



UPLANDS INITIATIVE FIELD PROJECTS 2007-8

Snowdonia (Bethesda) Survey Area

North Wales

Archaeological Survey Report



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SUMMARY

An archaeological identification survey of the mountainous region of Snowdonia adjacent to the village of Bethesda (SH 612 615 centred) in Snowdonia, North Wales was undertaken between December 2007 and February 2008, by Oxford Archaeology North (OA North) on behalf of the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) as part of the Uplands Initiative. The project carried out an initial archaeological desk-based study, followed by a field identification survey for the study area.

The survey area of Snowdonia (Bethesda) covers an area of 13.76 sqkm and consists of part of the northern flank of the north-west end of the Snowdonia massif. The area is dominated by high peaks, including the ridges between Glyder Fawr and Carnedd y Filiast, along with the outlier Elidir Fawr. The study area consists of sloping open moorland which rises from approximately 300m to over 800m on the highest ridges, with the moorland being fringed by semi-improved enclosure on the lower slopes.

In total, five sites were established by the desk-based study as being recorded within the HER and NMR, of which four were updated and given additional new NMR numbers. In total, 99 new sites were identified by the field survey, representing a substantial numerical increase in the number of sites within the study area.

The previously discovered sites identified in the NMR and HER were limited to a possible stock enclosure/earthwork, a house, and a group of potential stock management or domestic structures. No sites of definitively medieval or earlier date had previously been discovered within the study area, and the present survey has not been able to add sites that are definitely earlier than post-medieval in date. There is a small collection of house platforms and once roofed structures that may have had domestic or agricultural function scattered along the southern fringes of the study area, along with a collection of possibly transhumance-type structures or stock management structures within one defined area.

In total, 97 sites have been ascribed to the post-medieval period, four sites are modern and three are of unknown date. The majority of the identified sites reflect the relatively recent exploitation of large tracts of open moorland that forms the western edge of the Snowdonia for sheepwalks. Up to 59 examples of sheepfolds and shelters were scattered across the whole study area, demonstrating that sheep farming has been a major enterprise within the study area. The fringes of the moorland have been subject to enclosure from at least the early post-medieval period, particularly on the southern side above Nant Peris.

As well as the agricultural features, there was also some evidence for slate quarrying consisting of discrete areas of trial mining and reservoir construction, that for the most part related to twentieth century exploitation. There was also evidence of recreational practices in the form of a collection of shooting mounds and four walkers shelters' on the summits within the study area.

CRYNODEB

Ymgwymerwyd ag arolwg archeolegol i adnabod mynydd-dir Eryri ger pentref Bethesda (SH 612 615 canol) rhwng Rhagfyr 2007 a Chwefror 2008 gan Oxford Archaeology North (OA North) ar ran Comisiwn Brenhinol Henebion Cymru (RCAHMW) fel rhan o'r Fenter Ucheldir. Roedd y prosiect yn golygu astudiaeth archeolegol wrth y ddesg i ddechrau, ac wedyn arolwg adnabod caeau ar gyfer holl ardal yr astudiaeth.

Mae ardal yr arolwg yn Eryri (Bethesda) yn cwmpasu darn o dir 13.76 cilomedr sgwâr, sef ochr ogleddol pen gogledd-orllewinol masiff Eryri. Mae'n ardal o gopaon uchel, yn cynnwys y cefnau rhwng Glyder Fawr a Charnedd y Filiast, ynghyd ag allgraig Elidir Fawr. Gweunydd agored llechweddog sydd dan astudiaeth, gan godi o ryw 300m i dros 800m ar y cefnau uchaf, gyda thir caeedig wedi'i led-wella ar lethrau isaf ymylon y gweundir.

I gyd, pennwyd bod pum safle wedi'u cofnodi o dan HER ac NMR, a phedwar o'r rheiny wedi'u diweddarau i gael rhifau ychwanegol newydd o dan NMR. A chymryd y cyfan gyda'i gilydd, 99 o safleoedd newydd a gafodd eu pennu, sy'n cynrychioli cryn gynnydd yn nifer y safleoedd o fewn ardal yr astudiaeth.

Roedd y safleoedd a ddarganfyddwyd o'r blaen ac a gafodd eu hadnabod o dan NMR ac HER wedi'u cyfyngu i gae da byw/cloddwaith posib, tŷ a grŵp o fframweithiau rheoli da byw neu ddomestig posib. Ni chawsai unrhyw safle o ddyddiad canoloesol neu gynharach pendant ei ddarganfod o'r blaen yn ardal yr astudiaeth, ac ni fu modd i'r arolwg presennol ychwanegu safleoedd sydd o ddyddiad pendant gynharach na'r ôl-ganoloesol. Mae casgliad bach o lwyfannau tŷ a fframweithiau oedd gynt â tho ac a allasai fod â swyddogaeth ddomestig neu amaethyddol wedi'u gwasgaru ar hyd ymylon deheuol ardal yr astudiaeth, ynghyd â chasgliad o fframweithiau'n perthyn o bosib i'r drefn drawstrefa neu fframweithiau rheoli da byw mewn un ardal ddiffiniedig.

I gyd, cafodd 97 o safleoedd eu priodoli i'r cyfnod ôl-ganoloesol, gyda mwyafrif y safleoedd a bennwyd yn adlewyrchu defnyddio cymharol ddiweddar ar leiniau eang o weundir agored fel ffriddoedd ar hyd ochr orllewinol Eryri. Roedd hyd at 59 enghraifft o gorlannau a llochesau wedi'u gwasgaru ar draws holl ardal yr astudiaeth, gan ddangos i ffermio defaid fod yn fenter o bwys yno. Mae ymylon y gweundir wedi'u troi'n dir caeedig ers o leia'r cyfnod ôl-ganoloesol cynnar, yn enwedig ar ochr y de uwchlaw Nant Peris.

Yn ogystal â'r nodweddion amaethyddol, roedd hefyd rywfaint o dystiolaeth o chwaraela am lechi ar ffurf manau mwyngloddio prawf ar wahân, gyda gwaith llunio cronfeydd, yn ymwneud gan mwyaf â byd gwaith yr ugeinfed ganrif. Gwelid hefyd dystiolaeth o arferion hamdden ar ffurf casgliad o dwmpathau saethu a sawl cysgodfa i gerddwyr ar y copaon o fewn ardal yr astudiaeth.

ACKNOWLEDGEMENTS

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We would like to thank Lorna Jones, Land Charges Officer at Gwynedd County Council and Nina Steele of the Gwynedd Archaeological Trust for providing HER details.

The field survey was undertaken by Peter Schofield, and assisted by Will Gardner. The report was written by Peter Schofield, and the illustrations were by Peter Schofield. The report was edited by Jamie Quartermaine who also managed the project.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Oxford Archaeology North (OA North) was invited to undertake an archaeological identification survey of the mountainous region of northern Snowdonia near Bethesda (SH 612 615 centred) in Snowdonia, North Wales on behalf of the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) as part of the Uplands Initiative. The study area encompasses 13.76 sqkm of upland and is part of the Dinorwig registered Historic Landscape No. 24.

1.2 OBJECTIVES

1.2.1 The objectives of the project were:

- to promote a wider and deeper understanding of upland areas and their role in Welsh history, in accordance with the aims of the Uplands Initiative;
- to provide an accurate Level 1 survey of all identified monuments (OA North, 2002).

1.2.2 To achieve these objectives the study area was subject to a desk-based assessment and walkover survey. The desk-based study, carried out in November 2007, consisted of a search of both published and unpublished records held by the National Monuments Record (NMR) of Wales, Gwynedd Archaeological Trust and the library and archives at OA North's offices in Lancaster. The field work was carried out to fit in with access availability and weather conditions; and was undertaken between December 2007 and February 2008.

