

**PROPOSED SOLAR FARM – LAND AT
MAES Y GARN, CEREDIGION:
ARCHAEOLOGICAL DESK-BASED
ASSESSMENT
NGR SN 48111 49270**



Prepared by DAT Archaeological Services
For: Caulmert Engineering,
Environment and Planning



DYFED ARCHAEOLOGICAL TRUST

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PROPOSED SOLAR FARM – LAND AT MAES Y GARN, CEREDIGION: ARCHAEOLOGICAL DESK-BASED ASSESSMENT

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Proposed Solar Farm – Land at Maes y Garn, Ceredigion:
Archaeological Desk-Based Assessment

PROPOSED SOLAR FARM – LAND AT MAES Y GARN, CEREDIGION: ARCHAEOLOGICAL DESK-BASED ASSESSMENT

SUMMARY

DAT Archaeological Services was commissioned by Caulmert Engineering, Environment and Planning, to prepare an Archaeological Desk Based Assessment of a proposed solar farm on land at Maes y Garn farm in Ceredigion. The aim of this assessment is to provide more information about the potential effects upon the historic environment by the development proposals. This report will be used by planners to help make an informed decision on the proposals in regards to archaeology and the historic environment.

The proposed solar farm development site is centered on NGR SN 48111 49270 and covers an area of 34.7ha. The buildings of Maes y Garn lie roughly at the centre of the proposed site. The development site comprises fields surrounding the buildings, mostly to the northwest and southeast. An access track leads to the farm from the nearest public road, the B4338.

A study area of 5km around the boundary of the proposed development site was used to obtain information on the known registered heritage assets within the area. Six Scheduled Ancient Monuments, one grade I listed building, two grade II listed buildings and nineteen grade II listed buildings exist within the 5km study area. There are no registered heritage assets within 1km of the boundary of the proposed development site, but a search of the HER and NMR for other archaeological and historical sites returned sixteen records, mainly of low significance within the 1km area. Three records of higher significance were found: the findspot of a prehistoric spindle whorl, the findspot of a Bronze Age cinerary urn, and the site of a Bronze Age round barrow.*

The majority of the known sites recorded are of post-medieval or modern date such as existing buildings, milestones and quarries. The land of the proposed solar farm site appears to have been used as agricultural land probably since the medieval period.

Later prehistoric activity is represented within 5km of the proposed site boundary by known sites and this and predictive modelling imply a moderate potential for further below-ground remains at the site. The site is a likely location for Bronze Age and/or Iron Age activity due to its location on south-facing, gentle slopes with many springs and watercourses present.

It is concluded that the development proposal will have no physical impact on any known archaeological remains within the development site or study area. There is a potential that the works could impact upon hitherto unknown archaeological remains, especially those of Bronze Age and Iron Age date.

The impact of the proposed solar farm on the wider historic environment in terms of visual impact is considered low. The development will mostly be low level and as the surrounding field boundaries will be retained. There is unlikely to be a permanent effect on the wider historic environment.

Further archaeological investigation of the site area, potentially in the form of geophysical survey is likely to be required to ascertain whether any archaeological remains are present. If any such remains exist, such information can then be used to determine whether there would be a requirement for alteration to the development proposals to avoid archaeological remains, or whether further archaeological investigation would be necessary.

1 INTRODUCTION

1.1 Project Proposals and Commission

- 1.1.1 DAT Archaeological Services were commissioned by Caulmert Engineering, Environment and Planning, to provide an archaeological desk based assessment for the site of a proposed solar farm on land at Maes y Garn in Ceredigion. The aim of the desk-based assessment is to provide enough information regarding the historic environment and potential impacts upon it to enable the planners to make an informed decision on the proposal as regards archaeological and historic environment issues.
- 1.1.2 The proposed solar farm development is located on land (centred on NGR SN 48111 49270) covering an area of approximately 3.74ha (Figures 1 and 2).

1.2 Scope of the Project

- 1.2.1 The assessment comprised the examination and collation of available sources of information including:
- Information on known archaeological and historic sites recorded on the regional Historic Environment Record (HER) held and maintained by DAT, including a search of available cartographic and pictorial sources, published and unpublished works, aerial photographs and any relevant web-based information;
 - Relevant information held by the Royal Commission on Ancient and Historic Monuments in Wales (RCAHMW) via the COFLEIN online computer database and information on Conservation Areas or Historic Landscape Areas within or in the vicinity of the site area from information held by DAT and CCW (now Natural Resources Wales) Landmap website;
 - A check of online catalogues of Ceredigion Records Office to determine if any relevant documents or maps were held regarding the Maes Y Garn site;
 - A search of Cadw's Listed Building records and Schedule of Ancient Monuments for designated buildings and sites of archaeological and historical importance lying on or in close proximity to the site;
 - A site visit to determine the presence or absence of visible archaeology or evidence for previous ground disturbance within the proposed development area.
- 1.2.2 The results of the assessment contained in this report are intended to identify the extent and character of the known and potential archaeological resource, to assess the likely and potential impacts of any development on that resource and to outline a possible programme of further works to mitigate those impacts. The assessment should be seen only as the first stage of the archaeological process and does not preclude the possibility that further archaeological input may be required prior to, or during, any proposed development.
- 1.2.3 A study area of up to 5km around the perimeter of the solar farm development boundary was used to ascertain the known registered archaeological and historical resource and a 1km search area for undesignated sites.
- 1.2.4 A Written Scheme of Investigation was prepared by DAT Archaeological Services which outlined the methodology used in this report.

1.3 Abbreviations

- 1.3.1 All sites recorded on the regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Record Number (NPRN). Scheduled Ancient Monument (SAM). Altitude is expressed to Ordnance Datum (OD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section at the rear of the report.

1.4 Illustrations

- 1.4.1 Printed map extracts are not necessarily reproduced to their original scale.

1.5 Timeline

- 1.5.1 The following timeline (Table 1) is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text.

Period	Approximate date	
Palaeolithic –	c.450,000 – 10,000 BC	Prehistoric
Mesolithic –	c. 10,000 – 4400 BC	
Neolithic –	c.4400 – 2300 BC	
Bronze Age –	c.2300 – 700 BC	
Iron Age –	c.700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – c. AD 410	Historic
Post-Roman / Early Medieval Period –	c. AD 410 – AD 1086	
medieval Period –	1086 – 1536	
post-medieval Period ¹ –	1536 – 1750	
Industrial Period –	1750 – 1899	
modern –	20th century onwards	

Table 1: Archaeological and Historical Timeline for Wales

¹ The post-medieval and Industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust



Figure 1: Location map based on the Ordnance Survey. Proposed development location outlined in red

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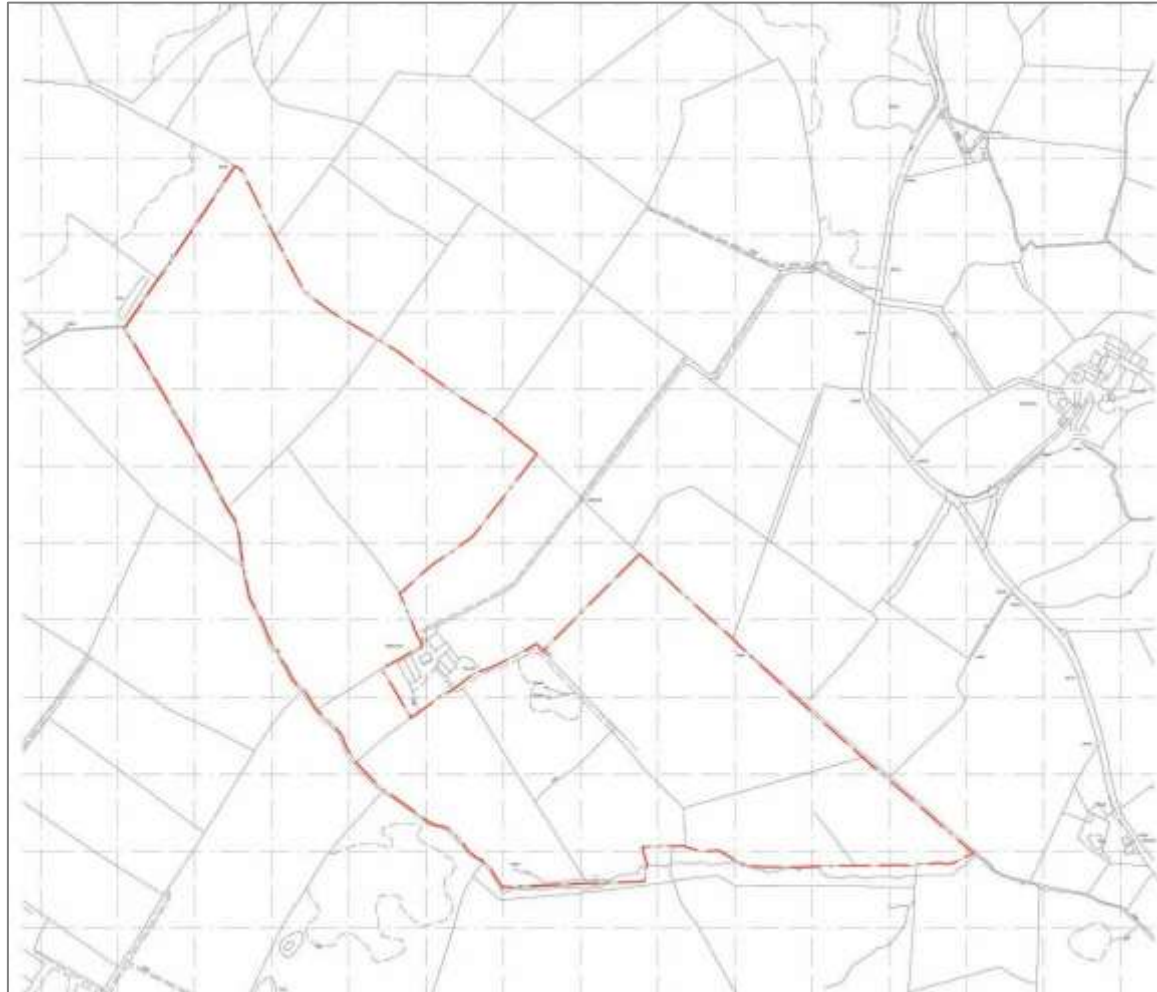


