Report No: 2011R035

Proposed Trevemper Solar Farm, Crantock, Cornwall

Archaeological Assessment

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CORNWALL COUNCIL

Historic Environment Projects

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Client	**The Green Company (Europe) Ltd.**
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Acknowledgements

This study was commissioned by Sarah Robertson of The Green Company (Europe) Ltd, Glasgow Office, 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.

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:

View from the western half of the site looking south-west (taken in March 2011).

Contents

List of Figures

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

1 Archaeological Summary

This archaeological assessment of a proposed solar farm at Trevemper, a short distance to the east of the village of Crantock and to the south of the Gannel River near Newquay, Cornwall, for The Green Company (Europe) Ltd. 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 the results of a desk-based study and site visit; it also 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) though is bordered by fourteen Scheduled Monuments within its 5km radius viewshed and forty-one listed buildings which also fall within the 5km viewshed (see Sections 3.4 and 3.6). 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) five Scheduled Monuments have possible inter-visibility with the site. The site is also potentially visible from thirty-four of the Listed Buildings within the viewshed.

On the basis of current knowledge the proposed site includes or is bordered by seven archaeological sites of particular significance. Those within the proposed area include a footpath/former track (**site 1**) of local importance and a field system of regional importance (**site 2**). Those sites adjacent to the area include the medieval settlements of Treringey and Trevemper (**sites 3** and **5**) both of regional importance, Treringey Iron Age/Romano-British round (**site 4** and **SM CO399**) of national importance, a medieval cross at Trevemper (**site 6, SM 26237 and LB 63649**) of national importance and the possible site of an Iron Age/Romano-British round (**site 7**) potentially of regional importance.

In terms of Historic Landscape Character, the development area at Trevemper has been mapped as Anciently Enclosed Land (Farmland Medieval), part of a large block within the surrounding landscape whose boundary layout was laid down during the medieval period, the present layout being associated with the nearby medieval settlements of Trevemper and Treringey to the east and west respectively. Buried early remains often occur in land of this HLC Type, and the presence of a significant prehistoric site (Treringey Round **site 4** and **SM CO399**) only 240m to the north of the proposed solar farm suggests prolonged settlement and agricultural use of this area, giving a high potential here for below-ground remains.

The scheme would involve erecting solar arrays up to 2m high, with one or more control stations, and associated cable trenching, together with 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 is assessed as potentially negative/moderate without appropriate mitigation; with a negative/minor residual impact provided the recommended mitigation is undertaken.

The recommendations set out a programme for further recording and other 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, and modification of the scheme to avoid any significant features detected. 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.

2 Introduction

2.1 Project background

This archaeological assessment of a proposed solar farm at Trevemper, Crantock, Cornwall, was commissioned by Sarah Robertson of The Green Company (Europe) Ltd. Glasgow Office, and undertaken by the Projects team of Historic Environment, Cornwall Council (HE, CC). The results of the assessment are intended to be submitted alongside other evidences to accompany an application for the development of a solar farm in the farmland between Treringey and Trevemper Farms. 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 two fields centred at SW 81103 59882 not far to the south of the Gannel Estuary and to the east of the village of Crantock (Figs 1 & 2).

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 4.1).

2.3 Methods

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 2.3.2, below). The main sources studied were as follows:

- Cornwall's HER, 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 9.1 for a list of these).
- Archaeological reports, histories and other relevant publications (listed in Section 9.2).
- Relevant designation and planning documentation.

- Aerial photographs taken previously as part of the Cornwall Aerial Survey project, HE, CC.

2.3.2 Study of viewshed

The viewshed mapping (as used in Figs 21 and 22), 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 of six 'observer points' based on representative locations within the two fields in which the arrays are proposed. These 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', that is, 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 reasonably 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 radii 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 21 and 22). The GIS was then used to capture for these 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.).

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 both fields on the site during March 2011. There was good visibility across the ground within the development area, which was, at the time, a young crop of grass in the eastern field and stubble in the western field. The views further afield, however, were obscured moderately by mist.

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

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 9.3).

3 Site location

The proposed solar farm site at Trevemper is located on the south facing slope of a hill to the south of the Gannel Estuary, Newquay centred at NGR SW 81103 59882 (Figs 1 and 2). The site lies to the north of a minor road leading off the A3075 and comprises two large adjoining fields in an area typified by farmland. This block of fields, between Trevemper Farm to the east and Treringey Farm to the west have a southerly aspect, the highest point of the site being at 55m OD (in the centre of the northern part of the site), the lowest being at 40m OD (along the southern edge of the site) (Fig 14). Altogether the site forms a roughly trapezoidal block of land with rising ground to the north, sloping down towards valleys leading off to the south-east towards Penhallow and Rosecliston and to the north-west towards the Gannel Estuary, which it meets at Penpoll. The ground to the south rises again to hills at Carevick and Trerew; the ground to the east falls towards Trevemper Bridge.

