Report No: 2012R006

Higher Trevartha proposed solar farm, Menheniot, Cornwall

Archaeological Assessment

Historic Environment Projects

Higher Trevartha solar farm, Menheniot, Cornwall

Archaeological Assessment

Client	**Smarter Energy Solutions**
Report Number	**2012R006**
Date	**30/01/2012**
Status	**Final**
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Acknowledgements

This study was commissioned by Kelly Sykes on behalf of Smarter Energy Solutions and carried out by Historic Environment Projects, Cornwall Council.

Viewshed modelling was undertaken by Carolyn Royall.

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.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

Historic Environment, Cornwall Council is a Registered Organisation with the Institute for Archaeologists

Cover illustration

Looking south-west from the site proposed for the Higher Trevartha solar farm towards Menheniot.

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Abbreviations

CRO	Cornwall County Record Office
EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
NGR	National Grid Reference
OS	Ordnance Survey
PRN	Primary Record Number in Cornwall HER

1 Summary

HE Projects Cornwall Council were approached on 04 January 2012 by Kelly Sykes, acting on behalf of Smart Energy Solutions, with a request to undertake a desk-based archaeological assessment of an 8.91Ha site at Higher Trevartha, centred at SX 27733 64125 to the east of Liskeard which has been proposed as the site for a solar pv farm. In tandem with the DBA, Smarter Energy Solutions also commissioned a geophysical survey of the site from Archaeophysica Ltd.

HE Projects contacted Phil Copleston, HEPAO for East Cornwall on 04/01/2012 with a request for a brief for this work. Mr Copleston supplied the requested information (which forms the basis for this WSI) by email on 05 January 2012.

The site consists of three adjoining fields set on a south-east facing slope to the south of Higher Trevartha, Menheniot, occupying an area of Anciently Enclosed Land (AEL) representing groups of fossilised former medieval strip fields. Its eastern edge was formerly traversed by a roadway passing through Higher Trevartha and running south to Tregrill, though over the past century and a half this has been downgraded to a footpath.

Desk-based assessment confirmed the medieval origins of the three fields proposed for the development. Although nothing was available to indicate anything of the earlier history of this part of the Cornish landscape, it is assumed that this area of AEL would have been farmed during late prehistory.

The geophysical survey revealed traces of a documented removed boundary, two ploughed out linear features parallel to and adjacent to modern boundaries in the eastern and central fields, a curvilinear linear feature of indeterminate age in the eastern field and some evidence for plough cultivation. The walkover survey revealed no additional archaeological features.

Viewshed mapping used to determine the potential impacts of the development of the solar farm on key heritage assets within the surrounding landscape suggested that, given the location and orientation of the site, these were unlikely to be significant. In relation to impacts on Historic Landscape Character, the impacts were judged to be likely to be slightly more significant, as a result of the introduction of modern features into a landscape which currently by and large lacks such elements. The potential impacts on key heritage features were field checked, confirming the results suggested by the viewshed modelling. Intervisibility with the Grade I Listed Menheniot Church was found to be partial and attenuated by distance.

The report summarises the results of the desk based assessment and surveys and sets out an appropriate mitigation strategy to minimise any avoidable negative effects on the historic environment, should the development proceed.

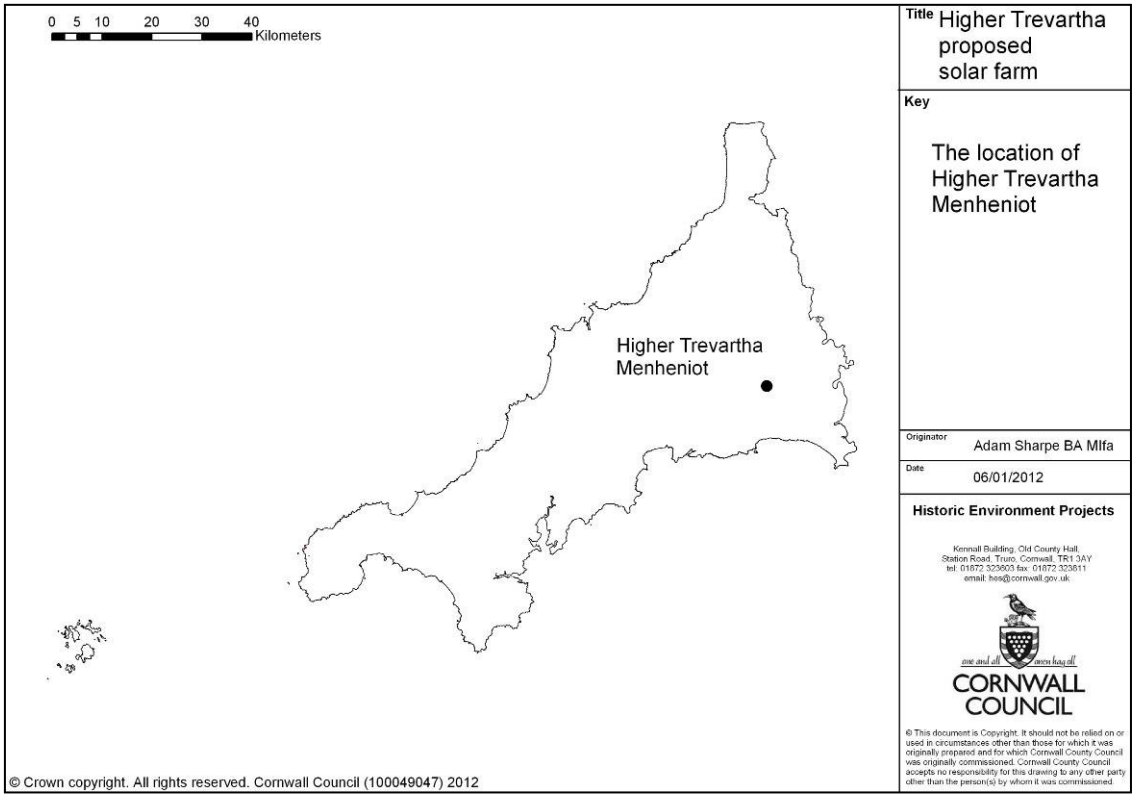

Fig 1. The location of Higher Trevartha, Menheniot.

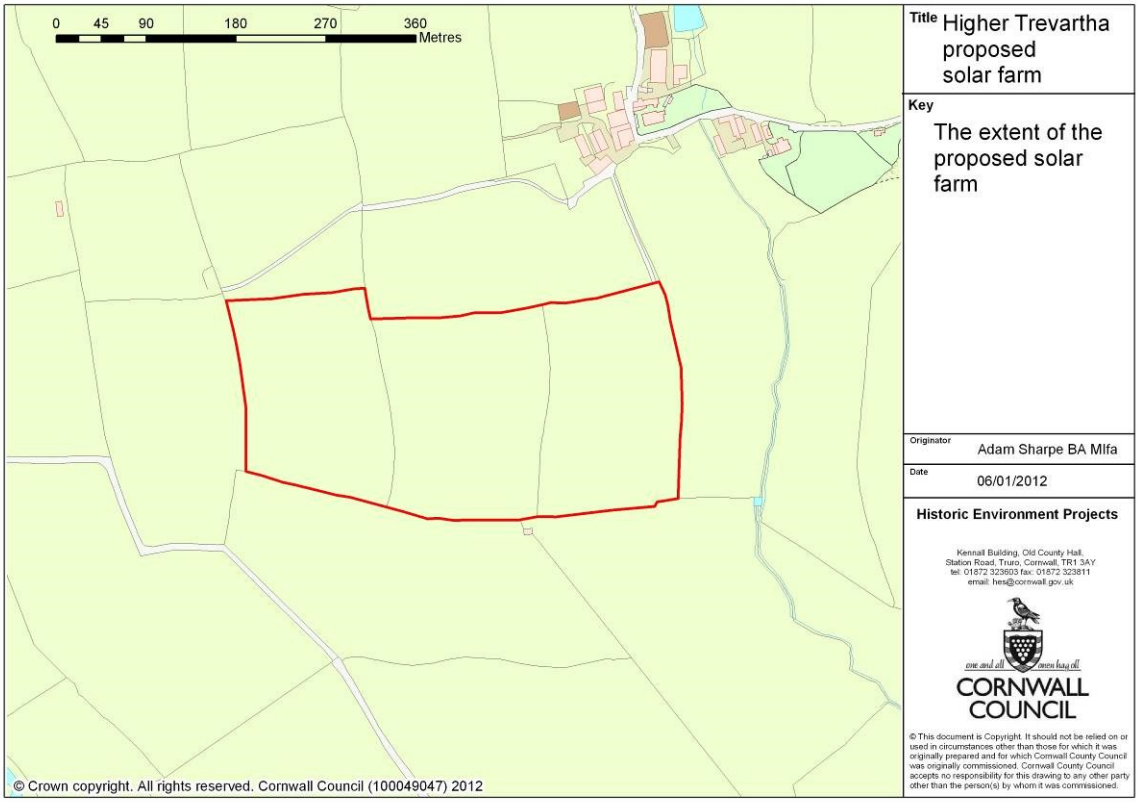

Fig 2. The extent of the project area at Higher Trevartha.

2 Introduction

2.1 Project background

HE Projects Cornwall Council were approached on 04 January 2012 by Kelly Sykes, on behalf of Smarter Energy Solutions, with a request to undertake a desk-based archaeological assessment (DBA) of an 8.91Ha site at Higher Trevartha, centred at SX 27733 64125 to the east of Liskeard, which has been proposed as the site for a solar photovoltaic farm. In tandem with the DBA and viewshed analysis, Smarter Energy Solutions commissioned a geophysical survey of the site from Archaeophysica Ltd.

HE Projects contacted Phil Copleston, HEPAO for East Cornwall on 04/01/2012 with a request for a brief for this work. Mr Copleston supplied the requested information (which forms the basis for this WSI) by email on 05 January 2012.

2.2 Aims and objectives

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 Higher Trevartha, Menheniot, Cornwall.

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 requirements of PPS5 HE6 (information requirements).

The aims of the archaeological geophysical survey were to:

- Undertake an archaeological magnetometer survey
- Produce a report containing the geophysical data and the data in interpreted form
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains is recommended.