Figure 2: Proposed development location marked with a red outline. Plan supplied by client (not to scale)

2 SITE LOCATION AND TOPOGRAPHY

- 2.1 The proposed solar farm development site is centered on NGR SN 48111 49270 and covers an area of 34.7ha (Figures 1 and 2).
- 2.2 The site lies 9km to the west of the town of Lampeter in Ceredigion, and 6km northwest of the town of Llanybydder in Carmarthenshire. The nearest village is Cwrtnewydd, 1km to the southeast.
- 2.3 The boundaries of the site follow existing field boundaries around the farm of Maes y Garn, which borders the site along with other fields. A track leads from the farm to the nearest road to the northeast, the B4338.
- 2.4 The proposed development site lies on the gently sloping southeast-facing side of a hill. The lowest point on the site is at about 200m OD and the highest at between 270m and 280m OD. Streams run along about three-quarters of the site boundary, and there are springs, streams and wet ground within the southern half of the site.
- 2.5 The underlying bedrock over the whole of the proposed development site is a silty mudstone of the Ashgill epoch, a formation known as Yr Allt. Covering the bedrock over the southern part of the site and a small part of the northern part of the site is Devensian Till laid down by the Welsh ice sheet during the last glacial period.

3 METHODOLOGY

- 3.1 This Archaeological Desk Based Assessment has been prepared using the following methodology which has been discussed and agreed with the archaeological advisors to the planning authority. A written scheme of investigation detailing this methodology was prepared and submitted for approval to the archaeological advisors to the planning authority.
- 3.2 A study area which comprised the main area of the solar farm development itself and a buffer zone of up to 5km around its boundary (as shown in Figure 3) was used to ascertain the extent of known archaeology within and in the vicinity of the site area.

Desk Top Study

- 3.3 The desk-based assessment has been prepared using the following sources of information:
- Dyfed Archaeological Trust Historic Environment Record data and other relevant information;
 - National Monuments Record of Wales information as held by the Royal Commission on the Ancient and Historic Monuments of Wales in Aberystwyth (via the COFLEIN website);
 - Bibliographic, cartographic and photographic information held at the Local Archives and the National Library of Wales;
 - Identification of any Scheduled Ancient Monuments, Listed Buildings, Historic Landscape Character Areas or Conservation Areas within or in the vicinity of the site area;
 - Relevant web-based information;
 - Site visit and walkover survey;
 - Assessment of the archaeological potential of the area; and
 - Assessment of likely impacts on any identified remains (or potential remains) and likely requirements, if any, for further stages of archaeological work.
- 3.4 The report complies with the relevant Chartered Institute for Archaeologists (CIfA) standards and guidance.

Site Walkover Survey

- 3.5 A detailed site visit was undertaken on the 22nd January 2015. The visit comprised a walkover of the proposed solar farm development site and views looking back to the site from its surroundings. Photographs were taken and field observations recorded in note form. All areas of the site were accessible.

4 HISTORICAL, LANDSCAPE AND ARCHAEOLOGICAL BACKGROUND

4.1 Archaeological and Historic Background

- 4.1.1 The *Cardiganshire County History* (Davies and Kirby 1994) highlights the relative dearth of evidence for the presence of man in the county before the Bronze Age; the monumental stone burial chambers that characterise the early farmers of the Neolithic period are almost completely absent. Some artefactual evidence has been found at chance findspots, however, in the form of stone and antler implements. These date to both the Mesolithic and the Neolithic periods. The older Palaeolithic period is unlikely to be represented in this area due to the removal of any archaeological layers by the movement of ice during our last glaciation.
- 4.1.2 Evidence for the Bronze Age in Ceredigion is far more apparent, mainly in the form of numerous burial monuments such as round barrows and cairns. There are also many standing stones and some stone circles. The majority of these lie on the highest ground in the east of the county, but there are also many in the hills just north and west of the proposed solar farm development at Maes y Garn.
- 4.1.3 The remains of many hillforts and other types of defended enclosure from the Iron Age are found in abundance in the lower lying western half of the county. There are several of these in the area around the proposed solar farm site. There is hardly any evidence for Roman activity in the area; forts and camps are so far only found in the eastern half of the county along a known Roman road.
- 4.1.4 The Kingdom of Ceredigion was one of several Welsh kingdoms that emerged in the 5th century AD and persisted until the Norman Conquest in the 13th century. Its area corresponded roughly to that of the modern county of Ceredigion. Some of the exploits of the rulers of Ceredigion from this time are documented, for example in the *Chronicle of the Princes* (Jones 1973), which describes the various civil wars enacted by rulers such as Maredydd ap Owain, Llywelyn ap Iorwerh and Maelgwn ap Rhys from the 10th century onwards. It was also written in the *Chronicle* and elsewhere that Danes and Northmen also caused trouble in these parts. Castle earthworks such as mottes and ringworks started to appear with the arrival of the Normans in Britain in 1066 and are monuments to the power strife between the Welsh princes, and subsequently between the Welsh princes and Norman invaders.
- 4.1.5 The church held a powerful influence during this time and owned much land in the study area. The proposed solar farm site lay, and still lies, in the parish of Llanwenog. Llanwenog village is 4km to the south-southwest of the site, and has a churchyard with Early Medieval origins and a medieval church and holy well. Near to the proposed site, only 500m south, the place-name 'Bryn-yr-eglwys' represents the site of one of four chapels-of-ease to Llanwenog parish church. The chapel was acquired (or established) by Cistercian Whitland Abbey when the surrounding lands were granted to the abbey as the grange of Tir Newydd (Williams 1990).
- 4.1.6 In 1870-72, the *Imperial Gazetteer of England and Wales* described the historic aspects of Llanwenog thus: "*LLANWENOG, a village, a parish, and a sub-district, in Lampeter district, Cardigan.....has a fair on 14 Jan. Acres, 10,720. Real property, £4,374. Pop., 1,521. Houses, 333. High Mead and Llanvaughan are chief residences. The living is a vicarage in the diocese of St. David's. Value, £138 Patron, the Bishop of St. David's. The church is dedicated to St. Gwnog, and has a tower.*"

- 4.1.7 The population stated above of 1521 inhabitants has lessened compared to an earlier count by Lewis in 1833 (*A Topographical Dictionary of Wales*), and this decline continued during the nineteenth century. Traditional industry reduced, agriculture was ever more in crisis and it became difficult for people to live. Subsequently, there was much emigration to the south Wales valleys, and the landed estates of the county got deeply into debt. Their debt contributed to the loss of landowner influence in the politics of the county (Davies 2007).

4.2 Historic Landscape Character Areas

- 4.2.1 The proposed solar farm development does not lie within the boundaries of any Historic Landscape Character (HLC) areas recorded on the Register of Landscapes of Outstanding Historic Interest in Wales (Cadw 1998).
- 4.2.2 No HLCs lie within 5km of the site boundary.

4.3 LANDMAP

- 4.3.1 The proposed solar farm development lies within landscape areas recorded on the National Resources Wales (NRW) LANDMAP database. LANDMAP is a GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set.
- 4.3.2 Most of the proposed solar farm development site lies within the Llanfihangel Ystrad Historic Landscape Aspect Area CRDGNHL086, which is summarised thus: *"This is a large agricultural area of dispersed farms set in a landscape of mostly small irregular fields, but with pockets of more regular medium-sized fields. There are currently 224 HERs, 28 LBs and 8 SAMs in the area, primarily relating to medieval and post medieval buildings, and Iron Age hillforts."*
- 4.3.3 The northern-most field of the site lies within the Crug Moel Historic Landscape Aspect Area CRDGNHL070. Its summary states that: *"This is an area generally lying over 250m and consists of large, fairly regular enclosures of improved pasture. There is very little rough ground. There are no dwellings. Apart from small coniferous plantations at the northern end of the area, this is largely a treeless landscape. The fields were probably carved out of moorland during the 19th century. There are currently 15 HERs, and 2 SAMs in the area, primarily relating to Bronze Age funerary monuments, post medieval cottage sites and quarries."*
- 4.3.4 The value of these historic landscape areas is classed as 'high,' which means that: *"The historic landscape is a good example of a Ceredigion agricultural landscape and the area contributes to the general historic landscape character of the wider region."* The management recommendations for both areas include maintenance of existing field boundaries, maintenance of the traditional appearance of buildings and control of stock levels, emphasizing that: *"Change of settlement pattern and agricultural management may be inappropriate."*
- 4.3.5 The proposed solar farm site also lies in its entirety in Lowland Cultural Landscape Aspect Area CRDGNCL029, essentially a farming landscape of small villages and other nucleations, and farms. The Management recommendations are: *"Encouragement to co-operation and sharing of experience between small craft-based businesses; encouragement to further agricultural diversification."*

- 4.3.6 The Visual and Sensory Aspect Areas in which the southern part of the proposed solar farm is to be situated is Llanwenog Farmland CRDGNVS499. Its value is classed as 'high' because the: *"Landscape has a consistent and integral tapestry of beech and other hedges and trees. It feels distinctive in parts and is attractive throughout."* It is recommended that hedges, trees/copses and small fields should be conserved and enhanced. It also emphasises that the area is: *"unspoilt by development and is consistent in character and in good condition throughout."*
- 4.3.7 The northern part of the site is situated in the Talgarreg Plateau Visual and Sensory Aspect Area CRDGNVS546. It is summarised thus: *"The area is settled with a scattering of farms and feels relatively isolated. The lack of human scale and openness is unsettling, although the contrast between wooded Teifi tributary valleys and the open plateaux is refreshing and dramatic."* It is recommended that hedgebanks and hedges should be restored where they exist, as should deciduous shelter belts.