1.2.3 This report sets out the results of the work, accompanied by a summary gazetteer of new sites (*Appendix 1*).

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A project design (OA North 2006) was submitted by OA North in response to a request for archaeological surveys of extensive areas of the Welsh Uplands; it was designed to meet the requirements of a brief issued by RCAHMW (2006). The project design provided for an initial archaeological desk-based study, followed by a field identification survey for the following areas: Snowdonia (Bethesda), Snowdonia (North-West), Cadair Idris – Llanegryn Uplands (West) and Cadair Idris – Llanegryn Uplands (East). OA North was commissioned to undertake survey of the first two project areas and the present report relates to the Snowdonia (Bethesda) area only (Figs 1 and 2).
- 2.1.2 Although the work has been carried out in accordance with the project design (OA North 2006), the extent of the study area has been revised from an initial area of 20.27 sqkm of land in the project design down to 13.76 sqkm in extent at the request of RCAHMW.

2.2 DESK-BASED SURVEY

- 2.2.1 **National Monuments Record (NMR):** an assessment was made of data held by the RCAHMW, Aberystwyth, which was overlain onto digital 1:10,000 mapping for the study area.
- 2.2.2 **Aerial Photographs:** aerial photography from the NMR office was also consulted along with RCAHMW aerial photographic interpretation of the study area. Information relating to possible new sites was annotated onto the field walking maps in GIS format.
- 2.2.3 **Historic Environment Record (HER):** an assessment was made of data held by the Gwynedd Archaeological Trust (GAT), which was also overlain onto the digital base map for the area.
- 2.2.4 **Ordnance Survey Mapping:** all available historic mapping for the survey area (provided by RCAHMW), was examined for the entire survey area for indications of historic sites not previously represented in the NMR and HER databases.
- 2.2.5 **World Wide Web:** historic landscape characterisation, parish records, census data and transcripts of some public records were obtained from archives and local histories on the internet. More modern data on the parish was also gleaned, which provided information about recent developments in the area.

2.3 IDENTIFICATION SURVEY

- 2.3.1 An identification survey to Level 1 (OA North 2002) was undertaken on the Snowdonia (Bethesda) study area. The identification survey represents the minimum standard of record for field investigation, and is aimed at the discovery of previously unrecorded sites. Its objective is to record the existence, location, and extent of any archaeological site. The emphasis of the record lies on the written

description, which includes comments on character and condition, and sites have been graded in terms of condition and archaeological significance. Sites already identified within the study area by the NMR and HER were checked and recorded at the same level of consistency as the newly discovered sites. The whole survey area, including both the unenclosed commons and surrounding improved and enclosed fringes, was examined. The survey aimed to identify, locate and record archaeological sites and features on the ground and involved four elements: reconnaissance, mapping, description and digital photography. This generated core information for entry into the NMR and additional archive information, in accordance with the RCAHMW Revised Data Standard for Upland Survey (RCAHMW 2004).

- 2.3.2 Each area was walked in transects of between 30m and 50m, depending on local topography and ground cover. The archaeological detail was mapped using Leica differential GPS equipment which used real-time EGNOS corrections from geostationary satellites to achieve an accuracy of up to ± 0.5 m. The digital survey data was transferred as shapefiles into a GIS system (ArcGIS 9.2), and was superimposed onto the embedded digital Ordnance Survey data (Figs 3 and 4). The descriptive records were input on-site into a database on a Psion portable palm computer; the more complex sites were also sketched onto paper *pro-forma* sheets. A photographic record of the sites was maintained using digital colour imagery and the images were used to accompany the present report.

2.4 GAZETTEER OF SITES

- 2.4.1 All of the information concerning archaeological sites within the assessed area was collated into a gazetteer (*Appendix 1*), which provides brief details of their location, period, type and altitude. Locations are given as eight-figure National Grid References where possible, and the position of each site is indicated on Figures 3 and 4.

2.5 ARCHIVE

- 2.5.1 A full archive has been produced to a professional standard in accordance with current English Heritage guidelines (1991) and the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The archive is provided in the English Heritage Centre for Archaeology format, both as a printed document and digitally. A synopsis, including the index to the archive and a copy of the report, will be placed in the NMR, RCAHMW at Aberystwyth and the Gwynedd HER at GAT, Bangor.

3. TOPOGRAPHICAL AND HISTORICAL BACKGROUND

3.1 LOCATION AND TOPOGRAPHY

3.1.1 The survey area of Snowdonia (Bethesda) covers an area of 13.76 sqkm and consists of part of the northern flank at the north-west end of the Snowdonia massif. The area is centred upon the steeply elevated mountain range sandwiched between the south-east/north-west orientated glaciated valleys of Nant Peris and Nant Ffrancon. The eastern side of the study area incorporates the mountainous ridge descending northwards from Glyder Fawr and containing the summits of Y Garn, Foel-goch, Mynydd Perfedd and Carneddy Filiast, along with the outlier Elidir Fawr that dominates the centre of the study area, and cradles the lakes/reservoirs of Marchlyn Mawr and Marchlyn Bach. The bulk of the study area consists of open sloping moorland descending from north-east to south-west from the mountainous ridgeline in the east at over 800m. The study area descends along the small elevated cwms of Cwm Dudodyn, Cwm Gafr and Cwm Cniefio and down to the top fringe of enclosed fields above the steep valley side at Nant Peris and the edge of Dinorwig slate quarries at 300m. The northern end of the study area is different in character, being flat and gently sloping open moorland of 300m-400m elevation. The moorland is sandwiched between the dispersed quarrymen's villages of Rhiwlas and Deiniolen in the south-west and the formalised quarry settlement of Mynydd Llandegai in the north-east.

3.2 GEOLOGY

3.2.1 The solid geology of the study area consists mainly of banded sedimentary rocks of Cambrian and Ordovician ages, with Merioneth, St Davids and Comley series rocks exposed to the north and the younger Arenig-Llandeilo series to the south. The south of the study area includes small areas of intrusive coarse-grained acidic igneous rock on the highest summits (British Geological Survey 1994; Neville George and Smith 1961). The overlying soils are a mixture of various soil types dependant on the parent rock (Soil Survey 1983). The area is dominated by loamy permeable soils of the Hafren association, which is found on the land below the mountain summits. By contrast, the mountain ridges contain very shallow, very acidic peaty soils of the Crowdy 2 association and the lower gently sloping land to the north of the study area contains seasonally waterlogged loamy upland soils with a very peaty surface horizon, of the Wilcocks 2 association (*ibid*).

3.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.3.1 **Prehistoric and Roman:** there was very little previously recorded evidence of human activity in the immediate study area during the prehistoric period. The only previously identified sites consist of the locations of a putative Bronze Age summit cairn atop the summit of Carnedd y Filiast (NMR 270001). Adjacent to the present study area are extensive, yet dispersed and fragmentary, remains of hut circle settlements and enclosures and burnt mounds (Cadw/CCW/ICOMOS 1998, 88). These are located on the interface between the lower edge of the open mountain

fringes and those parts of the upland commons enclosed, improved and farmed in the nineteenth century. There is evidence of prehistoric settlement and round houses located to the north-west of the study area on Moel Rhiwen and Moel y Ci, immediately adjacent to the east side of the study area above the Penrhyn slate quarries and further afield at similar altitudes on the opposite side of the Nant Peris valley at Garreg Lefain and Pen-y-bwlch to the west (*ibid*). Further lowland sites and field systems of the period have probably been destroyed or masked by the considerable post-medieval settlement, and associated farming practices, along with extensive quarrying and mining activities.

