

# Proposed Penpoll Solar Farm, Quethiock, Cornwall

## Archaeological Assessment



**Historic Environment Projects**



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<b>Client</b>	<b>Wardell Armstrong International</b>
<b>Report Number</b>	<b>2011R027</b>
<b>Date</b>	<b>Sept 2011</b>
<b>Status</b>	<b>Final</b>
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## **Acknowledgements**

This study was commissioned by Paul Evans of Wardell Armstrong International, Cornwall, and carried out by Historic Environment Projects, Cornwall Council.

The views and recommendations expressed in this report are those of Historic Environment Projects and are presented in good faith on the basis of professional judgement and on information currently available.

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**Cover illustration:** View from the proposed solar farm site looking south-west towards Padderbury hillfort (taken in February 2011)

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## **Abbreviations**

AEL	Anciently Enclosed Land (HLC Zone)
BA	Bronze Age
AONB	Area of Outstanding Natural Beauty
CC	Cornwall Council
CRO	Cornwall Record Office
EH	English Heritage
HBSMR	Historic Buildings, Sites and Monuments Record
HE	Historic Environment, Cornwall Council
HLC	Historic Landscape Character
LB	Listed building
LPA	Local Planning Authority
NGR	National Grid Reference
NMP	National Mapping Programme (digital plotting from aerial photographs)
OS	Ordnance Survey
PRN	Primary Record Number in Cornwall HBSMR
PPS5	Planning Policy Statement 5 ('Planning for the Historic Environment')
REL	Recently Enclosed Land
RIC	Royal Institution of Cornwall
SM	Scheduled Monument
WSI	Written Scheme of Investigation

## 7.1 Archaeological Summary

This archaeological assessment of a proposed solar farm at Penpoll, 2 Km to the south-east of Quethiock in south-east Cornwall, for Wardell Armstrong International was undertaken by the Projects team of Historic Environment, Cornwall Council (HE Projects, CC). The study was designed to gain a better understanding of the impacts which would result from the solar farm, both within the limits of this site, and in the surrounding historic landscape with its key archaeological sites or 'heritage assets'. It includes desk-based study, fieldwork, and evaluation, and follows current planning policies and guidance, relevant extracts from which are provided in the report. Viewshed mapping generated in ArcGIS, showing the theoretical inter-visibility between the proposed solar farm and the surrounding landscape, was used to inform the assessment.

The proposed area does not include any Scheduled Monuments (SMs) or Listed Buildings (LBs) although it is bordered by the Grade II Listed former manor house at Penpoll. The field boundaries within the proposed site are considered 'important' under Hedgerow Regulations. Within the potential viewshed up to 5km from the site (where historic features such as field systems can be discerned) three Iron Age or Romano-British hillforts which are all Scheduled Monuments have inter-visibility with the site. A scheduled medieval bridge also lies within the viewshed. The site is also potentially visible from thirty-six of the Listed Buildings within the viewshed.

No other designations exist within the proposed area itself although it is immediately bordered to the north by an Area of Great Historic Value (AGHV) and can be seen by another AGHV 2km to the south. Port Eliot Park (a listed Historic Park) also lies within the viewshed 3.5km to the south. This Historic Park lies within a more extensive Area of Outstanding Natural Beauty (AONB) much of which lies within the viewshed.

On the basis of current knowledge the proposed site includes or is bordered by nine archaeological sites of particular significance. Those within the proposed area include the site of a post-medieval pond (**site 1**) of local importance, a field system of local importance (**site 2**) and two post-medieval footpaths of local importance (**sites 3 and 4**). Those sites immediately bordering the area include the medieval manorial settlement of Penpoll, its manor house and post-medieval house of regional importance to the west (**site 5**), the site of a former medieval chapel (which may lie within the area) of regional importance (**site 6**), the site of an orchard associated with Penpoll of local importance (**site 7**), the site of some post-medieval buildings of local importance to the south-east (**site 8**) and a former medieval field boundary of local importance (**site 9**).

In terms of Historic Landscape Character, the development area at Penpoll was mapped as a mixture of Recently Enclosed Land (20<sup>th</sup> Century) in the western half of the site and Recently Enclosed Land (Post-medieval) in the eastern part of the site. However, the land represent a 20<sup>th</sup> century reorganisation of former Anciently Enclosed Land (Medieval Farmland), as found elsewhere within the area surrounding the former manor house at Penpoll to the north, east and west.

Buried early remains often occur in areas that were once Anciently Enclosed Land, and although there are no known prehistoric sites in the immediate vicinity, the presence of hillforts slightly further afield indicates the likelihood of other Iron Age/Romano-British settlement sites in the area, giving potential here for below-ground remains.

The scheme would involve erecting solar arrays up to 2m high, with a control station, and associated cable trenching and anchor points up to 1m deep. Its potential impacts include in the construction phase disturbance or loss of below-ground elements of these early fields, and of other buried features as yet unrecorded. In the operational phase it would impact adversely on HLC, and on the settings of designated heritage assets. Overall, the impact on the archaeological resource (without the results of a geophysical survey) is assessed as potentially negative/moderate to negative/minor



without appropriate mitigation; with a negative/minor residual impact provided the recommended mitigation is undertaken.

The recommendations in this report set out further work likely to be required to mitigate for the archaeological impact should the development proceed. This includes a geophysical survey to identify sensitive areas of the site. Also subject to the results of the geophysical survey, controlled soil stripping and/or an archaeological watching brief may be recommended to allow appropriate recording of buried remains. Disturbance to Cornish hedges should be avoided, but if they are, recording of affected sections may be required, and careful reconstruction may be appropriate.

## **7.2 Introduction**

### **7.2.1 Project background**

This archaeological assessment of a proposed solar farm at Penpoll, Quethiock, Cornwall, was commissioned by Paul Evans of Wardell Armstrong International's Cornwall Office, and undertaken by the Projects team of Historic Environment, Cornwall Council (HE, CC). The results of the assessment are intended to be included in a wider Environmental Assessment for the proposal. It follows methods of working and reporting developed by HE, CC for similar projects (Parkes 2010 and Sharpe, 2010), so facilitating cross-reference between project results. The site extends over three fields centred at SX 33842 63010, 0.75 Km to the west of Blunts, and 3 Km to the south-east of Quethiock, Cornwall (Figs 4 and 5).

### **7.2.2 Aims**

The principal aim of the study is to gain a better understanding of the impacts which would result from the construction of a solar farm at the site, both within the limits of the application site, and in the surrounding historic landscape with its key archaeological sites or 'heritage assets'.

The objectives are to identify the archaeological potential and significance of the site and to provide the client with advice on the impacts of the proposed development and any mitigation which would be likely to be required should the development proceed.

A further objective is to satisfy the information requirements of PPS5, the Government's policy statement on 'Planning for the Historic Environment' (see further Section 7.4.1).

### **7.2.3 Methods**

#### **7.2.3.1 Desk-based assessment**

For the desk-based study, historical databases and archives were consulted. Information about the history and significance of the sites and the features likely to survive in the proposed development area was recorded, and evidence for the development and present character of the wider historic landscape (HLC) was gathered. The key surrounding heritage assets (those of high archaeological importance) whose settings could be affected by the solar farm project were included in this work. GIS mapping was used to assist identification of the viewshed of the solar farm, to inform the study of impact on the settings of those surrounding assets. (See separate Section 7.2.3.2, below). The main sources studied were as follows:

- Cornwall's HBSMR, the computerised database of the county's archaeological and historical sites maintained by Cornwall Council.
- GIS based computerised mapping showing features plotted from aerial photographs as part of the National Mapping Programme (NMP).

- GIS mapping of Historic Landscape Character (HLC) Types, and related text derived originally from the Cornwall Historic Landscape Assessment, 1994.
- Historic maps and original documents (see Section 7.9.1 for a list of these).
- Archaeological reports, histories and other relevant publications (listed in Section 7.9.2).
- Relevant designation and planning documentation.
- Aerial photographs taken previously as part of the Cornwall Aerial Survey project, HE, CC.

### 7.2.3.2 Study of viewshed

The viewshed mapping (as used in Figs 14 and 15), showing the theoretical inter-visibility between the site with solar arrays as proposed and the surrounding landscape, was generated in ArcGIS. A viewshed is an area of the landscape that is visible from a specific location based on elevation values of a Digital Elevation Model (DEM). Viewshed analysis uses the elevation value of each cell of the elevation model to determine visibility to or from a particular location - the observer viewpoint. To determine the visibility of a target, each cell between the observer's location and target is examined for line of sight. Where cells of higher value are between the observer viewpoint and the target cells the line of site is blocked. If the line of sight is blocked then the target cell, and by extension that part of the landscape, is determined to not be part of the viewshed; otherwise it is included in the viewshed.

The methodology used was based on a Digital Surface Model (DSM), which takes account of surface features such as buildings, woodland, vegetation, roads etc, and provides a more accurate representation when compared to a 'bare earth' or DTM elevation model. A viewshed was generated for each the 'observer points' based on the centroid of each of the three fields in which an array is proposed. The seven were combined to produce the *multiple viewshed* for the proposed solar farm area.

When performing a viewshed analysis, several variables are used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for each observer point. For the proposed solar farm, the viewshed is based on an 'overall observer elevation value' made up of the 'elevation value' or height above sea level of the ground at the observer viewpoint, with added to this an additional offset of 2m to represent the height of the solar array.

The viewshed mapping is a computer model and whilst it does take into account some surface features that might hinder visibility and lines of sight (e.g. trees) it takes only limited account of visibility quality and the degradation of views over distance. It was therefore verified and qualified through observation as part of the project fieldwork, looking 'outward' or from rather than into the proposed site, due to limits on time and other constraints. Inevitably, atmospheric conditions and other local factors will still have a variable effect on actual visibility, and there are practical limitations to the feasibility of checking potential 'inward' visibility to a site which is currently similar in terms of its ground cover and other features to neighbouring farmland, but which would have a colour and texture more distinguishable than at present at distances of several kilometres if developed as proposed. However in general the areas of landscape visible on the ground proved to conform very well with those generated by the GIS modelling.

The checking of the viewshed on the ground also allowed identification of particular belts, within these areas theoretically visible from the proposed solar farm site, whose historic landscape character can be 'read' from the site with varying degrees of clarity through discernible patterns of historic features, primarily field systems, and can be expected to have views to the site of similar quality. The belts observed were used to help determine useful distance buffers (at 1km, 3km and 5km around the site) for application to the original viewshed mapping, to show zones with inwardly increasing

quality of visibility and legibility of the proposed solar farm's historic landscape (Figs 14 and 15). The GIS was then used to capture for the inner zones the designated key heritage assets; their Scheduled Monuments and Listed Buildings.

(It should be noted that the site viewshed mapping is used in this report to aid assessment and presentation of archaeological impacts. This work is not intended to convey more general impacts on views from dwellings, etc.).

#### **7.2.3.3 Fieldwork**

Following completion of the desk-based assessment, a 'walk-over' survey of the site was undertaken using a composite base map generated by that research. This involved walking systematically over the ground, recording the following;

- Any further details of sites identified during the desk-based survey
- Other features visible on the ground
- Areas of ground with particular evidence for potential survival of below-ground remains
- Relevant aspects of Historic Landscape Character
- Associations with the area's key heritage assets, contributing to their setting
- Views over surrounding sites and historic landscape.

The walk-over was carried out across all the fields on the site. There was good visibility across the ground, which was, at the time, newly planted. Areas within the viewshed were also visited to inform the assessment of impact on settings.

Digital colour photographs were taken as appropriate to record sites and aspects of the historic landscape, or illustrate potential effects on these.