The total area of the fields is approximately 12.35 hectares. The village of Crantock is 1.9Km to the west, whilst the southern outskirts of Newquay are 765m to the north.

3.1 Geology and soils

The solid geology of the study area consists of the Early Devonian Meadfoot Group of interbedded slates and sandstones, whilst the soils are recorded as Denbigh 2 loams over shales (CC GIS mapping).

3.2 Land use

At the time of the site visit the western field comprised stubble and grass and had sheep grazing on it whilst the eastern field contained a young crop of grass. In 2005, CCC aerial photographs (Fig 10) showed the fields to have been in pasture.

3.3 Access

A public highway borders the proposed solar farm fields to the south, this being a minor road leading off the A3075 leading west to Trevella Park. There is also a public footpath which runs along the northern edge of the site.

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 is extensive, and in summary includes the following (see Figs 21 and 22);

- **In a 1km radius**, ground mostly to the south but also to the west and east. This possibly includes the site of a Scheduled Monument which is also a listed building (SM 26237, LB 63649 a medieval wayside cross) and also Trevemper Bridge (LB 63659).
- **In a 1-3km radius**, ground mostly to the east and south-east, but some to the west (including Trevella farm house and farm buildings (LB 71038 and 71039) see Fig 18) and the top of a range of hills approximately 2.5-3km to the south and south-west including an Iron Age/Romano-British round and medieval plain an gwarry (SM 32941).
- **In a 3-5km radius**, patches of high ground to the north-east, east, south-east and south-west. Monuments and building are only visible on the skyline within this buffer. The Iron Age/ Romano-British hillfort (SM 32926) near Cargoll farm to the south of the site is visible (see Fig 19).

The overall viewshed for this site is fairly extensive, given its location on a ridge of south-sloping relatively high ground. It should be noted that the site visit was undertaken on a misty morning.

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 13). 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 13, the land proposed for the solar farm at Trevemper is mapped as Anciently Enclosed Land (AEL, Farmland Medieval); part of a large block of long established farmland of which this is an integral element.

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).

Anciently Enclosed Land

Much AEL will have been enclosed and farmed since the Middle Bronze Age (*c* 1500 BC), though within the landscape of West Penwith, much of the organisation of the

agricultural landscape dates from the Iron Age and Roman periods. This underlying patterning of boundaries was subject to re-organisation during the medieval period into extensive sub-divided field systems, associated with hamlets of co-operating families who each worked strips of land dispersed across different 'cropping units' or stock proof fields. Documented medieval farming settlements in close proximity to the site include Trevemper to the east and Treringey to the west.

Standing features including field boundaries still in use within and surrounding the proposed Trevemper solar farm can reveal much about the history of this HLC Type and particular places within it. Ground disturbance in 'Medieval Farmland' may reveal buried artefacts and structures or deposits associated with settlement, agriculture and other activity dating from prehistory and subsequent periods. Across Cornwall as a whole, Anciently Enclosed Land contains many 'rounds' or later prehistoric to Roman period enclosed settlements. These may survive as earthworks such as Treringey Round, 240m to the north of the site, or as sub-surface remains, which may be visible as 'crop-marks' on aerial photographs, or detected by geophysical survey, examples being cropmark rounds at Tresean and Trevornick 2.4Km and 3.0Km away to the south-west, or that at Tregear, 1.6Km to the south-east. NMP mapping (Fig 12) reveals little of the sub-surface archaeology of the area immediately surrounding the application site through cropmarks, though shows areas of ridge and furrow within fields to the south-west. A scatter of late prehistoric/early medieval enclosed and unenclosed farmsteads would typically be expected within this landscape, together with elements of their field systems. Excavations at Trethellan Farm on the northern side of the Gannel Estuary between Newquay and Pentire Head revealed evidence for prehistoric occupation and metalworking, possibly associated with the bronze age barrows on the Warren (MCO2574, MCO2573, MCO2572, MCO4130) and the prehistoric cemeteries at Pentire (MCO23091, MCO28062); open settlements would also be expected to the south of the river, which would have served as an important element in of prehistoric (and later) trading networks.

Roman coins have been found in the Gannel (MCO610) and on Pentire Point (MCO1141), whilst in the immediately surrounding countryside, the Cornwall and Scilly HBSMR lists a possible cliff castle on Pentire Point (MCO6567), a prehistoric enclosure (MCO33037), a round (MCO33153) and a possible round (MCO8286) at Pentire to the north-west, an Iron Age round at Trevella (MCO8792) not far to the west, another to the west at Park (MCO3209), three rounds at Rosecliston (MCO8437, MCO8438 and MCO33615) to the south and south-west. Also to the north of the Gannel, a greenstone axe (MCO1055) was found at Headleigh Manor to the north-east, three bronze age barrows are sited at Treloggan (MCO32955); also to the north-east, flint finds (MCO322) and various Neolithic or bronze age implements (MCO 1052) have been found in the southern parts of Newquay.

There would also have been many other unenclosed prehistoric and Roman era settlements within this area, and though more vulnerable to loss to 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 trial excavations.

3.6 Designations

There are no Scheduled Monuments, Listed Buildings or designated areas contained within the site although Treringey round SM CO399 (a scheduled Iron Age/Romano-British settlement) lies only 250m to the north of the area.

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 fourteen Scheduled Monuments (see Fig 21), and forty-one listed buildings (see Fig 22). 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 3km radius

Scheduled Monument No.	HBSMR Ref no	Name	Inter-visibility with the site
CO402	DCO14890	Two Barrows (Bronze Age)	Not visible
CO88	DCO1652	Trevelgue Iron Age/Romano-British promontory fort and two Bronze Age barrows	Not visible
CO619	DCO1464	Three Bronze Age barrows	Not visible
26237	DCO802	Medieval wayside cross	Possibly visible
CO399	DCO1310	Treringey Iron Age/Romano-British round	Not visible
30436	DCO967	Medieval wayside cross	Possibly visible
CO521	DCO1404	Group of three Bronze Age barrows	Not visible
32942	DCO1071	Two Iron Age/Romano-British cliff castles and two Bronze Age barrows	Not visible
32943	DCO1072	Medieval holy well and two Bronze Age Barrows	Not visible
29666	DCO920	Bowl barrow on Cubert Common	Possibly visible
32955	DCO1082	Holy well	Not visible
32941	DCO1070	Iron Age/Romano-British round and medieval plain an gwarry	Visible
29627	DCO918	Twelve Barrows (a linear Bronze Age barrow group	Not visible
32926	DCO968	Hillfort NW of Cargoll Farm	Visible

Listed Buildings in potential viewshed, within a 3km radius

LB Ref no [UID]	HBSMR Ref no	Name	Grade	Inter-visibility with the site
71118	DCO13029	St Columb Minor Methodist church	II	Not visible
71119	DCO13927	Milestone in St Columb Minor	II	Not visible
71117	DCO13356	The Old Vicarage in St Columb Minor	II	Not visible
71108	DCO13349	Range of farm buildings at Gusti Vean	II	Not visible
71107	DCO4098	Gusti Vean Farmhouse	II	Not visible
71106	DCO13348	Gusti Vean Cottages	II	Not visible
70126	DCO13073	Gate piers at entrance to Trevithick Manor	II	Possibly visible
63659	DCO5532	Trevemper Bridge	II	Possibly visible
63649	DCO5586	Base of medieval cross	II	Possibly visible
71039	DCO13037	Range of farm buildings at Trevella farmhouse	II	Visible
71038	DCO13036	Trevella farmhouse	II	Visible
63647	DCO4223	Cairnes farmhouse	II*	Possibly visible
63646	DCO5623	Carevick farmhouse	II	Possibly visible
63674	DCO4404	Wychwood Cottage	II	Possibly visible
63673	DCO4234	Haven Cottage	II	Possibly visible

63672	DCO5517	Thatched Cottage	II	Possibly visible
63670	DCO5592	Cubert Methodist church	II	Possibly visible
63662	DCO4230	Church of St Cubert	I	Possibly visible
63669	DCO5519	Church Room, Cubert	II	Possibly visible
63668	DCO4232	Cubert vicarage	II	Possibly visible
63665	DCO5522	Group of three monuments in St Cubert churchyard	II	Possibly visible
63664	DCO4231	Cross in St Cubert churchyard	II	Possibly visible
63667	DCO5523	Gateway, coffin rest and lamppost in St Cubert churchyard	II	Possibly visible
63661	DCO4374	Trewolla farmhouse	II	Possibly visible
63952	DCO4419	Tregair farmhouse	II	Possibly visible
63975	DCO4433	Church of St Newlyna	II*	Possibly visible
63979	DCO4438	The Old Vicarage, St Newlyn East	II	Possibly visible
63980	DCO5644	Redwing, St Newlyn East	II	Possibly visible
63983	DCO5645	The Glebe, St Newlyn East	II	Possibly visible
63976	DCO4113	Churchyard wall, St Newlyna	II	Possibly visible
63978	DCO4114	Gateway to old vicarage	II	Possibly visible
63981	DCO4115	Pophams, St Newlyn East	II	Possibly visible
63982	DCO4440	Farm buildings to No 2, St Newlyn East	II	Possibly visible
63977	DCO5498	Tremain monument in churchyard, St Newlyn East	II	Possibly visible
63969	DCO5503	Bushmead, St Newlyn East	II	Possibly visible
63968	DCO4109	No 4 and attached cottage, St Newlyn East	II	Possibly visible
63998	DCO4093	Lion sculptures at Trerice	II	Not visible
63999	DCO4448	Outbuildings at Trerice	II	Possibly visible
63996	DCO5666	Trerice House	I	Possibly visible
63997	DCO4447	Front garden walls and gate piers	II	Possibly visible
63994	DCO4091	Tresillian House	II	Possibly visible

Parts of the local landscape are designated an Area of Great Scientific Value (AGSV), this designation being applied to the Gannel Estuary 370m to the north and to Cubert Common 2.45km to the west. Cubert Common is also an area of Great Historic Value (AGHV) and a Site of Special Scientific Importance (SSSI).

Treringey Round, 250m to the north of the proposed solar farm is a Scheduled Monument, MCO339. A cross to the south of Trevemper Farm is Scheduled Monument 26237. This is also a Grade II Listed Building 63649. Trevemper Bridge to the east of the site is also a Grade II Listed Building 63659, whilst 1km to the west Trevella Farmhouse and its associated outbuildings are also Grade II Listed Buildings 71038 and 71039 respectively.

The surviving 'Cornish hedges' ,banks and revetted lynchets bounding the fields making up the site are considered 'important' under the historic criteria of the Hedgerow Regulations. All were recorded on the *c*1840 Crantock Tithe Map.

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.

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

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.'

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….'

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.'

4.2 Cornwall Structure Plan

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

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.

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.

4.3 Former Restormel Local Plan

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

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

4.3.1 Policy 11

The Council will seek to conserve and enhance the landscapes, features and habitats of heritage importance within the Borough.

4.3.2 Policy 12

(1) Proposals for interpretation and educational facilities which support greater awareness and incorporate positive management of landscapes, features and habitats of heritage importance will be permitted. (2) Where appropriate, opportunities will be taken to make conditions and enter into agreements relating to their conservation and proper management.

With particular reference to archaeology are the following extracts and policies:

5.88 The importance of preservation of archaeological sites and monuments is accepted at national level as set out in Government Circular 8/87 and PPG 16 (1990).

5.91 Where application is made for planning permission to carry out development which would affect an ancient monument whether scheduled or unscheduled, the desirability of preserving the monument and its setting is of course a material consideration.

5.92 The Planning Policy Guidance Note on Archaeology (PPG 16) expands on circular 8/87.

para 6 - "Archaeological remains should be seen as a finite, and non-renewable resource, in many cases highly fragile and vulnerable to damage and destruction .... They are part of our sense of national identity and are valuable for both their own sake and for their role in education, leisure and tourism."

para 14 - "... the key to the future of the great majority of archaeological sites and historic landscapes lies with local authorities, acting within the framework set by central government ... as well as with the owners of the site themselves. Appropriate planning policies in development plans and their implementation through development control will be especially important"

5.95 National guidance is reflected in the Cornwall Structure Plan where policy ENV2 seeks to prevent development which will adversely affect sites of archaeological importance.

4.3.3 Policy 26

Development proposals which adversely affect locally important archaeological sites held on the county sites and monuments record or identified as a result of a prior archaeological investigation will only be permitted where: (1) physical preservation in-situ is not feasible and the importance of the development outweighs the case for preservation of the remains; and (2) satisfactory arrangements are made for the excavation and recording of the remains before or during development.

5.112 In addition to the Scheduled Ancient Monuments, a large number of archaeological sites have been identified by the County Sites and Monuments Record (SMR). This record is being continuously updated and enlarged as a result of historical research, fieldwork, aerial photography and substantiated reports from the general public.

4.3.4 Policy 27

Where 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, an archaeological assessment will be carried out prior to the granting of planning permission.

5.113 In 1984 the Government acknowledged that the Schedule of Ancient Monuments no longer coincided with the consensus of informed opinion as to the monuments which were of most archaeological and historical interest. The fact that nationally only 2% of known sites and monuments were scheduled was considered to indicate the need for a nation wide review of the archaeological resource. In 1986 the Historic Buildings and Monuments Commission for England began work on the Monuments Protection Programme (MPP) which seeks to review and evaluate existing information (largely drawn from the County Sites and Monuments Records) so that those monuments which are of National Importance can be identified and scheduling or other means of protection can be recommended.

5.116 The Planning Authority supports the Cornwall County Council and its Archaeological Unit in their efforts to record, interpret and preserve the County's historic landscape and has contributed to the costs of providing the new detailed constraint maps.

5.117 Where proposals are submitted affecting a site which has been identified as having archaeological value, the County Archaeological Officer will be involved from the early stages of negotiations with applicants to ensure proper implementation of these policies.

5.118 Policy 27 will enable the Borough Council to make properly informed decisions on proposals which may affect sites of interest. For well researched known sites an assessment will be relatively straightforward and probably based on existing information. For sites with archaeological potential, small scale surveys, trial trenching etc. may be necessary. A geophysical survey can be an important method of evaluating potential sites.

5.122 The preservation in-situ of important archaeological remains is always to be preferred and this should be the primary objective of all negotiations. If preservation in-situ is not feasible an archaeological excavation for the purpose of preservation by record may be an acceptable alternative. This should always be seen as very much a second best option.

5.123 Where the development is permitted on any site considered to be of potential archaeological value, Policy 26(2) requires the developer to make appropriate and satisfactory arrangements for archaeologists to excavate and record the remains before or during development. This could involve investigation and observation prior to and during the work and the recording of any archaeological deposits, features or finds which might be revealed during the course of the development.

5.128 The CAU (HES) has recently reviewed the Historic settlements of Cornwall and suggested additional settlements which although not conforming with the National definition above are worthy of recognition for their historic importance. The CAU (HES) recommends that these settlements should be designated as Conservation areas. In this plan they have been identified as Areas of Local Architectural or Historic Value.

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.

5 Archaeological results

5.1 Chronological summary of the site and its landscape

The project area is set within the context of a landscape which has seen development from prehistory through the medieval period and into the post-medieval period. Although there are no known prehistoric sites within the project area, the Cornwall and Scilly SMR and the NMP plotting of features showing on aerial photographs provide the context for the development of the landscape of the study area through time. The landscape surrounding the project area was, to a large extent, given its present form during the medieval period, through the replacement of earlier field systems by one characterised by communally-farmed strip fields which themselves were subsequently grouped together and bounded with hedges, producing characteristically narrow, elongated fields with parallel sides. Many of these were, over time, amalgamated into larger enclosures to meet the requirements of changing agricultural practices through time. Although considerable boundary removal has occurred within this landscape since the medieval period, most of the farms within this area have medieval origins, and elements of the arrangements of their associated fields can still be discerned.

Mapping, aerial photography and geophysical prospection has revealed the extent to which this evolved medieval landscape overlies a late prehistoric farming landscape, characterised by the Iron Age and Romano-British enclosed settlement sites known as 'rounds' with their associated field systems, one surviving example being Treringey Round just to the north of the proposed solar farm.

It has been increasingly noticed in recent years that settlement associated with rounds does not just occur within the enclosure and there is potential for the remains of other unenclosed structures and settlement related features surviving within the site which may not have been detected by the NMP or which survive as ploughed down earthworks. The fields at Trevemper therefore have the potential to be underlain by an earlier field system and extra-mural settlement remains associated with Treringey round. There is also the potential for the survival of below-ground remains of both Bronze Age and Neolithic sites within this area of AEL.

Apart from Trevemper and Treringey, settlements of early medieval origin, the only other medieval site recorded in close proximity to the project area in the Cornwall and Scilly HBSMR is the Scheduled and Listed site of a medieval wayside cross (SM 26237 and LB 63649).

A process of map regression helps to understand the recent landscape history of the site. Trevemper was named as 'Trevimper' and shown as a substantial house on Joel Gascoyne's map of 1699 (Fig 4). Martyn's map of 1748 (Fig 5) is not greatly detailed but shows the development area bounded to the east and south by roads which are still in use. 'Treringy' is shown with its farm house and 'Tremper' is shown at this date as a hamlet or village. The *c*1809 OS surveyors' drawing (Fig 6) is not greatly detailed either but shows both 'Treringy' and 'Trevemper' as settlements as well as the roads to the south and east of the proposed solar farm, the project area being shown as a block of elevated ground to the south of the Gannel estuary.

In 1840, as today, the area proposed for the solar farm lay within the ecclesiastical parish of Crantock. The 1839 Tithe Map for Crantock (Fig 7) shows the arrangement of fields within the project area as retaining considerably more of their medieval character than they do today, given the boundary removal which has taken place in the past 150 years - instead of the two fields making up the site today, in 1839 there

were fourteen, the fields clearly indicating their origins as fossilised medieval strip fields. The copy of the Terrier accompanying the Crantock Tithe Award in the Cornwall and Scilly HBSMR indicates what appears to be a perpetuated arrangement of land tenure which reflects an adaptation of medieval arrangements, where five tenants worked fragmented, dispersed holdings. Fig 7 shows the holdings worked by the various tenants.

The following field names were given for the area of the solar farm on the Tithe Map:

Treringey

331 8 Acre (Constantine Johns)

336 Lane Close (Constantine Johns)

Trevemper

337 Long Close (Constantine Johns)

338 Park Treringey (Constantine Johns)

339 Middle Close (Constantine Johns)

340 Way Close (Constantine Johns)

341 Treringey Meadow (Francis Roberts)

342 Stephen's Meadow (William Stephens)

343 Stephen's Meadow (William Stephens)

344 Stephen's Meadow (William Stephens)

345 Stephen's Meadow (William Stephens)

346 Stephen's Meadow (William Stephens)

347 Trevemper Meadow (Henry Stephens)

348 Edward's Close (Zaccheus Prater)

Four decades later in *c*1880, the OS 1st Edition 25" to the mile mapping (Fig 8) showed the loss of some boundaries and the amalgamation of smaller fields into six enclosures, though these retained much of the original medieval character. By *c*1907 (OS 2nd Edition 25" mapping Fig 9) further boundary loss had taken place, the number of enclosures at the time having been reduced to four. By 2005, the fourteen fields shown on the Tithe Map of 1839 had been amalgamated into two large enclosures.

5.2 Inventory of sites within and adjacent to the proposed development area

(See Fig 3 for site locations)

Site 1. footpath/track, SW 81167 60022

A footpath runs from Treringey to Trevemper along the northern edge of the site and in the western half of the eastern field this footpath lies within the development area. This path or former track is likely to have early origins and is shown on the Tithe Map of 1839 and the First and Second Edition OS map of *c*1880 and *c*1907.

Site 2. Field system, SW 81080 59859

This is the field system which extends across the site. The field boundaries that survive within the site pre-date the 1839 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 late 19th and 20th centuries. All of the surviving boundaries are stone-faced earth banks (Cornish hedges) overgrown with grass and brambles etc. On average the hedges measure 1.3m high by 1.3m wide at their bases. The field boundaries are recorded in detail on the *c*1840 Tithe Map (Fig 7) and

subsequent *c*1880 and *c*1907 OS maps (Figs 8 and 9). Remains of removed boundaries, and other early elements of the system, may survive below ground.

Site 3. Settlement of Treringey, SM CO399, HER No MCO17668, SW 80839 60137

The settlement of Treringey is first recorded in 1400 when it is spelt "Treyungy" (Gover, 1948). The name is Cornish and contains the element 'tre' meaning 'estate, farmstead' (which indicates a settlement of early medieval origin), plus 'yungy' a personal name (Padel, 1985).

Site 4. Treringey round, HER No MCO8721, SW 81067 60166

The remains of an alleged Iron Age or Romano-British defended settlement, which is scheduled (SM CO399). The site is shown on the 1839 Tithe Map as a multivallate earthwork consisting of three or four banks and ditches labelled 'old entrenchment'. However, on the modern OS map a single crescentic-shaped bank is shown. In 1962 the remains were surveyed by the OS fieldworker who found that the two surviving sides of the earthwork consisted of a broad bank 8.0m to 18.0m wide by 1.0m high on the outer side and 2.0m high on the inner, with the remains of a 1.3m deep outer ditch. The curving south side is at the top of a very steep northern slope, and on the east side follows this 1 in 3 gradient. According to the English Heritage field monument warden, part of the west side of this outer bank has long been ploughed out, but the ditch is still detectable. The outer bank mostly survives as scrub covered hedges, and the ditch between that and the next bank inside is intact. As far as the field monument warden could see, the two outer inner banks shown by the Tithe Map are also extant. Banks and ditches vary considerably in dimensions due no doubt to past ploughing. The OS fieldworker noted that although the site is known as 'Treringey Round', its shape, size and topographical position (on the side of the Gannel Estuary) do not conform to those of a normal round, and concluded that its date and purpose was uncertain. The enclosure is clearly visible on vertical aerial photographs. The inner and outer banks described above (with associated ditches) are visible on these photographs, as are traces of what might be a third rampart. The enclosure appears to be 215m wide (east-west) (Cornwall HBSMR).

Site 5. Settlement of Trevemper, HER No MCO17881, SW 81579 59889

The settlement of Trevemper is first recorded in 1284 (Gover, 1948). The name is Cornish and contains the element 'tre' meaning 'estate, farmstead' (which indicates a settlement of early medieval origin), and an uncertain second element (Padel, 1985). Trevemper is shown on Gascogne's 1699 map of Cornwall (Fig 4) with a substantial gentry house. It is depicted on Martyn's 1749 map of Cornwall (Fig 5) as a village.

Site 6. Medieval cross, SM 26237, HER No MCO6119, SW 81531 59731

The base of a medieval cross is located just to the south of Trevemper. It is adjacent to fields called 'Cross Close' on the Tithe Apportionment of 1839. In 1977, the cross base was surveyed by the OS (Cornwall HER). They state that the socket stone, which is situated in the centre of a road junction, is 1m square and lies flush with the ground. The socket is 0.3m in diameter and 0.2m deep. The monument was included in the Schedule on 7/2/1995 (Cornwall HER).

Site 7. Possible Iron Age/Romano-British round, HER No MCO8437 SW 80702 59601

A series of field-names listed on the Tithe Apportionment of 1839 to the south of Treringey suggest the site of a round. These are 'Lower Castol' (SW 8071 5955), 'Higher Castol' (SW 8074 5923) and 'Outer Castol' (SW 8088 5955). The name 'castol' meaning, 'castle, village, tor' (Padel, 1985). Immediately to the south of these is a field named 'Round Field'.

5.3 Further archaeological potential

In addition to the known sites (Section 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 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.

6 Significance

Of the known individual archaeological sites adjacent to the proposed solar farm, Treringey Iron Age/Romano-British round (**site 4**) to the north and the medieval cross at Trevemper (**site 6**) to the south-east are Scheduled Monuments and considered to be of high significance and of national importance. The possible site of an Iron Age/Romano-British round (**site 7**) to the south-west of the area may also be of high significance. The presence of Iron Age/Romano-British rounds in the immediate area and records of a busy prehistoric landscape around the Gannel estuary generally indicates the potential for surviving below-ground prehistoric remains within the site.

The medieval settlements of Treringey and Trevemper (**sites 3** and **5**) are of moderately high significance and the field system (**site 2**) is important on a regional scale, showing derivation from a medieval 'open' or subdivided strip field system, some early strip boundaries being maintained as Cornish hedges. There is potential for buried evidence of early farming, and datable deposits, in the form of buried traces of other strip divisions, and of cultivation ridges within the strips. Buried remains associated with the settlement Treringey may be present within the north-western part of the site. The present footpath (**site 1**) running along the northern site is an historic right of way and is shown as a partially walled track on the Tithe Map *c*1839 (Fig 7) and *c*1880 OS map (Fig 8). This site is of moderate significance and local importance.

In terms of its contribution as the setting of important 'heritage assets' *beyond* its limits, the development area has moderate significance. The most significant impacts are those on the setting of the ancient farm settlements at Trevemper and Treringey to the east and west, as well as that on Treringey Round to the north. The most significant designated sites which are clearly inter-visible with the proposed solar farm are Trevella farmhouse and farm buildings (LBs 71038 and 71039), an Iron Age/Romano-British round and medieval plain an gwarry (SM 32941) and an Iron Age/Romano-British hillfort (SM 32926). Three other Scheduled Monuments within the viewshed may also be visible and parts of the site may be visible from thirty-two other listed buildings within the viewshed.

The development site lies within an area whose historic character is 'Anciently Enclosed Land' (Medieval Farmland). The NMP have shown some limited evidence within the area to the south-east for ridge and furrow cultivation consistent with agricultural practices during the medieval period, whilst the boundaries shown on the Tithe Map within the area show clear derivation from early cultivation strips in their form. Such strip fields would have been associated with the medieval settlements of Trevemper and Treringey.

Anciently Enclosed Land has been shown by the NMP to have the potential to be a resource containing prehistoric or medieval features, with the potential for associated artefacts or deposits surviving below ground.

Finally, it should be noted that the surviving Cornish hedges within the site of the proposed solar farm 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 Archaeological Impact

7.1 Types and scale of impact

It should be noted that the exact proposals for layout and construction at the Trevemper site are not yet known. Two general types of archaeological impact associated with solar farm developments have been identified and summarised by Sharpe (2010) as follows.

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 the undergrounding of cables, and through provision of any works compound, and permanent or temporary vehicle access ways into and within the site.

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

A plan of the proposed solar farm at Trevemper (Fig 17) show solar arrays running in rows aligned east-west over all of the ground within the site. The site would also presumably include a control cabin.

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 the whole site.

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

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.

7.1.4 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 7.2, 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 8.

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**, 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 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.

7.2.1 Impact on known individual archaeological sites within and adjacent to 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 any surviving archaeological sites within the area, or elements of these. In this instance the only historic above ground features within the area proposed for the solar farm are the Cornish hedges making up the site's boundaries and sub-divisions **(site 2)**.

The direct impact of the proposals on known sites within the proposed area are assessed as potentially **negative/minor**.

The proposed solar farm would however, impact on the setting of known sites within its immediate surroundings. These include the settlements of Treringey and Trevemper **(sites 3 and 5)** which although undesignated, maintain many historic elements and their historic character as medieval and post-medieval settlements.

The impact of the proposals on known sites adjacent to the proposed area are assessed as potentially **negative/moderate**.

7.2.2 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 21 and 22, 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 ancient farmland, and so adversely affect the setting of the Scheduled round at Treringey 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 4.1.3)

- During its operational phase the solar farm would detract from the visibility and understanding of the area as predominantly ancient farmland, and so obscure aspects of the significance - as an early farming settlement working this land.
- In operation the solar farm would also have some adverse impact on the settings of other Scheduled Monument within the generated 5Km viewshed of the site, including hillfort (SM 32926) and Iron Age/Romano-British round and medieval plain an gwarry (SM 32941).
- However the impacts noted above would be limited with regard to site settings because the medieval strip-derived layout evident in the upstanding field boundaries means that the predominant historic character of the solar farm area today is medieval/post-medieval, thus contributing less directly to an understanding of the prehistoric landscape.
- The above effects would also be limited because the visual impact could be reversible.
- During the operational phase the 5km viewshed created for the Trevemper solar farm suggests that it could also impact on the settings of a number of the forty-one listed buildings. Listed Buildings clearly inter-visible with the site include Trevella farmhouse and farm buildings (LB 71038 and 71039).