- 3.3.2 There is also evidence of Iron Age hillforts within the Nant Peris valley, and include the multivallate hillfort of Dinas Dinorwic located at the mouth of the valley to the north-west of the study area (*ibid*; Lynch 1995, 73), and the smaller putative defended hilltop of Dinas Ty-du (NMR 302638) located to the west of the study area above Llanberis. Both of these hillforts were found in association with external remains of hut circle settlements.
- 3.3.3 The predominantly unenclosed settlements and associated field systems are categorised within the NMR as Iron Age / Roman; however, there are very few absolute dates for these monuments in Wales and their chronology is uncertain. They are less likely to be of early Iron Age date as the climatic decline of the early part of the first millennium BC would not have supported arable farming at altitude (Lamb 1981), but there are examples from elsewhere in Northern England of unenclosed settlements that date back to the Late Bronze Age (Haselgrove 2002; Jobey 1985).
- 3.3.4 There is evidence of Roman military occupation and associated defences in the region surrounding the study area. The long established and occupied fort of *Segontium* is located on the coast at Caernarfon and was the site of the main Roman military base in north Wales throughout the Roman period (Lynch 1995, 103). Closer to the study area are the earthwork remains of the strategically located early marching camp at Pen y Gwryd at the head of the Llanberis Pass and to the east of the study area (*op cit*, 105). It is probable that the Llanberis Pass/Nant Peris valley was one of the routes used by the Roman army to manoeuvre through the area in order to subjugate the local population.
- 3.3.5 **Medieval to Post-Medieval:** there is some evidence for habitation and exploitation within and around the study area from the post-medieval period and possibly extending back to the medieval period. The previously recorded evidence consists of a group of features clustered on the upland fringes and into the cwms above Nant Peris on the south-west edge of the study area. They include a putative stock enclosure/fold of unknown date (NMR 270000, RCAHMW 1960, 169, *No. 1138*, and Plate 2), a domestic house/cottage (NMR 25981, and Plate 3), and a cluster of structures within Cwm Gafr, which were alternatively recorded as platform houses, agricultural structures or hut circles (NMR 270002 and NMR 270034). There was no evidence of extensive relict field-systems within the study area which is unusual by comparison with other areas upon the moorland fringes of the Snowdonia range (OA North 2004 and 2005). Further afield, across the Pass of Llanberis to the south and also in Cwm Brwynnog, are surviving medieval sheilings/platform houses that are located at similar altitudes (Lynch 1995, 159). The latter site consists of the surviving remains of a royal *hafodau* settlement mentioned in documentary sources

in the fourteenth century as being part of the landholdings of the Welsh Princes of Gwynedd in Dolbadarn (*ibid*; Cadw/CCW/ICOMOS 1998, 89). The landholding was potentially also enclosed by a large boundary bank and ditch skirting the area (*ibid*). Dolbadarn Castle in Llanberis was constructed on the isthmus between Llyn Padarn and Llyn Peris by Llwelyn ap Iorwerth ('The Great') between 1216 and 1240, in order to control the strategically important Pass of Llanberis (*op cit*, 158).

- 3.3.2 **Post-Medieval:** the period has been dominated, and the landscape shaped, by extensive extractive mining industries in the post-medieval period. There are two major industries, slate quarrying and copper mining, which can be found adjacent to the study area within the Nant Peris and Nant Ffrancon valleys. The two main slate quarries (along with various smaller satellite workings) are those of Penrhyn, located to the northern edge of the study area above the settlement of Bethesda, and Dinorwic, located on the southern edge of the study area above the settlement of Llanberis. They both consist of large-scale open-galleried workings with connecting haulage systems and inclines. At one time the quarries were the largest two in the world, and they expanded and followed the fortunes of the aristocratic Vaynol and Penrhyn estates in the late-eighteenth to twentieth centuries (Gwyn and Thompson 2000, *Section 11 and 14*). Whilst Penrhyn quarry is still in operation today, the Dinorwic quarry was closed in 1969 and was latterly converted and heavily modified (along with Marchlyn Bach reservoir in the study area) in the 1980s with the construction of the Dinorwic hydro-electric power station (Plate 1). A smaller slate quarry at Marchlyn, on the north-western edge of the study area, was also set up and was worked between the 1930s and 1960s using modern methods (*ibid*; Richards 1999, 45). An area of copper mining industry developed on the opposite side of the Nant Peris valley, to the south of the current study area, where trial levels and adits extend up the valley side to the south. Initial exploitation may have occurred as far back as the Bronze Age; however, documentary evidence shows only the modern operation of the mine from the mid-eighteenth century to the late nineteenth century (Bick 2003, 111).
- 3.3.3 The study area is dominated by open, unenclosed mountain commons and sheepwalks that were once owned by the two major estates of Vaynol and Penrhyn. The surrounding fringe of land, to the south of the central block of common, at Nant Peris, appears to form the pre-modern focus of occupation and farming in the valley, with a medieval church foundation, early enclosure and non-nucleated settlement (Gwyn and Thompson 2000, *Section 43*). The fringes of land to the west and north of the open commons consist of small-scale encroachment onto the commons by quarrymen farmers in the eighteenth century, or more latterly officially-sanctioned enclosure small-holdings for the quarrymen of the two major estates/quarries in the nineteenth century when the land was acquired by the major estates. The land to the west was held by the Vaynol estate and was enclosed by the quarrymen from Dinorwic quarry in an *ad hoc* manner, whilst the land to the north was used by the Penrhyn estate to create the planned settlement of Mynydd Llandegai for many of the workers from Penrhyn quarry (*op cit*, *Sections 33 and 42*). The larger nucleated settlements of Bethesda and Llanberis both initially coalesced in the nineteenth century on land that was not held by either of the two major estates; the former was developed purely as a quarrying centre, whilst the latter combined a mixture of quarrymen and emerging touristic enterprises that were associated with the ascent of mount Snowdon (*op cit*, *Sections 4 and 12*).

4. RESULTS OF THE DESK-BASED STUDY

4.1 DESK-BASED STUDY SUMMARY

- 4.1.1 ***Cartographic Evidence:*** examination of the historic maps, the Ordnance Survey (OS) first and subsequent editions of the 6" and 25" to 1 mile mapping, can provide an insight into the development of the enclosed lands and higher unenclosed moorland; however, there was little significant difference revealed between the extensive OS second edition mapping (1900-01) and that of today. The layout of the enclosure fields at the edge of the study area remains almost entirely static and unchanged, showing the pattern of small piecemeal encroachments on the west and north around and above the farms at the edge of Dinorwic and Deiniolen dispersed settlements, and to the south on the upper fringes of enclosure associated with Nant Peris. The historic mapping indicates that the principal use for the moorland was for the grazing of sheep, and there are a handful of sheep folds shown located in various localities: along field boundaries, edges of streams, on the open common, on the edge of the farmed land, and on the higher sheep walks, where they nestle within the sheltered glacial cwms that bisect the study area. The upper fringes of enclosed lands above Nant Peris, and the cwms above, also shelter examples of roofed structures; at least one example is named as a byre on the OS second edition mapping (the earliest available mapping for this area) as Beudy Cae'r Gwyddel (NMR 270010), the putative house, located slightly to the east of the previous site, is shown to be an unroofed structure by the time of this mapping.
- 4.1.2 The OS second (1900-01) and subsequent edition mapping show the heavily industrialised nature of the lower land surrounding the study area, to the south at Dinorwic quarry, where a small roofed structure is depicted in the study area (NMR 270073), and to the north, where Penrhyn quarry is shown extending further towards the study area over time. Elsewhere there is evidence of a small trial mining level on the edge of Marchlyn Bach. On the northern edge of the study area, Llyn y Mynydd was created by damming the streams that were flowing adjacent to Penrhyn quarry, so as to provide water power for the extensive quarry workings (NMR 270092).
- 4.1.3 ***Aerial Photographic Interpretation:*** digital aerial photographic mapping and interpretation was supplied by the RCAHMW under the auspices of the Uplands Initiative. The interpretation identified little of archaeological significance for this particular study area. Sites consisted of a sparse collection of dispersed features, that predominantly related to agricultural structures, sections of walls and drainage features.
- 4.1.4 ***Gwynedd Historic Environment Record (HER), National Monuments Record of Wales (NMR):*** in total, five unduplicated sites were recorded within the HER and NMR; all comprising undated or potentially post-medieval/modern sites. (Table 1; Fig 3 and 4).

5. SURVEY RESULTS

5.1 INTRODUCTION

- 5.1.1 The study area predominantly incorporated areas of steep, elevated, unenclosed lands along with smaller areas of lower enclosed fringes and some lower flat unenclosed common to the north. The survey examined both known and previously unknown sites which ranged in date potentially from the medieval period through to the post-medieval and modern periods. The majority of sites consisted of widely dispersed single monuments, although larger groups of sites were evident, in particular a grouping of domestic and agricultural structures in Cwm Gafr. All the sites identified by the documentary study were examined; their locations and extent were updated on the mapping, as required, and the site descriptions were enhanced. Both new and old sites are indicated on Figures 3 and 4. Two small portions of the study area measuring 0.2 sqkm were not subject to walkover survey (Fig 2), as access was not granted by the landowner, and both consisted of enclosed fields.
- 5.1.2 **Previously Recorded Sites:** the desk-based study identified one pre-survey NMR site, whilst a further four unduplicated HER sites were also updated and given new NMR numbers. The majority of the known sites were confirmed by the identification survey; however, a few sites, despite extensive searching, could not be located.
- 5.1.3 **New Sites:** in total, 99 new sites were identified representing a substantial numerical increase in the number of sites within the study area; they are summarised below in Table 1.

Period	Pre-Survey Number	Post-Survey Number	Numerical Increase
Post-Medieval	2	97	95
Modern	1	4	3
Unknown	2	3	1
Total	5	104	99

Table 1: Pre- and Post-Survey Site Numbers

- 5.1.4 **Altitude range of sites:** the overall site density was 7.5 sites per sqkm, which was spread according to altitude as shown in Table 2. The greatest density of sites was between the 300-324m OD range.

Height Range	Existing Sites	New Sites	Total
300-324m	0	19	19
325-349m	0	4	4
350-374m	1	3	4
375-399m	1	3	4

400-424m	0	4	4
425-449m	0	6	6
450-474m	0	6	6
475-499m	1	7	8
500-524m	0	11	11
525-549m	0	6	6
550-574m	1	10	11
575-599m	0	0	0
600-624m	0	1	1
625-649m	0	3	3
650-674m	0	4	4
675-699m	0	1	1
700-724m	0	4	4
725-749m	0	0	0
750-774m	0	0	0
775-799m	0	3	3
800-824m	1	3	4
Over 825m	0	1	1
Total	5	103	104

Table 2: Pre- and Post- survey site numbers with respect to altitude

5.1.5 *Range of site types*: the sites identified from the present survey, and previously identified within the record, fall into nine general types, which are defined as shown in Table 3.

Type	Existing Sites	New Sites	Total
Boundary Bank, Boundary Stone, Boundary Wall, Marker Cairn	0	7	7
Cottage, House, House Platform, Hut	1	5	6
Dam	0	1	1
Earthwork, Platform	1	1	2
Quarry, Trial Mine, Winder House	0	7	7
Sheep Fold, Sheep Shelter, Byre	0	59	59
Shelter, Structure, Store	3	5	8
Shooting Mound	0	12	12
Trackway	0	2	2
Total	5	99	104

Table 3: Range of Site Types

5.2 POST-MEDIEVAL/MODERN

- 5.2.1 No sites of definitively medieval or earlier date had previously been discovered within the study area or were discovered by the present survey.
- 5.2.2 ***Agricultural Landscape and Settlement:*** in total, 101 sites have been ascribed to the post-medieval period, and form the vast majority of the identified sites (see Table 1). The sites reflect the relatively recent exploitation of large tracts of the open moorland that forms part of the north-western edge of the Snowdonia range. Many sites are attributable to the dispersed agricultural exploitation of both the enclosed fringes and the open moorland sheep walks for stock management, and comprise numerous sheepfolds (a few of which are multi-cellular in form) and shelters (up to 59 examples) scattered across the whole study area (Plate 5). The large number of these features demonstrate that sheep farming has been a major enterprise across the moorland at altitude during the post-medieval period. The southern fringes of the open moorland common, above Nant Peris, have been subject to enclosure from at least the early post-medieval period. The steep slopes on either side of the Nantlle Valley have been controlled and enclosed by the farmsteads located on the valley floor and the land holdings extend up as far as the top break of slope of the valley side. Several further types of structure were encountered during the survey and these were all clustered on the upland fringes and into the cwms above Nant Peris on the south-west edge of the study area. They include a putative stock enclosure/fold of unknown date (NMR 270000, Plate 2), once-roofed domestic and/or byre structures (NMR 25981 Plate 3, NMR 27007 Plate 4, NMR 27010 and NMR 270080), and a cluster of structures within Cwm Gafr which were probably associated with stock management and small-scale transhumance practices (NMR 270002 and NMR 270034).
- 5.2.3 ***Industrial Landscape:*** the industrial landscape of the study area is dominated by nineteenth and twentieth century slate mining, whose extensive workings fringe the area, although few features actually encroach into the present survey area. The most extensive slate workings/trials are associated with the mid-twentieth century workings at Marchlyn quarry on the north-west end of the study area, and these extend as linear excavations for some distance on the west side of the quarry (NMR 270043 Plate 6, NMR 270044, NMR 270046, NMR 270062 and NMR 270065). One definitely earlier trial was recorded in a similar location sandwiched between the eastern end of Marchlyn quarry and Marchlyn Bach (NMR 270054). Other industrial features consist of a putative winder house, located above the top of Dinorwic quarry at Elidir Fach (NMR 270073, Plate 7) and the remains of the breached dam that contained Llyn y Mynydd adjacent to Penrhyn quarry (NMR 270092, Plate 9).
- 5.2.4 ***Recreation:*** two types of recreational activities are evident from the results of the present survey, the most recent of which is evidence of modern walkers' shelters on the summits of Elidir Fawr (NMR 270003), Mynydd Perfedd (NMR 270075) and Carnedd y Filiast (NMR 270001 and NMR 270076). Despite the name of the latter site ('Carnedd' means cairn), there was no surviving evidence of any prehistoric summit cairns, although one of the shelters may have been constructed out of an earlier boundary marker cairn (NMR 270001). The most numerous recreational site related to grouse shooting, and comprised a tight V-shaped grouping of twelve circular shooting mounds located on the flat boggy area of Gwaen Gynfi, adjacent

to the once dammed Llyn y Mynydd reservoir (NMR 270090-270091 and 270093-270102). The mounds are located on what is still open common, owned by the heirs of the Penrhyn estate, and clearly include some of their recreational paraphernalia from the nineteenth and twentieth centuries.

6. CONCLUSION

6.1 DISCUSSION

- 6.1.1 The survey has identified only a relatively small collection of sites within the present study area, but this is hardly surprising given the steep and highly elevated nature of much of the terrain. A moderately high density of sites were, however, found throughout the south and western fringes of the enclosed lands within the study area, and there were particular concentrations of sites nestled within the unenclosed moorland cwms that extend up into the study area from the south-west. Most of the sites were associated with post-medieval stock management and extractive industrial activities. The present survey has increased the number of identified monuments by a massive 1980%.
- 6.1.2 **Agriculture and Settlement:** the remains of post-medieval agriculture make up the vast majority of sites within the study area, and are predominantly stock management features on the unenclosed moorland (59 sites). There was also expansion of settlement and field systems running into the fringes of the study area, reflecting encroachment of the moorland commons in both an *ad hoc* manner and latterly under the auspices of the Penrhyn and Vaynol estates. In particular, the land above Nant Peris has numerous stock management features and possible small-scale domestic structures that were located on both the upper fringes of the enclosed fields and also extended up into the sheltered cwms. The distinct grouping of these monuments, the presence of potentially domesticated roofed structures, and the association with stock pounds, may be an indication that this was an area of marked transhumance activity, that may have extended over a broad period. As such, it most probably represents a possible shieling (hafod) settlement community that was undoubtedly active in the post-medieval period, but may also have extended back into the medieval period. Some of the structures, including long house structure NMR 25981, were within enclosed land, but there is the possibility that at least some of these structures pre-dated the enclosure.
- 6.1.3 **Industry:** the extraction of slate, and to a lesser extent copper ore, has been a major factor in shaping the regional landscape and the lives of the local populace over the last few hundred years. Elements of this industry are relatively few within the present study area, although the area does avoid/skirt the extensive workings of both Penrhyn and Dinorwic slate quarries, which at one time were the biggest of their kind in the world. The modest collection of new features identified include twentieth century trial mining adjacent to Marchlyn quarry, a single earlier trial mine in the same location, a possible winding house structure above Dinorwic quarry and the remains of a breached dam and reservoir that was once used to power Penrhyn quarry.
- 6.1.4 **Recreation:** limited numbers of recreational structures were identified in the study area relating to nineteenth and twentieth century grouse shooting associated with the Penrhyn estate and also several twentieth century walkers shelters on the high summits. It did not seem that any of the shelters had been constructed out of prehistoric summit cairns.

7. RECOMMENDATIONS

7.1 RECOMMENDATIONS FOR FURTHER WORK

- 7.1.1 It is recommended that investigation in the form of palynological sampling and peat coring be undertaken within the study area. Sampling should take place in the boggy areas on the northern limits of the study area between Gwaen Gynfi and Mynydd Llandegai. Archaeological sites in the form of hut circle settlement (albeit outside of the present study area) lie nearby to the east and also slightly further afield on the hills to the west and north. This would not provide an absolute chronology for the sites, but palynological work from peat adjacent to the sites would be able to determine periods of agricultural, and more specifically, arable activity in the vicinity of the sites.
- 7.1.2 Detailed survey and documentary analysis could also be profitably undertaken on the domestic structures located on the land above Nant Peris, and also the grouping of potentially transhumance features nestling within Cwm Gafr located upslope to the north-east. The putative stock enclosure/hut identified within the Caernarvonshire Inventory in the same location (NMR 270000, Plate 2) may also require further investigation as, although the earthwork remains undated, it could potentially pre-date the post-medieval period in origin.

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APPENDIX 1 GAZETTEER OF NEW SITES

NPRN	NGR	TYPE	PERIOD	ALTITUDE
25981	SH6148059230	House	Post-medieval	380
270000	SH6097059360	Earthwork	Post-medieval	350
270001	SH6204062780	Shelter	Modern	820
270002	SH6181359725	Structure	Unknown	480
270003	SH6119261301	Shelter	Modern	925
270004	SH6163359762	Sheep Fold	Post-medieval	530
270005	SH6145559748	Sheep Fold	Post-medieval	450
270006	SH6127759859	Boundary Wall	Post-medieval	370
270007	SH6116959583	Cottage	Post-medieval	365
270008	SH6108259595	Sheep Fold	Post-medieval	340
270009	SH6104459579	Sheep Shelter	Post-medieval	340
270010	SH6104159240	Byre	Post-medieval	315
270011	SH6107059132	Sheep Fold	Post-medieval	300
270012	SH6069859701	Boundary Wall	Post-medieval	360
270013	SH6077559637	House Platform	Post-medieval	315
270014	SH6079759623	House Platform	Unknown	320
270015	SH6057859942	Sheep Fold	Post-medieval	445
270016	SH6042660398	Sheep Fold	Post-medieval	635
270017	SH6037560440	Sheep Shelter	Post-medieval	645
270018	SH6070360302	Sheep Fold	Post-medieval	570
270019	SH6074460504	Boundary Wall	Post-medieval	650
270020	SH6069660269	Sheep Fold	Post-medieval	560
270021	SH6154760624	Sheep Fold	Post-medieval	440
270022	SH6160260621	Sheep Fold	Post-medieval	435
270023	SH6167960768	Sheep Shelter	Post-medieval	470
270024	SH6108959679	Sheep Fold	Post-medieval	330
270025	SH6146159236	Store	Post-medieval	380
270026	SH6156159358	Sheep Shelter	Post-medieval	410
270027	SH6158159366	Sheep Shelter	Post-medieval	405
270028	SH6163459441	Hut	Post-medieval	395
270029	SH6163459488	Sheep Fold	Post-medieval	430
270030	SH6170359603	Sheep Fold	Post-medieval	460
270031	SH6173959722	Structure	Post-medieval	485
270032	SH6177459781	Sheep Fold	Post-medieval	500
270033	SH6180359830	Sheep Fold	Post-medieval	515
270034	SH6187859961	Structure	Post-medieval	550
270035	SH6198560043	Sheep Shelter	Post-medieval	560
270036	SH6201759992	Sheep Shelter	Post-medieval	550
270037	SH6201559941	Sheep Shelter	Post-medieval	540
270038	SH6206059790	Sheep Shelter	Post-medieval	530
270039	SH6175359519	Platform	Unknown	475
270040	SH6168759411	Sheep Shelter	Post-medieval	430
270041	SH6165659371	Sheep Shelter	Post-medieval	425
270042	SH5955361848	Sheep Fold	Post-medieval	500
270043	SH5966561997	Quarry Trial	Post-medieval	500
270044	SH5971562165	Quarry Trial	Post-medieval	500

270045	SH5978262198	Sheep Shelter	Post-medieval	525
270046	SH5985962278	Quarry Trial	Post-medieval	525
270047	SH5995062335	Boundary Bank	Post-medieval	525
270048	SH5954062299	Sheep Fold	Post-medieval	500
270049	SH5959662203	Sheep Fold	Post-medieval	500
270050	SH5928462157	Sheep Shelter	Post-medieval	450
270051	SH5929861980	Sheep Shelter	Post-medieval	450
270052	SH6102962323	Sheep Fold	Post-medieval	520
270053	SH6076562700	Sheep Fold	Post-medieval	490
270054	SH6058862615	Trial Mine	Post-medieval	500
270055	SH6032063081	Sheep Fold	Post-medieval	400
270056	SH6002363350	Boundary Stone	Post-medieval	380
270057	SH5958761794	Sheep Shelter	Post-medieval	490
270058	SH5952661706	Sheep Shelter	Post-medieval	480
270059	SH5959361418	Sheep Fold	Post-medieval	480
270060	SH5963861579	Sheep Shelter	Post-medieval	500
270061	SH6032562301	Sheep Shelter	Post-medieval	570
270062	SH6012062195	Trial Mine	Post-medieval	560
270063	SH6013962194	Sheep Shelter	Post-medieval	570
270064	SH6003061956	Sheep Shelter	Post-medieval	560
270065	SH5991061984	Trial Mine	Post-medieval	550
270066	SH6040260372	Sheep Shelter	Post-medieval	630
270067	SH6031961247	Sheep Shelter	Post-medieval	795
270068	SH6029461228	Marker Cairn	Post-medieval	795
270069	SH6037861344	Marker Cairn	Post-medieval	780
270070	SH6062561804	Sheep Shelter	Post-medieval	690
270071	SH6053861828	Sheep Shelter	Post-medieval	700
270072	SH6042561727	Sheep Shelter	Post-medieval	715
270073	SH6003461304	Winder House	Post-medieval	650
270074	SH6000861573	Sheep Fold	Post-medieval	650
270075	SH6231861891	Shelter	Modern	810
270076	SH6175363190	Shelter	Modern	720
270077	SH6169563131	Sheep Shelter	Post-medieval	700
270078	SH6157962859	Sheep Shelter	Post-medieval	620
270079	SH6168259039	Sheep Fold	Post-medieval	420
270080	SH6195759407	House Platform	Medieval?	450
270081	SH6203058622	Sheep Fold	Post-medieval	500
270082	SH6206158565	Sheep Shelter	Post-medieval	490
270083	SH6232758526	Sheep Shelter	Post-medieval	550
270084	SH6307058516	Sheep Shelter	Post-medieval	800
270085	SH6310958536	Sheep Shelter	Post-medieval	810
270086	SH6290458272	House Platform	Medieval?	650
270087	SH5936764849	Trackway	Post-medieval	320
270088	SH5940464841	Trackway	Post-medieval	320
270089	SH6041263871	Sheep Fold	Post-medieval	345
270090	SH6022964558	Shooting Mound	Post-medieval	310
270091	SH6024264565	Shooting Mound	Post-medieval	310
270092	SH6002864789	Dam	Post-medieval	305
270093	SH6022164497	Shooting Mound	Post-medieval	315
270094	SH6020664419	Shooting Mound	Post-medieval	315
270095	SH6019264340	Shooting Mound	Post-medieval	320

270096	SH6018264265	Shooting Mound	Post-medieval	320
270097	SH6014164323	Shooting Mound	Post-medieval	320
270098	SH6013664384	Shooting Mound	Post-medieval	315
270099	SH6012964458	Shooting Mound	Post-medieval	315
270100	SH6012464522	Shooting Mound	Post-medieval	315
270101	SH6014464268	Shooting Mound	Post-medieval	320
270102	SH6017564246	Shooting Mound	Post-medieval	320

ILLUSTRATIONS

Figure 1: Location of Study area

Figure 2: Snowdonia (Bethesda) Study area

Figure 3: Site distribution showing both pre- and post survey sites (North)

Figure 4: Site distribution showing both pre- and post survey sites (South)

Figure 5: Site distribution within Cwm Gafr and above Nant Peris

PLATES

- Plate 1: Marchlyn Mawr reservoir
- Plate 2: Afon Gafr earthwork (NMR 270000)
- Plate 3: Afon Gafr house remains (NMR 25981)
- Plate 4: Esgair y Ceunant cottage (NMR 270007)
- Plate 5: Esgair y Ceunant sheep fold (NMR 270005)
- Plate 6: Afon Fachwen, trial mine (NMR 270043)
- Plate 7: Elidir Fach winder house (NMR 270073)
- Plate 8: Gwaen Gynfi shooting mounds (NMR 270090 and 270091)
- Plate 9: Llyn y Mynydd dam (NMR 270092)

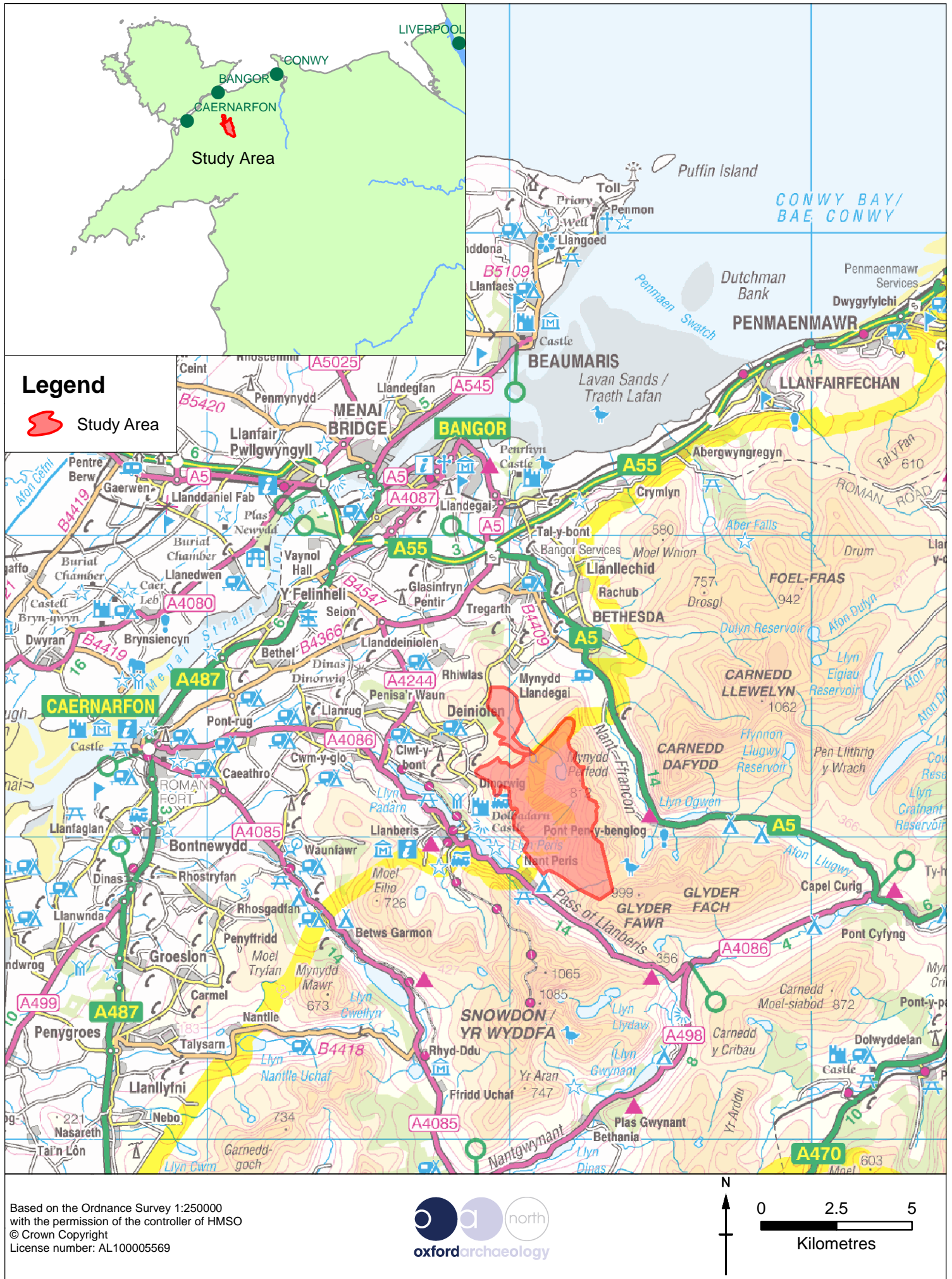


Figure 1: Location of Study Area

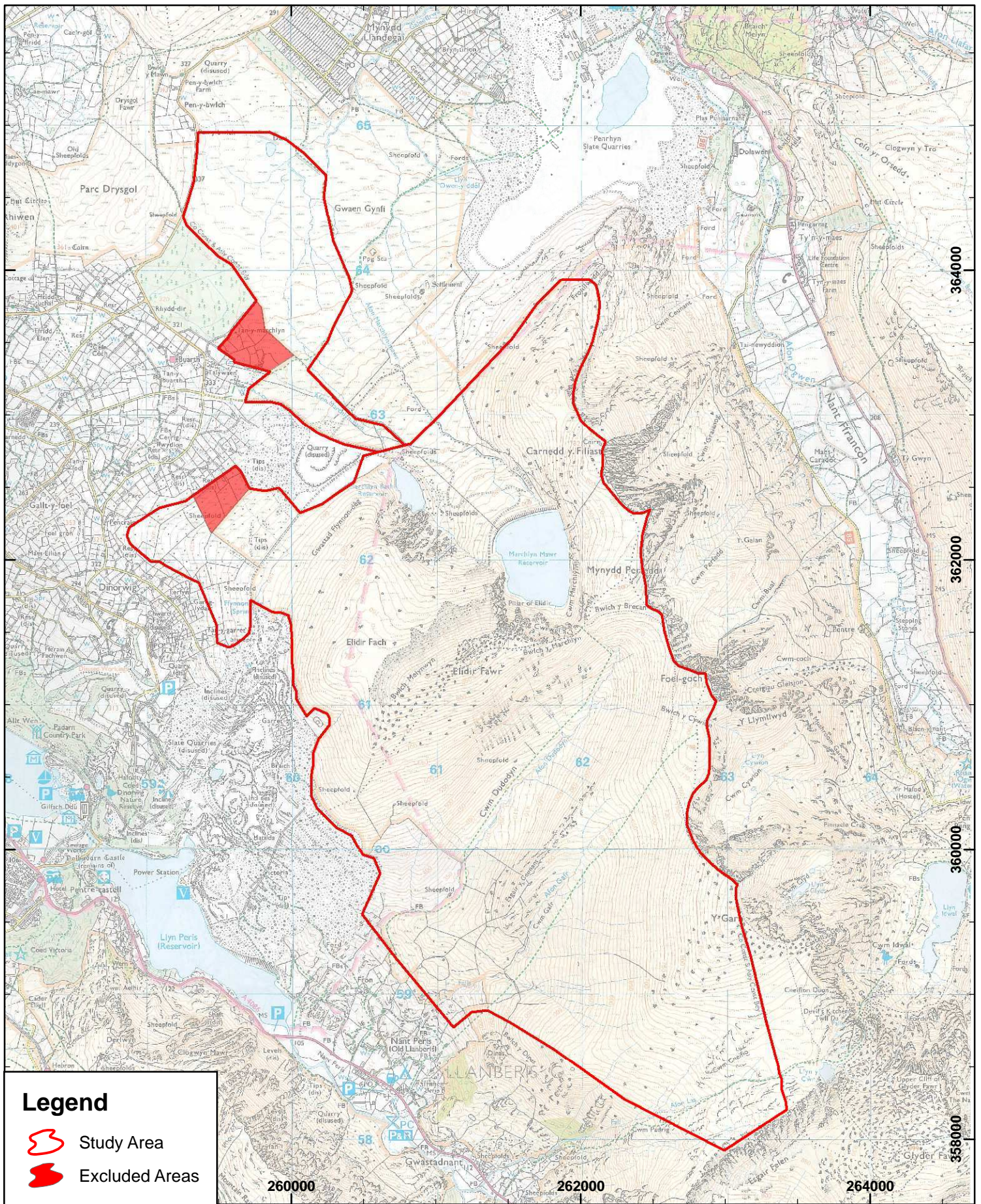


Figure 2: Snowdonia (Bethesda) Study Area

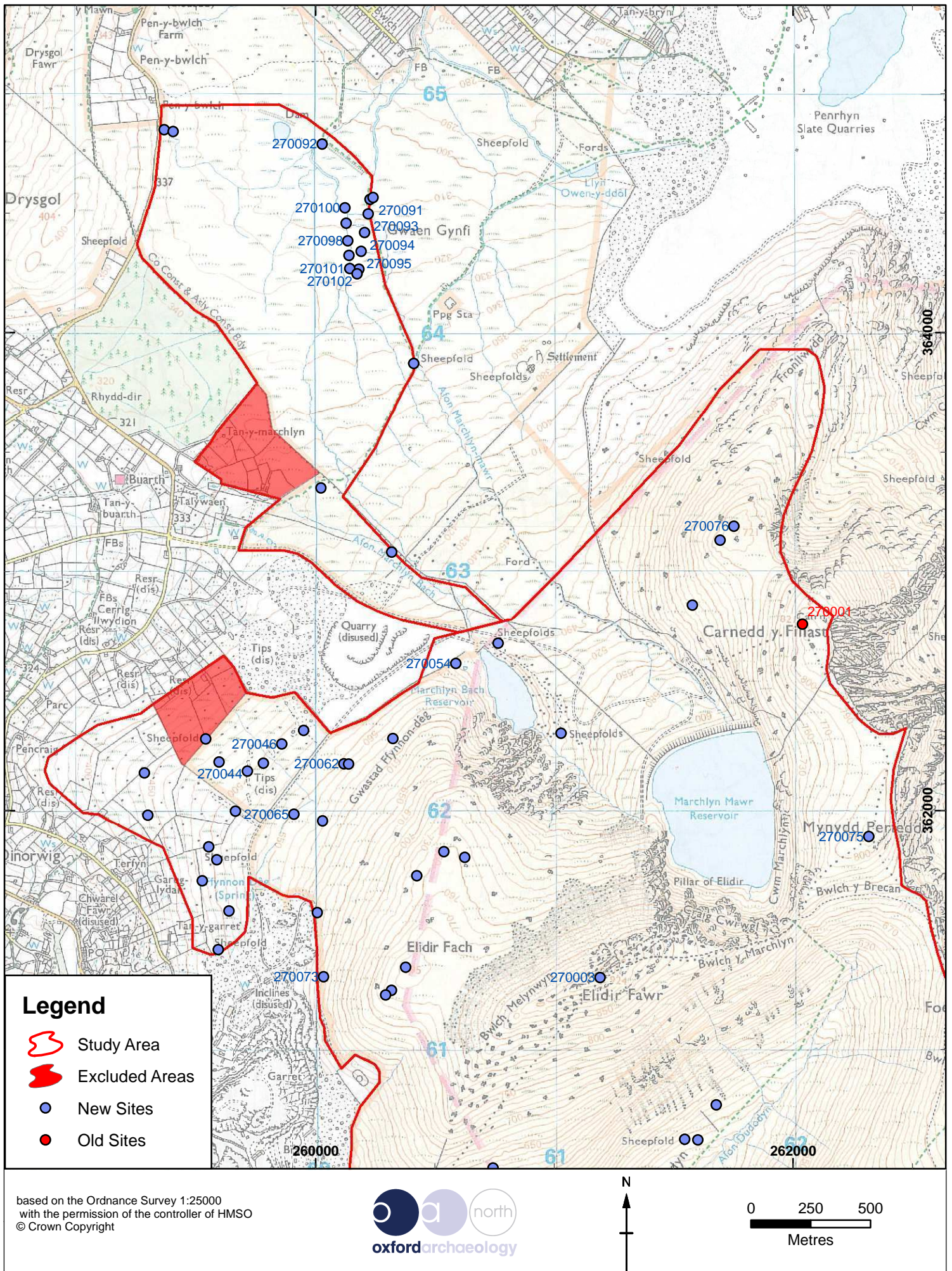


Figure 3: Site distribution showing both pre- and post survey sites (North)

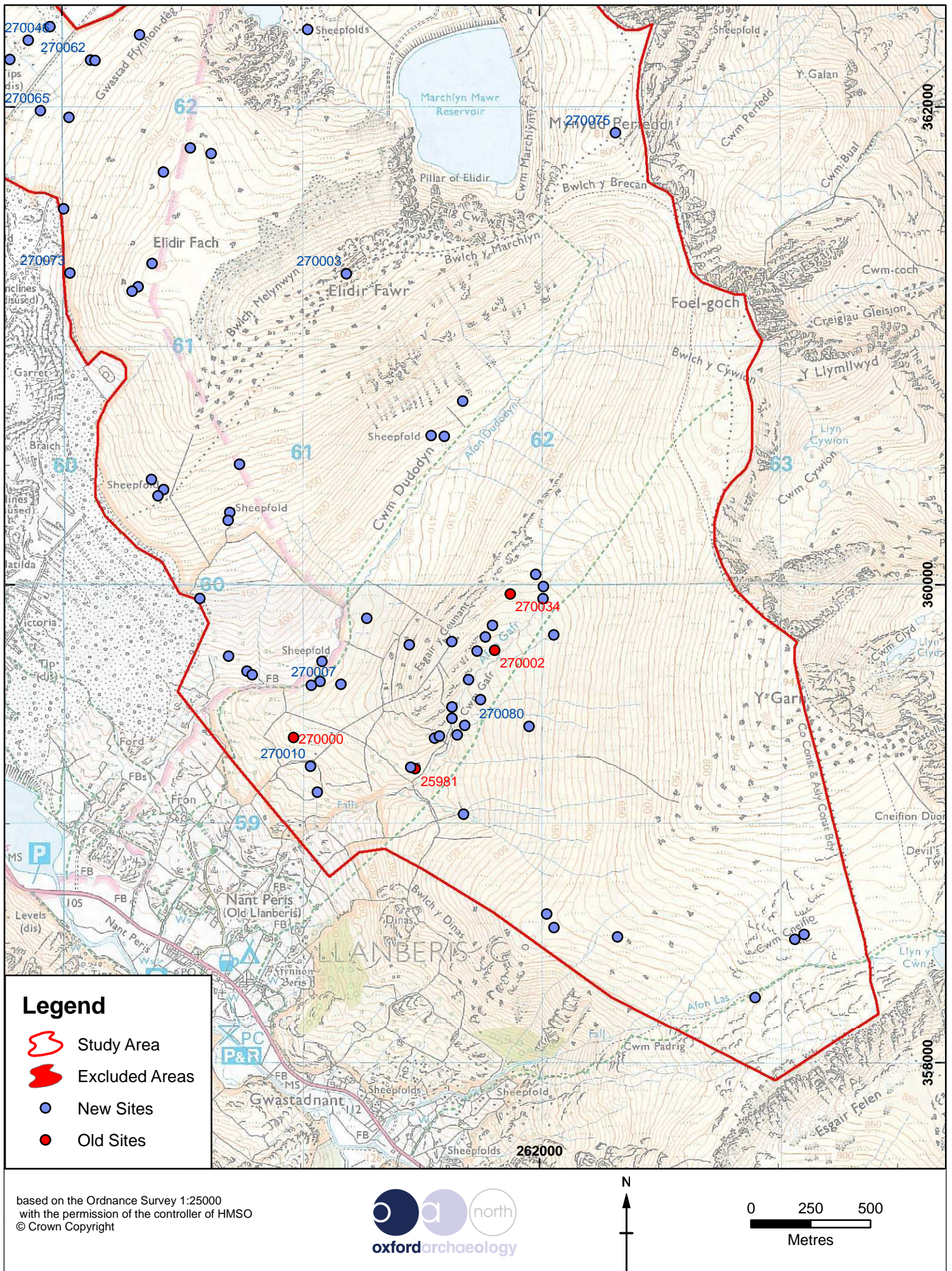


Figure 4: Site distribution showing both pre- and post survey sites (South)

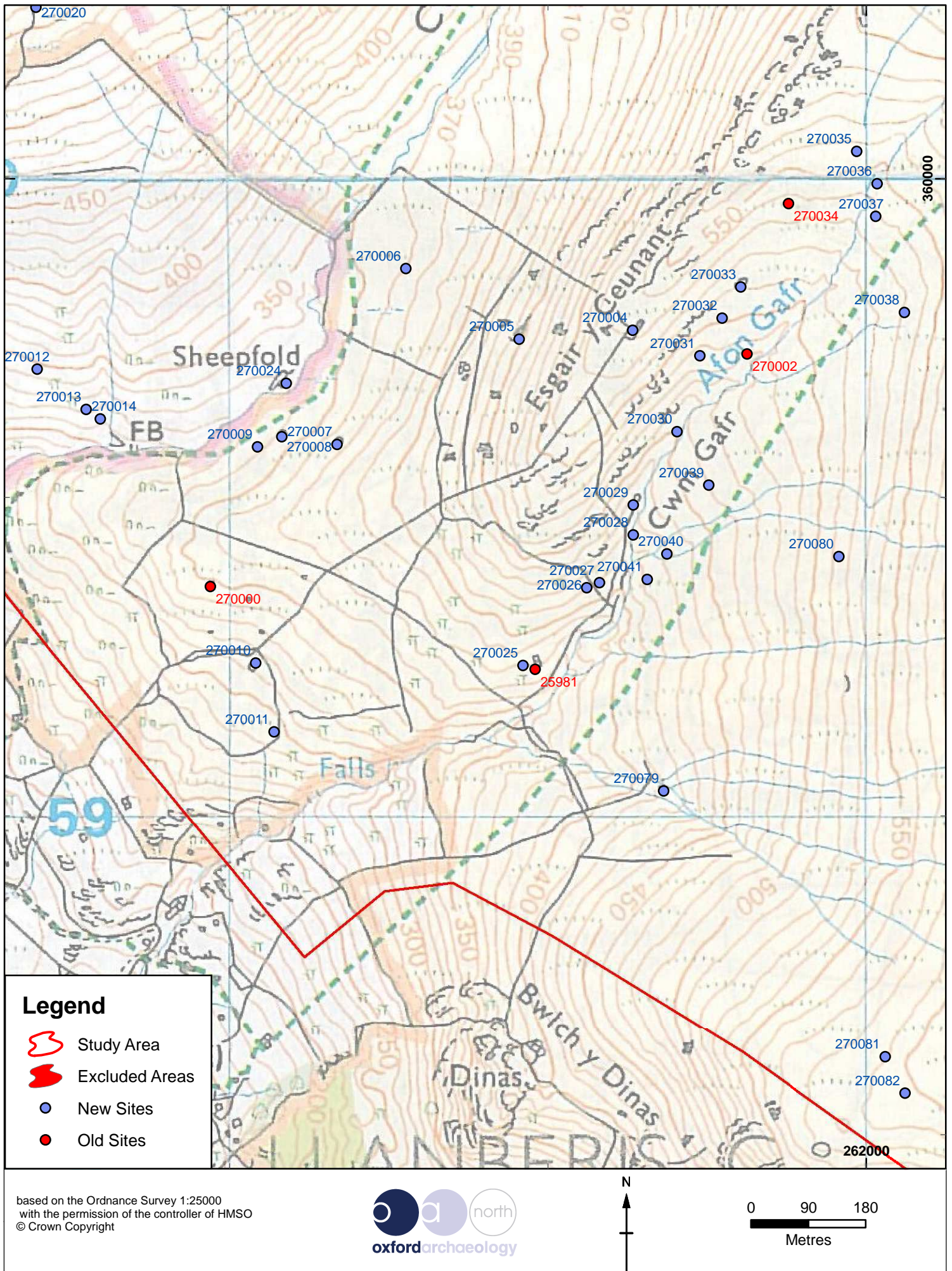


Figure 5: Site distribution within Cwm Gafr and above Nant Peris



Plate 1: Marchlyn Mawr reservoir



Plate 2: Afon Gafr earthwork (NMR 270000)



Plate 3: Afon Gafr house remains (NMR 25981)

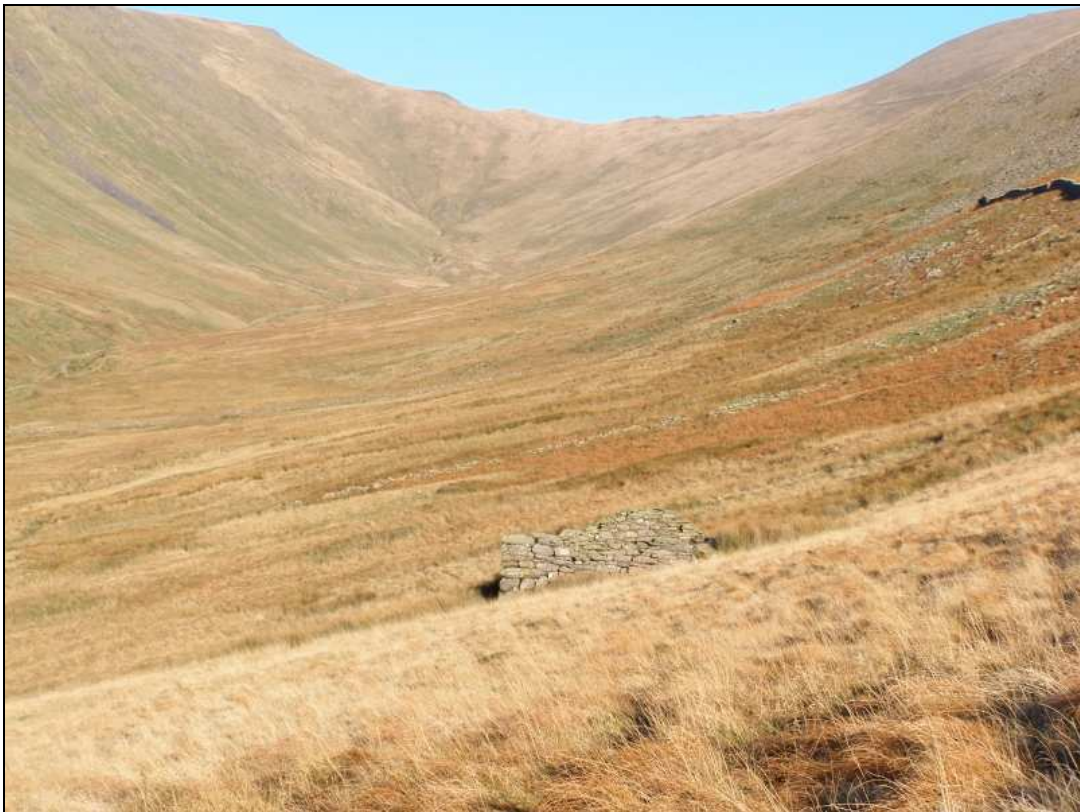


Plate 4: Esgair y Ceunant cottage (NMR 270007)



Plate 5: Esgair y Ceunant sheep fold (NMR 270005)



Plate 6: Afon Fachwen, trial mine (NMR 270043)



Plate 7: Elidir Fach winder house (NMR 270073)



Plate 8: Gwaen Gynfi shooting mounds (NMR 270090 and 270091)



Plate 9: Llyn y Mynydd dam (NMR 270092)