#### **7.2.3.4 Post-fieldwork**

The cultural resource of the study area, and potential impacts of the solar farm scheme upon this, were assessed and reported using current standards and methodologies, and professional judgement. The area's individual archaeological features, its specific archaeological potential for further, buried sites, its Historic Landscape Character (HLC), and its significance for the settings of key surrounding heritage assets (in terms of both visual and historic or other aesthetic connections), were all considered. The viewshed study was used to inform the HLC and 'settings' assessments. Finally, notes and images generated by the project were archived, following established HE guidelines (see Section 7.9.3).

## **7.3 Site location**

The proposed solar farm site is located on south facing slope in the parish of Quethiock, south-east Cornwall centred at NGR SX 33842 63010 (Fig 4). The site lies immediately to the south of a minor road leading east-west from Coombe to Quethiock. This block of fields immediately to the east of Penpoll Farm has a mixture of southerly, easterly and westerly aspects, the highest point of the site being at 120m OD along the roadside, the lowest being at 100m OD to the south. Altogether the site forms an irregular, roughly trapezoidal block of land, the landscape rising to a ridge immediately to the north along the road, with small valleys running away to the west and south. The total area of the fields is approximately 17.56 hectares. Quethiock is 3Km away to the north-west, Pillaton is just under 3Km away to the north-east.

### 7.3.1 Geology and soils

The solid geology of the study area mostly consists of the Early Devonian Saltash Formation of slates and siltstones, though within this area they are traversed by a number of east-west trending dykes and basaltic lavas, the northern part of the project area being traversed by east-west trending basaltic lavas of the Devonian to Carboniferous period and a Rhyolite dyke of the Permian period. The geology is further complicated by a north-south trending fault crossing the eastern part of the project area. These bedrocks are overlain by fine, well-drained loamy soils and silts of the Denbigh 1 Series to the east and the Trusham Series of well-drained fine loams over locally deeply-weathered rock to the west (CC GIS mapping). These soils are also likely to be locally variable, reflecting the underlying geology.

### 7.3.2 Landuse

This is arable farmland. At the time of the site visit all the fields contained a spring crop except the southern half of the eastern field which had been left as rough ground.

### 7.3.3 Access

A public highway borders the proposed solar farm fields to the north, this connecting Coombe to the east to Quethiock to the north-west. A long-standing public footpath crosses the project area from Trehurst to the south-east, meeting the public highway just to the north of Penpoll.

### 7.3.4 Viewshed

The Zone of Theoretical Visibility (ZTV) for the proposed solar farm (that is, the area of the surrounding historic landscape which can be seen from the site and from where the site can be seen) generated for the project includes the following (see Figs 14 and 15);

- **In a 1km radius**, ground contained within the site and some areas beyond to the west, east and south including the settlements of Penpoll and Blunts.

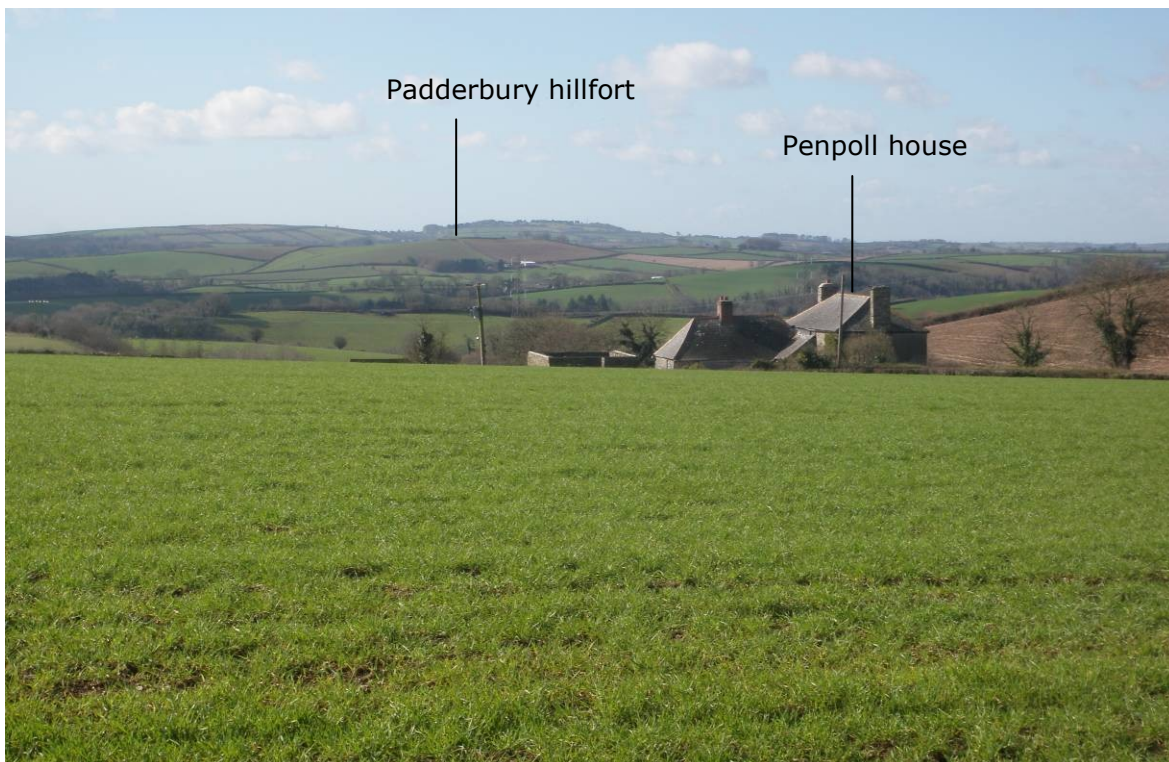


Fig 1 View from the north of the site looking south-west to Penpoll (Listed Building no: 61325)

- **In a 1-3km radius**, ground to the north inter-visible with the very northern part of the site, ground to the south and south-west including Padderbury hillfort inter-visible with the whole of the site, and patches of ground to the south-east inter-visible with the whole site (cover and Figs 1 and 2).

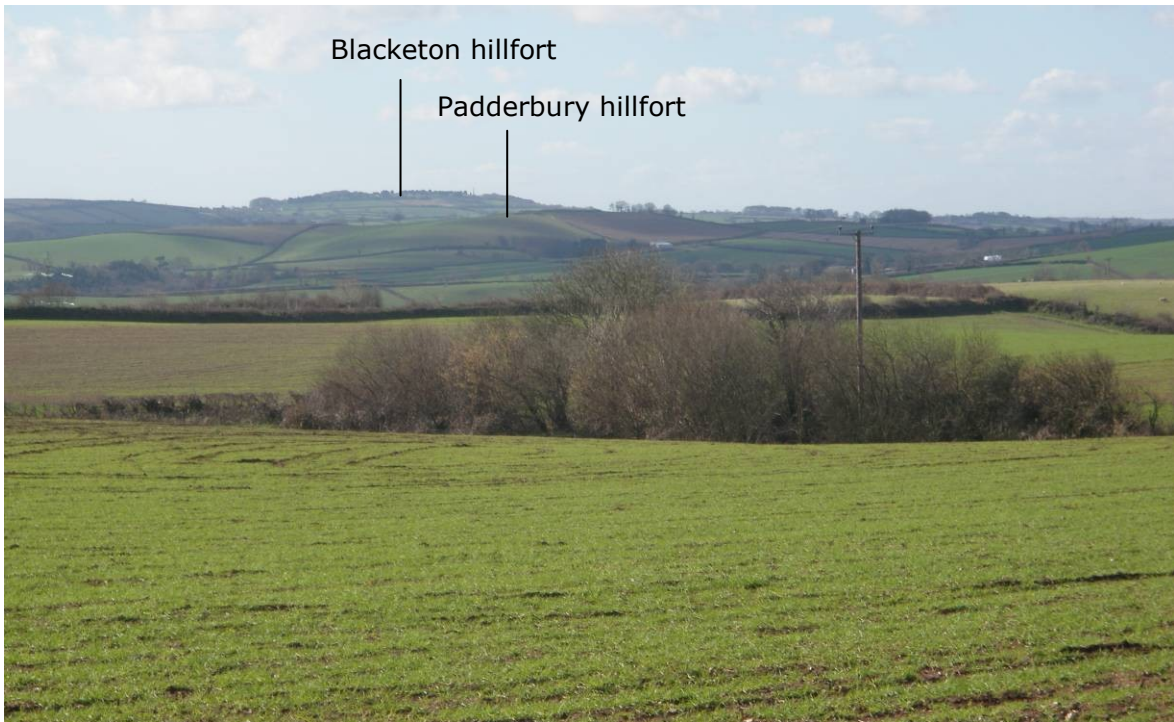


Fig 2 View from the centre of the site looking south-west to Padderbury hillfort and Blacketon Farm hillfort (Scheduled Monument nos: CO1039 and CO1038)

- **In a 3-5km radius**, ground to the north inter-visible with the very northern part of the site and including Cadson Bury hillfort (Fig 3), ground to the south and south-west including Blacketon Farm hillfort inter-visible with most of the site, (Figs 1 and 2).



Fig 3 View from the north of the site looking north to Cadson Bury hillfort (Scheduled Monument no: CO309)

### 7.3.5 Historic Landscape Characterisation

Historic Landscape Characterisation, developed for Cornwall from 1994 (Cornwall County Council 1996), captures the varying evidence for change and earlier landscapes existing in the present landscape, identifying extents of landscape with similar essential or distinguishing features, principally field boundary patterns. These extents have been mapped across the county, forming a continuous patchwork of Units of various Historic Landscape Character (HLC) Types (Fig 11). HLC Units of any given Type share a similar distinctive character today, the result of historic processes common to that Type, and tend to contain a predictable range of archaeological sites and historic features.

As shown in Fig 11, the land proposed for the solar farm at Penpoll is mapped as a combination of Recently Enclosed Land (REL, Farmland 20<sup>th</sup> Century) and Recently Enclosed Land (REL Post-medieval Farmland), though this probably represents a late 18<sup>th</sup> or early 19<sup>th</sup> Century reorganisation of part of a large block of long-established farmland (medieval) AEL which surrounds the site.

The following summary of the Historic Landscape Character Types forming the site is adapted from a generic HLC text produced for Cornwall by Peter Herring (Cornwall County Council, 1996).

#### Recently Enclosed Land

This Type consists mainly of Post-Medieval Enclosed Land whose field systems have been substantially altered by large-scale hedge removal in the 20th century. It also includes, however, post-medieval and 20th century intakes from rough ground, woodland and marsh. The larger fields that result from hedge removal are often farmed more intensively, using heavier machinery, than in 'unimproved' Anciently and Post-Medieval Enclosed Land. In Cornwall generally, there are two principal subtypes of Recently Enclosed Land

- Intakes beyond the edges of Anciently or Post-Medieval Enclosed Land, including some whole new farms (notably on the St Breock Downs).
- Alterations to field systems in Anciently or Post-Medieval Enclosed Land.

The later 20th century alterations are mainly the product of a combination of increased agricultural specialisation coupled with capital investment in the form of machinery relatively insensitive to the intricacies of smaller fields. An underlying cause of the change is the inability of many small farmers to compete with neighbours who need to expand to maintain adequate returns on their investment. The result is amalgamation of farms and improvement. Farms at this semi-industrial level would normally include arable crops, either as cash-crops or as providers of winter fodder for expanded herds.

In some upland parts of Cornwall, such as on the St Breock Downs, the processes of enclosure (usually by fence rather than hedge) and improvement were late, not commencing until immediately after the Second World War.

Fields are often very large, but when derived from Anciently Enclosed Land they usually have sinuous sides as selected ancient hedges are retained. Permanent and temporary fencing is also common, especially in that taken in from Rough Ground, Woods, etc.

Settlements and most of the other historic components of that Recently Enclosed Land established within earlier field systems usually retain many features of Anciently Enclosed Land, although farmsteads are often also altered, with numerous large covered yards, silage pits etc and often few surviving stone farm buildings. Occasionally whole farmsteads have been removed.

The use of heavier agricultural machinery means that there are usually even fewer prehistoric features visible at surface than in Anciently Enclosed Land and also that

sub-surface remains are more likely to be damaged or destroyed.

To the whole area is likely to have been farmland during the medieval period. The field pattern shown on the Quethiock Tithe map c1840, the c1880 OS map and the c1907 OS map (Figs 8, 9 and 10), shows derivation from a medieval strip field system. During the 20<sup>th</sup> century, however, a process of boundary removal took place, amalgamating the nine original fields into three large enclosures.

### **Anciently Enclosed Land**

Before 20<sup>th</sup> century boundary removal the proposed development area would have been categorised as Anciently Enclosed Land.

Much AEL will have been enclosed and farmed since the Middle Bronze Age (c 1500 BC). The 'Medieval farmland' AEL reflects re-organisation in the medieval period into extensive 'open' or sub-divided field systems, associated with hamlets of co-operating families who each worked open strips of land dispersed in different 'cropping units' or stock proof fields making up the systems. Those documented medieval farming settlements in close proximity to the site include Penpoll and Trehurst.

Overall, on the ground, the proposed solar farm fields show derivation from medieval strip fields.

Standing features including field boundaries still in use, can reveal much about the history of this HLC Type. Ground disturbance in 'Medieval Farmland' may reveal buried artefacts and structures or deposits associated with settlement, agriculture and other activity, both medieval and earlier in date. Across Cornwall as a whole, it contains many 'rounds' or later prehistoric to Roman period enclosed settlements. These may survive as earthworks, or as sub-surface remains, which may be visible as 'crop-marks' on aerial photographs, or detected by geophysical survey.

There may have been as many unenclosed prehistoric and Roman era settlements within this area, and though more vulnerable to loss from ploughing or other change during the long and intensive use for farming characteristic of this HLC Type, remains of such activity are increasingly being discovered through geophysical survey, archaeological watching briefs, and excavations. Smaller undetected buried deposits or artefacts could also be present in 'Medieval farmland' as elsewhere in AEL.

### **7.3.6 Designations**

There are no Scheduled Monuments, Listed Buildings or designated areas within the site although Penpoll house (a Grade II Listed Building) lies immediately to the east.

Within the potential viewshed in a 5km radius of the site (a distance within which historic features can still be viewed on the ground) there are four Scheduled Monuments (see Fig 14), and thirty-six listed buildings (see Fig 15). These designated heritage assets are listed in the following tables along with a description of their inter-visibility with the site.

#### ***Scheduled Monuments in potential viewshed, within a 5km radius***

<b>Scheduled Monument No.</b>	<b>HBSMR Ref no</b>	<b>Name</b>	<b>Inter-visibility with the site</b>
CO309	DCO1267	Cadson Bury Iron Age/Romano-British hillfort	Visible
CO368	DCO1293	Clapper bridge, medieval	Not visible
CO1039	DCO1130	Padderbury Top Iron Age/Romano-British hillfort	Visible
CO1038	DCO1129	Iron Age/Romano-British hillfort	Possibly visible

at Blacketon Farm

**Listed Buildings in potential viewshed, within a 5km radius**

<b>LB no [UID]</b>	<b>Ref</b>	<b>HBSMR Ref no</b>	<b>Name</b>	<b>Grade</b>	<b>Inter-visibility with the site</b>
61408		DCO2460	Pentillie Park farmhouse	II	Possibly visible
61409		DCO2461	Barn to the north of Pentillie Park farmhouse	II	Possibly visible
61410		DCO2462	Barn to the north-east of Pentillie Park farmhouse	II	Possibly visible
61411-61425		DCO2463	Newton Ferrers House and surrounding buildings	I and II	Possibly visible
61403		DCO3419	Higher Woolaton	II	Possibly visible
61404		DCO2456	Barn west of Higher Woolaton	II	Possibly visible
61325		DCO1799	Penpoll manor house	II	Visible
61323		DCO2534	Methodist Chapel in Blunts	II	Possibly visible
61393		DCO1828	Trenodden farmhouse	II	Possibly visible
61294		DCO3392	Stables south of Trenodden farmhouse	II	Possibly visible
61288		DCO3734	Trehawke House	II	Possibly visible
61289		DCO3390	Gatepiers south-west of Trehawke House	II	Possibly visible
61290		DCO1826	Barn to west of Trehawke House	II	Possibly visible
61291		DCO1827	Granary to north of Trehawke House	II	Possibly visible
61280		DCO1823	Granary to west of Pathada farmhouse	II	Possibly visible
62039		DCO2218	Catchfrench manor	II	Possibly visible
62040		DCO3531	Catchfrench old house and screen wall	II	Possibly visible
62080		DCO3558	West Glasdon	II	Possibly visible
62055		DCO2680	Lanjore farmhouse	II	Possibly visible
62050		DCO3533	Nos 1 and 2 Furze Park Lodge	II	Possibly visible
62021		DCO2667	Church of St Terminus, St Erney	II*	Possibly visible
62030		DCO3323	St Erney House	II	Possibly visible
62032		DCO2670	Pigsty to north of St Erney House	II	Possibly visible

Other designations in the surrounding area include two Areas of Great Historic Value (AGHV) which are of high significance since one of these areas lies immediately to the north of the site and the other clearly within the viewshed 2km to the south. Port Eliot Park (a listed Historic Park) also lies within the viewshed 3.5km to the south. This Historic Park lies within a more extensive Area of Outstanding Natural Beauty (AONB) much of which lies within the viewshed. The River Tiddy 3km to the south of the site is designated as a Site of Special Scientific Interest (SSSI) and a Special Area of Conservation (SAC). 1.5km to the north and north-east of the site are two Cornwall Wildlife Sites (CWS). In addition, there are Conservation Areas in St Germans 5km to the south and Liskeard 7km to the west and Liskeard is also designated as an Historic Settlement.



The 'Cornish hedges' or boundary banks of the fields making up the site are considered 'important' under the historic criteria of the Hedgerow Regulations. All are recorded on the c1840 Tithe Map.

## 7.4 Policies and Guidance

The following section brings together policies and guidance, or extracts from these, referred to in this report and/or used in the development of the assessment and its methodology.

### 7.4.1 Planning Policy Statement 5 (PPS5), 'Planning for the Historic Environment'

#### 7.4.1.1 Policy HE9.6

HE9.6 'There are many heritage assets with archaeological interest that are not currently designated as scheduled monuments, but which are demonstrably of equivalent significance....The absence of designation for such heritage assets does not indicate lower significance and they should be considered subject to the policies in HE9.1 to HE9.4 and HE10.'

#### 7.4.1.2 Extracts from Policies HE9.1 to HE9.4 and HE10

Policies HE9.1 to HE9.4 and HE10, referred to in Policy HE9, include the following;

- HE9.1 'There should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting.'
- HE9.2 'Where the application will lead to substantial harm to or total loss of significance local planning authorities should refuse consent unless it can be demonstrated that: (i) the substantial harm to or loss of significance is necessary in order to deliver substantial public benefits that outweigh that harm or loss....'
- HE10.1; 'When considering applications for development that affect the setting of a heritage asset, local planning authorities should treat favourably applications that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset. When considering applications that do not do this, local planning authorities should weigh any such harm against the wider benefits of the application....'

#### 7.4.1.3 PPS5 English Heritage guidance

The English Heritage and DCMS (Department for Culture, Media and Sport) document 'PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide' provides guidance on PPS5 and its application.

This refers to the need, for decision-making in response to an application for change that affects the historic environment, of providing and assessing, at a level appropriate to the relative importance of the asset affected, information on the asset and its extent, on its setting, and on the significance of both of these aspects. Section 5, 54 states that 'Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and

importance of the significance of a heritage asset and the contribution of its setting is very important....'

Section 5 on Policies HE6 to HE 12, 58, notes among appropriate actions (in point 5) 'Seek[ing] advice on the best means of assessing the nature and extent of any archaeological interest e.g. geophysical survey, physical appraisal of visible structures and/or trial trenching for buried remains.'

The section on Policy HE10 defines setting as follows;

'113. Setting is the surroundings in which an asset is experienced. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.

114. The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration; by spatial associations; and, by our understanding of the historic relationship between places. For example, buildings that are in close proximity but not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each. They would be considered to be within one another's setting.'

## **7.4.2 Cornwall Structure Plan**

The following policies in the Cornwall Structure Plan relate to the historic environment.

### **7.4.2.1 Policy 1**

Development should be compatible with:

The conservation and enhancement of Cornwall's character and distinctiveness;

The prudent use of resources and the conservation of natural and historic assets;

A reduction in the need to travel, whilst optimising the choice of modes, particularly opportunities for walking, cycling and the use of public transport;

Through developing the principles of Policy 1 it is intended to integrate environmental values with land use and transport policies, achieving patterns of development that reflect strong environmental protection and stewardship of resources.

### **7.4.2.2 Policy 2**

Throughout Cornwall, development must respect local character and:

Retain important elements of the local landscape, including natural and semi-natural habitats, hedges, trees, and other natural and historic features that add to its distinctiveness;

Contribute to the regeneration, restoration, enhancement or conservation of the area;

Positively relate to townscape and landscape character through siting, design, use of local materials and landscaping.

The conservation and enhancement of sites, areas, or interests, of recognised international or national importance for their landscape, nature conservation,

archaeological or historic importance, including the Cornish Mining World Heritage Site, should be given priority in the consideration of development proposals.

### **7.4.3 Former Caradon Local Plan**

Although now part of Cornwall Council, Caradon District Council's policies listed in its local plan continue to be relevant. Those policies concerning the historic environment are listed below.

The Caradon Local Plan contains policies designed to protect the archaeological resource, using the following elements of policy framework:

#### **Caradon Local Plan Policy CL19**

High priority will be given to the protection, preservation and enhancement of nationally important scheduled and unscheduled monuments and other sites and buildings of archaeological and historic significance in the plan area through the following measures:-

- (i) Development proposals which would prejudice the preservation of nationally important archaeological remains, whether scheduled or not, and their settings, will not be allowed unless the development is also of national importance and there is no alternative site.
- (ii) If there is evidence to suggest that significant remains may exist on the site of a proposed development, the extent and importance of which are unknown, the Local Planning Authority will request the developer to arrange for an archaeological evaluation to be carried out before the planning application is determined, thus enabling an informed planning decision to be made.'
- (iii) Where preservation in-situ is not possible the Local Authority will not allow development to take place until satisfactory provision has been made for a programme of archaeological investigation and recording prior to the commencement of the development.

#### **Caradon Policy CL20**

Where proposed development is likely to significantly affect sites of County or local archaeological importance, they should be protected in situ, unless the significance of the remains is not sufficient, when weighed against the need for development, to justify their physical preservation. Where retention of remains is not possible, the council may impose conditions or seek planning obligations to ensure that adequate archaeological records are prepared before development commences.

#### **Caradon Historic Settlements Policy EV1**

In considering proposals for development of sites in historic settlements, as shown on the proposals map, priority will be given to the protection of below ground archaeological features through the following measures.