7.2.3 Impact on Historic Landscape Character

A solar farm at Trevemper 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 the HLC Unit of Medieval Farmland 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 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 8.2 and 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.

7.2.4 Other archaeological impact

Ground disturbing works here could encounter significant buried prehistoric, medieval or post-medieval remains (see Section 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 though archaeological recording, reducing the residual impact to **neutral** or **negative/minor**.

7.2.5 Impact on historic field boundaries

It is presumed that it is proposed that the solar farm scheme would not involve removal of the historic field boundaries, which are likely to derive from a prehistoric

farming landscape which was reorganised during the medieval period. 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** to **negative/moderate** impact on these features. It is likely that it could be mitigated satisfactorily though archaeological recording, and if appropriate, careful, guided reconstruction; reducing the residual impact on boundaries to **neutral**.

8 Mitigation Strategy

8.1 Development of pre-construction recording; geophysical survey

A geophysical (magnetometer) survey has been recommended for the whole of the area proposed for the solar farm to 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 high archaeological potential.

With 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.

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 systems (Site 1).*** Disturbance (through works such as cable laying, gateway opening or widening) of the fabric of the upstanding elements of the medieval derived field system: the hedge banks still in use as field boundaries, should be avoided or disturbance minimised to reduce loss of early features and of their contribution to HLC (see also Section 7.2.5).
- ***Documented archaeological sites.*** Disturbance of the type described above also has the potential to damage or destroy buried archaeological remains within the site. A geophysical survey of the proposed solar farm may reveal buried features. Where archaeological features are identified by a geophysical survey or other means as being of significance it would be expected that the array layout would be amended to remove impacts on these sites.

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.

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.

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.

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.

9 References

9.1 Primary sources

Joel Gascoygne, 1699, Map of Cornwall (photocopy at HE)

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

Ordnance Survey, *c*1809. *2 Inch Drawing*

Tithe Map and Apportionment, *c*1840. *Parish of Crantock* (digital and microfiche copies at HE)

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*

9.2 Publications

Cornwall County Council 1994. *Cornwall Landscape Assessment* Truro

Gover, J E B, 1948. *Place names of Cornwall, t*ypescript held by the Courtney Library, RCM

Padel, O, 1985. *Cornish Place-Name Elements*, 140, 221-222, 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, 2011. *Proposed Tregonning Solar Farm, St Enoder and St Newlyn East, Cornwall, Archaeological Assessment* Cornwall Council: Truro

9.3 Project archive

The HE project number is 2011**027**

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.Q-T\Trevemper solar farm assessment 2011027
3. Viewshed mapping stored in the directory L:\Historic Environment (Data)\HE_Information\Viewsheds\Solar_Panels\trevemper_solar_multiple_viewshed.shp
4. This report text is held in digital form as: G:\Historic Environment (Documents)\HE Projects\Sites\Sites T\Trevemper solar farm assessment 2011027\Report 2011027\ Trevemper solar farm assessment report 2011027

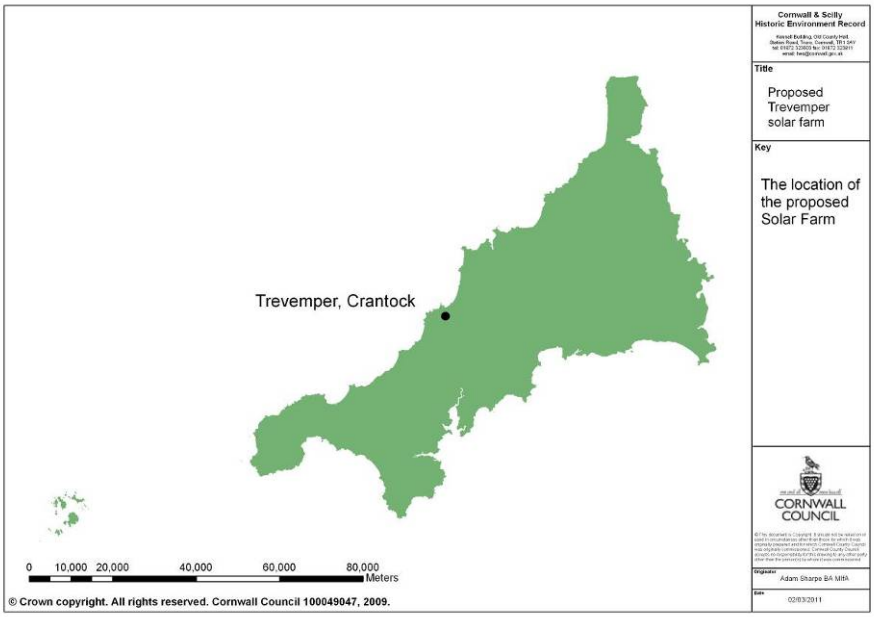


Fig 1. The location of Trevemper, