 59834 46473
NPRN	PRN	Period Post medieval
Description A short length of dry stone wall between the stream and a natural rock. Only surviving to 0.5 m high this wall is 0.5 m thick and constructed of rock slabs up to 1 m long, but only 0.25 m thick		
		
Significance Local	Condition Poor	Survival Bad
Stability Slow Deterioration	Vulnerability Low	Threat Edge of survey area
Management Recommendations Avoid		
Photograph Cwm Bychan_10	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415453	Site Name Cwm Bychan Embankment	Grid Reference SH 59750 46248
NPRN	PRN 57254	Period Modern
Description Railway embankment approximately 6 m high with an access tunnel/bridge below. Notated stone structure with a brick vault. The access tunnel is 3.4 m wide and 6.9 m long with splaying retaining walls either side to retain the earthen bank of the embankment.		
		
Significance Regional	Condition Good	Survival Good
Stability Stable	Vulnerability Low	Threat Route passes below tunnel
Management Recommendations Record any trench		
Photograph Cwm Bychan_12	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415454	Site Name Cwm Bychan Settling Tank 2	Grid Reference SH 59776 46276
NPRN	PRN 3792 (part of)	Period Modern
Description Rectangular pond 4.4 x 2.4 m in size and up to 0.5 m deep with a secondary pond at its western end. The secondary pond is 3.0 x 2.4 m in size, but is shallower being up to 0.3 m deep. Some remnant of dry stone walling in places around both ponds. The smaller pond appears to be fed from the buddle immediately to the north. No signs of an outfall.		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat Near to route
Management Recommendations Protect remains and carry out a watching brief on any adjacent works		
Photograph Cwm Bychan_14	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415455	Site Name Cwm Bychan Buddle 2	Grid Reference SH 59784 46291
NPRN	PRN 3792 (part of)	Period
Description Flat circular area 5.5 m in diameter defined partly by a low concrete wall and partly by natural rock quarried to shape. No sign of a central pivot block. Possibly driven from rock cut platform above. Outfall to the south appears to lead into Buddle 1 (41589)		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Keep clear of vegetation		
Photograph Cwm Bychan 17	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415456	Site Name Cwm Bychan Machine Base	Grid Reference SH 59795 46305
NPRN	PRN 3792 (part of)	Period
Description Two large concrete blocks, one rectangular and 3.35 x 3.10 m in size and the other “L” shape and 3.25 x 1.75 m in size. Both blocks standing up to 0.95 m high. The “L” shaped block has iron fitting on its upper surface. They sit towards the southern edge of two, interlinked platforms, one 16 x 9 m in size and the other 8 x 7 m. The northern side of these platforms are cut into the natural slope by up to 0.75 m and are built up to the south.		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Low	Threat Trees growing within the feature
Management Recommendations Remove trees if possible, maintain as an open space		
Photograph Cwm Bychan_20 Cwm Bychan_21 Cwm Bychan_22 Cwm Bychan_23	Surveyed by I. Brooks	Date 21/2/15


National Trust ID 415457	Site Name Cwm Bychan Rectangular Tank 2	Grid Reference SH 59791 46318
NPRN	PRN 3792 (part of)	Period
Description Rectangular concrete lined tank 4.95 x 2.1 m and at least 0.95 m deep. The outer surface of the tank had stone walling which is now lost. Partly buried into the natural slope. The front wall is broken and leaning		
		
Significance Local	Condition Poor	Survival Moderate
Stability Rapid Deterioration	Vulnerability Medium	Threat Regrowth of trees within the tank
Management Recommendations Prevent regrowth		
Photograph Cwm Bychan_25 Cwm Bychan_26 Cwm Bychan_27	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415458	Site Name Cwm Bychan Possible flywheel pit	Grid Reference SH 59789 46329
NPRN	PRN 3792 (part of)	Period Modern
Description Two concrete block constructed structures with metal fittings on either side of a possible flywheel pit 0.95 m wide and at least 1.5 m long. The eastern block is approximately 2 m long and 0.65 m wide and forms a squat, hollow cross with a bearing block and other fittings on its top surface. The other block is 0.3 x 0.45 m in size and has iron bolts on its upper surface probably for another bearing block. Possibly related to the aerial ropeway. Possible dry stone wall attached the western block.		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat Tree growing out of pit
Management Recommendations Remove tree and prevent regrowth		
Photograph Cwm Bychan_29	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415459	Site Name Cwm Bychan Stanchion Support	Grid Reference SH 59796 46332
NPRN	PRN 3792 (part of)	Period Modern
Description Concrete block 3.65 x 0.93 m in size and at least 0.4 m thick with the bases for two iron stanchion, one set at either end. The base of the metal fittings are 0.46 m square with a circular post 0.1 m in diameter set vertically. Possibly the last supports for the aerial ropeway.		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat None
Management Recommendations Maintain in an open area		
Photograph Cwm Bychan_31	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415460	Site Name Cwm Bychan Revetting Wall	Grid Reference SH 59812 46317
NPRN	PRN	Period Post Medieval
Description A short length (4.6 m) of dry stone walling revetting the western side of the stream. Standing up to 1.5 m high this wall is made of poorly coursed rounded boulders up to 0.4 m in size.		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat On route
Management Recommendations Avoid damage		
Photograph Cwm Bychan_35	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415461	Site Name Pen y Groes Wall	Grid Reference SH 59693 46171 - SH 59624 46197
NPRN	PRN	Period Post Medieval
Description Well maintained dry stone wall alongside the drive to Pen y Groes cottage. Up to 1.5 m high and 0.6 m thick the wall is constructed of relatively small (up to 0.3 m) sub-angular stone blocks. Some areas of coping. Two areas of recent collapse		
		
Significance Local	Condition Good	Survival Good
Stability Slow Deterioration	Vulnerability Low	Threat Trees growing close to wall
Management Recommendations Monitor the condition, consider removal of adjacent trees		
Photograph Cwm Bychan_36	Surveyed by I. Brooks	Date 21/2/15

National Trust ID 415462	Site Name Cwm Bychan Wall 5	Grid Reference SH 59856 46406 - SH 59829 46292
NPRN	PRN	Period Post medieval
Description Dry stone wall running along the western side of the stream. Somewhat tumbled wall up to 0.75 m high and 0.5 m thick forming the western side of the valley floor. Constructed of local sub-angular rocks up to 0.4 m in size and incorporating local boulders and rock outcrops in places		
		
Significance Local	Condition Fair	Survival Moderate
Stability Slow Deterioration	Vulnerability Medium	Threat Adjacent to route
Management Recommendations Avoid		
Photograph Cwm Bychan_10	Surveyed by I. Brooks	Date 21/2/15

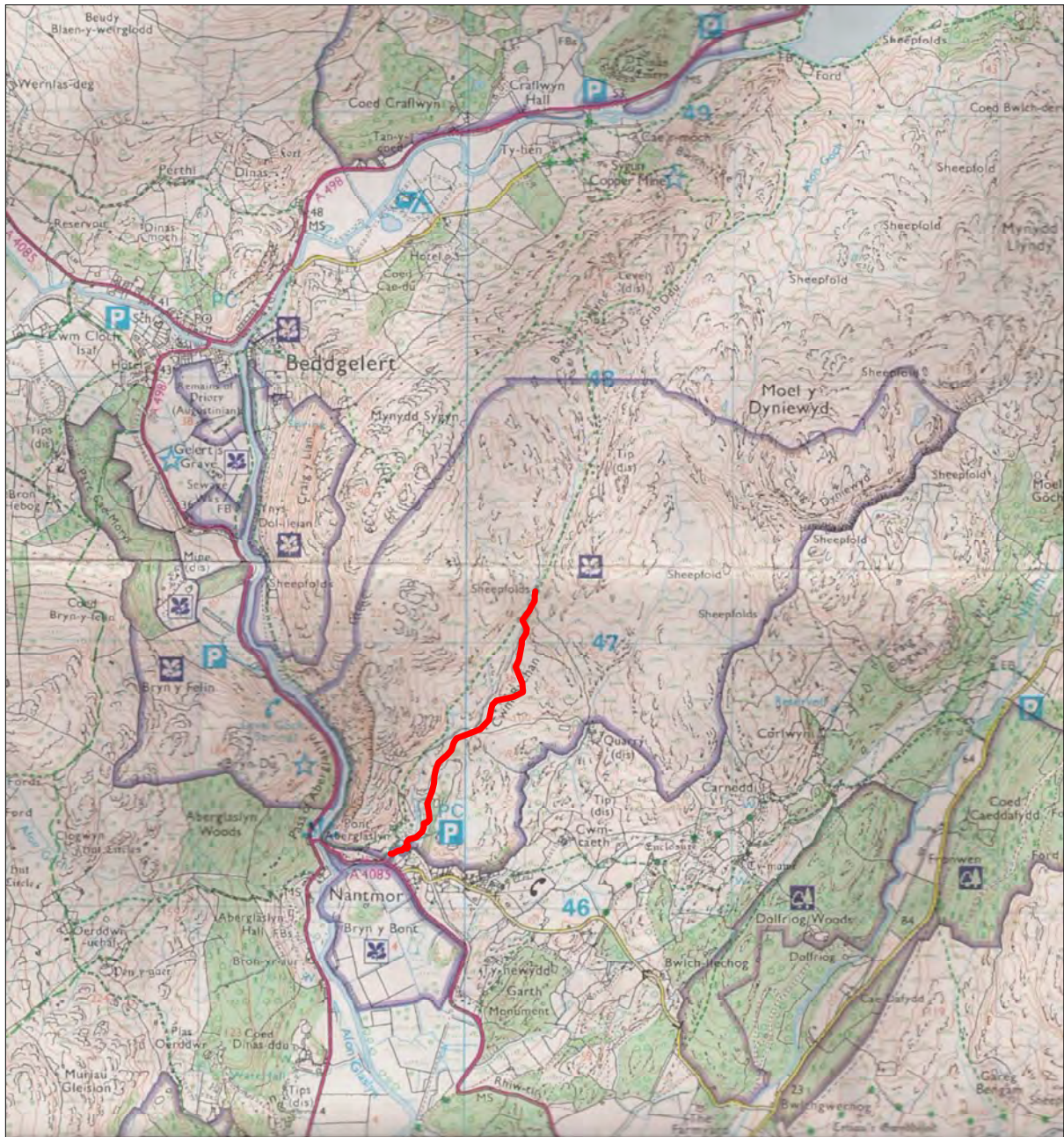


Figure 1: Location
Scale 1:25,000

Reproduced from the Explorer OL17, 1:25,000 scale map
by permission of the Ordnance Survey ® on behalf of
The Controller of Her Majesty's Stationary Office
© Crown Copyright 2002
All Rights Reserved Licence Number AL 100014722



Figure 2: Detail of Route
Not to scale

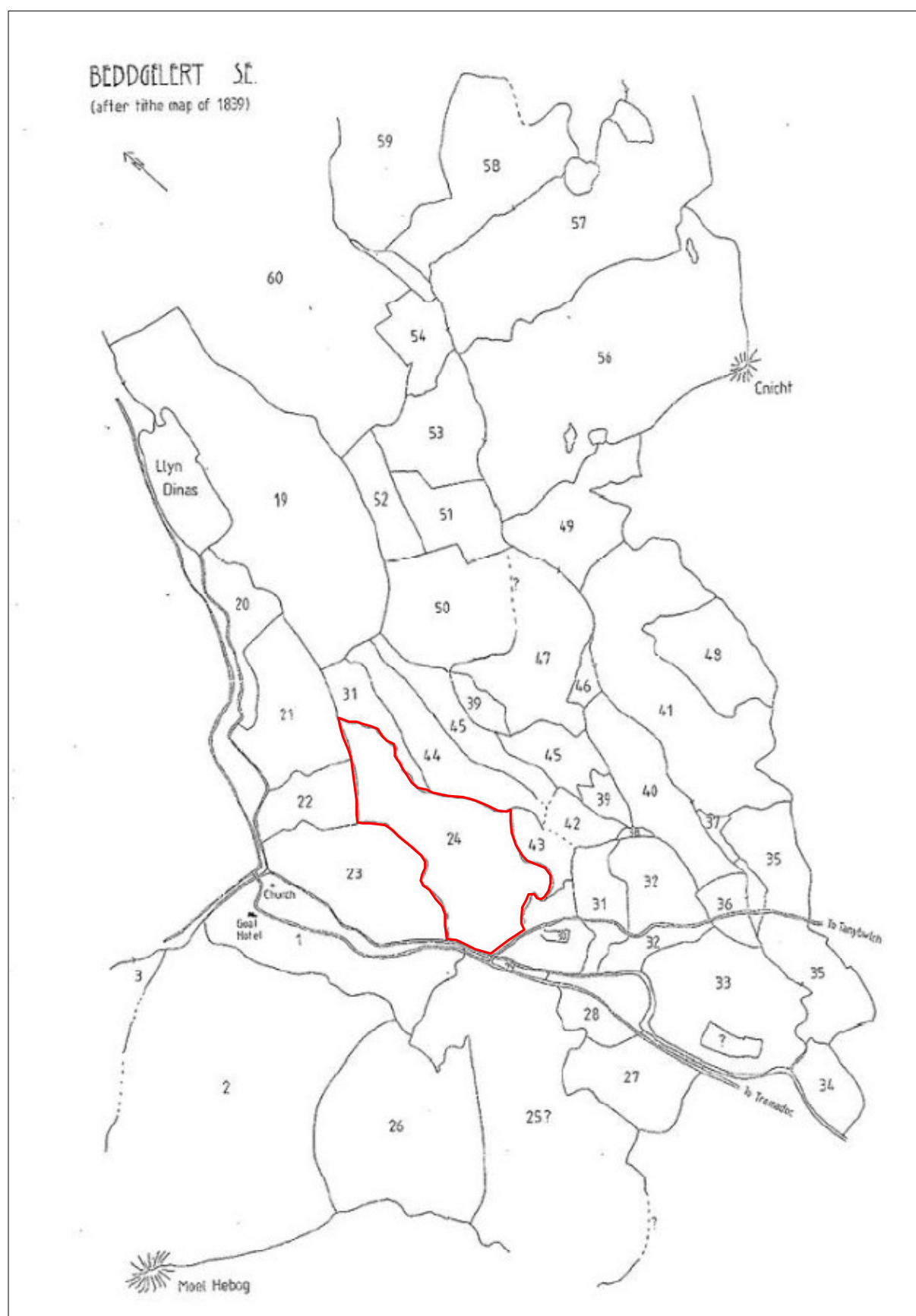


Figure 3: Extract from the 1839 Beddgelert Tithe Map
Not to scale



Figure 4: Combined extracts from the Merionethshire III SW and
Carnarvonshire XXVIII NW 1888 Ordnance Survey Maps
Not to Scale

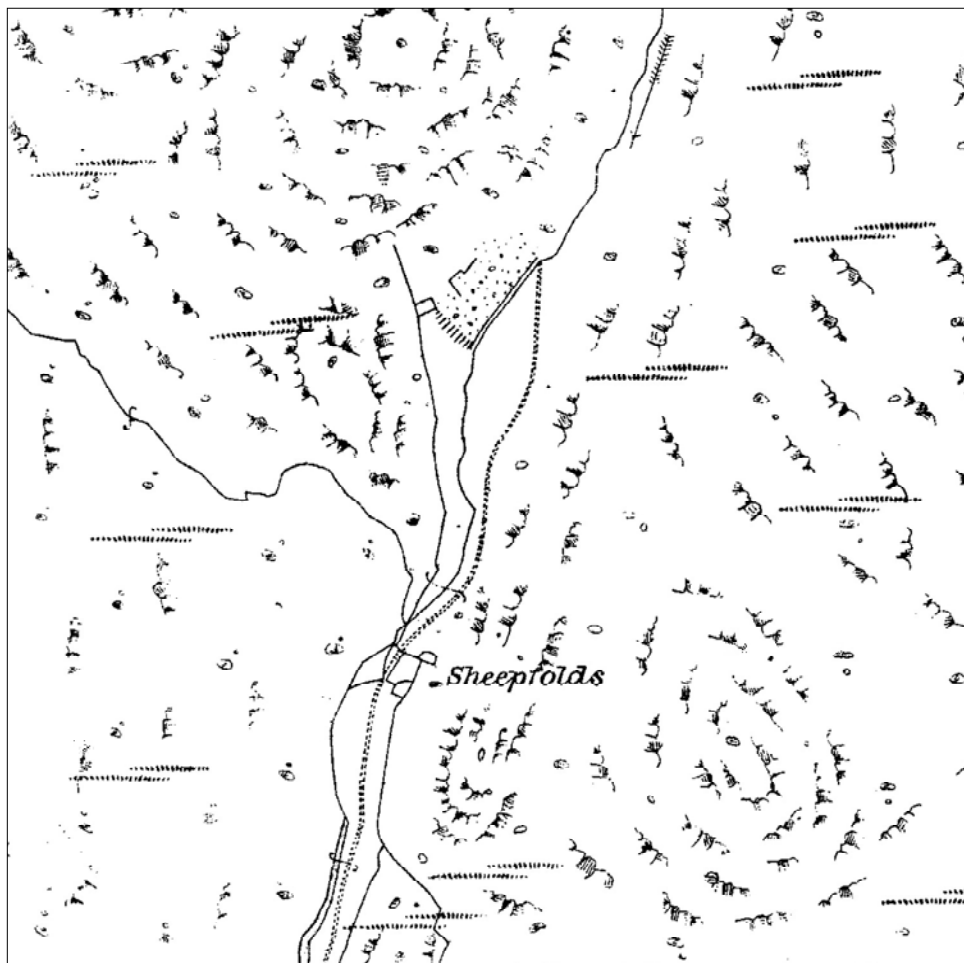


Figure 5: Extract from the Ordnance Survey
Merionethshire III.5 map 1889
Not to scale

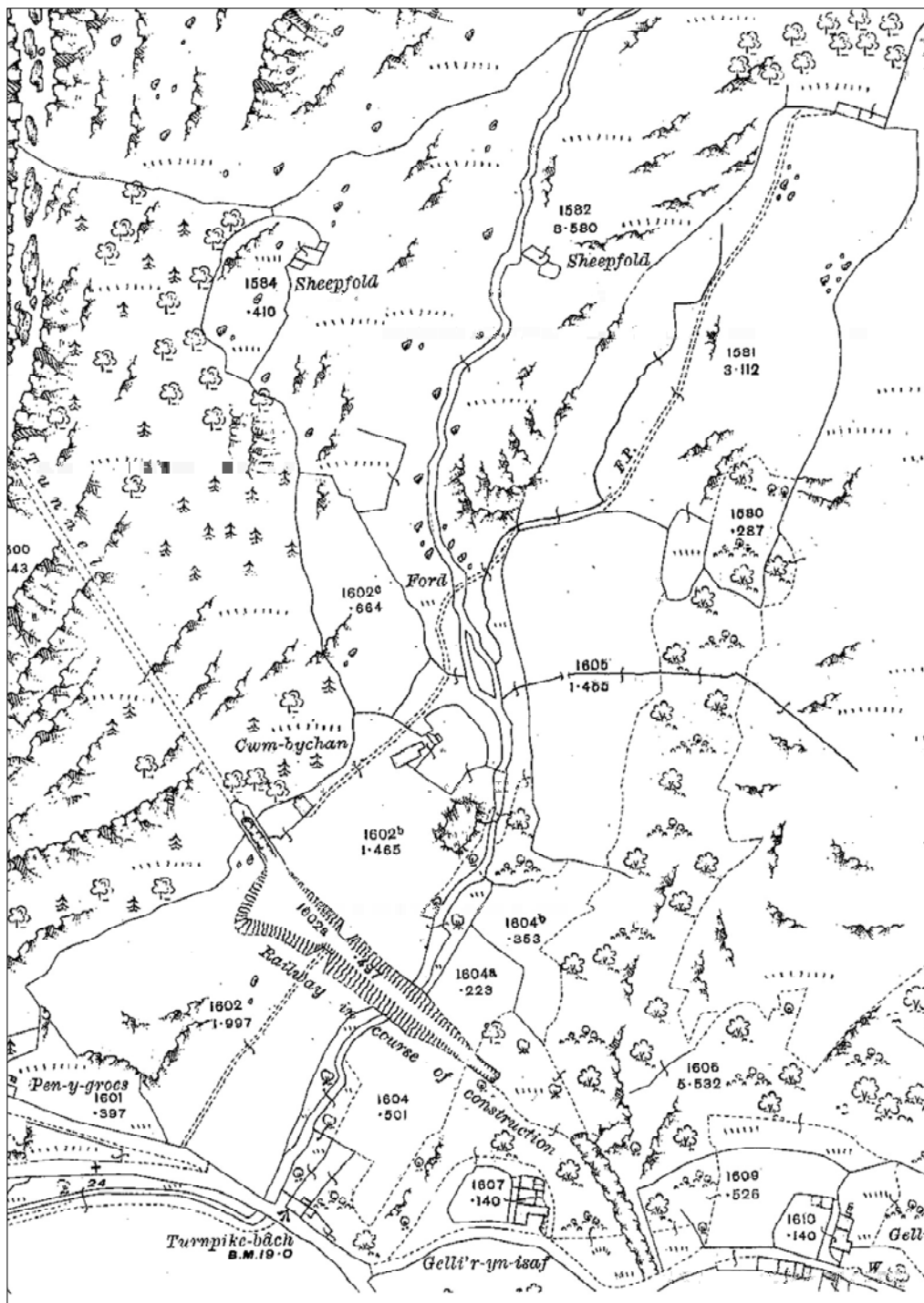


Figure 6: Extract from the Ordnance Survey
Caernarvonshire XXVIII.9 map 1915
Not to scale

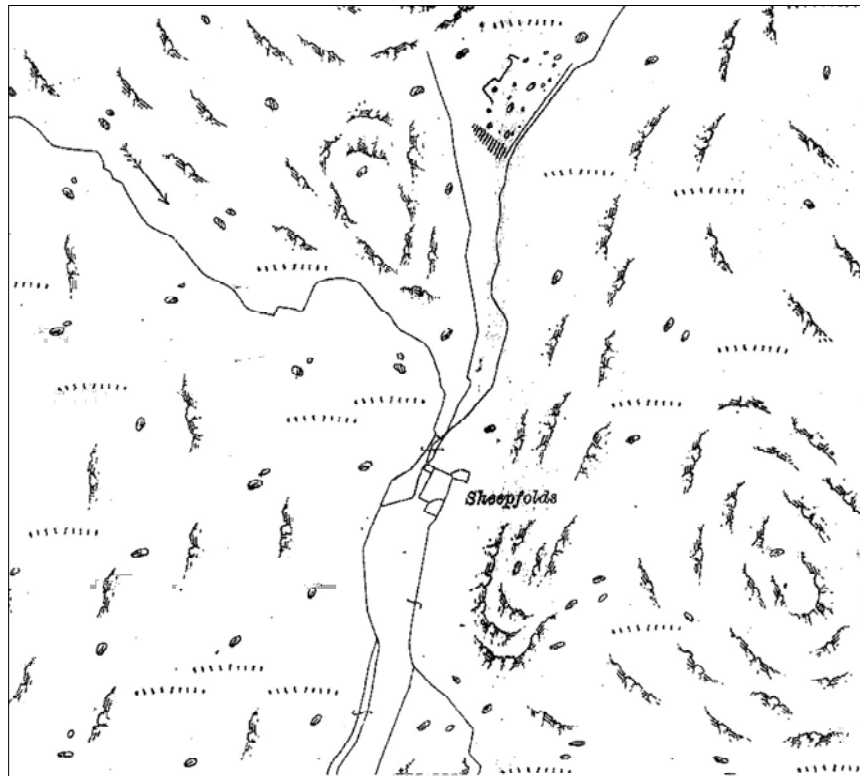
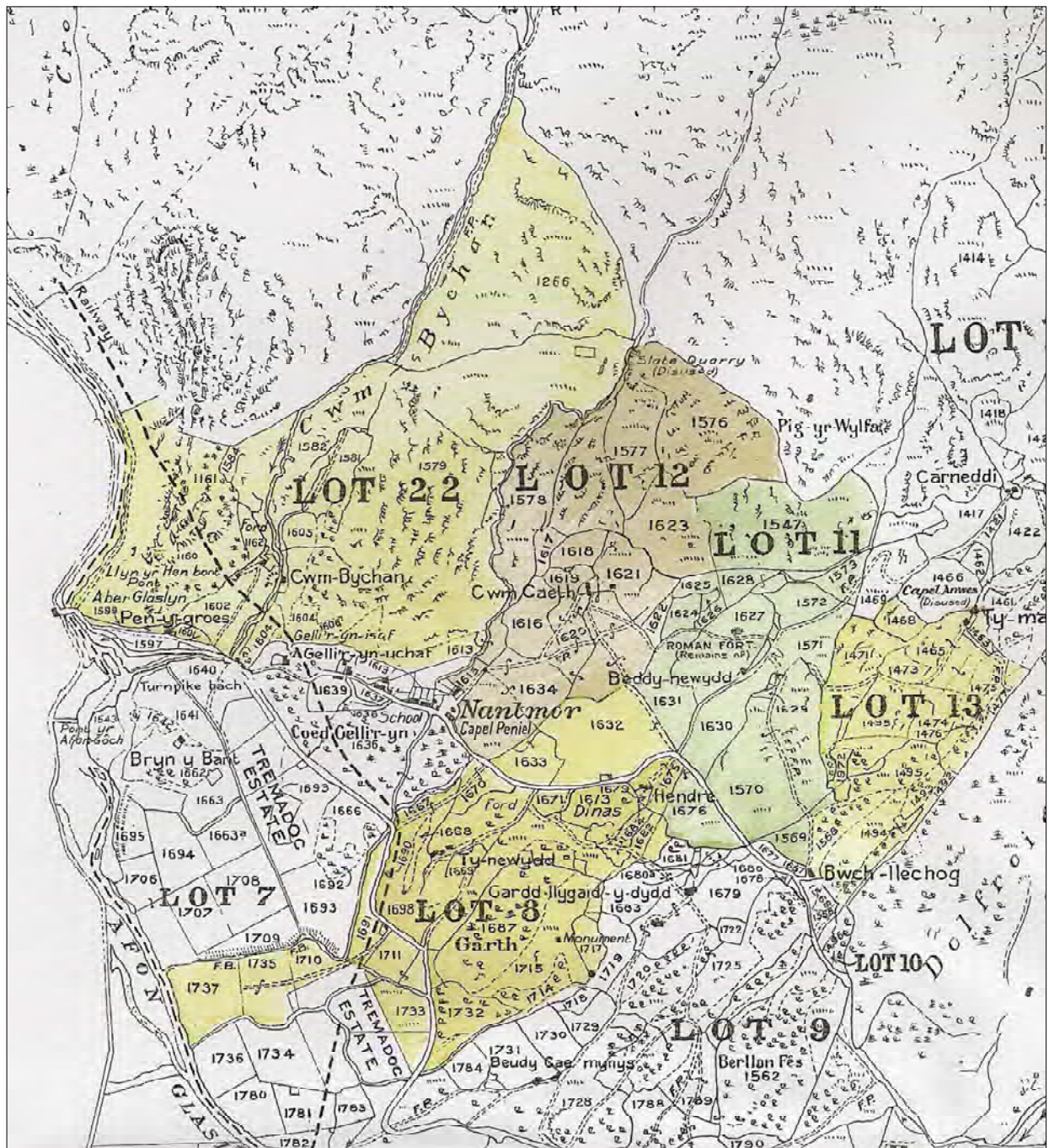


Figure 7: Extract from the Ordnance Survey
Caernarvonshire XXVIII.5 map 1915
Not to scale



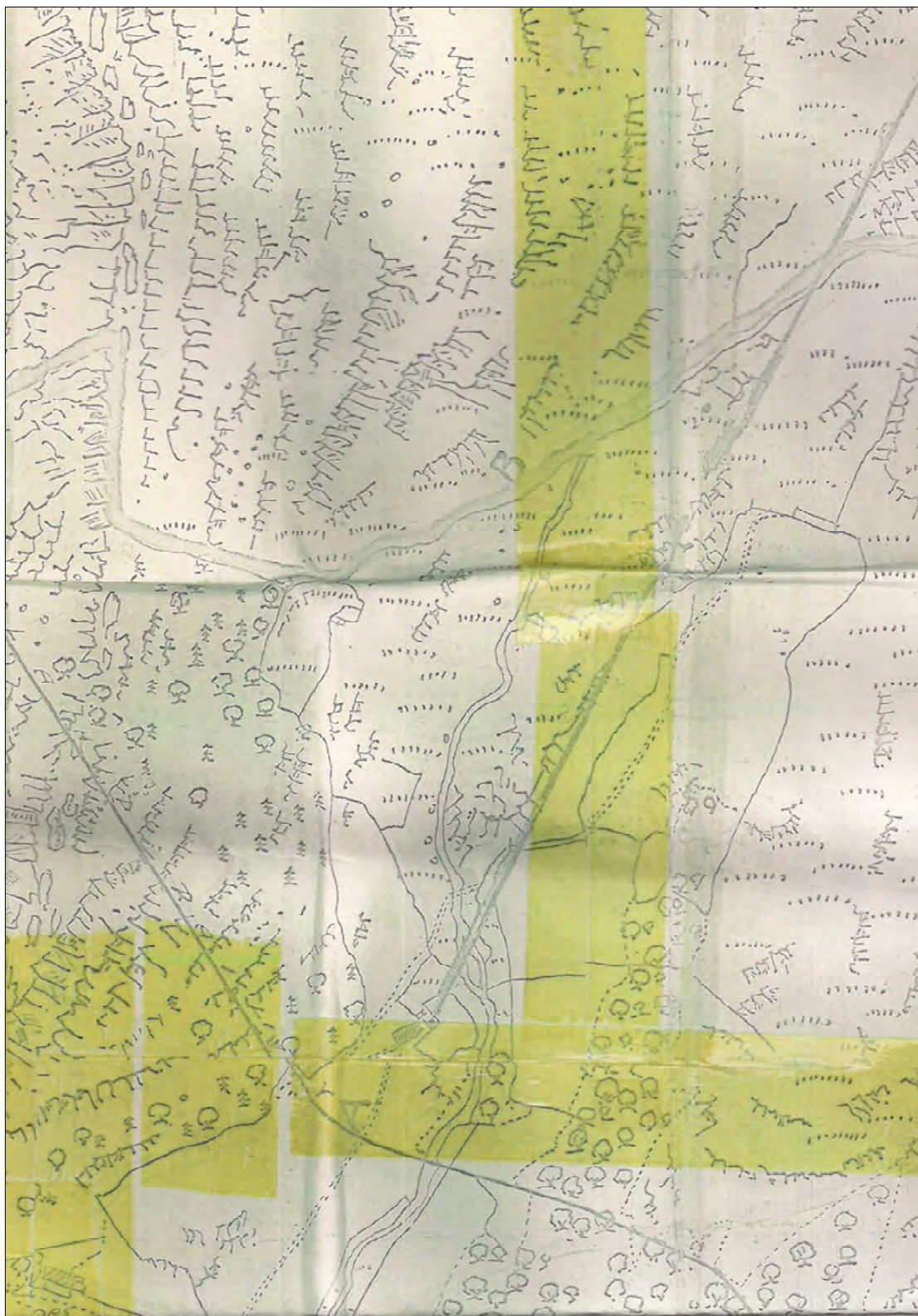
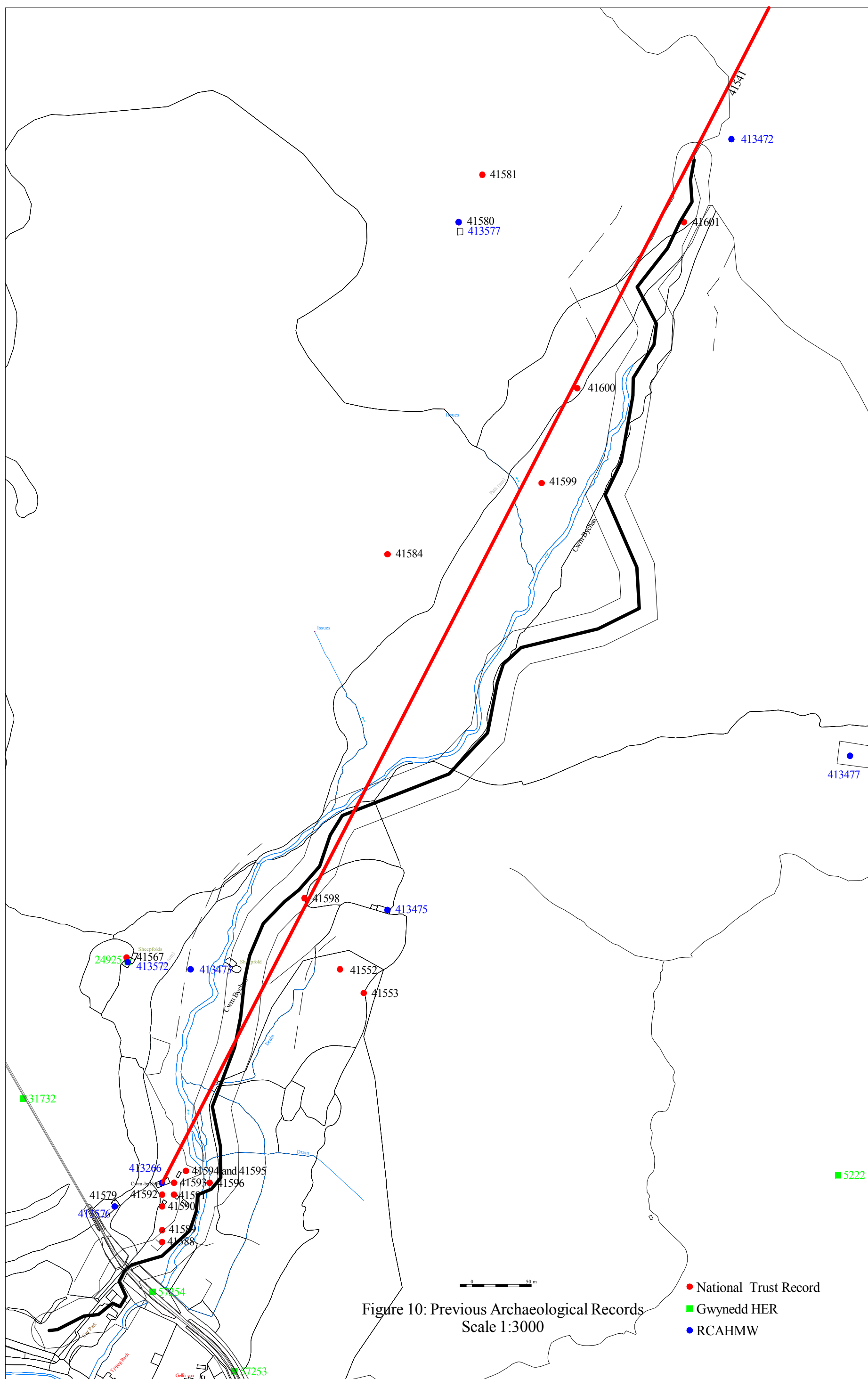
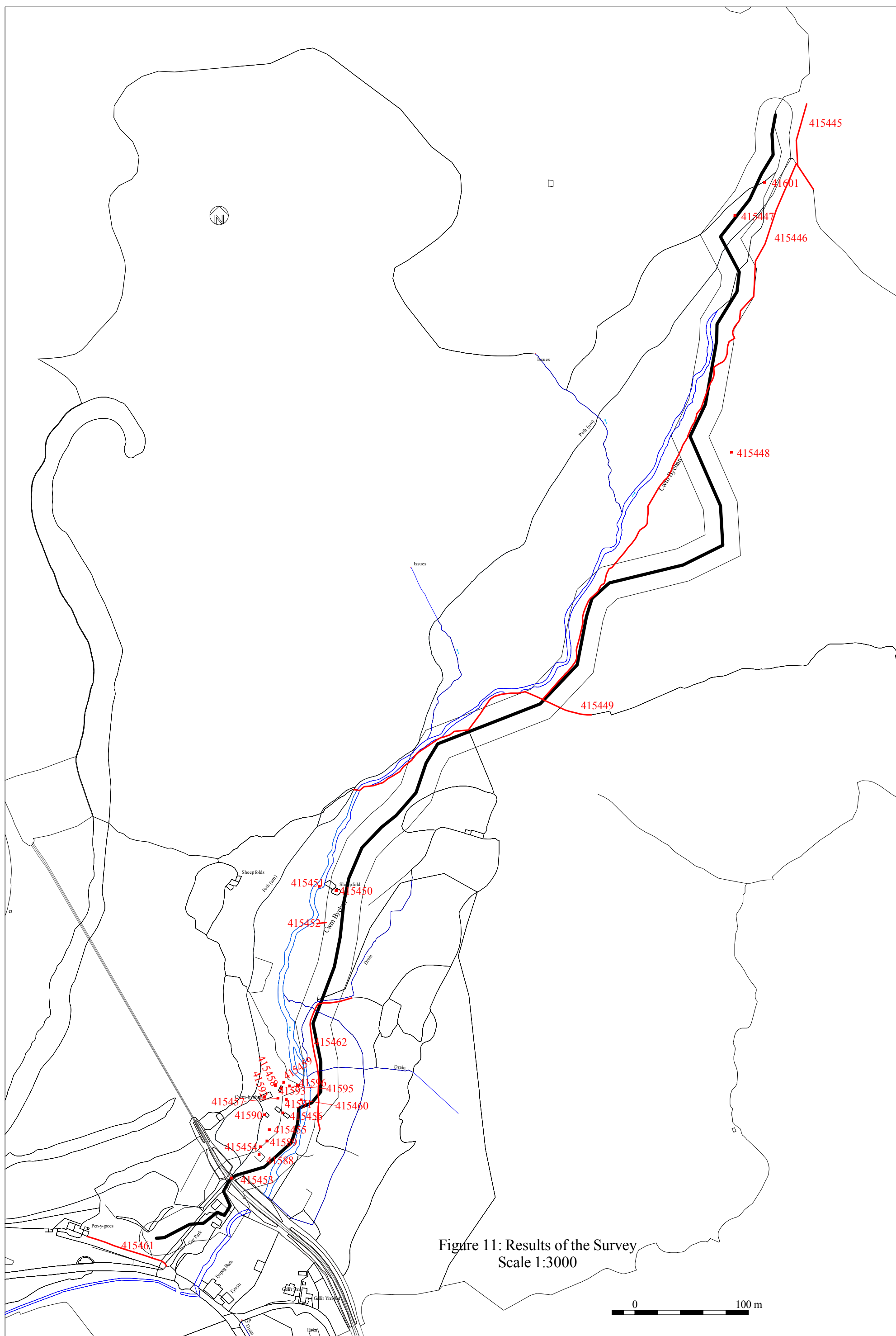


Figure 9: Extract from the plan of the aerial ropeway
Prepared by J. E. Griffiths et al
(Caernarvonshire Archives XM 4170/109)
No date.
Not to scale





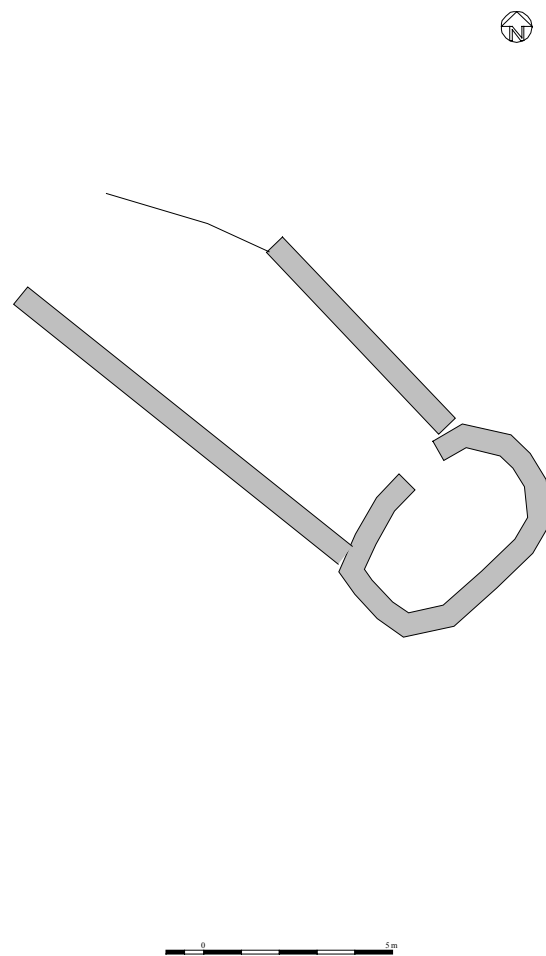


Figure 12: Sketch Plan of the Sheep Washing Station (51450)
Scale 1:200 (approx.)

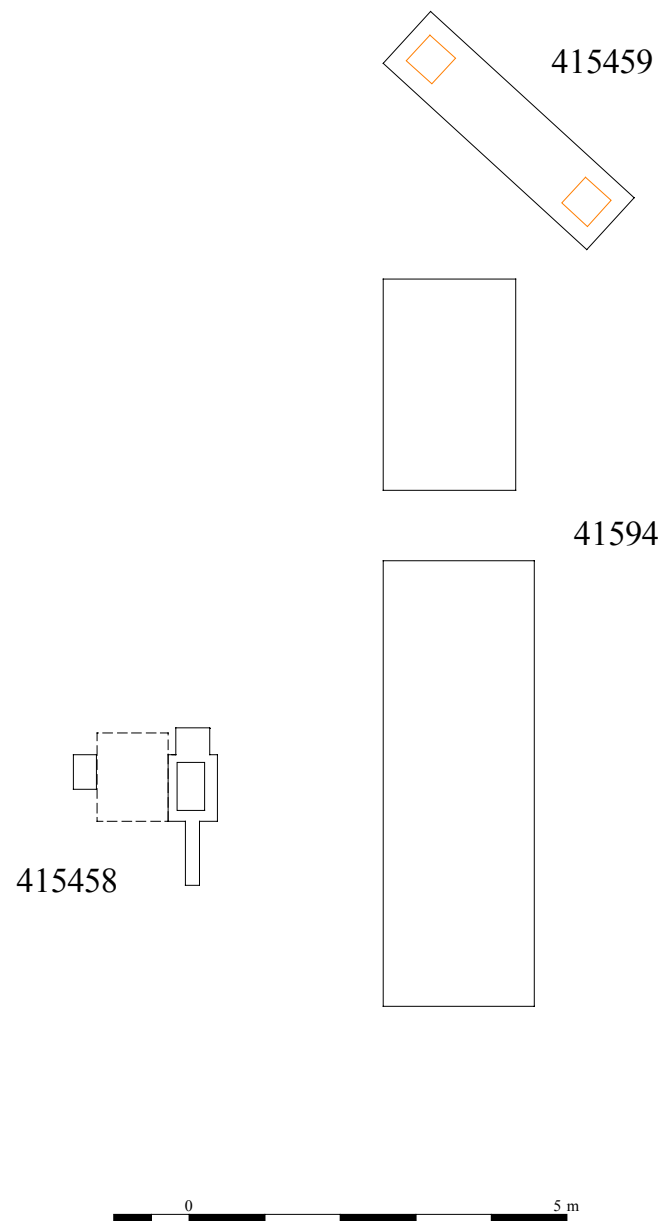


Figure 13: Sketch Plan of 415458, 41594 and 415459
Scale 1:100 (approx.)

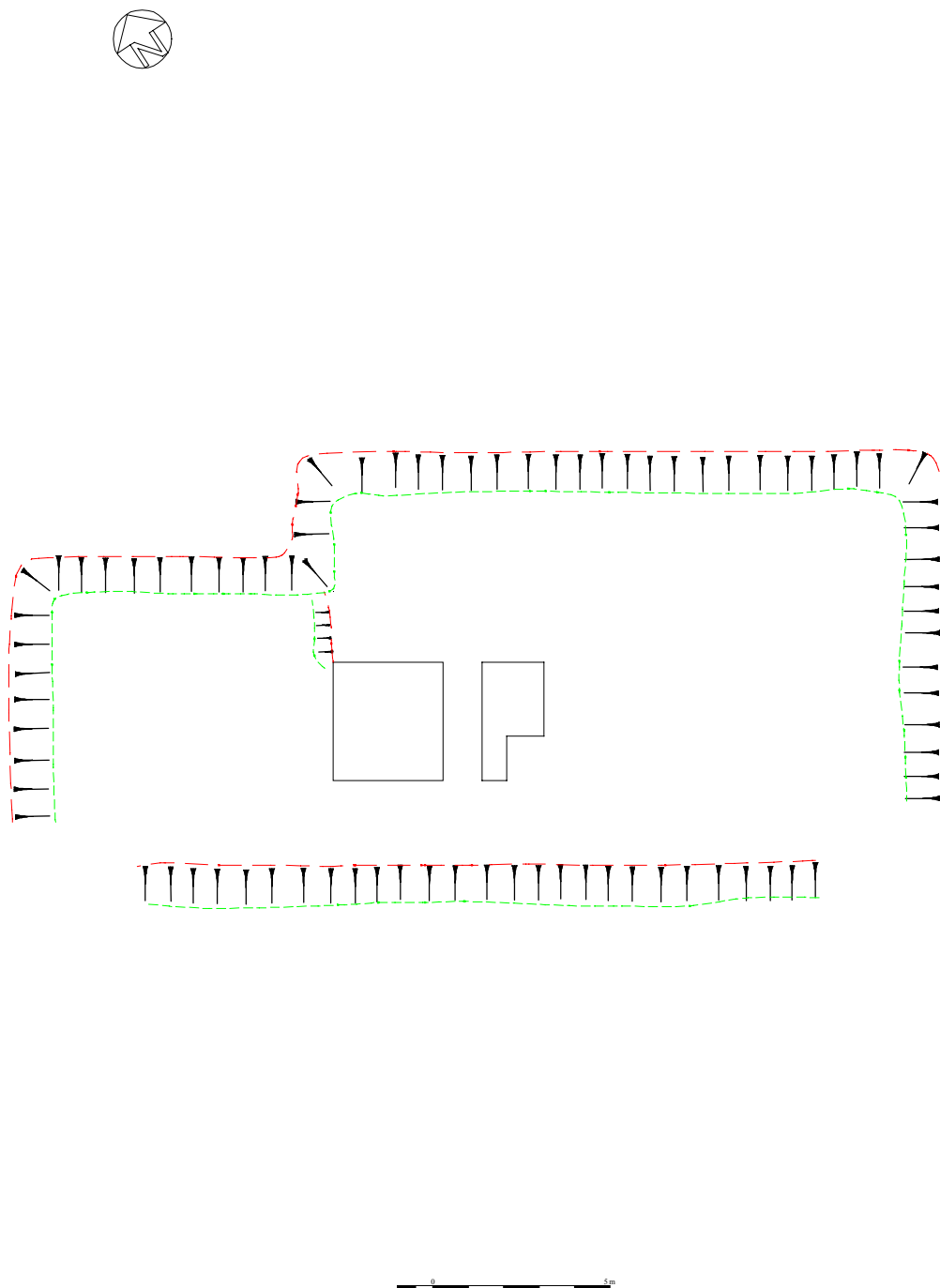


Figure 14: Sketch Plan of the Concrete Blocks (41546)
and Associated Platforms
Scale 1:200 (approx.)