2.3 Methods

2.3.1 Desk–based assessment

As part of the desk-based assessment (DBA), historical databases and archives were consulted in order to obtain information about the history of the site and its surroundings, and the structures and features recorded within the site boundaries. The main sources consulted were as follows:

- Published sources available at the Cornwall and Scilly HER
- Historic maps including
    - Joel Gascoyne's map of Cornwall (1699)
    - Norden's Map of Cornwall (1728)
    - Thomas Martyn's map of Cornwall (1748),
    - OS 1 inch survey (c1810)
    - Menheniot Tithe Map (c1840),
    - 1st and 2nd Editions of the OS 25 inch maps (c1880 and c1907)
- Modern maps
- National Mapping Programme transcripts from aerial photographs
- Other aerial photographs in the Cornwall and Scilly HER

- Historic Landscape Characterisation mapping.
- Cornwall and Scilly Historic Buildings, Sites and Monuments Record (HBSMR)
- Information held as GIS themes on the Cornwall and Scilly HER

The historical and landscape context of the site were also considered during this stage of the assessment in order to establish the types of heritage assets which are located within the area surrounding the proposed solar farm.

2.3.2 Viewshed analysis

An assessment of the impacts of the proposals on the surrounding area was made using the guidelines and methodological approaches set out in English Heritage's recent consultation draft guidance on the setting of heritage assets. This was based on GIS-based viewshed mapping produced using a model of theoretical inter-visibility between with the arrangement of solar arrays proposed for the site and significant heritage assets within the surrounding landscape; the viewshed (ZTV or Zone of Theoretical Visibility) was generated using ArcGIS software. The methodology employs 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 a range of 'observer points' based on the centroids of the three fields in which the arrays are proposed. These have been combined to produce a *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 at Higher Trevartha, the viewshed was 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 2.0m to represent the height of the solar array. Viewshed checking is undertaken, given that vegetation may block views to key sites, whilst significant heritage assets within the theoretical viewshed are routinely visited (where access is possible) to determine intervisibility with the proposed development site, and hence the scales and types of any visual impacts which might affect their settings, as required by English Heritage. A viewshed radius of 3Km was used to determine potential impacts on designated heritage assets and a radius of 1Km for undesignated heritage assets (see Figs 16 & 17).

2.3.3 Fieldwork

In order to check the validity of the Zone of Theoretical Visibility indicated by the viewshed analysis, and thus the potential impacts on key heritage assets within the ZTV, site visits were made on 18 January 2012 to both the site proposed for the solar farm, and to key locations within the surrounding landscape, in particular the Grade I Listed Menheniot Church. A visual check and photographic record were made of intervisibility (or the lack of it) between the proposed development area and the heritage assets indicated by the ZTV as being likely to be intervisible with it. A full walkover survey of the site proposed for the solar farm was also undertaken.

2.3.4 Fieldwork – geophysical survey

A geophysical survey of the three fields making up the proposed solar farm at Higher Trevartha was commissioned by the client from Archaeophysica, and its results are summarised in this report.

Geometrics MagMapper G858 caesium vapour magnetometers were used for the survey, using a high performance sledge mounted acquisition system. The four sensors were sited approximately 0.3m above the ground surface to maximise sensitivity while decreasing the influence of surface anomalies. A line separation of 0.5m was used and

the along line interval was approximately 0.25m following English Heritage guidance. As the ground conditions were suitable, the instruments were deployed as an array mounted on a specially-constructed nonmagnetic high performance sledge towed by a quad bike, offering a faster rate of coverage, minimal contact with the ground and a stable measurement platform. The sled-based approach avoids the need for extensive grid set out because real time tracking is provided by a GNSS receiver mounted on the sledge. Data coverage is guided by real time track plotting visible to the driver of the quad bike, who also monitors instrument data, positioning quality and survey resolution through continuous display on a ruggedized laptop mounted on the quad.

The field data was subjected to normal potential field processing techniques including reduction of the background regional field and splitting of the resultant residual field into different depth models through analysis in the frequency domain, yielding a shallow data set modelling anomalies likely to originate within the upper 3.0m of ground, and also a pseudo-gradient data set which models the response of a 1.0m vertical gradiometer.

The data was presented as a series of greyscale images overlaid onto map data georeferenced to the Ordnance Survey grid. A separate catalogue map graphically highlights the most significant anomalies regardless of their origin, and also provides a numerical key to a detailed anomaly catalogue included within the Archaeophysica report. Significant aspects of the results are discussed in the geophysical report, and are accompanied by a detailed methodological description, and a justification and analysis of the geophysical environment and its impact upon or presence within the data.

The geophysics report has been made available to Historic Environment Projects, Cornwall Council, and its findings have been incorporated into this assessment report which will form the basis of recommendations for any further investigative work or other archaeological mitigation required on the site.

2.3.5 Post-fieldwork

On completion of the project and following review with the HE Project Manager the results of the study were collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006*. The site archive will initially be stored at ReStore, with the eventual aim of deposition at Cornwall Record Office.

An archive report (this report) has been produced and supplied to the Client. This report has been lodged with the Cornwall and Scilly Historic Environment Record (HER) and will be made available for public consultation once a planning application for the development has been submitted. A copy of the report will be supplied to the National Monuments Record (NMR) in Swindon, to the Courtney Library of the Royal Cornwall Museum and to the Cornish Studies Library. All digital records are filed on the Cornwall Council network.

An English Heritage/ADS online access to the index of archaeological investigations (OASIS) record has been made covering this assessment project.

3 Location and setting

The site is centred at SX 27733 64125, 2Km to the east of Liskeard in the parish of Menheniot (Fig 1), extends to 8.91Ha, and measures approximately 435m east-west and 205m north-south. It consists of three contiguous south-east sloping fields (Fig 2) whose highest point in the north-west corner of the site is at 145m OD, its lowest being in the south-east corner of the site at 100m OD (Fig 14).

The bedrock geology consists of slates and siltstones of the Saltash Formation, part of the Early Devonian Tamar Group, these being flanked to north and south by narrow

bands of Devonian age Microgabbro. The soils are predominantly Denbigh 1 loams over shale, though the soils in the western half of the western field are recorded as Trusham Series loams over hard rock.

CCC aerial photographs (Fig 10) show the site to have been in arable in 2005. In 2012 the three fields were in short-grazed grassland.

4 Designations

No designations apply to the site. Public Rights of Way follow the eastern and western boundaries of the site, that to the east following the route of a former hedgeline in its south-east corner where the designated right of way crosses a small part of the modern field.

5 Site history

The site is part of an area of landscape with a Historic Landscape Characterisation of Anciently Enclosed Land (Farmland Medieval), see Fig 12. The HER records two sites bordering the proposed application area – MCO43061, an early medieval field system consisting of a series of contouring lynchets, and MCO17832, the settlement of Trevartha, first recorded in 1342 (see Fig 11), which includes its Grade II Listed 17th century farmhouse and garden wall. The place name is made up two elements: 'Tre' is the Cornish name for a farmstead or settlement, whilst the second component represents a Cornish personal name. The NMP have not recorded any features within the site proposed for development as a solar farm, though early boundaries are recorded within the fields to the east of the site in the form of plough lynchets (Fig 13).

6 Results of desk-based assessment

The map regression suggests that these three fields appear to have changed little since 1840, no boundary removal and only very slight boundary changes (to the south-eastern corner of the eastern field) having taken place. The surviving boundaries appear very likely to represent fossilised bundled medieval strip fields which would formerly have been part of an open field associated with the nearby medieval settlement of Trevartha.

Gascoyne's Map dating to 1699 (Fig 3) showed Higher and Lower Trevartha as 'Trewartha' and marked the site with the symbol he used to denote a significant farmstead.

The settlement of Trevartha is not shown on Norden's 1728 map of Cornwall (Fig 4). This showed the nearby settlement of Trencreek (as 'Pencreek'), but smaller and less important farmsteads were generally omitted from Norden's mapping.

Martyn's Map of Cornwall, which dates to 1748 (Fig 5), showed Higher/Lower Trevartha as 'Trevatha', and for the first time showed the roadway from Pengover Green to the north running through Trevartha to Tregrill to the south following the eastern side of the project area.

The 1st Edition OS 1" to the mile mapping dating to *circa* 1809 (Fig 6) again showed the site lying immediately to the west of a north-south running road or lane (now represented by the public right of way following the eastern boundary of the proposed solar farm site) and occupying the southern end of a ridge between two stream valleys.

On the apportionment to the 1840 Menheniot Tithe Map (Fig 7), dating to *circa* 1840, Higher Trevartha was recorded as being owned and held by John Hodge. Field 548 (to the west) was known as *Middle Park* and measured 6 acres, 3 poles and 12 perches; Field 580 (the central field) was called *South Town* and measured 7 acres, 3 poles and

36 perches, and Field 581 (to the east, named *Higher South Town*) measured 6 acres, 3 poles and 3 perches. All three fields were recorded as arable. The roadway running south from Higher Trevartha was still shown at this date (being bounded only to the east), together with two tracks running off this along the southern edge of the fields making up the project area, that to the west running to a small barn just to the south of the south-east corner of the central field, that to the east running a short distance down to the valley floor.

The First Edition Ordnance Survey 1st Edition 25" to a mile mapping dating to *circa* 1878 (Fig 8) showed the field arrangement more or less as it exists today, though the southern end of the eastern boundary was shown with a distinct kink (the modern boundary is straight in this area). The roadway which had been shown on previous mapping was portrayed as a double-pecked line following the eastern boundary of the eastern field on its western side, suggesting that the route had become relatively informal by this date. The barn was still shown as roofed, but the lane leading to it had disappeared by 1878. The southern hedgeline of the three fields were shown as having been planted with trees, whilst occasional trees were also depicted on the northern boundary of the three fields. OS benchmarks had been established in the south-western corner of the western field, on the south-western corner of the cottage or barn and in the south-eastern corner of the eastern field.

The Second Edition Ordnance Survey 25" to a mile mapping dating to *circa* 1907 (Fig 9) showed few changes, though implied that the trees along the hedge lines had been felled by this date. The track along the eastern boundary of the site was, on this mapping, marked as a footpath. The barn remained roofed.

The modern OS mapping (Fig 2) still depicts the barn as a roofed structure, and shows that the south-eastern corner of the eastern field has been re-aligned. A Cornwall County Council aerial photograph from 2005 (Fig 10) showed the barn site to be under dense tree cover. The field to the south of the eastern field has seen some boundary removal, and there are no apparent traces of the former roadway crossing this area. Two of the three fields appear to have been cut for silage on this image.

7 Results of site walkover survey

A site walkover was undertaken on 18 January 2012. The weather was overcast, with variable cloud cover, being as low as 150m at times during the visit. The three fields were in short grass, the central field having recently been spread with slurry.

The three fields lie to the west of a relatively steeply sided valley slope, but the eastern pair of fields also slope towards the south into a subsidiary dry valley, the break of slope lying roughly a third of the way from their northern boundaries. The western field is more level than the others, its southern boundary being near the head of the valley.

The boundaries are stone-faced earth walls (Cornish hedges), their facings consisting of vertically-set small pieces of slate with intermittent larger vertically-set slabs of slate at their bases. Most of the boundaries have suffered very extensive rabbit damage, and are backed up with barbed wire fences to make them stockproof. The hedges are between 1.0m and 1.4m high, and are topped with hard-trimmed mature vegetation, which principally consists of oak, ash and blackthorn. The eastern hedgeline consists of a hedge at its northern end. Its southern half is delineated by a fenceline, reflecting the length of the boundary which was grubbed up when it was re-aligned and straightened during the 20th century.

No traces of any archaeological earthwork features were noted within the three fields examined during the walkover.

The eastern boundary of the roughly-cobbled former 3.5m wide roadway running south from Trevartha to the north-eastern corner of the eastern field still survives, is well constructed and is faced with local slate mixed with quartzy material which may

represent mine waste. Some facing collapses have has been repaired with blockwork, but in some places the facings include fragments of early post-medieval moulded stonework which presumably derive from a demolished early house at Higher Trevartha. The boundary on the western side of the lane has been removed, presumably during the widening of this feature, and the eastern side of the adjacent field has been built up with demolition rubble, some very recently disposed of. No evidence for the extension of the lane within the fields to the south was found, though its former route was marked by stiles on hedges traversed by the public right of way.

8 Summary results of geophysical survey

See Fig 21

The three fields were surveyed by Archaeophysica Ltd on 11 January 2012 using the quad bike towed, sled-mounted, multi-sensor array described above in Section 2.3.4.

No significant archaeological features were detected within the three fields. Evidence for contouring cultivation ridges was present in all three fields, though within the western field additional evidence for ploughing activity was detected running diagonally to this. A former field boundary [11] which had been shown on historic maps was detected in the south-eastern corner of the eastern field, whilst in both the eastern and central fields, ditched features [9] and [3] were plotted running parallel to and close to modern boundaries. A rather fragmentary slightly curvilinear linear feature [10] in the southern part of the eastern field is of uncertain date and interpretation, as is a much slighter feature [8] in the northern part of the same field. A scatter of small, point features [7] in the same general location as linear feature [8] may represent a scatter of pits or the effects of buried pieces of magnetically enhanced debris.

9 Results of viewshed analysis

See Figs 15-17.

Given the elevated location of the site and its orientation, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) would extend, somewhat patchily, to the south to Widegates and Looe, to the south-east to areas near Trerulefoot and the Rame Peninsula, to the east towards St. Dominick, to the north to areas near Pensilva and to the west to parts of Liskeard (see Fig 15).

Within the 3Km radius ZTV (Fig 16), the viewshed suggests that the site will be visible from the north-western parts of Menheniot, from land near Clicker Quarry to the south and from the eastern parts of Liskeard to the west. This zone includes no Scheduled Monuments, Registered Parks and Gardens or Battlefields. The areas of Liskeard suggested as likely to lie within the ZTV is to the east of the boundary of the Conservation Area for this settlement and no Listed Buildings within the town fall within the likely ZTV. At Menheniot, the western part of the Grade I Church of St. Lalluwy (DCO3746), the Grade II tomb chest of Daniel Batten (DCO3747) and the churchyard wall (DCO2528) seemed likely to fall within the ZTV. Only the roof and a small part of the western gable of the Grade II Listed farmhouse at Higher Trevartha (DCO3395) would be intervisible with the higher part of the site. The Grade II Listed garden walls at Trevartha farm (DCO1821) would not be intervisible with the site.

The viewshed analysis suggested that the site was likely to be visible from most of the eastern part of the 1Km radius ZTV (see Fig 17). Only a small number of sites recorded within the Cornwall and Scilly HER lie within this zone and were suggested as likely to be intervisible with the solar farm, these comprising elements of Wheal Trehane (MCO13157), a cropmark early medieval field system at Crift Farm to the north-east (MCO43060) and the early medieval field system to the south of Trevartha Farm (MCO43061).

Viewshed field checking

As part of the site survey, whilst views out from the site of the proposed solar farm were checked, visits were also made to key locations within the surrounding landscape to field check the theoretical ZTV. This was found to be largely correct, though modified (and limited) by vegetation and buildings in some locales.

The spire of Menheniot church and the north-western fringes of the village were clearly visible from almost all parts of the area proposed for the solar farm (Fig 18), with the exception of the lower parts of the eastern and central fields, where views were blocked by the valley side to the south. However, the church is at a substantial distance from the fields proposed for the solar farm, and in practice, views back from the churchyard were almost completely blocked by houses to its north-east, the site only being visible through a gap between two of them (Fig 19). Very partial views of the site proposed for the solar farm were available through field entrances off Mine Road to the north of Menheniot.

In relation to Wheal Trehane/Wheal Honey (MCO13157), the only element of this site which is visible from the site is the upper part of its surviving chimney, which is sited just to the east of the ridgeline. The fields proposed for the solar farm are not visible from the mine site.

It was not possible to field check intervisibility between the proposed solar farm and the site of the field system at Crift (MCO43060), but the ZTV mapping suggests that this locality would be at the outer edge of the viewshed locally, and that intervisibility would be partial and significantly attenuated by the angle of view and by intervening field boundaries.

Views of the eastern parts of Liskeard were suggested in the ZTV from the three fields, but in practice these were blocked by the rising ground of the spur and by the field boundaries. The eastern parts of the town were visible from the field immediately to the west of the three proposed for the solar farm which is sited on the summit of the spur. The sections of Liskeard visible from this field to the west consisted almost wholly of modern development, including industrial estate buildings.

10 Synthesis

The three fields proposed for the construction of a solar farm at Higher Trevartha near Menheniot are of medieval origin, representing land enclosed from former strip fields. Neither the desk based assessment nor the site walkover nor the geophysics revealed any indications of prehistoric activity having taken place on this site, though evidence of this type might have been removed or obscured as a result of many centuries of cultivation activity. There is no evidence for significant sub-surface archaeology within the fields proposed for the solar farm development.

The construction of a solar farm at this location is felt unlikely to have any significant impacts on heritage assets within the landscape surrounding it, given the relative paucity of intervisible sites within the mapped viewshed and the restricted intervisibility. The site will be visible to some limited degree from the church and churchyard of St. Lalluwy at Menheniot, and to a larger degree from the rear elevations and gardens of the buildings on the north-western side of the settlement. Given the distance between the proposed solar farm and Menheniot, and the partial intervisibility between designated heritage assets in the settlement and the proposed development, impacts on their settings will be limited. Impacts on Historic Landscape Character will be rather more significant, given that the construction of the solar farm would introduce a large area of modern materials into a landscape whose appearance is almost wholly rural and which is almost entirely made up of traditionally-farmed fields interspersed with long-established woodlands.

11 Policies and guidance

The following section brings together policies and guidance (or extracts from these) used in the development of the assessment and its methodology.

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

11.1.1 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.*'

11.1.2 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….*'

11.2 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*.'

11.3 Former Cornwall Structure Plan

The following policies in the Cornwall Structure Plan relate to the historic environment are currently used to guide responses to applications.

11.3.1 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.'

11.3.2 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 proposed World Heritage Site, should be given priority in the consideration of development proposals*.'

11.4 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 Policy CL21

Proposals for development affecting the historic parks and gardens listed by English Heritage and shown on the proposals map will not be approved unless all of the following criteria can be satisfied:

(i) That the important historic and architectural features, layout and ornamentation of the garden are preserved.

(ii) That the character of the parkland setting is preserved or enhanced and

(iii) That the trees and woodland that contribute towards the character of the historic garden are retained.

Caradon Policy CL22

Planning permission for development in the historic battlefield site of Braddock Down, identified on the proposals map, will not be granted if it would demonstrably harm the integrity of the site, its topography, or an appreciation of the site through views obtained across it.

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.

11.5 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.

12 Likely impacts of the proposed development

12.1 Types and scale of impact

Two general types of archaeological impact associated with solar farm developments have been identified as follows.

12.1.1 Types of impact, construction phase

Construction of the solar farm could have direct, physical impacts on the buried archaeology of the site through the installation of mountings for solar panels and associated control plant, through the undergrounding of cables, and through the provision of any works compound, together with any permanent or temporary vehicle access ways into and within the site. The information supplied by the client for this assessment does not make it clear how the proposed solar farm is to be connected to the National Grid.

12.1.2 Types of impact, operational phase

A solar farm might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during the operational phase, given the scales of such developments and the introduction of large areas of new materials into the rural landscape. Such factors also make it likely that the development would have an impact on Historic Landscape Character.

12.1.3 Scale and duration of impact

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.

Negative/unknown is 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.

12.1.4 Potential and residual impacts

Potentially adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 12.2, where appropriate, both 'potential' and 'residual' impacts are given; that is, expected impacts 'before' and 'after' such work, principally in relation to the development phase. A proposed mitigation strategy is outlined below in Section 13.

12.2 Assessment of impact

Overall, the impacts of the proposed solar power installation on the archaeological resource are assessed as having a potential scored as **negative/minor**. Impacts on potential sub-surface archaeology within the development site might be higher, but could be limited to **negative/minor** or **neutral** provided that any 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 11) 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 assessment is adjusted accordingly to avoid 'double counting' of impacts.

12.2.1 Impact on archaeological sites within the development area

Ground disturbance associated with the installation of supports for the arrays, cables or ancillary works during the construction phase could result in permanent, irreversible loss of below ground remains of archaeological sites within the area, or elements of these. The works if deeper than current topsoil levels might affect buried cut features.

The scales of impact will vary with the significance of each individual site, and with the proportion of any site which would be affected. Notably, buried features could be disturbed, truncated or removed. In the absence of detailed information regarding the survival of sub-surface archaeology within the development area and the extent of groundworks or other potentially intrusive activity associated with the development, this impact is considered to be **negative/unknown**, with a residual impact of **negative/minor** or **neutral** provided that appropriate mitigating work is carried out. These impacts would be **permanent** and **irreversible**.

Identifier	Site	NGR	Impact/recommendations
MCO43061	Medieval derived field system	Centred SX 22742 64144	Damage to sub-surface archaeology through foundation and cable trenching.
None	Buried archaeological sites, possibly including funerary, ceremonial or settlement sites.	Fields centred SX 22742 64144	Archaeological watching brief during groundworks.