- (i) If there is evidence to suggest that significant remains may exist on the site of a proposed development, the extent and importance of which are unknown, the Local Planning Authority will require the developer to arrange for an archaeological evaluation to be carried out before the planning application is determined, thus enabling an informed planning decision to be made.
- (ii) Where preservation in-situ is not possible the Local Authority will not allow development to take place until satisfactory provision has been made for a programme of archaeological investigation and recording prior to the commencement of the development.
- (iii) Where proposals would result in significant adverse impact on archaeology of a site or settlement, planning permission will not be granted.

(iv) By ensuring that any loss of buried features occurs only where the loss is outweighed by the reasons for the development.

(v) In considering development proposals particular importance will be attached to the need to preserve evidence of the origin and development of the settlement.

#### **7.4.4 Hedgerow Regulations**

Under the current, 1997 Hedgerow Regulations, owners wishing to remove all or part of a hedgerow considered to be historically important must notify the Local Planning Authority (LPA). Criteria determining importance include whether the hedge marks a pre-1850 boundary, and whether it incorporates an archaeological feature. The LPA may issue a 'hedgerow retention notice' prohibiting removal.

## **7.5 Archaeological results**

### **7.5.1 Chronological summary of the site and its landscape**

Although there are no known prehistoric sites within the project area, the Cornwall and Scilly SMR and NMP plotting of features showing on aerial photographs provide the context for the development of the landscape of the study area through time, the historic maps (Figs 8, 9 and 10) showing that the landscape within and around the project area was given its present form during the medieval period (derived from strip fields).

This predominantly medieval landscape is typified by small farming settlements with their associated field systems. The farmland within the site is associated with the medieval manorial settlement of Penpoll which lies immediately to the west. Medieval strip fields can still be easily discerned both within and around the site. There is potential for survival of buried remains within the site associated with the medieval settlement and also the possible site of a chapel.

However, in the wider landscape around the project area much of the land is likely to be underlain by an earlier agricultural landscape which is likely to date back to the Iron Age or to the Romano-British period in the early centuries AD which is indicated by the presence of Iron Age/Romano-British hillforts to the south and north. The presence of the hillforts suggests there is potential for the remains of rounds, unenclosed structures and settlement related features surviving elsewhere in the landscape which may not have been detected by the NMP. There is also the potential for the survival of below-ground remains of both Bronze Age and Neolithic sites within this area of former AEL.

A process of map regression helps to understand the recent landscape history of the site. Martyn's map of 1748 (Fig 6) is not greatly detailed but shows the development area bounded to the west and south by streams, Penpoll being shown as a farm complex. The c1809 OS surveyors' drawing (Fig 7) is not greatly detailed either but shows the road to the north of the project area, as well as that to Penpoll to the west.

In 1840, as today, the area proposed for the solar farm lay within the ecclesiastical parish of Quethiock. The c1840 Tithe Map shows the arrangement of fields within the project area (Fig 8), there being evidence for considerable loss of field boundaries (instead of the nine fields making up the site in 1839) there are now three fields.

The area at Penpoll is described in the Quethiock Terrier under 'Penpoll and Broom Downs' as being owned by Edward Collins Esq. and leased by George Aire (George Aire also leased the house). The fields included in the area proposed for the solar farm were described as follows:

817 Barn Field? Illegible (Arable)

818 [Illegible] (Arable)

- 819 [Illegible] (Arable)
- 820 Lower [Illegible] Park (Arable)
- 821 [Illegible] Moor (Pasture)
- 822 [Illegible] May Park (Arable)
- 823 Higher May Park (Arable)
- 824 Three Acre Meadow (Meadow)
- 825 Little May Park (Arable)

Four decades later in 1880 (and again in 1907), the OS 25" to the mile mapping (Figs 9 and 10) showed the project area still consisted of nine fields, crossed diagonally from south-east to north-west by a footpath (**site 3**). A further footpath crossed the north-eastern field from south-east to north-west (**site 4**). Between 1907 and 2005, many of the field boundaries were removed, the three northern fields, the two south-eastern fields and the four south-western fields being amalgamated into three enclosures.

## 7.5.2 Inventory of sites within the proposed development area

(See Fig 13 for site locations)

### **Site 1. Pond, SX 33963 62959**

This pond was constructed at some point between 1880 and 1907. It is shown on the Second Edition OS map of c1907 (Fig 10). It is fed by a stream or spring from the north and is enclosed on the east side by a Cornish hedge (stone-faced earth bank) approximately 0.7m high by 1m wide.

### **Site 2. Field system, SX 33838 63086**

This is the field system which extends across the site. The field boundaries that survive within the site pre-date the c1840 Tithe Map and are likely to have medieval origins as part of a strip field system. However, many of the boundaries shown on the Tithe map were removed in the 20<sup>th</sup> century. All of the surviving boundaries are stone-faced earth banks (Cornish hedges) overgrown with grass and brambles and around the farm they support mature trees including oak. On average the hedges measure 1.2m high by 1.2m wide at the base. The field boundaries are recorded in detail on the c1840 Tithe Map (Fig 8) and subsequent c1880 and c1907 OS maps (Figs 9 and 10). Remains of removed boundaries, and other early elements of the system, may survive below ground.

### **Site 3. Footpath, SX 33819 62992**

A footpath is shown on the First Edition OS map c1880 and Second Edition OS map c1907 (Figs 9 and 10) running from the north-west corner of the site down to the south-east corner. The right of way along this route still exists but the path itself was not visible at the time of the walk-over.

### **Site 4. Footpath, SX 34035 63170**

A footpath is shown on the First Edition OS map c1880 and Second Edition OS map c1907 (Figs 9 and 10) running across the north-east corner of the site. The right of way along this route no longer exists and the path is no longer visible.

### **Site 5. Penpoll manor house, medieval settlement and post-medieval house, HER No MCO11276, SX 33611 63182**

This medieval settlement was part of the Domesday Manor of Penpoll held by Aelfric prior to 1066 (LB description). The Patron of Quethiock rectory in 1317 was Stephen de Haccombe, Knight, of Haccombe in Devon, who at that time owned the large manor of Penpoll in Quethiock. [www.ebooksread.com/.../page-33-an-illustrated-postal-](http://www.ebooksread.com/.../page-33-an-illustrated-postal-)

[directory-with-map-and-historical-notice-of-twenty-paris-nne.shtml](#) The exact date of the medieval manor house is unknown but it appears to have been partially replaced with a 17<sup>th</sup> century house. The OS surveyor records from inspection and the owner's information that the west wing is the remainder of the old manor house, and the eastern part is probably as old as the main wing (HER record).

#### **Site 6. Site of medieval chapel, HER No MCO10100, SX 33611 63182?**

According to Henderson, there was a chapel recorded at Penpoll in 1375 (Henderson, 1925). The exact location of the chapel is unknown and it may lie within the development area.

#### **Site 7. Site of orchard, SX 33545 63140**

A former orchard to the south of Penpoll is visible on air photos and was plotted as part of the NMP. The orchard is also shown on the c1880 and c1907 OS maps (Figs 9 and 10).

#### **Site 8. Post-medieval buildings, SX 33945 62758**

A small enclosure containing several buildings immediately outside the south-east corner of the site is shown on the Tithe map c1840 (Fig 8) (containing two buildings), the c1880 OS map (Fig 9) (containing three buildings) and c1907 OS map (Fig 10) (containing two buildings). It is possible that this was the site of a mill.

#### **Site 9. Former medieval field boundary, SX 34048 62934**

A field boundary is visible on 1946 RAF air photos and was plotted as part of the NMP. The boundary is sited within an area of is likely to form part of a medieval field system.

### **7.5.3 Further archaeological potential**

In addition to the known sites (Section 7.5.2) other, buried archaeological remains as yet unrecorded may be expected to survive within the extent of the proposed solar farm.

Areas of 'Anciently Enclosed Land', of the 'Medieval Farmland' HLC Type (which this section of the landscape appears to represent, despite reorganisation during the 20<sup>th</sup> century) have been shown through interventions such as watching briefs and excavations elsewhere in Cornwall to have high archaeological potential. Buried traces of both secular and ceremonial prehistoric sites, as well as of medieval settlement and farming-related activity, may remain in land of this Type. There is also high potential for 'stray' or even *in situ* artefacts such as pottery and flint surviving in the soils.

## **7.6 Significance**

Of the known individual archaeological sites within and bordering to the proposed solar farm, the medieval manorial settlement of Penpoll, its manor house and post-medieval house (**site 5**) and the site of a former medieval chapel (which may lie within the area) (**sites 6**) are considered to be of high significance because of both their below-ground archaeological potential and upstanding fabric (in the case of **site 5**). Although site 6 is not designated, site 5 contains a listed building, and they are both considered to be of regional importance. Together, these sites indicate the potential for medieval below ground remains surviving within the area.

The remains of the medieval field system (**site 2**) are of moderate significance and local importance. All the other sites, the pond (**site 1**), the footpaths (**sites 3 and 4**), the orchard (**site 7**), the buildings (**site 8**), and the former boundary (**site 9**) are also of local importance. There is potential within the site for buried evidence of earlier farming and some potential for prehistoric activity.

In terms of its contribution as the setting of important 'heritage assets' *beyond* its limits, the development area has moderate to high significance. Three scheduled monuments (Iron Age/Romano-British hillforts) have inter-visibility with the site; **CO1039** Padderbury hillfort 3km to the south-west, **CO1038** Blacketon Farm hillfort 5km to the south-west and **CO309** Cadson Bury hillfort 4km to the north. The western half of the site is also clearly visible from Penpoll house (Grade II listed building). The other 35 listed buildings in the viewshed also have potential inter-visibility with the site. The site is immediately bordered to the north by an Area of Great Historic Value (AGHV) and can be seen by another AGHV 2km to the south. Port Eliot Park (a listed Historic Park) also lies within the viewshed 3.5km to the south. This Historic Park lies within a more extensive Area of Outstanding Natural Beauty (AONB) much of which lies within the viewshed.

The development area contains the remains of a medieval field system which will have potential for prehistoric or medieval features, artefacts or deposits surviving below ground.

Finally, it should be noted that the Cornish hedges still in use are considered important under the historic criteria of current hedgerow regulations, contribute to the significance of the proposed solar farm area in several, related ways. The boundaries may contain early fabric and may seal buried soils with evidence of past environments. They also indicate the time depth of the historic landscape here.

## 7.7 Archaeological Impact

### 7.7.1 Types and scale of impact

Two general types of archaeological impact associated with solar farm developments have been identified and summarised by Sharpe (2010) as follows.

#### 7.7.1.1 Types of impact; construction phase

Construction of a solar farm would have direct, physical impacts on the above-ground or buried archaeology of the site: through construction of solar arrays and associated control plant, with undergrounding of cables, and through provision of any works compound/s, and permanent or temporary vehicle access ways into and within the site.

Current plans indicate that the creation of the solar arrays within the project area will entail the driving of piles or anchors on which to site the individual arrays. In addition, linear trenching will be required to house the conduits carrying the cabling linking up the individual arrays. These various works could involve considerable ground disturbance up to 1m in depth.

Plans of the proposed solar farm at Penpoll show arrays running in rows aligned east-west over perhaps around two thirds of the ground area of the site, leaving corners and margins around the fields (Fig 5). A large area has been left around the settlement of Penpoll and another smaller area in the south-east corner of the site. Also the footpath (**site 3**) running diagonally through the site has been kept clear. To the north of the arrays, a control point with plant in a fenced rectangular compound is shown in the proposed site layout plan.

#### 7.7.1.2 Types of impact; operational phase

A solar farm may be expected to have a visual impact during the operational phase, with tightly-packed arrays of dark glass photovoltaic panels, together forming a surface in the region of 2m above ground level, extending across much of the site.

It is understood that the solar farm is regarded as a temporary development, but that its operational phase might extend for some twenty years, which may be regarded in terms of peoples' experiences of it as a generation.

### 7.7.1.3 Scale and duration of impact

As noted by Sharpe (2010) the impacts of a solar farm on the historic environment may include positive as well as adverse effects. For the purposes of assessment these are evaluated on a seven-point scale:

**positive/substantial**

**positive/moderate**

**positive/minor**

**neutral**

**negative/minor**

**negative/moderate**

**negative/ substantial**

with the additional **negative/unknown** used where an adverse impact is predicted but where, at the present state of knowledge, its degree cannot be evaluated satisfactorily.

The assessment also distinguishes where possible between **permanent** and **temporary** effects, or between those that are **reversible** or **irreversible**, as appropriate, in the application of the scale of impacts.

### 7.7.1.4 Potential and residual impacts

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming the following Section 7.7.2, where appropriate, both 'potential' and 'residual' impacts are given; that is, expected impacts 'before' and 'after' such work. A proposed mitigation strategy is outlined below in Section 7.8.

## 7.7.2 Assessment of impact

Overall, the proposed solar farm on the archaeological resource is assessed as having a potential impact scored as **negative/moderate to negative/minor**, the residual impact being **negative/minor** if the recommended mitigation is undertaken.

The assessments supporting this general statement are outlined in the following sub-sections. To comply with current policies and guidance (Section 7.4) these provide assessments of impact in terms of different aspects of the archaeological resource - its individual sites, the settings of sites, HLC, and field boundaries. There are inevitably areas of overlap between these categories of impact (the field pattern of the area forming at once a significant individual site, the setting of adjoining assets, and an intrinsic feature of the historic landscape, while including individual historic boundaries, for example); the assessment is adjusted accordingly to avoid 'double counting' of impacts.

### 7.7.2.1 Impact on known individual archaeological sites within the project area

Ground disturbance associated with the installation of supports for solar arrays or cables or with ancillary works could result in permanent, irreversible loss of upstanding or below ground remains of the known archaeological sites within the area, or elements of these. The works if up to around a metre deep might affect buried cut features.

The scale of impact will vary with the significance of the individual site, and with the proportion of the whole site which would be affected. The Cornwall and Scilly have no record of significant archaeological features within the area proposed for the solar farm. However, the medieval manorial settlement of Penpoll (**site 5**) immediately to the west and the site of a former chapel (**site 6**) potentially lying within the area



mean that the direct impact of the proposals on the site are assessed as potentially **negative/moderate to negative/minor**.

## 2.2 Impact on the project area as the setting of surrounding key heritage assets

The proposed solar farm is considered to have an impact on the setting of key surrounding heritage assets, summarised as a **negative/moderate** impact overall, as follows (see Figs 14 and 15, for locations of SMs and LBs referred to);

- During the operational phase the solar farm would detract moderately severely from the understanding of its location within an area of former medieval farmland, and so adversely affect the setting of the Scheduled hillforts at Padderbury (SM CO1039), Blaketon Farm (SM CO1038) and Cadson Bury (SM CO309) with which it provides a 'historic or aesthetic connection' of the type included in the definition of settings in the English Heritage PPS5 guidance (see Section 7.4.1.3).
- However the impacts noted above would be limited with regard to site settings because the medieval strip-derived layout evident in the remaining upstanding field boundaries means that the predominant historic character of the solar farm area today is medieval/post-medieval, so it contributes less directly to understanding of the prehistoric landscape.
- The above effects would also be limited because any direct impact on buried remains identified could be avoided or adequately mitigated (see Section 8) and because the visual impact could be reversible.
- During its operational phase the solar farm would adversely affect the setting of the neighbouring Areas of Great Historic Value (AGHV) and the listed Historic Park at Port Eliot to the south.
- During the operational phase the solar farm could also impact on the settings of up to thirty-six listed buildings within the generated viewshed within the 5km radius. The impact on the setting of Penpoll house (LB 61325) has been reduced by designing the solar array layout so that it avoids the north-western area surrounding the building.

### 7.7.2.3 Impact on Historic Landscape Character

A solar farm at Penpoll can be predicted to degrade the historic character of the landscape. The expected effect on HLC is **negative/moderate**. Factors contributing to this assessment are as follows;

- Land-take for the project would be substantial but relatively small in comparison with the very large area of Medieval Farmland containing islands of REL of which it forms part.
- Impact in terms of physical loss during the construction phase of the upstanding boundaries which form the visible components of HLC would be **neutral** or **negative/minor**.
- Visual impact throughout the operational phase would mean the loss of visibility of historic open farmland, reduced visibility of semi-natural hedgerows, and low but extensive introduction of modern design and materials.
- Some scope for mitigating measures to reduce or avoid this impact on HLC has been identified. (These relate to treatment of the historic boundary banks which form the major tangible component of HLC here; see Sections 7.8.2 and 7.8.5).
- However the impacts on the legibility of HLC could be largely or wholly reversible should the solar farm installations be removed in the future.

#### 7.7.2.4 Other archaeological impacts

Ground disturbing works here could encounter significant buried prehistoric or medieval remains (see Section 7.5), resulting in permanent, irreversible loss of these, or elements of them. This potential impact is assessed as **negative/unknown** as specific evidence for the nature and extent of any such remains is at present limited to that of aerial photography prospection which by its nature represents only a partial record. It is likely that it could be mitigated satisfactorily through archaeological recording, reducing the residual impact to **neutral** or **negative/minor**.

#### 7.7.2.5 Impact on historic field boundaries

It is understood that it is proposed that the solar farm scheme would not involve removal of the historic field boundaries, which show derivation from a medieval strip field system. However without full details of any proposed undergrounded cable ways, works access routes etc. which might entail disturbance to the Cornish hedges or their gateways, there remains a potential **negative/minor** impact on these features. It is likely that it could be mitigated satisfactorily through archaeological recording, and if appropriate, careful, guided reconstruction; reducing the residual impact on boundaries to **neutral**.

## 7.8 Mitigation Strategy

### 7.8.1 Development of pre-construction recording; geophysical survey

A geophysical (magnetometer) survey is recommended for the whole of the area proposed for the solar farm. This would allow the identification of any buried sites, not visible on the ground or on the NMP plot from aerial photographs, allowing sensitive ground to be identified as closely as possible in this area of moderate archaeological potential.

Following the completion of the geophysical survey, a Written Scheme of Investigation (WSI) should be prepared and agreed to establish and direct a programme of mitigating archaeological work. This should follow a Brief set by Cornwall Council's Historic Environment Advice Team, which would set out the scope of any further work required. It is likely to include the elements outlined below.

### 7.8.2 Close design of proposed works to reduce impact

The archaeological assessment indicates that careful design of the proposed solar farm to avoid or reduce particular impacts should be considered;

- **Field system (Site 2)** Disturbance (through works such as cable laying, gateway opening or widening) of the fabric of the upstanding elements of the medieval strip-derived field system, the hedge banks still in use as field boundaries, should be avoided or minimised to reduce loss of early features and of their contribution to HLC (see also Section 7.7.5).
- **Other significant archaeological remains** Should the recommended geophysical survey indicate any other significant archaeological sites or features, measures to avoid impact on these should be considered.

### 7.8.3 Controlled soil stripping and archaeological watching brief

Controlled soil stripping (direction by an archaeologist of mechanical topsoil and subsoil stripping) is recommended either where any large areas of ground are to be disturbed (including works compounds) or in areas where significant geophysical survey results have been identified and which remain proposed for ground disturbance in the final scheme design. This would provide for preservation by record of buried archaeological features or artefacts, and would also allow identification of any further recording or other needs such as wider excavation or sampling. In other areas where

narrow trenches or small areas of ground disturbance are proposed, an archaeological watching brief during groundworks may be more suitable.

#### **7.8.4 Excavation**

Archaeological excavation may be appropriate in advance of any ground disturbance in areas where features of high significance are found during the geophysical survey or controlled soil strip.

#### **7.8.5 Boundary recording and reconstruction**

Any of the historic field boundaries or parts of these disturbed by the works should be recorded in advance. Where sections of boundaries are to be taken down to allow access for construction vehicles or for cable routes, sections through them should be drawn at a suitable scale. Boundaries should also be sampled for buried soils and palaeoenvironmental evidence if considered appropriate by the recording archaeologist. If possible boundaries so disturbed should be re-instated using original or similar local rubble stone, and in the existing style.

#### **7.8.6 Analysis and presentation of findings**

The results of the mitigating archaeological recording outlined above should be compiled and analysed, and significant findings should be presented as required, with publication to professional standards as appropriate.

## **7.9 References**

### **7.9.1 Primary sources**

Thomas Martyn, 1748. Map of Cornwall (photocopy at HE)

Ordnance Survey, c1809. *2 Inch Drawing*

Tithe Map and Apportionment, c1840. *Parish of Quethiock* (microfiche copy at HE)

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Ordnance Survey, c1907. *25 Inch Map* Second Edition (licensed digital copy at HE)

Ordnance Survey, 2007. *Mastermap Digital Mapping*

[www.ebooksread.com/.../page-33-an-illustrated-postal-directory-with-map-and-historical-notice-of-twenty-parishes-nne.shtml](http://www.ebooksread.com/.../page-33-an-illustrated-postal-directory-with-map-and-historical-notice-of-twenty-parishes-nne.shtml)

### **7.9.2 Publications**

Cornwall County Council 1994. *Cornwall Landscape Assessment* Truro

Gover, J E B, 1948. *Placenames of Cornwall*. Typescript held by the Courtney Library, RCM

Henderson, C, 1925. *The Cornish Church Guide*. 189

Padel, O, 1985. *Cornish Place-Name Elements*, English Place-name Society: Nottingham

Parkes, C, 2010. *Proposed Brill Solar Farm, Constantine, Cornwall Archaeological Assessment* Cornwall Council: Truro

Sharpe, A, 2010. *Proposed Four Burrows Solar Farm, Cornwall Archaeological Assessment* Cornwall Council: Truro

Sturgess, J, 2010. *Proposed Kernow Solar Farm, Newquay, Cornwall, Archaeological Assessment* Cornwall Council: Truro

Sturgess, J, and Sharpe, A, 2010. *Proposed Tregonning Solar Farm, St Enoder and St Newlyn East, Cornwall, Archaeological Assessment* Cornwall Council: Truro

### **7.9.3 Project archive**

The HE project number is **2011007**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Kennall Building, Old County Hall, Station Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Digital photographs and map drawings stored in the directory R:\Historic Environment (Images)\SITES M-P\Penpoll solar farm assessment 2011007
3. Viewshed mapping stored in the directory L:\Historic Environment (Data)\HE\_Information\Viewsheds\Solar\_Panels\Penpoll\_solar\_multiple\_viewshe d.shp
4. This report text is held in digital form as: G:\Historic Environment (Documents)\HE Projects\Sites\Sites P\Penpoll solar farm assessment 2011007\report 2011007\ Penpoll solar farm assessment report 2011007

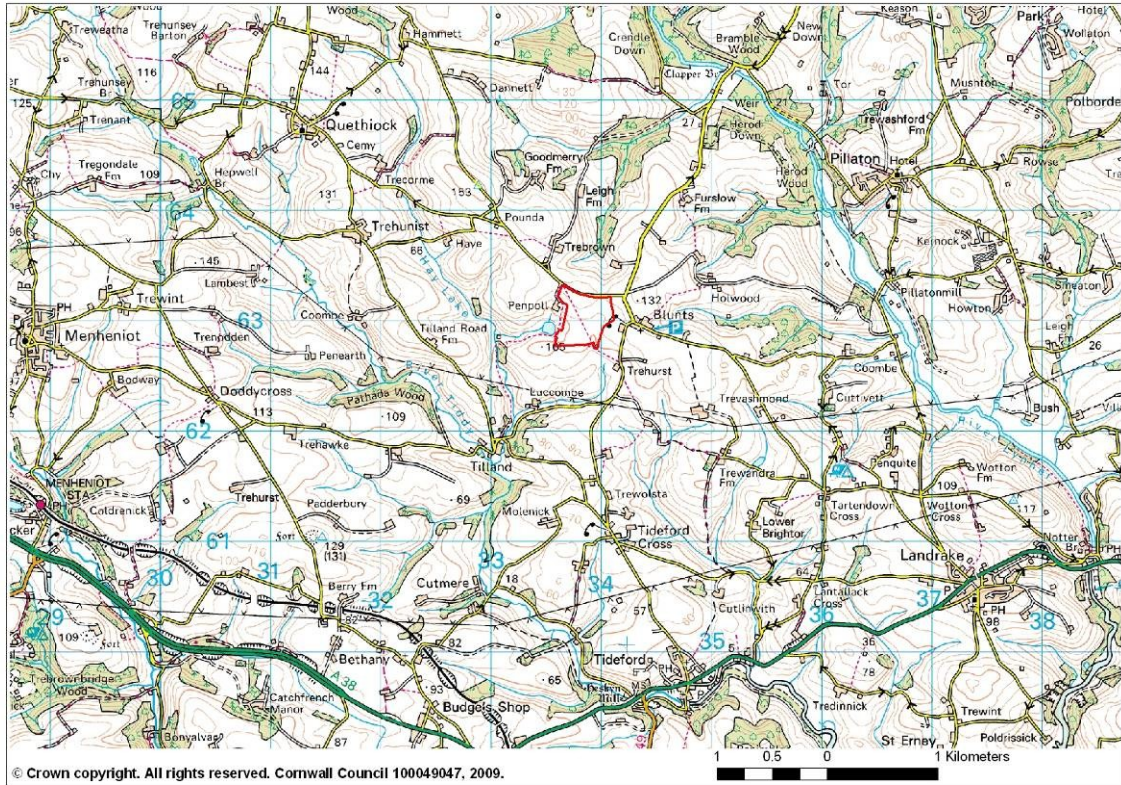


Fig 4 Location map

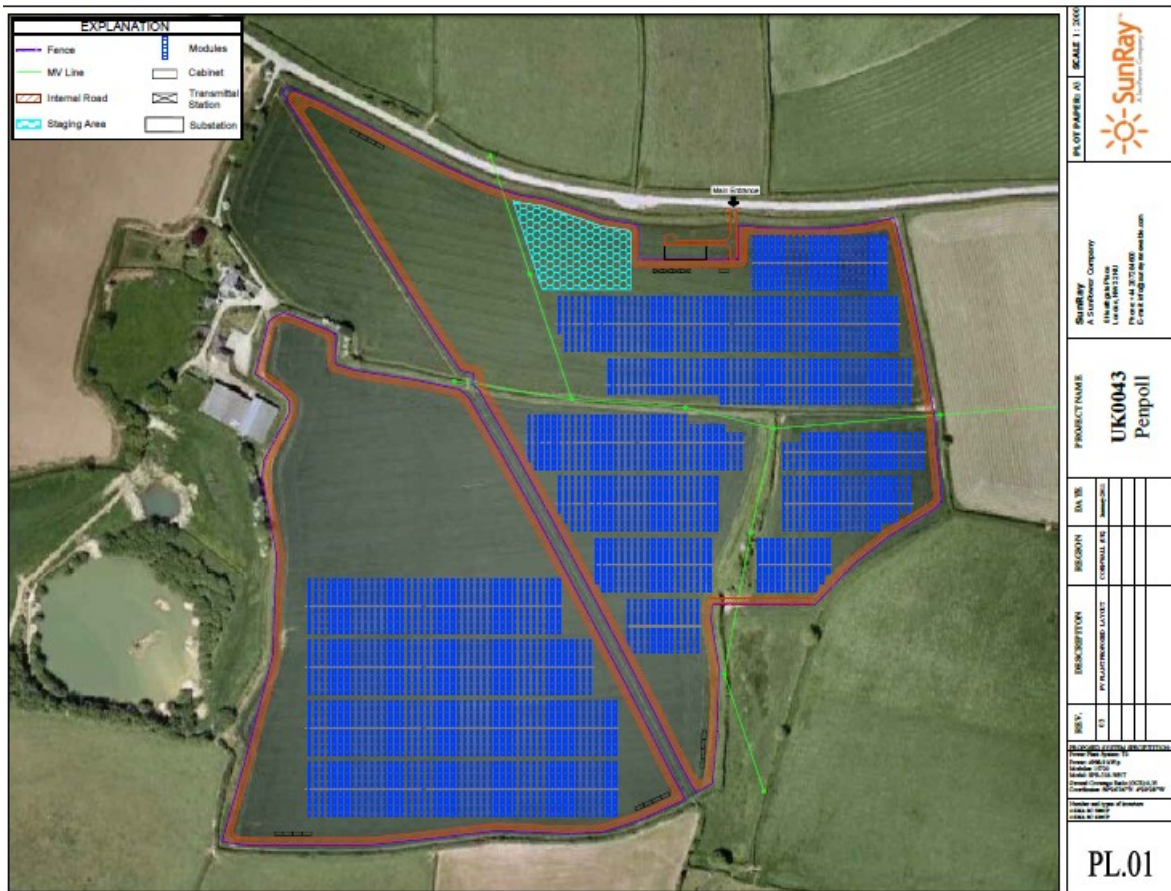


Fig 5 Plan of the proposed solar farm, showing solar arrays (in blue)



Fig 6 Thomas Martyn's map of 1748



Fig 7 The area on the c1809 OS Surveyors' drawing



Fig 8 Extract from the Tithe Map c1840 for the Parish of Quethiock

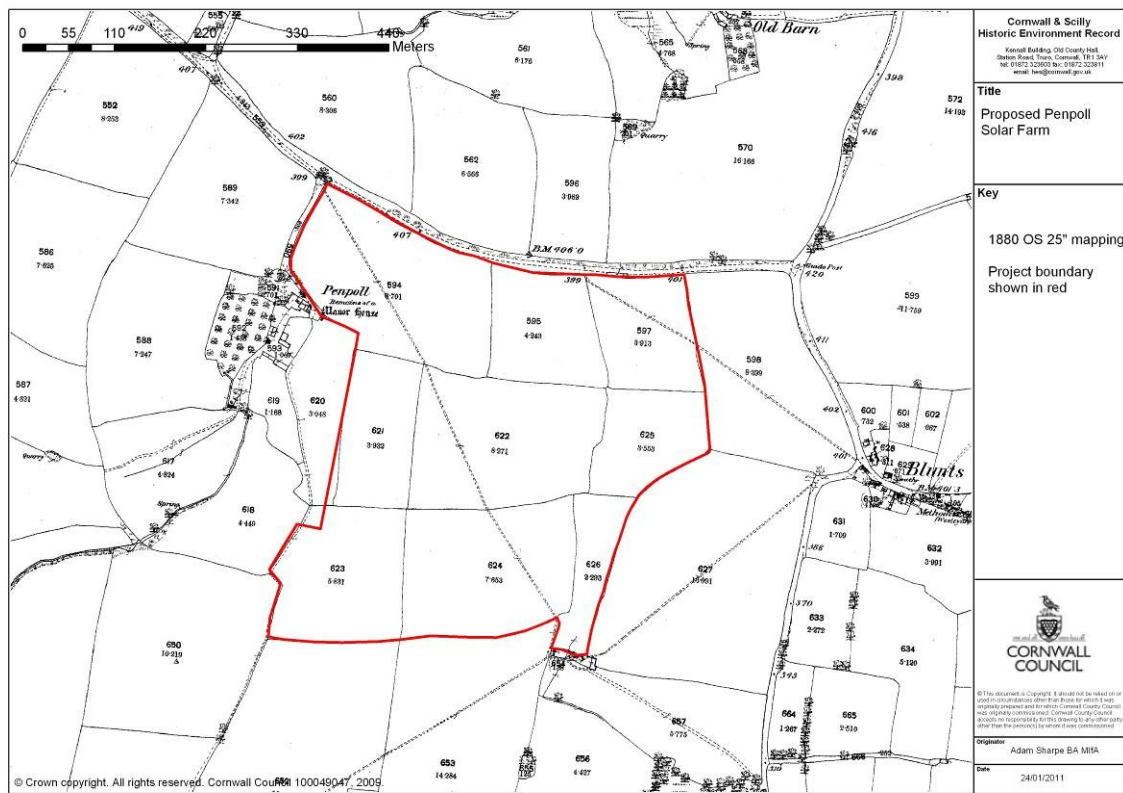


Fig 9 First edition OS 25" map of c1880

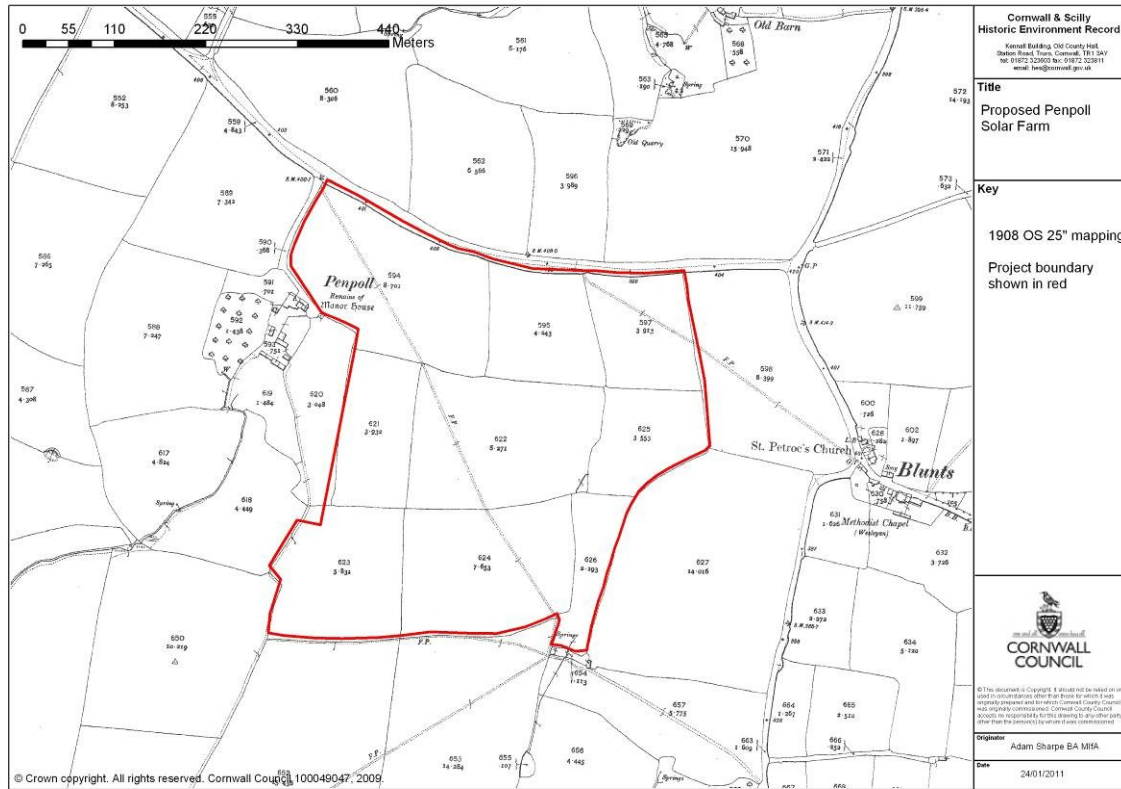


Fig 10 Second edition OS 25" map of c1907

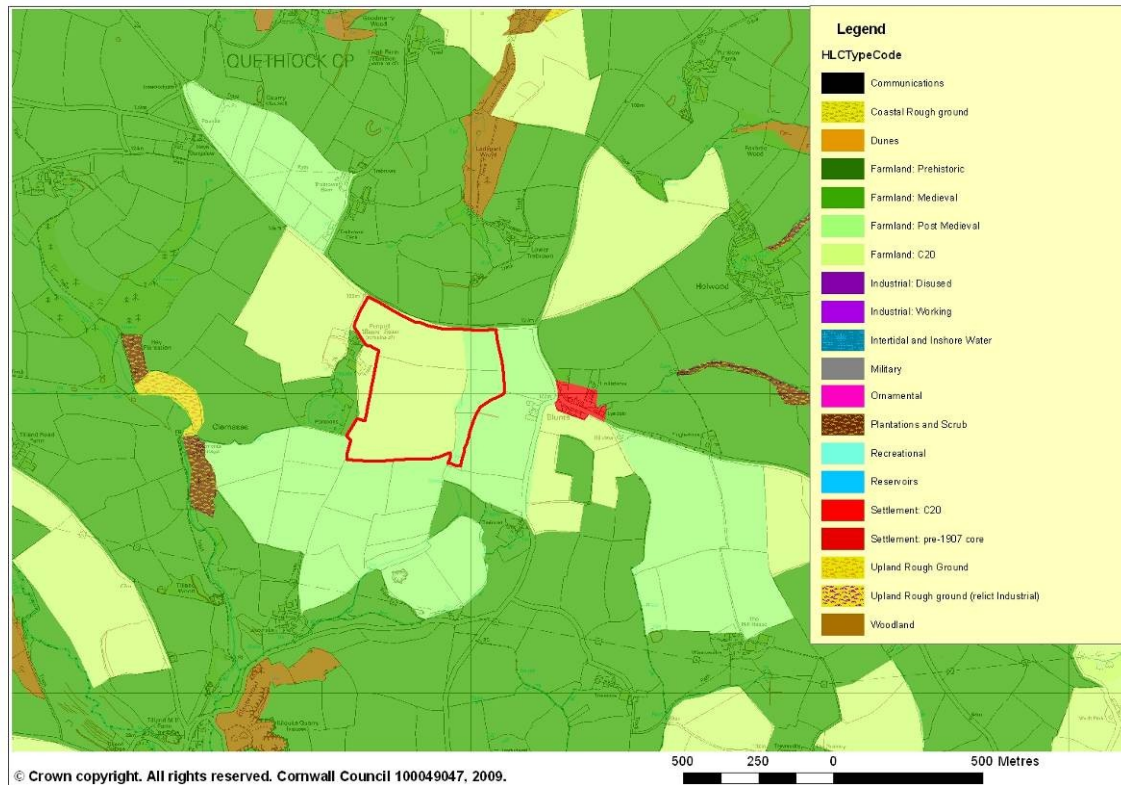


Fig 11 The 1994 HLC mapping



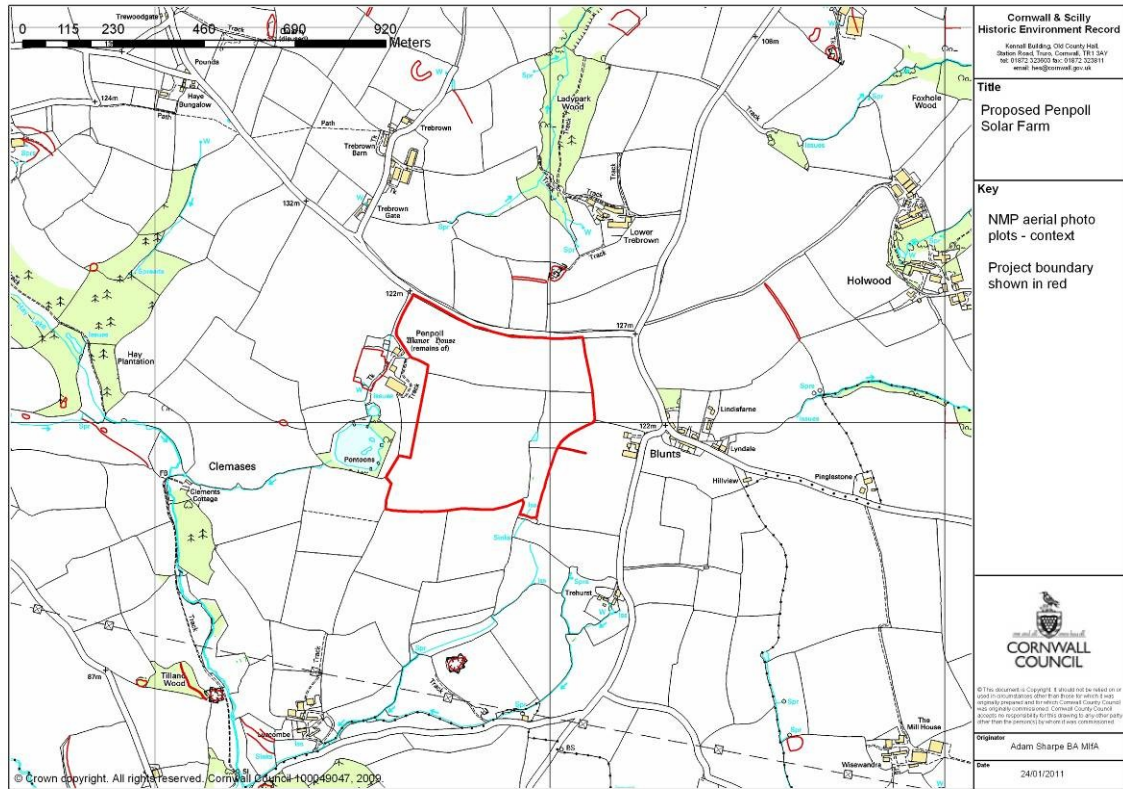


Fig 12 Distribution of features plotted by the NMP within a 1km radius of the site

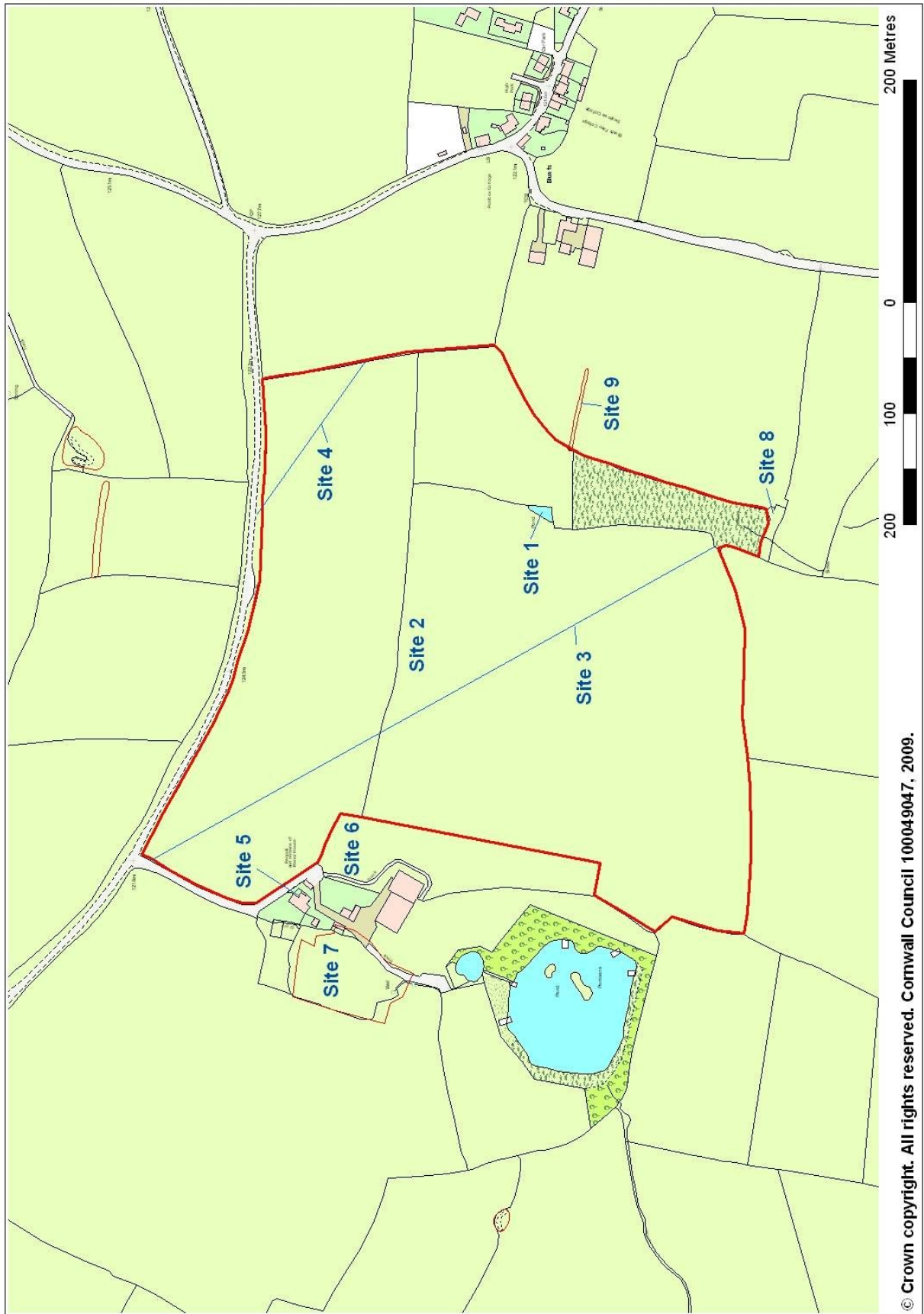


Fig 13 Archaeological sites location map

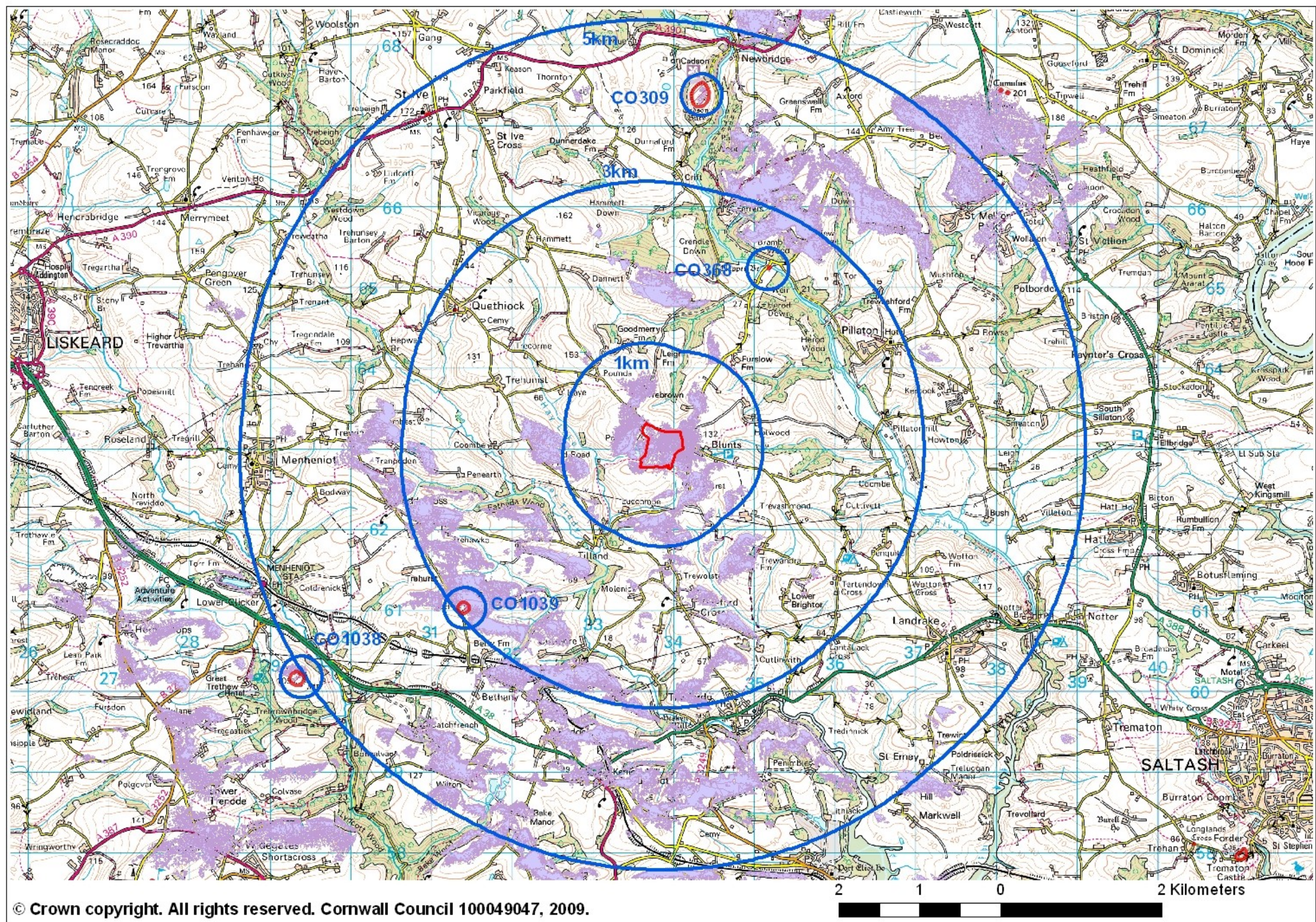


Fig 14 Map showing the computer generated viewshed of the proposed solar farm (in purple), and Scheduled Monuments (red but circled in blue) within a 5km radius



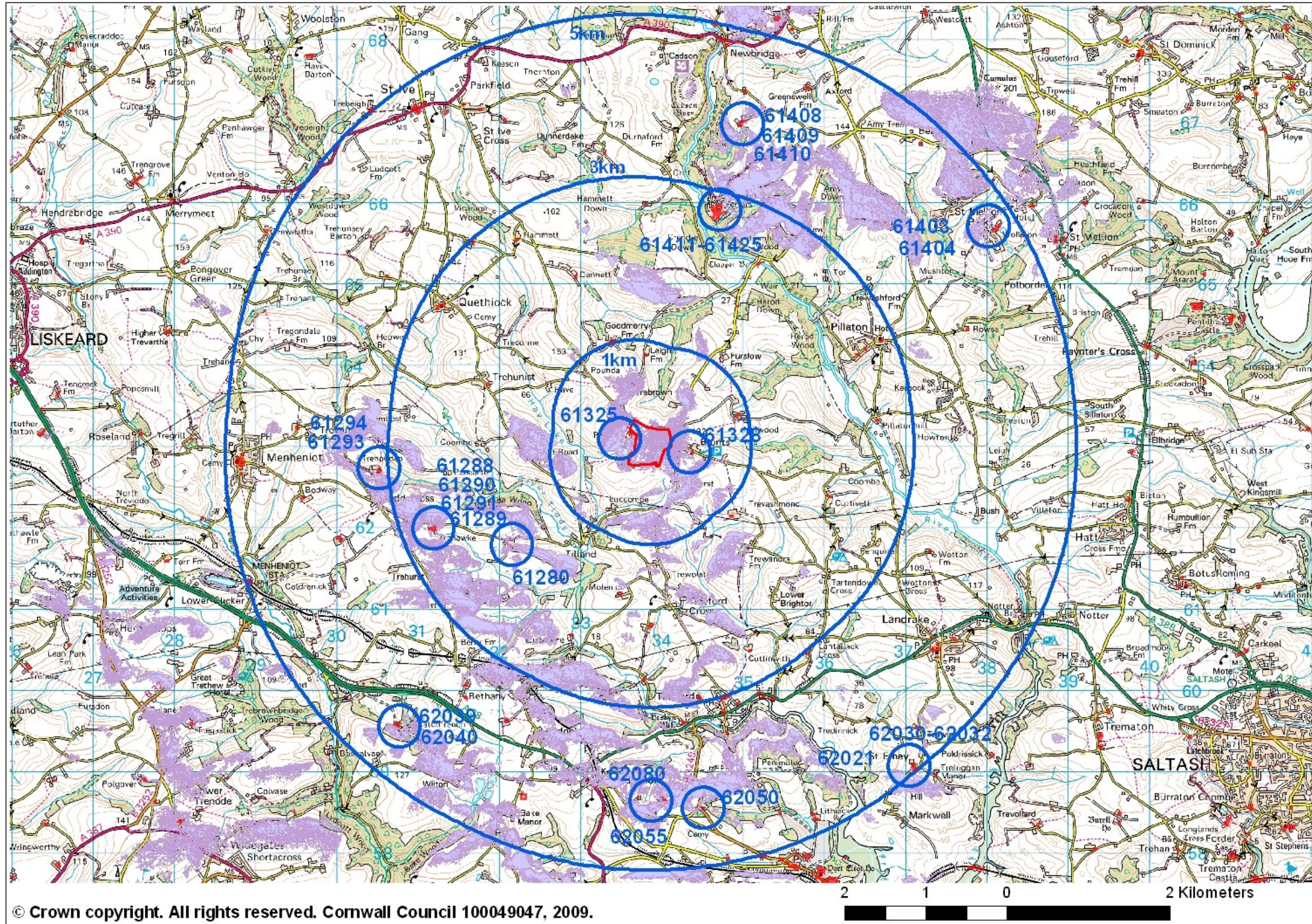


Fig 15 Map showing the computer generated viewshed of the proposed solar farm (in purple), and listed buildings (red but circled in blue) potentially visible within a 5km radius



## **Addendum for Trevemper solar farm archaeological assessment**

Following the completion of the archaeological assessment of the proposed solar farm at Penpoll a geophysical survey was carried out to include the majority of the proposal area excluding the south-west corner (Fig 1). The survey (undertaken by ArchaeoPhysica) was carried out to satisfy mitigation measures for geophysical survey which were recommended in the archaeological assessment.

The results of the magnetometer survey are presented in a full report supplied by Martin Roseveare of ArchaeoPhysica. The interpretation drawings from this report are shown here in Figs 3 and 4. It should be noted that geophysical surveys are only a partial representation of the features that survive below ground and that this site has high potential for the survival of other (as yet undetected) archaeological features.

The geophysical interpretation drawings (Figs 3 and 4) show both prehistoric and medieval activity of high archaeological significance scattered across the proposal area. The clear results show that the majority of features are well preserved and they are indicative of an area which has been settled throughout most of the prehistoric period. Prehistoric features include enclosures, field systems and settlement (round houses). Medieval activity is represented by features associated with a former strip field system, remnants of plough furrows and enclosures. The medieval field system itself is partially preserved in the existing field boundaries.

The prehistoric elements of the site should be viewed as of regional or potentially national importance.

The new archaeological features revealed by the geophysical survey have now altered the assessment of impacts previously stated in the archaeological assessment.

The impact on known archaeological features identified through the assessment or geophysical survey is now assessed as **negative/substantial** and the potential impact of the solar farm on unknown (as yet unidentified) below ground archaeological features remains assessed as **negative/unknown** (although the potential for the presence of these features is now high).

The mitigation recommendations set out within the archaeological assessment remain unchanged.

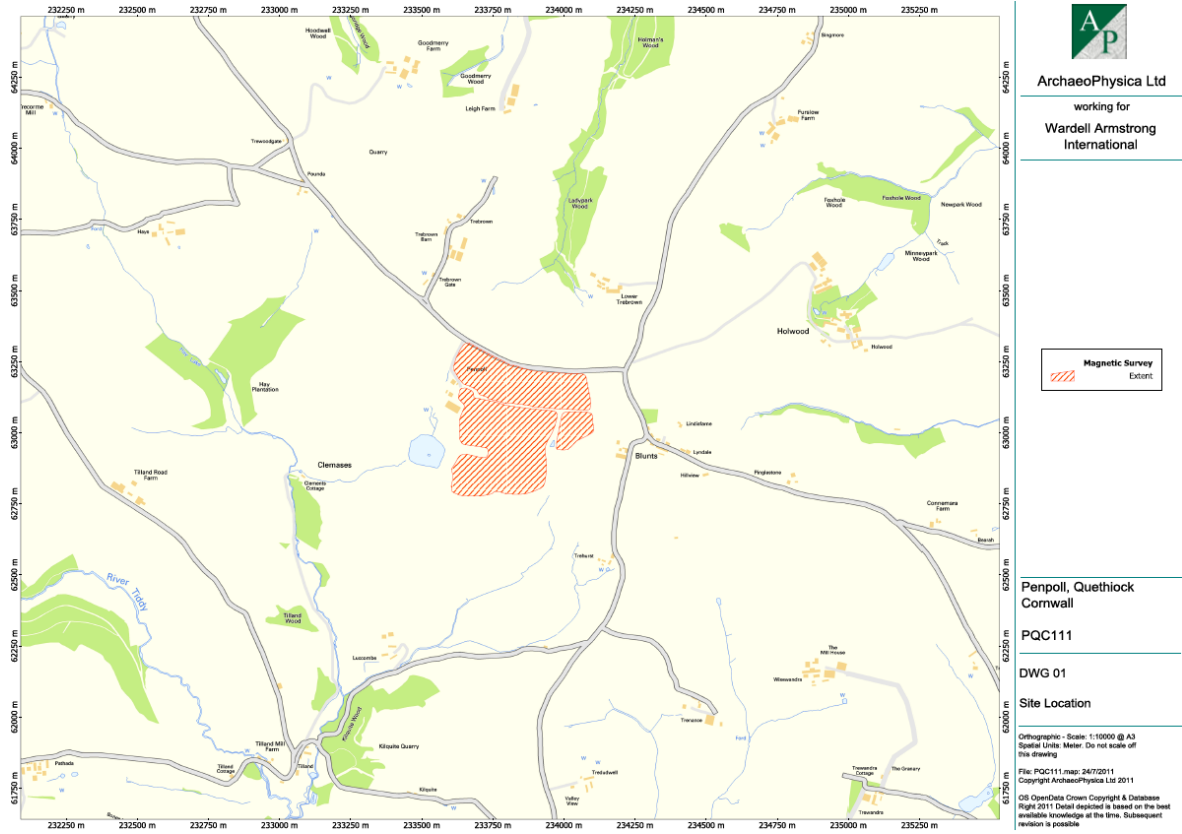


Fig 1: Extent of geophysical survey area



Fig 2: Solar array proposal plan (supplied by The Green Company (Europe) Ltd)





Fig 3: Geophysical survey interpretation drawing of northern half of site (© ArchaeoPhysica)



Fig 4: Geophysical survey interpretation drawing of southern half of site (© ArchaeoPhysica)