4.4 Known Archaeological Sites

- 4.4.1 The following information is taken from Cadw Schedule of Ancient Monuments, Listed Building information, regional Historic Environment Record data and RCAHMW National Monuments Record. Archaeological and historical significance is ascribed to the sites according to the following criteria:

Site Category (SC)	Definition of Site Category
A	Features of national importance - Scheduled Ancient Monuments, Listed buildings Grade I and II*, well preserved historic landscapes, registered parks and gardens and historic battlefields
B	Non-scheduled sites of regional or county importance. Listed Buildings Grade II, reasonably preserved historic landscapes
C	Features of district or local importance but generally common features at a national or regional level
D	Minor sites or sites so badly damaged that too little now remains to justify their inclusion in a higher grade
U	Features about which insufficient is known to attribute them to a higher rank, or which cannot be sufficiently accurately located to justify their consideration

Table 2: Site category definitions

Scheduled Ancient Monuments

- 4.4.2 There are six Scheduled Ancient Monuments within a 5km search area around the proposed solar farm (Table 3, Figure 3). The following information has been compiled from the HER and NMR site descriptions.
- 4.4.3 Gaer Maesmynach (Cribyn Gaer) (SAM no. CD080) is a ridge-top univallate defended enclosure lying at 210m above sea level. It is 4.2km ENE of the proposed solar farm and is possibly visible from it. Gaer Maesmynach is naturally protected by steep slopes to the west, north and east. On the southeast side the approach is fairly level and is

protected by a short length of outer bank. The inner defence consists of a bank and ditch 15m wide and 5m high overall. The main enclosure is sub-circular in shape, approximately 100m north - south and 80m east - west. A simple entrance lies on the southeast side. A possible building platform, 14m by 4.0m, is set into the north rampart.

- 4.4.4 Whilgarn (SAM no. CD165) is a ring barrow comprising a setting of stones and internal mound, c.17m in diameter, surrounded by a wide circular ring of earth and stone with an external ditch, giving the monument an overall diameter of c.35m. It is 3.2km northwest and will not be visible from the solar farm due to the presence of a large hill between the two sites.
- 4.4.5 Castell Hywel (SAM no. CD084) is a sub-circular steep-sided mound, set on the western point of a spur above the valley of the Clettwr Fach, thought to represent a medieval castle motte. The mound is about 40m in diameter and rises 9.5m to a level summit, 18m in diameter, mutilated by trenching; ditched except on the west, where it rests on a 12m high scarp above the valley bottom. It is identified with Humphrey's Castle, recorded as destroyed in 1136 and rebuilt in 1153. Castell Hywel lies 3.9km away to the east-northeast on the other side of a hill from the proposed solar farm, which will obscure it from view.
- 4.4.6 Castell Moeddyn (SAM no. CD082) is a hilltop enclosure that lies on the southern side of a rounded hilltop at 270m above sea level in a naturally well defended location. It is strongly defended by a rampart on the north, where it is easily approachable, but more weakly defended along the steep slopes to the southwest, south and east. On these sides the hill falls steeply away to the Afon Grannell over 70m below. At its best preserved section on the northwest side the defences consist of a bank, ditch and counterscarp bank 18m long and up to 5m high. A simple entrance lies on the northeast side. The interior is level, and oval in shape, measuring 175m by 78m. At a distance of 2.2km to the SW, the proposed solar farm will be visible from Castell Moeddyn.
- 4.4.7 Castell 270m E of Moeddyn-Fach (SAM no. CD083) is a small inland promontory fort. It is a small triangular-shaped promontory with steep slopes on the west, south and east sides down to small streams, and is heavily defended by a bank and ditch on the north side. Overall this defence measures 35m long, 13m wide and about 2m high. There is a simple entrance about 4m wide in its centre. The interior area enclosed is very small, approximately 50m by 25m. It is probably an Iron Age fort and has also been described as a possible medieval castle site. It is probably inter-visible with the proposed solar farm site, which is 1.3km to its south.
- 4.4.8 Penlan-Noeth (SAM no. CD221) is the remains of an earth and stone built barrow, measuring c.22m in diameter and with a maximum height of 0.6m. The mound has been lowered and spread, but despite this disturbance, the bulk of the barrow remains intact and well defined. It is 2.4km north of the proposed solar farm and is possibly visible from it (the height of the barrow and the solar farm development would suggest any intervisibility is minimal).

Listed Buildings

- 4.4.9 There are twenty two listed buildings within 5km of the proposed solar farm development (Table 4, Figure 4), one of which is grade I listed and two of which are grade II* listed.

- 4.4.10 The grade I listed building is St Gwenog Church (LB no. 9817), which is situated 3.6km SSE of the proposed solar farm. Its listing description gives the reason for its listing as: *".....the most complete medieval church in Cardiganshire, with fine late C15 roof and tower."* Intervening topography means that the proposed solar farm will not be visible from the church.
- 4.4.11 The first grade II* listed building is Felin-hafodwen (LB no. 17436), a 19th century corn mill with documented medieval origins. Its description says it is listed: *"for its exceptional historic interest as a rare survival of a "Vitruvian" mill in SW Wales with the primitive machinery largely intact. Most of the known examples in Cardiganshire are ruined or altered."* The second grade II listed building is Rhiwson Uchaf house-and-byre (LB no. 18374), of the post-medieval period, which is listed because it is: *"one of the very few long-house survivals in Cardiganshire, with scarfed trusses throughout; the survival of painted decoration in the parlour is extremely rare."* The proposed solar farm will not be visible from either of these two buildings.
- 4.4.12 The only grade II listed building that the proposed solar farm will be visible from is the milestone on the A475 east of Cwmsychbant (LB no. 18369). This has been listed: *"....for its historic interest as a survival of early road transport history of the region."*
- 4.4.13 All the other grade II listed buildings are of residential, agricultural or industrial character dating to the post-medieval period, and are not considered to be visible from the proposed solar farm development.

SAM No.	PRN NPRN	Site Name	Summary	Period	NGR	Distance to site	SC
CD080	4794 303883	Gaer Maesmynach	A univallate hillfort with extra defences on the south-east where the ground falls away less steeply.	Prehistoric	SN 52006 50851	3.8km WSW	A
CD165	1852 303843	Whilgarn Ring Cairn	A ring barrow.	Prehistoric	SN 44816 51723	3.2km SE	A
CD084	3983 303827	Castell Hywel	A motte built on a natural spur with a ditch on the east and south.	Medieval	SN 44044 47650	3.9km ENE	A
CD082	1859 303838	Castell Moeddyn	An oval hilltop enclosure defined by a bank ditch and counterscarp bank which are c.18m wide and 4-5m high.	Prehistoric	SN 48488 51951	2.0km SSW	A
CD083	1861 303837	Castell 270m E of Moeddyn-Fach	A small promontory site defended on the east and west by steep natural slopes and by a bank and ditch to the north. The defences are c.13m wide and 2m high overall with a central causewayed entrance.	Prehistoric	SN 47494 51411	1.3km S	A
CD221	9081 405616	Penlan-Noeth, Round Barrow	A circular mound, c.22m in diameter and 0.6m high, situated on the east-facing gentle slope of an arable field.	Prehistoric	SN 47270 52431	2.4km S	A

Table 3: Scheduled Ancient Monuments within 5km of the boundary of the proposed solar farm development site (shown in Figure 3)

LB No. Grade	PRN NPRN	Site Name	Summary	Period	NGR	Distance to site	SC
9810 <i>Grade II</i>	5663 7225	Capel Troedyrhiw (Independent)	Independent Chapel was built in 1808 and rebuilt in 1861 in the Simple Round-Headed style of the long-wall entry type.	post-medieval	SN 49993 52176	3.2km SW	B
9817 <i>Grade I</i>	5636 220	St Gwenog Church	Medieval parish church, large. Consists of a chancel/nave without structural division, a south chapel and a west tower. The organ chamber is early 20th century.	medieval	SN 49389 45526	3.6km NNW	A
10592 <i>Grade II</i>	9891 5267	Castell Hywel, Mydroilyn Road, Castell Hywel	Substantial farmhouse refitted and largely reconstructed in 19th century.	post-medieval	SN 44379 48305	3.5km ENE	B
10593 <i>Grade II</i>	57441 418750	Watermill at Glandwr, Mydroilyn Road, Castell Hywel	A late 19th century watermill, recorded on the 1889 1st edition and 1905 2nd edition Ordnance Survey maps, that retains its large iron, formerly overshot, wheel.	post-medieval	SN 44592 49036	3.0km E	B
10594 <i>Grade II</i>	10042 5260	Yr Efail, Mydroilyn Road, Castell Hywel	Cottage recorded by RCAHMW in 1981. Recorded as Smithy Cottage and therefore presumably associated with a smithy.	post-medieval	SN 44149 48447	3.5km ENE	B
10595 <i>Grade II</i>	57443	Gwaralltyryn, Pontsian Road, Castell Hywel	Farmhouse	post-medieval	SN 43822 47803	4.1km ENE	B
10596 <i>Grade II</i>	57444	Cartshed Range to left of Gwaralltyryn, Pontsian Road, Castell Hywel	Cartshed range	post-medieval	SN 43802 47800	4.1km ENE	B
10597 <i>Grade II</i>	57445	Outbuildings opposite Gwaralltyryn, Pontsian Road, Castell Hywel	Farm outbuildings	post-medieval	SN 43810 47781	4.1km ENE	B
10598 <i>Grade II</i>	57446	Milestone between Rhydowen & Cwymychbant, Cardigan Road, Cwymychbant	Milestone	post-medieval	SN 45158 45727	4.3km NE	B
17429	57693	Cob Cottage in Village	Regional cottage of traditional vernacular	post-	SN 51980 51342	4.1km	B

<i>Grade II</i>	3079	Centre (originally called Troedrhiwfallen)	construction, built in the late eighteenth or early nineteenth century.	medieval		WSW	
17434 <i>Grade II</i>	57697	Stable/carhouse at Penlan-hafodwen	Outbuildings. Penlan-hafodwen is also known as Penlan-capel	post-medieval	SN 51608 50964	3.6km WSW	B
17435 <i>Grade II</i>	57698	Barn at Penlan-hafodwen	Barn. Penlan-hafodwen is also known as Penlan-capel	post-medieval	SN 51656 50962	3.6km WSW	B
17436 <i>Grade II*</i>	57699 24738	Felin-hafodwen	A corn mill, with attached corn-drying kiln, located in Capel Sain Silin is of late 18th -early 19th century date but built on the site of a former medieval manorial mill, in the possession of Strata Florida monastery.	medieval; post-medieval	SN 51597 50916	3.6km WSW	A
17437 <i>Grade II</i>	57700	Milepost outside Tangaer	Milepost	post medieval	SN 52194 50932	4.1km WSW	B
17439 <i>Grade II</i>	57702	Milestone on S side of by-road near Pen-wern Mills	Milestone	post medieval	SN 51518 51450	4.1km WSW	B
17440 <i>Grade II</i>	57703	Milestone on S side of road near Capel Troedyrhiw	Milestone	post medieval	SN 50118 52153	3.2km SW	B
18078 <i>Grade II</i>	57925	Milestone on A475 to W of Llanwnnen	Milestone	post medieval	SN 52498 46859	4.5km WNW	B
18086 <i>Grade II</i>	17416 23842	Pont Abercerdinen	2 arches, each 20 ft. span over river Gramell. Erected 1840's. (Inscription 1843). 2nd class (1878).	post medieval	SN 252809 48113	4.5km WNW	B
18369 <i>Grade II</i>	57942	Milestone on A475 E of Cwmsychbant	Milestone.	post medieval	SN 48311 46157	2.8km N	B
18370 <i>Grade II</i>	57943	Milestone on A475 E of Drefach	Milestone.	post medieval	SN 49690 45850	3.6km NNW	B
18371 <i>Grade II</i>	57944	War Memorial	Commemoration of men of the parish of Drefach who fell during the Great War.	post medieval	SN 50191 45869	3.6km NNW	B
18374 <i>Grade II*</i>	57947 5692	Rhiwson Uchaf house-and-byre	A more or less intact longhouse. Still with thatched roof, scarfed crucks, double floor structure, boarded partitions and slate sinks intact.	post-medieval	SN 50473 46815	3.0km NW	A

Table 4: Listed buildings within 5km of the boundary of the proposed solar farm development site (shown in Figure 4)

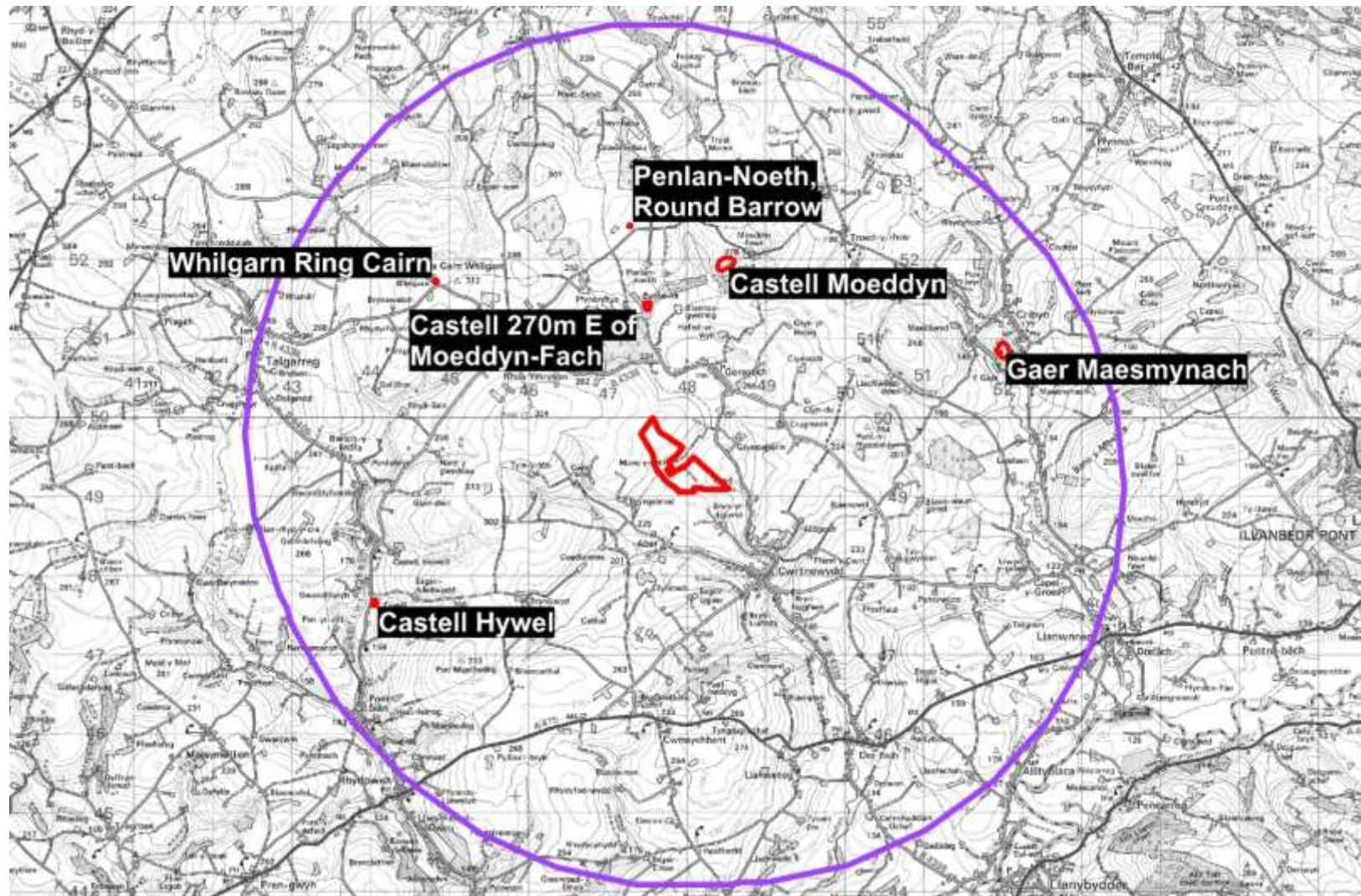


Figure 3: Map showing Scheduled Ancient Monuments within the 5km search area around the proposed solar farm (red boundary)

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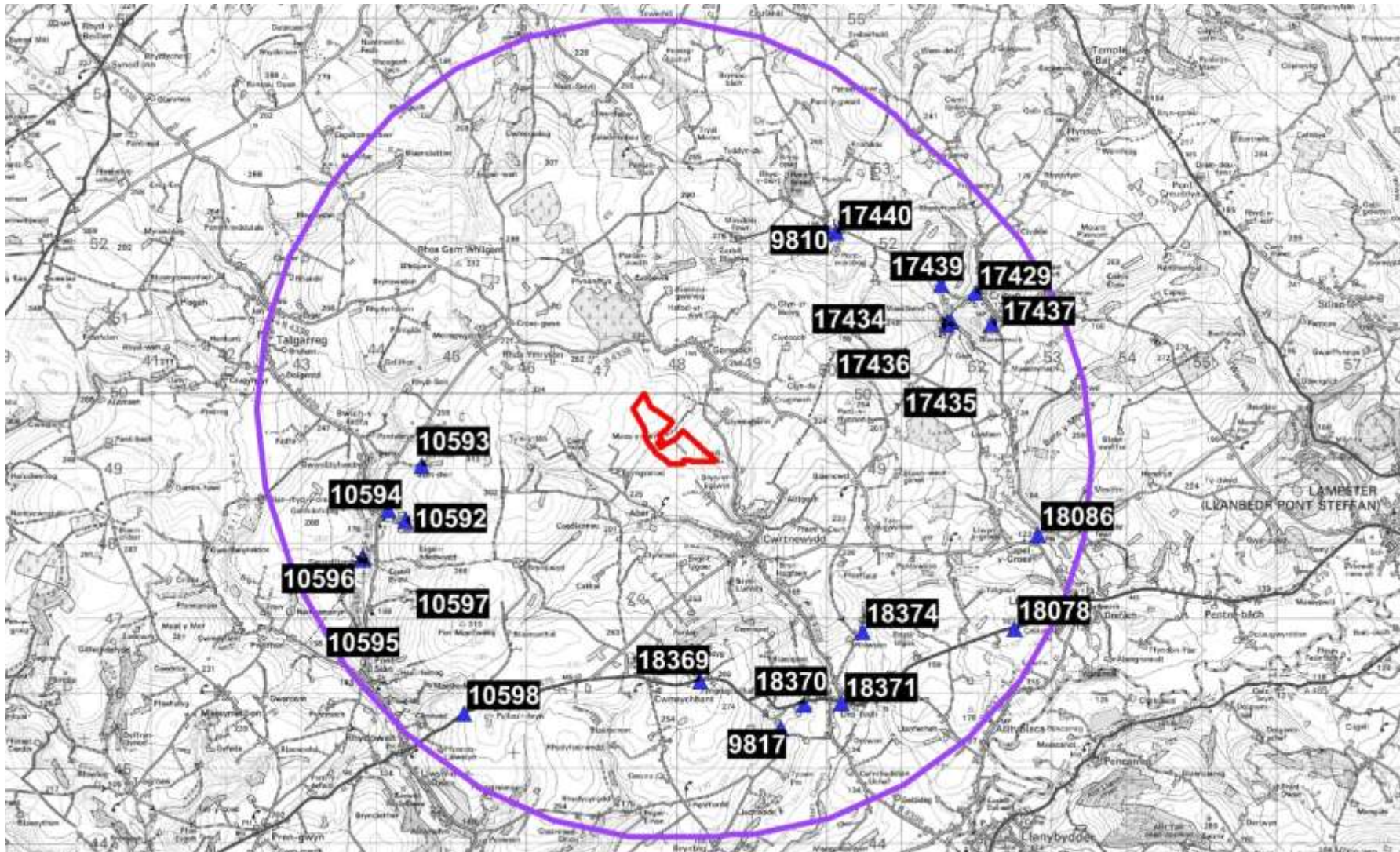


Figure 4: Map showing Listed Buildings within the 5km search area around the proposed solar farm (red boundary)

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Historic Environment Record and National Monument Record

- 4.4.14 Sixteen sites are recorded on the Regional HER within a 1km search area around the boundary of the proposed solar farm (Table 5, Figure 5). Three of the HER records are also listed in the NMR (also shown in Table 5 and Figure 5). There are no records in the NMR that are not in the HER. None of the Scheduled Ancient Monuments or listed buildings described in the previous sections of this report lie within the 1km search area.
- 4.4.15 The oldest record in date is the find spot of a disc-shaped spindle-whorl (PRN 100645), made from mudstone. It is a thin and flat stone, polished but plain, with signs of damage on the faces. The spindle whorl is prehistoric, probably dating to the Iron Age or an earlier period. It was found on the same hill as the proposed solar farm only 300m away to the northeast at a similar height above ordnance datum.
- 4.4.16 Only two other records on the HER within the search area are of prehistoric date, and both date to the Bronze Age. The first is the find spot of a cinerary urn at Bryngranod (PRN5639). This spot is on a different spur of the same hill as the proposed solar farm, at a similar height above ordnance datum and at about 500m to the southwest. The second record is that of a round barrow at Pant-Crug-Las (PRN 10663), 800m east-northeast of the proposed development site, and again at a similar height on the same hill. This round barrow is inter-visible with the proposed development.
- 4.4.17 Of unknown date is a soilmark recorded on an aerial photograph taken by Meridian Airmaps in 1955. It was described as looking like two massive "horseshoe" shaped earthen banks, one with a central mound; although considering the geology of the region it was thought likely that it was a natural feature. Soilmarks of this description are recorded because they can indicate a prehistoric enclosure. It was seen 500m north of the proposed solar farm site, further up the same hill.
- 4.4.18 The remaining records are of low archaeological and historical significance. The only record dating to the medieval period is a place name relating to a chapel of which there are no known remains. All of the other records concern residential, agricultural and industrial sites of the post-medieval period.

PRN NPRN	Site Name	Summary	Period	NGR	SC
5639	Bryngranod	According to a report by E. Lorimer Thomas (Archaeologia Cambrensis, 1910) a cinerary urn (now lost) was found at this location. The Ordnance Survey (1974) state that the site is on the shore of an extinct lake, the exact findspot being identifiable by charcoal, white stones and dark earth on the surface of a ploughed field.	Bronze Age	SN 472 490	D
8382	Rhos Garn Wen	Soilmark of unknown significance.	Unknown	SN 470 502	D
8687 5481	Glynmeheryn / Glynmeherin	A "sub-mediaeval house" when recorded by RCAHM in 1979. Still occupied at that time. The house was demolished c. 1997 after suffering severe damage after a storm.	post-medieval	SN 4864 4972	D
9073	Rhyd-Las	Ruined drystone cottage, with enclosure, recorded in 1979.	post-medieval	SN 4755 5063	D
9190	Ty'n-Fron	Deserted minor farmstead complex, includes dwelling, outbuildings and enclosure.	post-medieval	SN 4675 4960	D
10663	Pant-Crug-Las	Round Barrow	Bronze Age	SN 486 501	B
12391	Capel Bryneglwys	Place-name 'Bryn-yr-eglwys'. Represents site of one of the four chapels-of-ease to Llanwenog parish (pilgrimage chapels?). However, it was acquired (or established) by the Cistercian Whitland Abbey when the surrounding lands were granted to the abbey.	Medieval	SN 485 486	D
18143		Quarry	post-medieval	SN 47061 48500	D
18144		Sand pit	post-medieval	SN 4755 4855	D
18151 308066	Alltgoch Quarry	Quarry producing construction materials, north of Cwrtnewydd. Photographed during aerial reconnaissance by RCAHWM on 15 November 2002.	post-medieval	SN 4885 4838	D
18308	Blaenau School	Blaenau County Primary School was constructed sometime between the publication of the 1889 1:2500 scale Ordnance Survey map and the 1905 edition. The school continues to be marked on modern OS maps and is visible on modern aerial photographic coverage.	post-medieval	SN 4764 5084	C
18310		Quarry	post-	SN 47774 50610	D

			medieval		
18311 7366	Brynhafod Welsh Baptist Church;	Brynhafod Baptist Chapel was built in 1711 and rebuilt in 1861 in the Simple Round-Headed style of the gable entry type.	post- medieval	SN 4832 5063	C
18313		Gravel Pit	post- medieval	SN 48483 50270	U
18314		Quarry	post- medieval	SN 48566 50184	D
100645	Gorsgoch	A disc-shaped spindle-whorl, made from mudstone. Polished but plain, with signs of damage on the faces. Thin and flat stone.	Prehistoric	SN 4850	D

Table 5: Archaeological and historical sites recorded on the Regional HER and the NMR within the search area of 1km around the proposed solar farm. Mapped in Figure 5

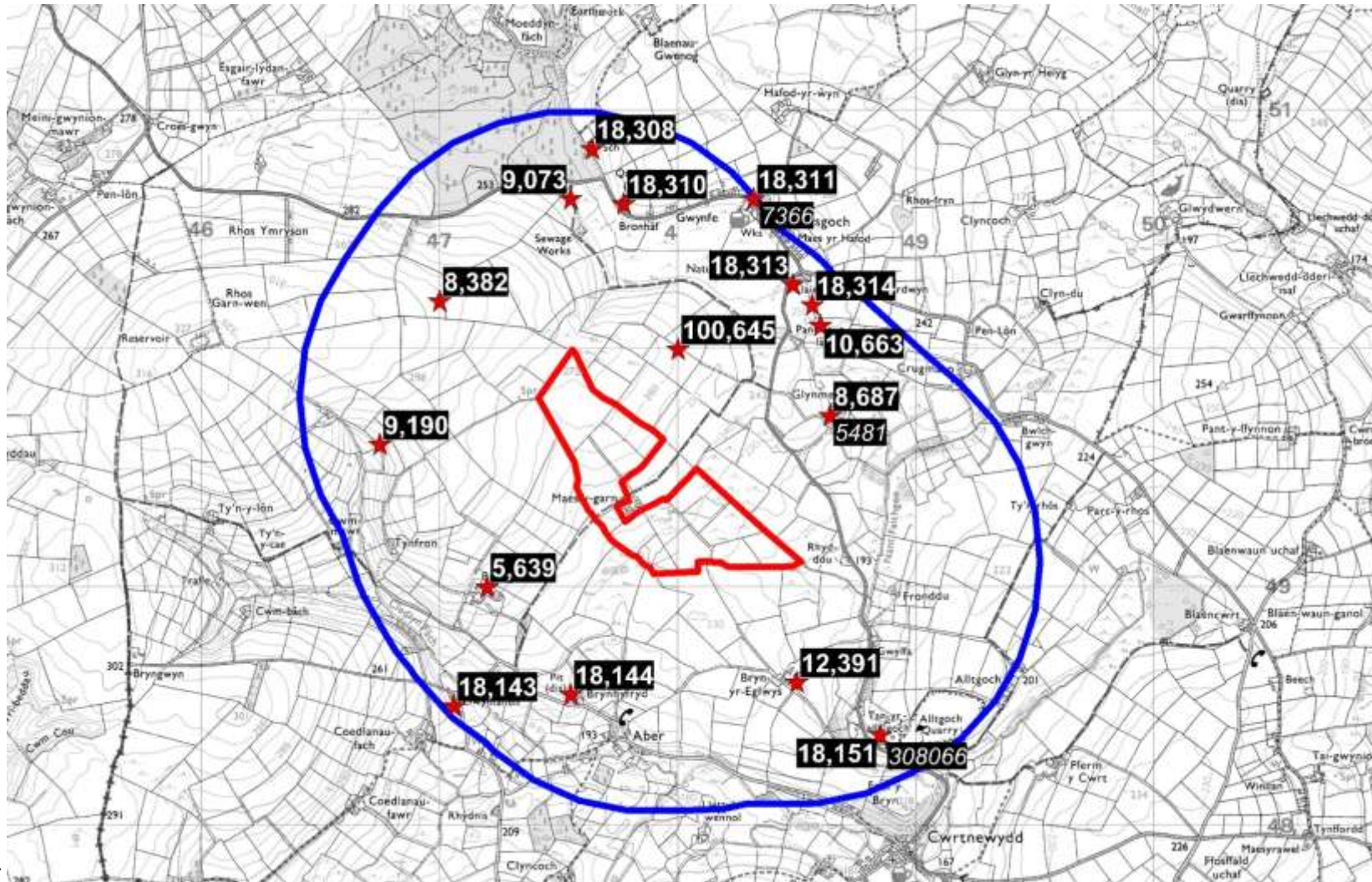


Figure 5: Map showing HER and NMR sites within the 1km search area around the proposed solar farm (red boundary). NMR record numbers are in *italics*.

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4.5 Cartographic Sources

- 4.5.1 A number of earlier cartographic sources were used to ascertain the development and use of the proposed development area in the past. No relevant estate maps or other cartographic sources pre-dating the early 19th century were identified during the research for this project.
- 4.5.2 The Llanwenog parish tithe map of 1840 shows Maes y Garn as a single building (Figure 6). Most of the boundary of the proposed solar farm site can be traced along field boundaries and streams on the tithe map. There are less field boundaries within the area than there are at present. The letters 'AMLE' across the middle of Figure 6 are part of the words 'Brynau Hamlet,' the name for this part of Llanwenog parish.
- 4.5.3 The apportionment (1843) that accompanies the tithe map displays field names from which little information can be determined about the site area, and the state of cultivation is not stated for it.
- 4.5.4 The next early map available is the 1889 1st edition 1:2500 OS map (Figure 7), which shows more buildings at Maes y Garn and many more fields within the proposed development area than were shown on the tithe map. Several of the fields are shown as marshy. Trees surround the farm buildings and line the farm entrance track that comes up from the south from Bryn-yr-Eglwys farm. Trees are also depicted lining another track running southwest from the farm to the stream. Two other tracks leave the farm towards the higher ground: one to the north and one to the northwest.
- 4.5.5 Subsequent maps (observed on the <https://www.old-maps.co.uk> website) show no change in the field boundaries around Maes y Garn until the most recent maps, which show that eleven fields to the north of the farm buildings have merged to form only four fields. The maps also show that a change in the number and layout of the farm buildings took place in the 1970s. Today's map (Figure 2) shows the same building layout, but the field layout on the proposed site to the south of the farm has changed; eight fields have been merged to form five larger ones.

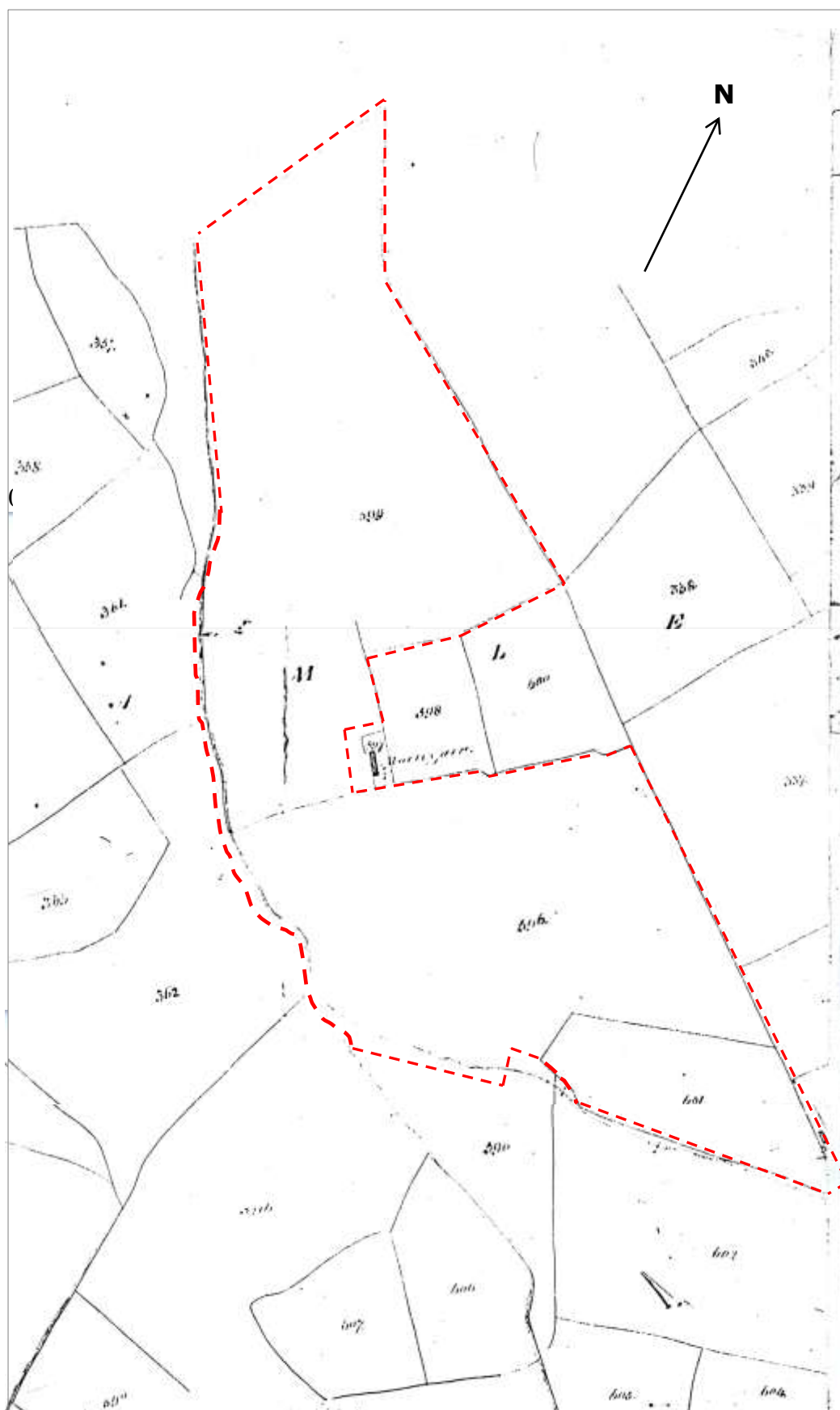


Figure 6: Extract from the 1840 Llanwenog parish tithe map, showing proposed solar farm development site outlined in red (not to scale)

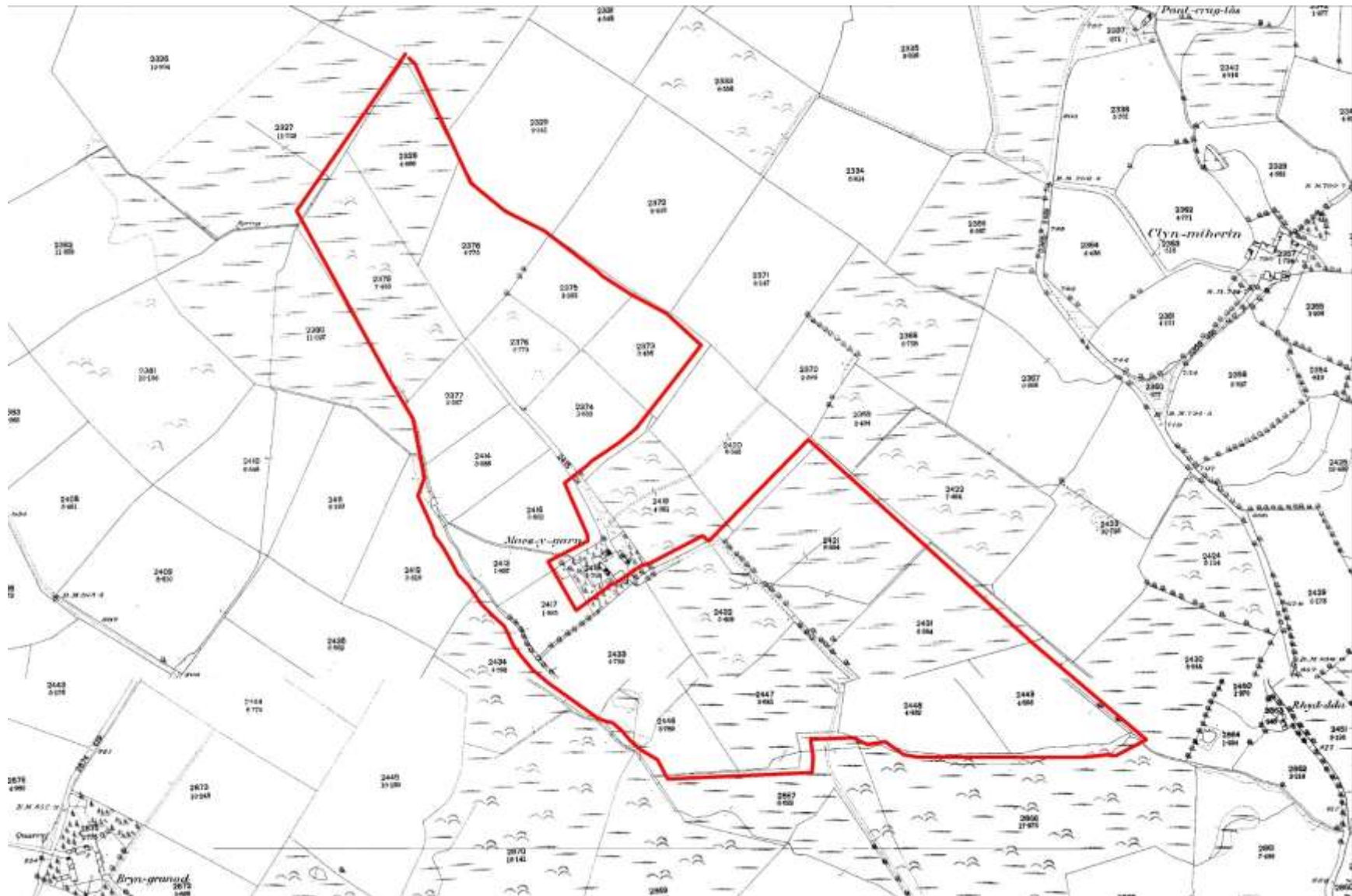


Figure 7: Extract from the 1st edition OS 1:2500 map of 1889 showing proposed solar farm development site outlined in red

4.6 Aerial Photographic Information

- 4.6.1 The oldest aerial photograph record of the area, the RAF collection of 1946, was not available.
- 4.6.2 The DAT oblique aerial photographic collection was searched for any photographs of the site area, but none were available which may be an indication that no archaeological remains have been noted in this area previously.
- 4.6.3 A large part of the proposed solar farm site was covered by Meridian Airmaps in 1955 (Photo 1). The photo clearly shows the difference in the more uneven nature of the fields to the south of the farm than those to the north. This is likely to be due to the wetter nature of the land to the south of the farm, where there are many springs. The plough lines and smooth appearance of the fields to the north of the farm suggest cultivation.
- 4.6.4 Google maps online aerial imagery shows a field layout the same as the latest map of the area shown in Figure 2. Some of the old field boundaries can still be seen as cropmarks. Many current and/or dried up water channels can be seen in the wetter fields south of the farm. (Image not reproduced here due to licence restrictions.)



Photo 1: Meridian Airmap aerial photograph no. 35110, showing most of the proposed solar farm site (outlined in red)

4.7 Previous Archaeological Work

- 4.7.1 To date no intrusive or non-intrusive archaeological work has been undertaken within the area of the current proposed development.

4.8 Site Walkover Survey

- 4.6.1 A site walkover was undertaken on 22nd January 2015 on a clear day in fine weather. The whole of the site area was accessible.
- 4.6.2 Through discussions with the landowner, it is understood that the northernmost field (Figure 2) had formerly been drained, with channels and land drains inserted in a northeast-southwest direction. This field, the two large fields to the south of it, and the small field to the west of the farm buildings, were gently undulating pasture, and the ground is even (Photo 2).
- 4.6.3 The other fields (to the south of the farm) were rough pasture; wet and uneven due to current and dried up water channels. There were frequent stands of rushes and patches of bog (Photo 3). The field nearest to the farm buildings to their southeast was particularly boggy to the extent that a walkover was not attempted.
- 4.6.4 In the field that is furthest southwest within the proposed development site earthworks were visible where peat cutting had taken place and the ground had not been made even again. In this area the ground was also very uneven and wet due to springs, and attempts at open drainage had been made (Photo 5).
- 4.6.5 The majority of the field boundaries on the site were old stone and earth banks now overgrown in places with small trees and bushes (Photos 6 & 7). The large size of some of the stones used could be seen at gateways and other eroded parts of the banks (Photos 8 & 9).
- 4.6.6 A disused iron water wheel stood beyond the west end of the farm buildings (photo 10). Writing on the wheel indicates that it was manufactured in Cardigan.
- 4.6.7 There were good views from the proposed development site to the east, south and west. The view to the south towards the higher ground at Llanllwni was particularly good (Photo 11).
- 4.6.8 Clearly visible from the northeastern edge of the proposed development site to the east was the round barrow 800m away at Pant-Crug-Las (PRN 10663), a non-registered archaeological site (Photo 12). A visit was also made to the round barrow in order to look back towards the proposed solar farm site and assess the impact it would make on the barrow. It was concluded that very little of the solar farm would be seen and the impact would be low.
- 4.6.9 None of the other registered or non-registered known sites of historical or archaeological significance were considered to be near enough or visible enough from the proposed site for their settings to be affected by the development. Castell Moeddyn (SAM no. CD082), hilltop enclosure 2.2km to the northeast of the site, is visible from the northeastern tip of the site. The impact on its setting will be low because the vast majority of the site would not be visible from it. An existing wind turbine was also noted very near to the enclosure.



Photo 2: Looking south toward the Maes y Garn farm buildings from one of the fields to their north



Photo 3: Looking northeast over the rougher fields in the southern half of the site



Photo 4: Looking north toward the particularly boggy field immediately to the southeast of the farm



Photo 5: Looking south at the uneven and wet ground in the field that is furthest southwest in the proposed development site



Photo 6: Looking west along a stone and earth field boundary characteristic of many on the proposed development site



Photo 7: Looking north along an old overgrown stone field boundary in the most southerly field of the site



Photo 8: Large stones in one of the stone and earth banks



Photo 9: Large stones visible in one of the stone and earth banks where there has been some erosion of the covering turf



Photo 10: The iron water wheel at the west end of the farm buildings



Photo 11: The view south from the proposed site, toward the high ground at Llanllwni



Photo 12: The view east from the proposed site; the round barrow at Pant-Crug-Las 800m away can be seen

5 POTENTIAL IMPACTS OF THE PROPOSED NEW SOLAR FARM DEVELOPMENT ON THE HISTORIC ENVIRONMENT

5.1 Previous Impacts to Development Site

- 5.1.1 No record has been found of any previous archaeological intervention at the proposed solar farm development site. Cartographic sources and aerial photographs show that the only changes to the site since the early 19th century have been an increase in the number of buildings at Maes y Garn farm and changes to the field layout around it.
- 5.1.2 It is known that two fields (the most northern and the most southwestern) have been disturbed in the last fifty years by drainage works.
- 5.1.3 Peat cutting in the most southwestern field has left mounds of earth that have never been flattened again.
- 5.1.4 It is clear from the site visit and aerial photographic evidence that although many of the fields are presently laid to grass, they have been ploughed over the years. The fields to the north of the farm buildings in particular are relatively level, which is likely to be the result of improvements to them.

5.2 The Potential Impacts of the Proposed Development

- 5.2.1 Based on the topography of the improved land north of the farm buildings and the known agricultural regimes practiced upon it since the early 19th century it is likely that if archaeological deposits are present they will lie at the interface between the plough disturbed soils and underlying natural geological strata. Typically this would be at a depth of less than 0.5m.
- 5.2.2 Details of the proposals and construction techniques have not been received, but in general the following are usually required as part of a solar farm development:
- Construction of access tracks
 - Construction of contractor's compound and materials storage areas
 - Construction of swales for water management
 - Installation of piles for the solar panels
 - Cable trenches
 - Electricity substations and transformers and associated bases
 - Possible resurfacing of the farm lane or other tracks
 - Other ancillary infrastructure (fencing, lights, stores, landscaping and planting)
- 5.2.3 In most cases solar farms do not require substantial earth moving exercises such as an initial topsoil strip across the solar panel areas. It is assumed that this will be the case for this solar farm, but if one is required then such works would potentially expose or damage any archaeological remains.
- 5.2.4 Topsoil stripping and potentially deeper works would be needed for access tracks, contractor's compound and the footprints of the substations and transformers. Such works would expose, damage or destroy any below ground archaeological remains that may be present at the site.
- 5.2.5 Swales are normally used around the panel areas to assist with water management across the site. Rainwater run-off will be accentuated across the site area once it is covered in panels and ground absorption is reduced. The swales are usually located to collect water run-off and formed to overflow into

- adjacent water courses or slow down run-off into surrounding land. The construction of such swales will require access by machinery and the excavation of the swales themselves. This could expose, damage or destroy any archaeological remains if present. It is also possible that the overflow from the swales could lead to erosion of surrounding land and again cause impacts to any underlying archaeological remains.
- 5.2.6 Although cable trenching would be narrow, their required depth would be such that they would also impact on below ground archaeological remains if present.
- 5.2.7 Solar panels are typically fixed to the ground using steel piles, which will usually be driven into the ground using tracked vehicles and inserted to depths of over 1m. These will cause insubstantial disturbances, but cumulatively across the whole site they have the potential to significantly damage any below ground archaeological remains. This impact would become more or less severe depending upon the type and sensitivity of the underlying archaeological remains.
- 5.2.8 Perimeter fencing will be required to prevent unauthorised access to the site area and prevent livestock or deer from getting in. These will be additional to the existing hedge banks.
- 5.2.9 The possible resurfacing of Maes y Garn's farm lane may be required in order to allow construction plant up to the site area. The lane is currently unsurfaced and uneven with potholes. Major resurfacing may cause impacts to any underlying archaeological remains.
- 5.2.10 The farmland within the proposed development site will be covered with solar panels facing approximately south-southeast. The panels are low lying and the general land form and field layout of the area will remain unchanged. Proposed structures are unlikely to be of great size and will not be visually intrusive, although certain positions of sunlight can cause glare which can make the panels very visible from certain directions.
- 5.2.11 It is not anticipated that any existing hedge banks will be removed. There are a number in the south of the area which are partial remnants from earlier field patterns and it is possible that the intention may be to remove these.

6 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND IMPORTANCE

- 6.1 The archaeological desk-based assessment has shown that there are no known archaeological sites within the area of the proposed solar farm.
- 6.2 There are no known archaeological remains of national significance within the proposed development area, although there are several within 5km of the site boundary. There are a number of non-designated archaeological sites within 1km of the proposed solar farm. Only two known sites will be affected visually by the proposed development, but the impact on both is considered to be low. The solar panels will be facing away from both sites and only a small part of the solar farm will be visible from either of them. The registered site is the Scheduled Ancient Monument of Castell Moeddyn hilltop enclosure (SAM no. CD082), 2.2km to the northeast of the proposed solar farm, and its setting already includes a modern wind turbine nearby. The non-designated site is a round barrow 800m east-northeast of the proposed development at Pant-Crug-Las (PRN 10663).
- 6.3 The site walkover did not identify any upstanding archaeological remains within the proposed solar farm area, excluding the presence of existing hedge banks and boundary walls (Site Category significance C – see Table 2). These remains will not be impacted upon by the proposed works, but if new access gateways or similar do need to be built then some impact on these will occur. Impacts could

also occur if some of the remnant field boundaries in the southern part of the site are removed. The LANDMAP characterisation descriptions for this area would look to retaining any field boundary, including remnant ones.

- 6.4 It is only possible to provide an indication of the potential for hitherto unknown archaeological remains to be present within the site area. This is discussed below by general archaeological period, providing an assessment of the potential and the likely significance of remains of that date. The information taken from the study area is used as the basis for this, with added information included from a recent study of predictive modelling for archaeological remains produced for the Dyfed region (Murphy & Pritchard 2014).
- 6.5 The potential for remains of Palaeolithic, Mesolithic and Neolithic date to be present within the site area is considered to be very low to negligible as no such remains have been recorded within the study area, and are known to be scarce in the wider area. Such remains would be considered to be of regional to national importance.
- 6.6 The potential for remains of Bronze Age date to be present is considered to be medium. A Bronze Age round barrow, a Bronze Age cinerary urn and a spindle whorl of possible Bronze Age date have been found at three different sites within 1km of the site in similar topographic locations to the site area, making the discovery of other remains of such a date possible. Another Bronze Age barrow is located within 5km of the area. The high ground, gentle south-facing slope and the presence of springs and water courses at the proposed development site make it favourable for further Bronze Age remains to be found. Such remains would be of at least regional importance.
- 6.7 There are Iron Age defended enclosures within 5km of the site boundary, and a nearby find of a spindle whorl already mentioned could be of probable Iron Age date. There are no indications of earthworks or cropmarks within the proposed solar farm site from the aerial photographs studied or walkover undertaken for this assessment, but the potential for remains of this date is considered to be moderate due to the high ground, gentle south-facing slope and the presence of springs and water courses. If present, such remains would be considered to be of regional importance.
- 6.8 There are no Roman remains within the study area. The potential for remains of this date to be present within the site is considered to be low to negligible. If present, such remains would be considered to be of regional importance.
- 6.9 The potential for remains of Early Medieval date to be present within the site area is considered to be low to negligible as no such remains have been recorded within the study area. If found to be present such remains would be considered to be of at least regional importance.
- 6.10 The potential for remains of medieval settlement to be present within the site area is considered to be low to negligible although it is very possible that Maes Y Garn lies on the site of a medieval precursor. There are medieval remains within 5km, such as a castle mound. The surrounding villages probably also have medieval origins. The land at Maes y Garn is likely to have belonged to and have been farmed by the church. Agricultural remains of medieval date would be of low archaeological importance.
- 6.11 The majority of sites recorded on the HER and NMR are of post-medieval date, reflecting the increased survival of standing buildings, as well as cartographic and documentary information from this period. The proposed solar farm area would have been used as agricultural land during this period. Many of the existing hedge banks are recorded on the 1840 parish tithe map (Figure 6) and as such are protected by the Hedgerows Regulations (ref 1997). Agricultural remains of post-medieval date would be seen to be of local importance.

7 DISCUSSION

7.1 General Conclusions

- 7.1.1 The archaeological assessment has shown that the proposed solar farm development site on farmland surrounding Maes y Garn farm contains no known recorded sites of archaeological or historical significance within its boundary.
- 7.1.2 There is limited archaeological information for the Bronze Age, Iron Age, medieval, post-medieval and modern periods. This may be as a result of a lack of previous archaeological works undertaken within the area. No known archaeological remains are present within 5km of the site boundary from the Palaeolithic, Mesolithic, Neolithic, Roman or Early Medieval periods.
- 7.1.3 Later prehistoric activity is represented by known sites: a cinerary urn, two barrows, date to the Bronze Age, and defended enclosures are from the Iron Age, while a spindle whorl could belong to either period. The site is a likely location for Bronze Age and/or Iron Age activity due to its location on south-facing, gentle slopes with many springs and watercourses present.
- 7.1.4 There is no known evidence for Roman or Early Medieval activity within the study area. It is likely that the land has been used for agriculture from the medieval period onward. Cartographic sources and aerial photographs show that the only changes to the site since the early 19th century have been an increase in the number of buildings at Maes y Garn and changes to the field layout around it. As such the potential for remains prior to the post-medieval period related to anything other than agriculture is considered to be low. The farm buildings at Maes y Garn and hedge banks around the farm are upstanding remains from this period, all of which will should remain unaffected by the proposals.
- 7.1.5 The construction of the solar farm will include areas of extensive disturbance which could expose, damage or destroy buried archaeological remains in the areas of the constructor's compound, access tracks, footprints of the transformers and substations, area of the swales and cable trenching. Minor disturbance will come from the installation of individual piles for the photovoltaic panels, but the very large number of these piles driven across the site will cause a cumulative impact.
- 7.1.6 In terms of visual impact to surrounding heritage assets and Historic Landscape Character areas, the impact is considered to be low. The panels themselves will be low structures and the field layout of the area should remain unaltered.

7.2 Archaeological Mitigation

- 7.2.1 In order to provide further information on the extent, date, character and significance of potential buried archaeological remains within the site area it is usual for a geophysical survey to be carried out (usually gradiometer survey). Such surveys are rapid programmes of work which should identify the presence of below ground features such as pits, ditches, burnt areas or buried structures. The most significant identified potential for the site area is for Bronze Age remains, and specifically in the form of round barrows, burials or burnt mounds. Such features are easily identifiable from gradiometer survey as burnt materials in the ditches of the barrows or mounds of heat affected stones will produce clear differences in the grounds magnetic susceptibility and thus create anomalies on any such surveys.
- 7.2.2 Based on the conclusions of the recent predictive modelling project undertaken by DAT for Cadw, it is likely that a geophysical survey of the site area would identify at least one archaeological site (based on the geology and topography of the proposed solar farm – and a prediction of 2-4 sites per square kilometre); the

possibility of a Bronze Age burnt mound within the general area is also likely due to the number of streams and springs present (0.1 sites per square kilometre) (Murphy and Pritchard 2014).

- 7.2.3 If no archaeological remains are identified on such a survey then it is possible that no further archaeological intervention would be needed.
- 7.2.4 In the event that features are identified, it would be necessary to evaluate whether such remains will be significantly impacted upon by the development. It may be possible to alter development proposals to avoid areas of archaeological significance and leave them preserved in-situ. Alternatively if avoidance is not possible further mitigation in the form of preservation through recording (archaeological excavation) may be necessary.
- 7.2.5 Certain types of remains would be considered to be of such significance or fragility that even where minimal disturbance is proposed, for example with the piles for the photovoltaic panels, the disturbance would not be considered acceptable. This could be the case in the event that Bronze Age round barrows or areas of possible cremation burials were identified.
- 7.2.6 In the case where remains are deemed to be of lower significance or that the impact from the development is considered acceptable, then it is possible that further archaeological intervention may not be required. In such cases it would not be considered appropriate for a watching brief to be undertaken during the installation of ground anchors for the solar panels, as it would be unproductive and of little value. Where topsoil stripping is required an archaeological watching brief may be needed, as observation of larger areas of ground could identify important archaeological remains.
- 7.2.7 Although the field boundaries are to be retained it is possible that some additional breaches for new gateways may be needed or the remnant boundaries removed. If this is to be undertaken, then archaeological recording of the sections through the hedge banks should be undertaken. These recommendations for archaeological mitigation are based on the design proposals at the time of writing the report and may need to be reassessed if substantial changes in the development's design are proposed.
- 7.2.8 The decision regarding the requirement for any further archaeological works at the site, whether prior to or following planning permission lies with Ceredigion County Council, following advice from their archaeological advisors (Planning Services at Dyfed Archaeological Trust). Such decisions or recommendations will be based on the findings of this desk-based assessment.

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DYFED ARCHAEOLOGICAL TRUST

**RHIF YR ADRODDIAD / REPORT NO. 2015/3
RHIF Y DIGWYLLIAD / EVENT RECORD NO. 107540**

**Ionawr 2015
January 2015**

Paratowyd yr adroddiad hwn gan / This report has been prepared by

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Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by

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ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf.
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Llofnod / Signature  Dyddiad / Date 30/01/2015

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau sydd
gennych ar gynnwys neu strwythur yr adroddiad hwn

As part of our desire to provide a quality service we would welcome any comments you
may have on the content or presentation of this report