12.2.2 Impacts on the settings of surrounding key heritage assets

The proposed solar farm is considered to be likely to have some impacts on the settings of key surrounding heritage assets, these being summarised as **negative/minor** to **neutral** overall:

- During the operational phase the solar farm is unlikely to impact to a significant degree on the setting of the Listed Buildings within its viewshed, given the partial nature of any intervisibility and their distance from the site (averaging 1.68Km at Menheniot, see Fig 16). Whilst most of the solar farm will be intervisible with the Grade I Listed church at Menheniot, its construction would result in only very minor changes to the setting of the church. Intervisibility with other designated buildings in Menheniot would be very partial, whilst intervisibility with Higher Trevartha farmhouse is limited to its roof and the upper part of its western gable.
- There are no Conservation Areas within the ZTV of the 3Km radius viewshed of the proposed solar farm.
- There are no Registered Parks and Gardens within the ZTV of the 3Km radius viewshed of the proposed solar farm.
- There are no Registered Battlefields within the ZTV of the 3Km radius viewshed of the proposed solar farm.
- There are no Scheduled Monuments within the ZTV of the 3Km radius viewshed of the proposed solar farm.
- During its operational phase the solar farm is felt unlikely to impact on undesignated heritage assets within the 1Km viewshed given their natures, the partial nature of any intervisibility or their distance from the site.

Designated heritage assets within the 3Km radius viewshed

Listed Buildings (LB) – see Fig 16

Identifier	Site	NGR	Impact
DCO3746	Church of St. Lalluwy (Grade I)	SX 28778 62821	Negative/minor to neutral
DCO3747	Chest tomb of Daniel Batten (Grade II)	SX 28773 62815	Neutral
DCO2528	Churchyard wall at Menheniot (Grade II)	SX 28769 62844	Neutral
DCO3395	Higher Trevartha farmhouse (Grade II)	SX 27919 64417	Neutral

Undesignated heritage assets within the 1Km radius viewshed

See Fig 17

Identifier	Site	NGR	Impact
MCO13157	Wheal Trehane/Honey	SX 28599 63897	Neutral
MCO43060	Cropmark early medieval field system at Crift Farm	SX 28277 64735	Neutral
MCO43061	Early medieval field system at Trevartha	SX 27995 64047	Negative/minor

12.2.3 Impacts on Historic Landscape Character

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

- The land-take for the project is small in comparison with the area of the HLC Unit of Anciently Enclosed Land within the surrounding landscape. However, the proposed solar farm would be the first large scale modern development within the landscape surrounding the fields at Higher Trevartha, given that this landscape substantially retains its medieval-derived character, comprising fields whose boundaries were laid down in the early post-medieval period interspersed with areas of woodland. There are some modern features within this landscape, but they tend to be relatively small scale (former mines and quarries or small-scale engineering works) and hidden by the topography or by clumps of woodland.
- There would be no impacts in terms of physical loss during the construction phase of the upstanding boundaries which form the visible components of HLC.
- Visual impact would occur throughout the operational phase, affecting the integrity of this area as historic farmland, given the introduction of modern features into this area. Other than from the routes of public rights of way flanking and close to the site, this part of the landscape is over-looked from only a very small number of publicly-accessible points in the local landscape (principally at Mine Hill on the road north from Menheniot to Trehane), rendering the visibility of changes to its character low from the surrounding landscape. The visual impacts on the landscape will also tend to be significantly diminished by topography and distance from the site.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the solar farm be dismantled in the future.

12.2.4 Other archaeological impacts

Any ground disturbing works here could encounter significant buried prehistoric or medieval remains, 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 limited to that of aerial photography and geophysical survey. It is likely that this impact could be mitigated satisfactorily though archaeological recording, reducing the residual impact to **neutral** or **negative/minor**. These impacts would be **permanent** and **irreversible**.

13 Mitigation Strategy

A range of means to mitigate the potential impacts identified in this assessment may be considered by the Historic Environment Planning Advice Officer, and may include one or more of the following.

13.1 Site re-design

Based on the results of the geophysical survey, the HEPAO might ask the site developer to either avoid some areas of the site or to mount arrays on non-intrusive concrete shoes to avoid direct impacts on its more sensitive areas. The first approach would limit any impacts on below ground archaeology; the second approach would reduce the direct impacts on the known below ground archaeology of the site to **neutral**.

Should the finalised site design seem likely to result in unavoidable impacts on below-ground features, a Written Scheme of Investigation (WSI) will need to 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.

13.2 Controlled soil stripping and watching brief

An archaeological watching brief (observation and recording by an archaeologist during mechanical topsoil and subsoil stripping) might be required either where any significant

areas of ground are to be disturbed (for instance for the foundations for inverter units), or in areas where significant results have been identified through aerial photographs or geophysical survey and which remain proposed for ground disturbance (by, for example cable trenching or close piling) in the final scheme design. This approach would provide for preservation by record of buried archaeological features or artefacts and reduce any impacts on the below ground archaeology of the site to **negative/minor**. The resultant impacts would be **permanent** and **irreversible**.

13.3 Analysis and presentation of findings

The results of any required mitigating archaeological recording outlined above would need to be compiled and analysed; significant findings would be presented as required, with publication to professional standards where appropriate.

14 References

14.1 Primary sources

Ordnance Survey, c1809, *1" Map First Edition*

Ordnance Survey, *c*1880. *25 Inch Map* First Edition (licensed digital copy at HE)

Ordnance Survey, *c*1907. *25 Inch Map* Second Edition (licensed digital copy at HE)

Ordnance Survey, 2007. *Mastermap Digital Mapping*

Tithe Map and Apportionment, *c*1840. *Parish of Menheniot* (digital copy available at CRO)

14.2 Publications

Norden, J. 1728, *John Norden's manuscript maps of Cornwall and its nine hundreds*, facsimile edition Ed. Ravenhill, W. 1972, University of Exeter

14.3 Websites

http://www.heritagegateway.org.uk/gateway/ English Heritage's online database of Sites and Monuments Records, and Listed Buildings

15 Project archive

The HE project number is **2012005**

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 stored in the directory R:\Historic Environment (Images)\SITES.E-H\Higher Trevartha proposed solar farm 2012005
3. English Heritage/ADS OASIS online reference: cornwall2-118358
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites H\Higher Trevartha Menheniot proposed solar farm assessment\Report\Higher Trevartha solar farm report.doc

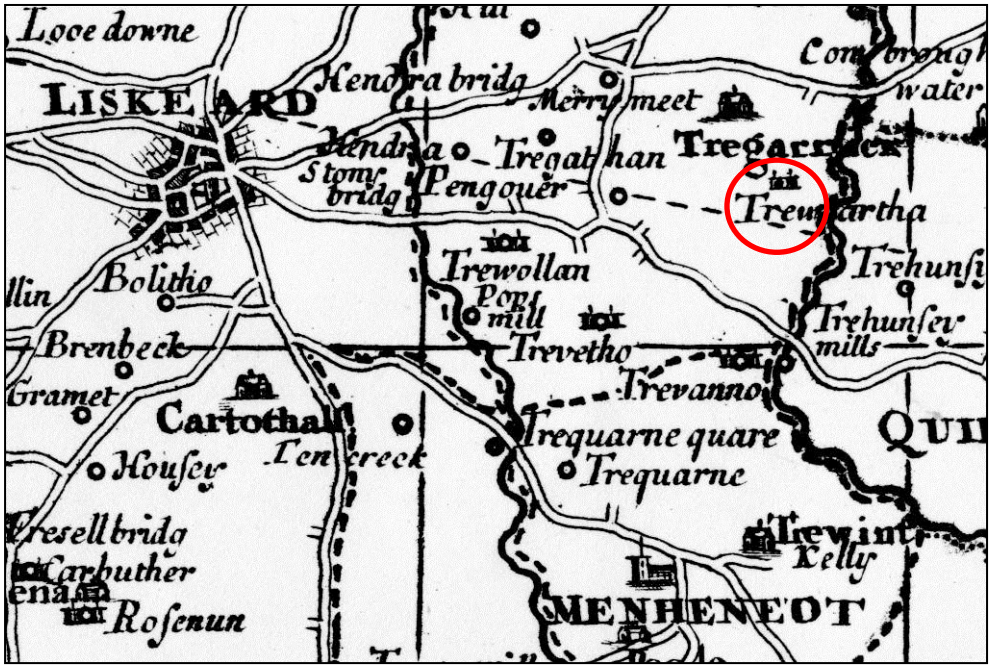

Fig 3. The project area as shown on Gascoyne's 1699 map of Cornwall. Higher Trevartha is shown as 'Trewartha' on this mapping.

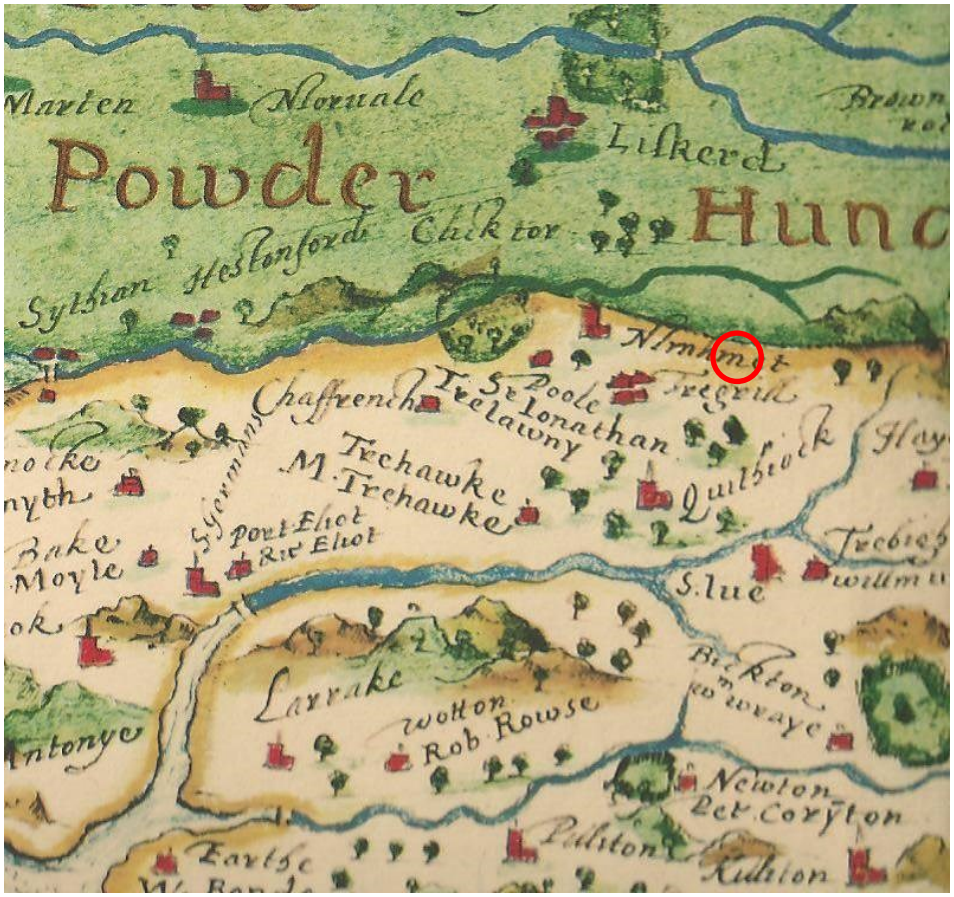

Fig 4. An extract from Norden's 1724 Map of the East Hundred of Cornwall. The location of Higher Trevartha is circled in red. North is to the right.

Fig 5. An extract from Martyn's 1748 Map of Cornwall. Higher Trevartha was shown as 'Trevatha' on this mapping. The road down the eastern side of the site from Higher Trevartha to Tregrill ('Tregrell') was first shown on this mapping.

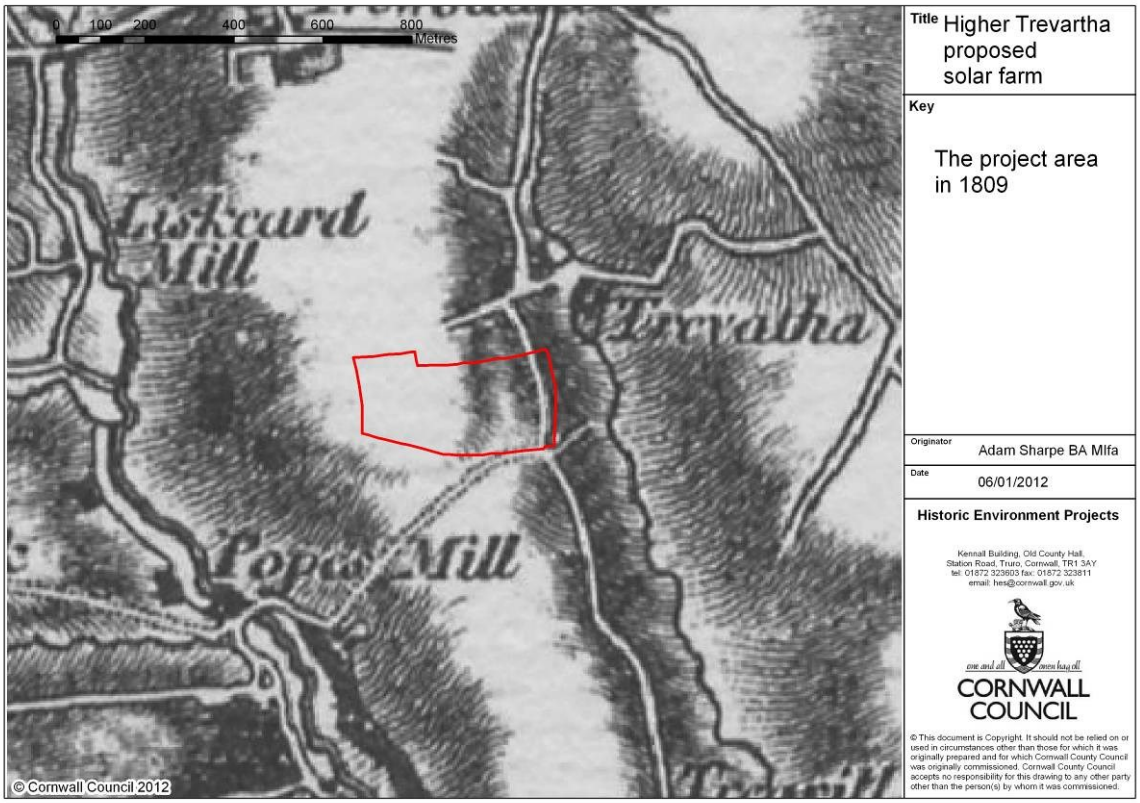

Fig 6. An extract from the 1st Edition of the OS 1" to a mile mapping, circa 1809. The project area is outlined in red. The map shows the former road leading from Trevartha to Tregrill running down its east side.

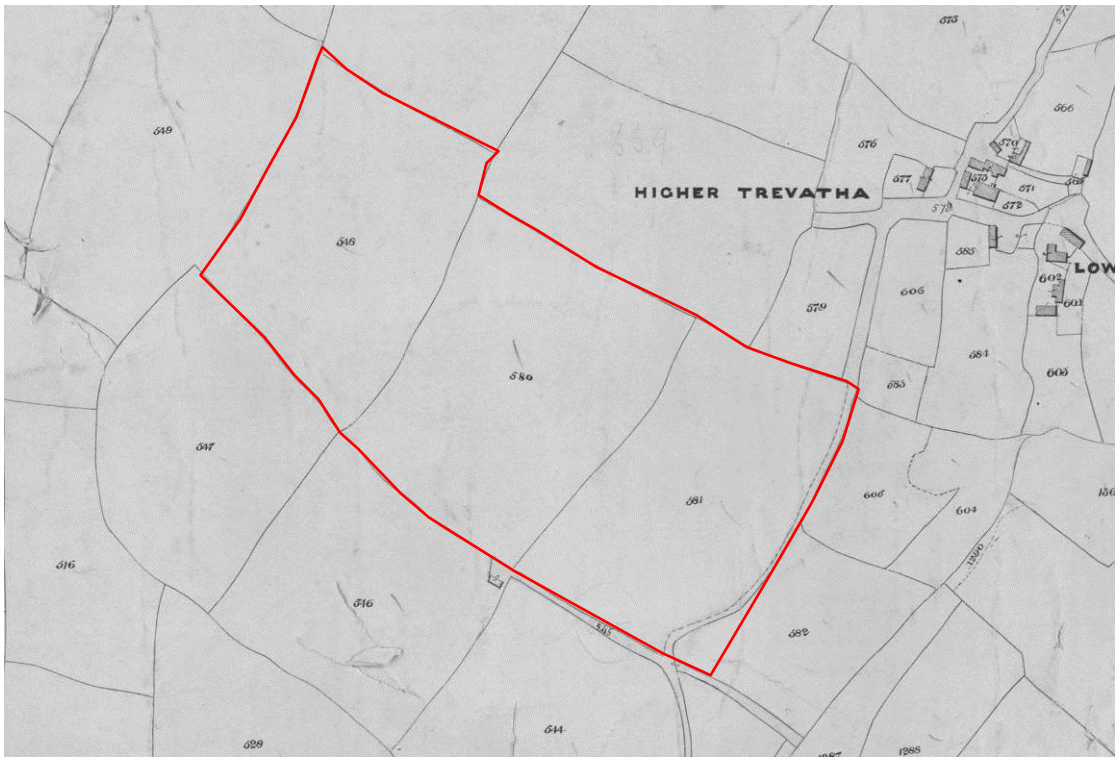

Fig 7. An extract from the circa 1840 Menheniot Tithe Map showing the three fields proposed for the solar farm development and the road bordering them to the east.

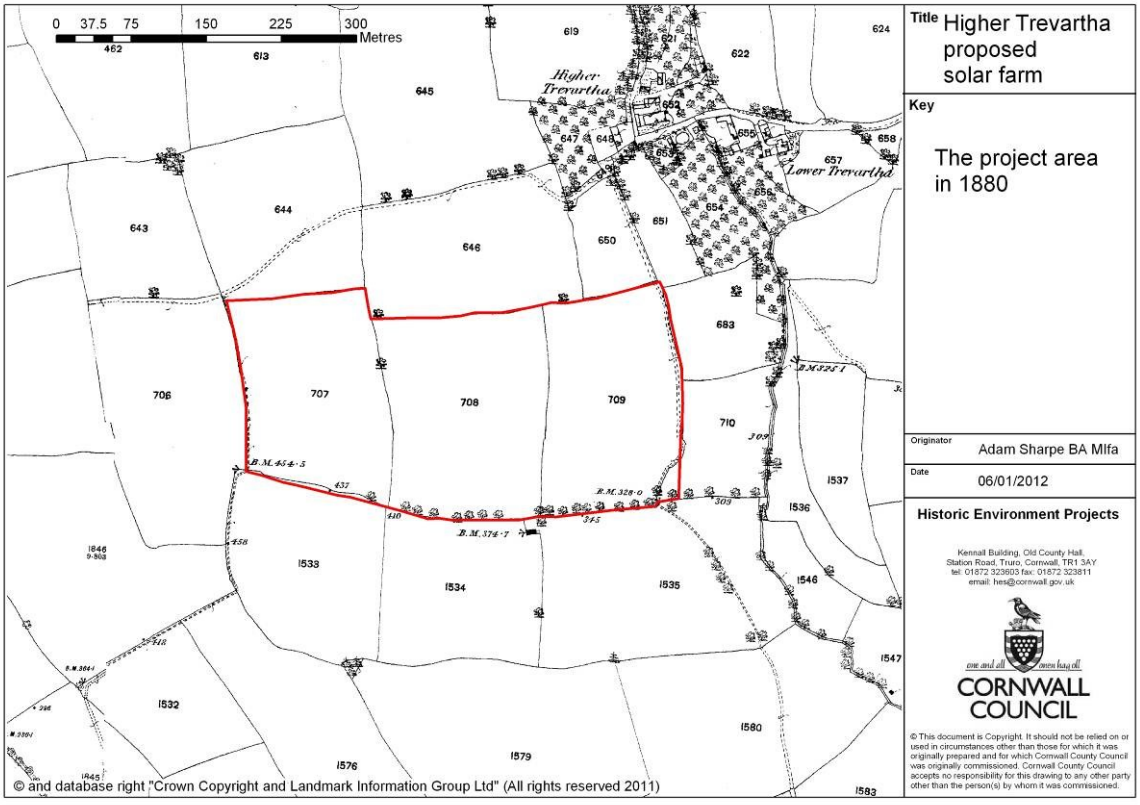

Fig 8. An extract from the 1st Edition Ordnance Survey 25" to the mile mapping circa 1878 showing the project area.

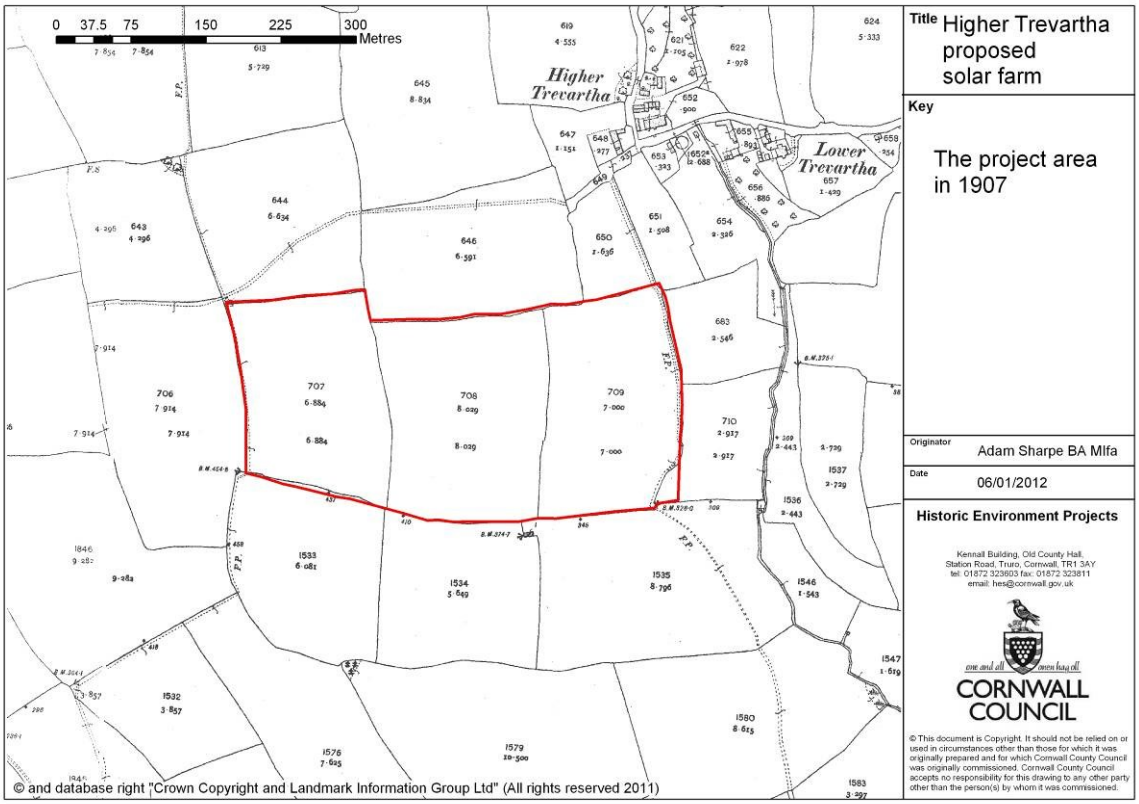

Fig 9. An extract from the circa 1907 Ordnance Survey 25" to the mile mapping for the project area.

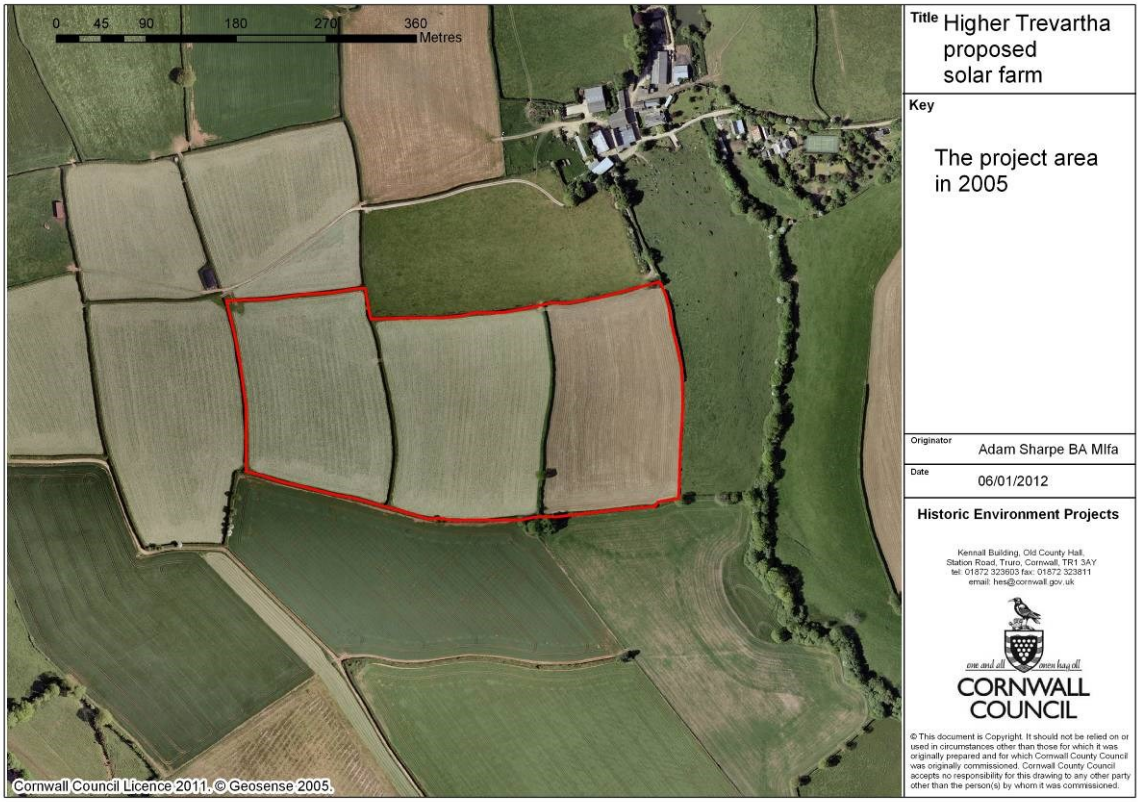

Fig 10. A 2005 Cornwall County Council aerial photograph showing the project area.

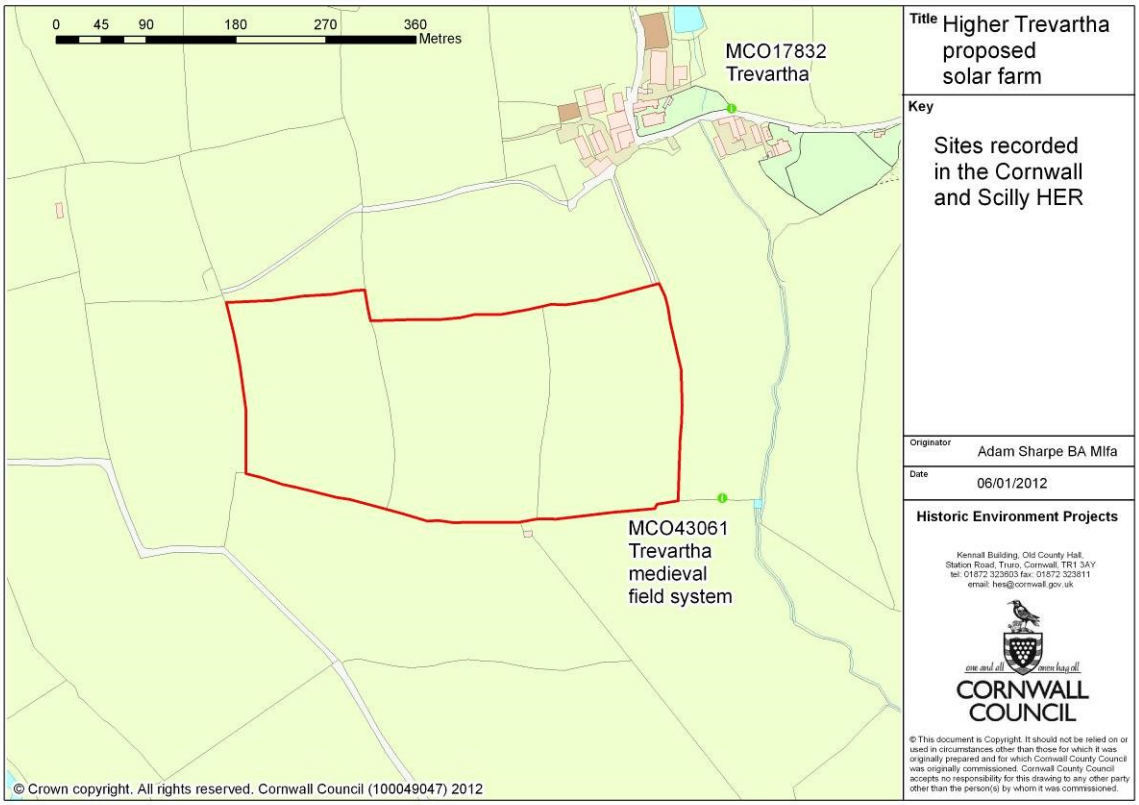

Fig 11. Sites at and adjoining the project area identified from the Cornwall and Scilly Historic Environment Record.

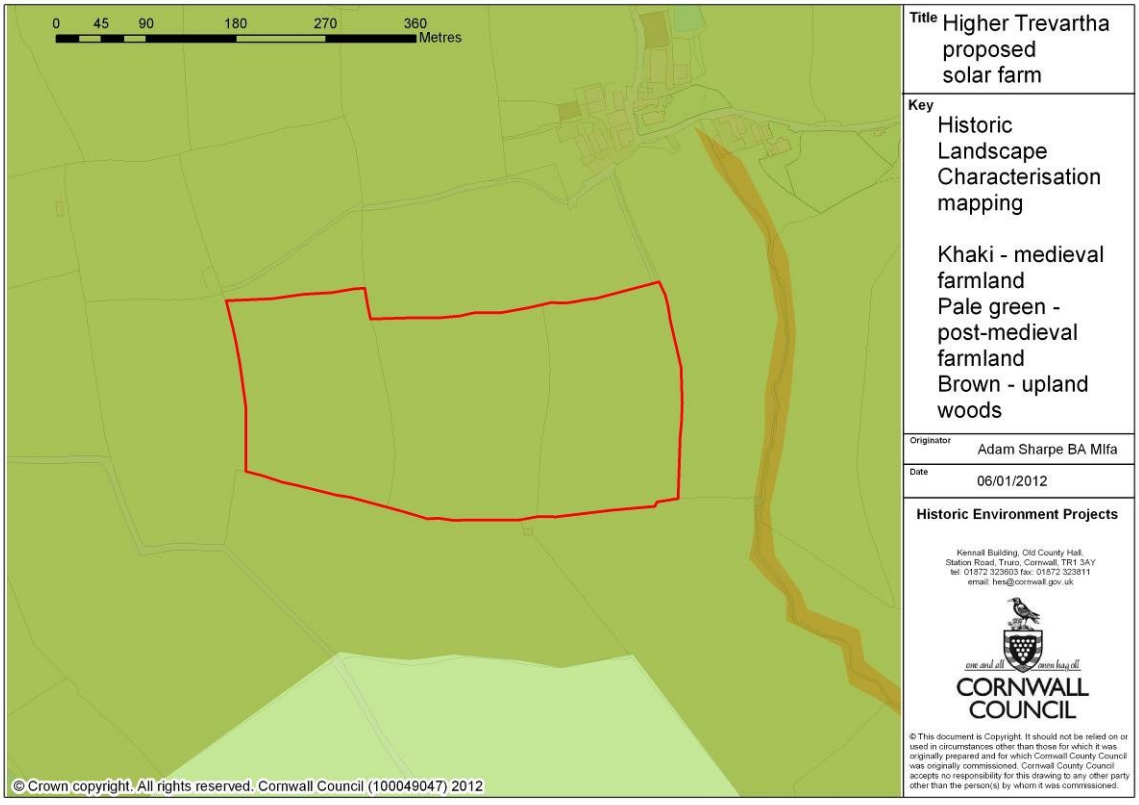

Fig 12. Historic Landscape Character (HLC) mapping for the project area, showing how it lies within an extensive block of Anciently Enclosed Land (AEL) laid out during the medieval period.

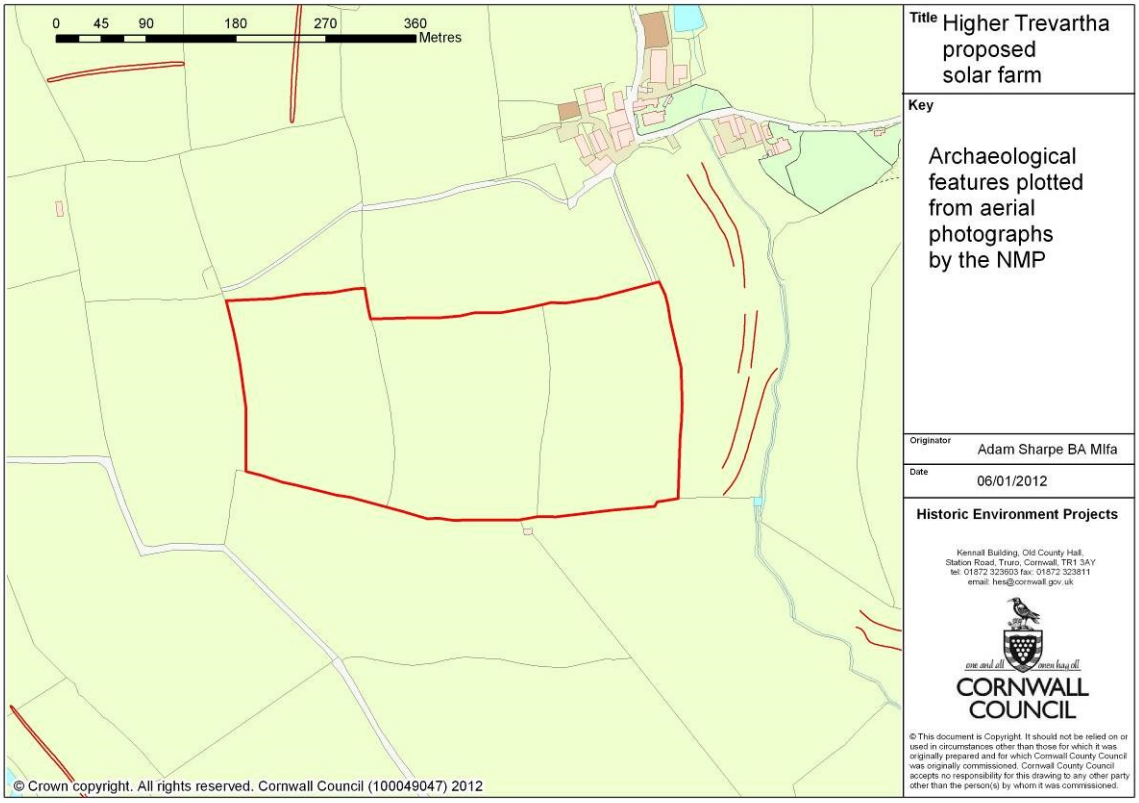

Fig 13. Cropmark archaeological sites in the landscape surrounding the project area mapped by the National Mapping Programme (NMP) from aerial photographs.

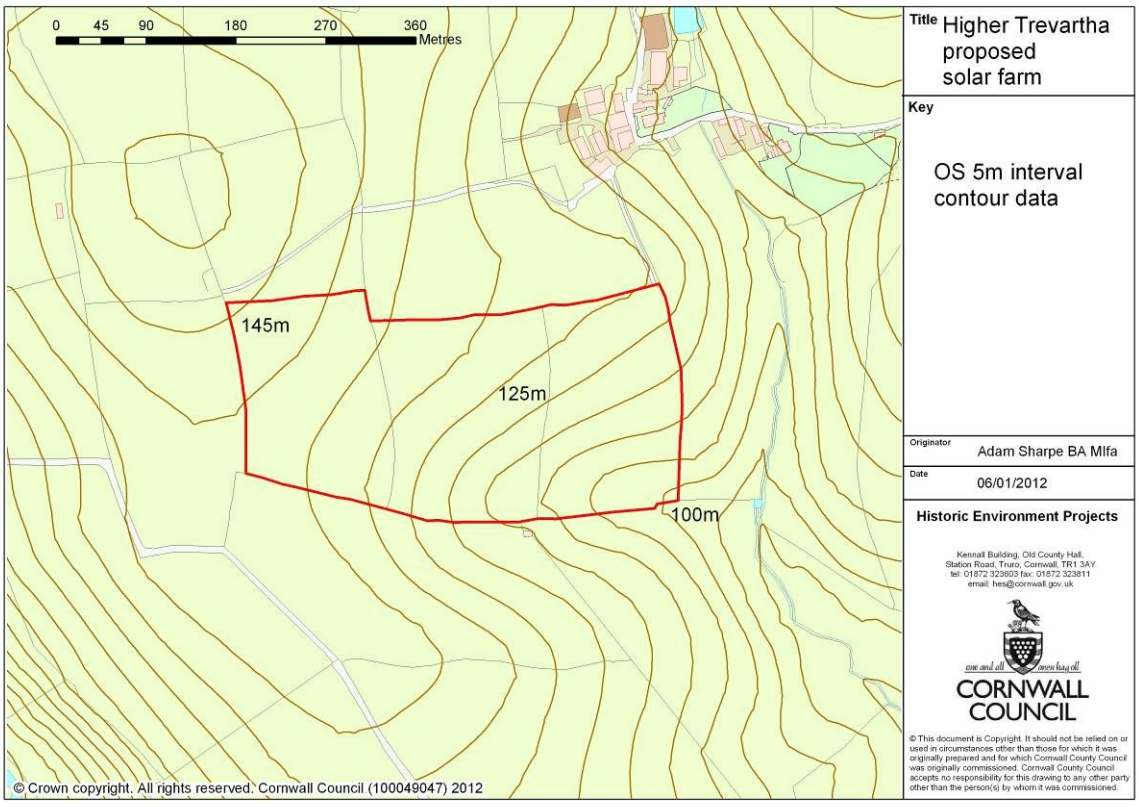

Fig 14. OS contour data, showing the location of the project area at the south-eastern end of a south-running spur on the northern slopes of a small valley.

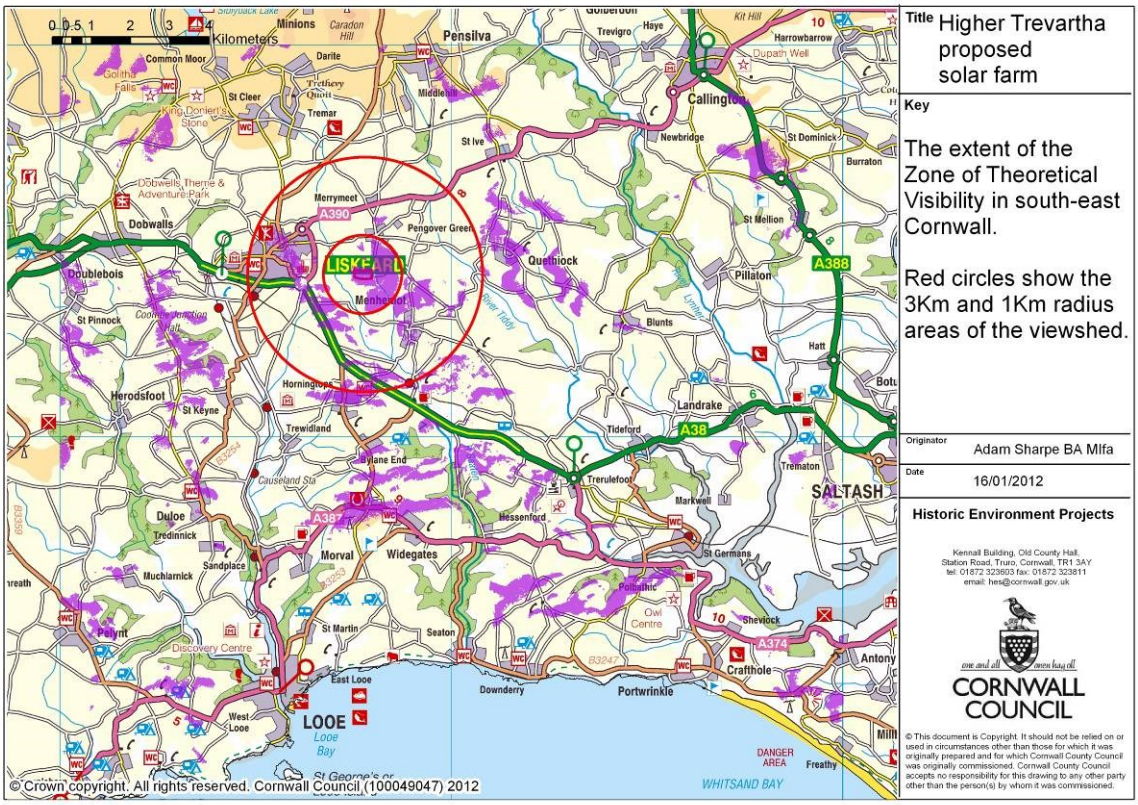

Fig 15. The extent of the ZTV for the site within south-east Cornwall, as shown by the areas delineated in purple.

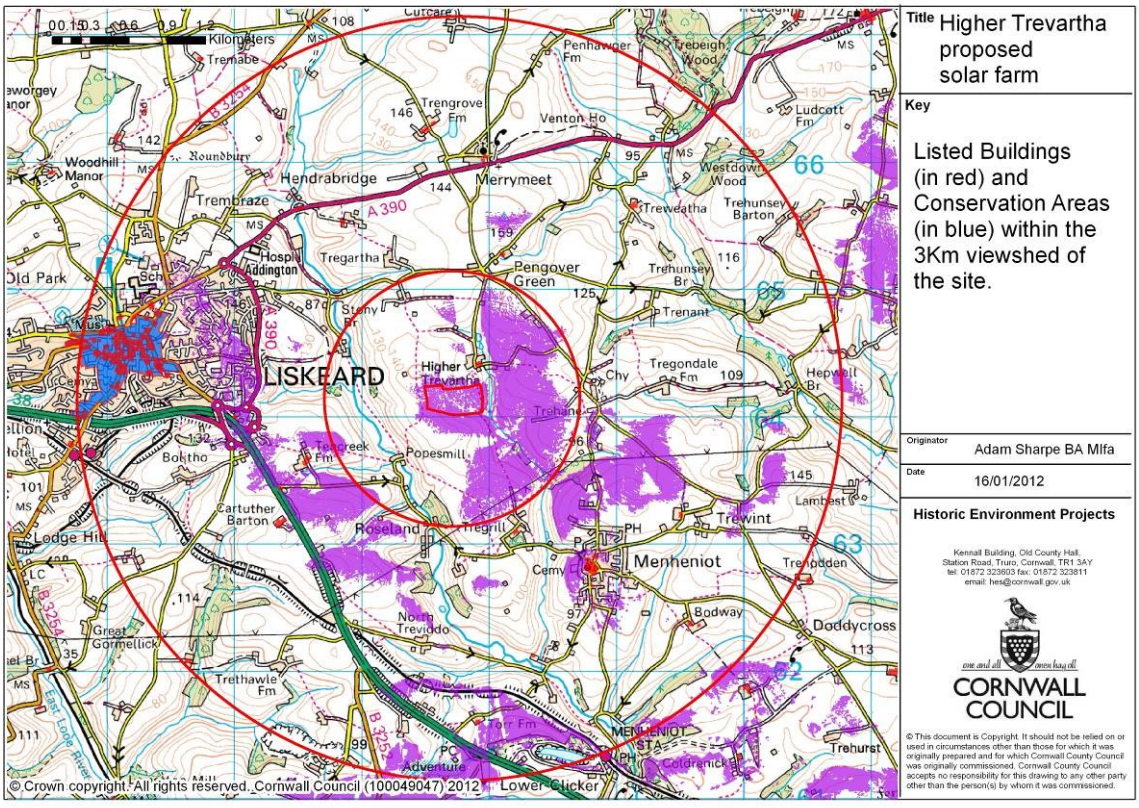

Fig 16. Designated heritage assets within the 3Km radius of the ZTV for the proposed Higher Trevartha solar farm.

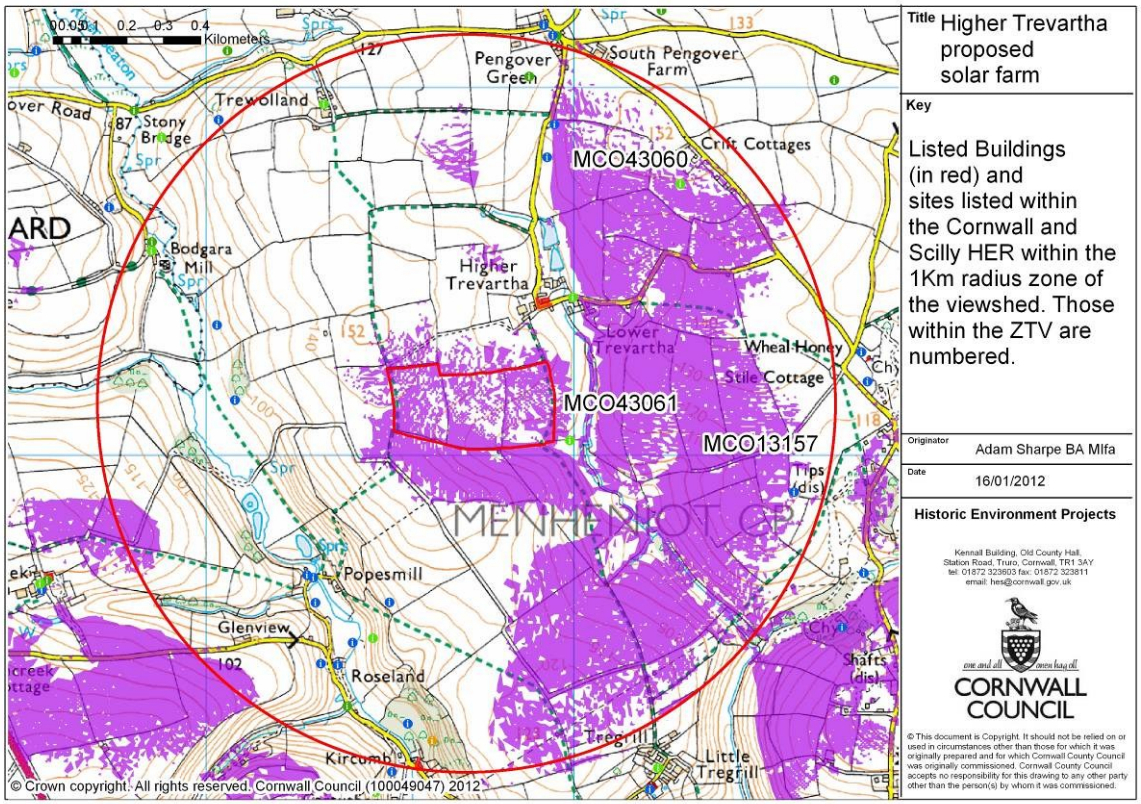

Fig 17. Designated heritage assets and sites recorded within the Cornwall and Scilly Historic Environment Record within the 1Km radius of the ZTV for the proposed Higher Trevartha solar farm.

Fig 18. Looking south-east over the removed hedgeline in the south-eastern part of the site at Higher Trevartha towards Menheniot church.

Fig 19. Looking north-west from the northern part of Menheniot churchyard towards the proposed Higher Trevartha solar farm (arrowed). The views of the site from this location are partial and distant.

Fig 20. Looking through the gateway from the eastern field towards the central field, showing the hedges forming the boundaries around and between these fields.

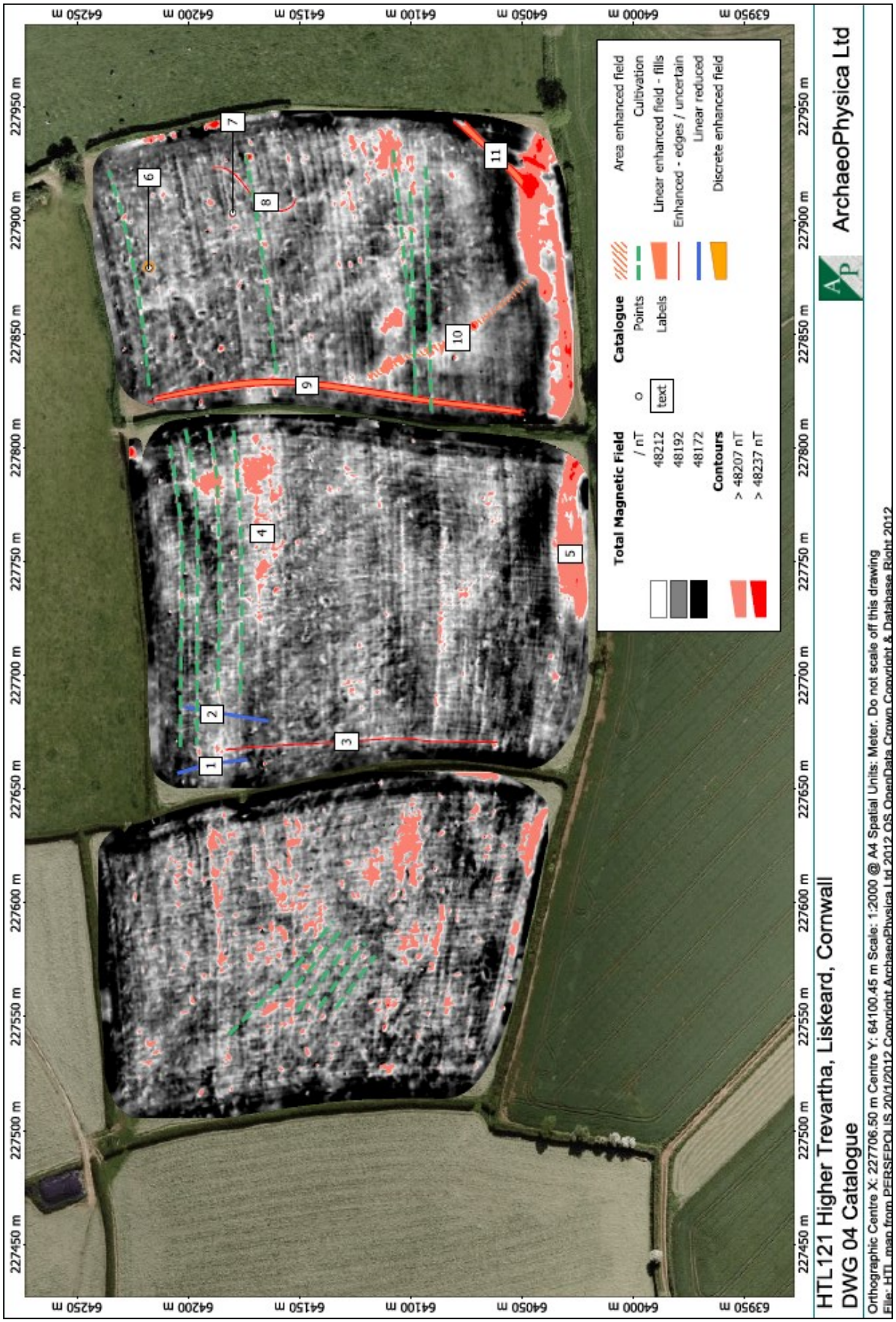

Fig 21. The interpreted Archaeophysica geophysical data plot. With the exception of a known removed boundary, the only significant features detected were two strip field boundaries in the centre and eastern fields, and a curvilinear feature [10] in the eastern field. North is to the left.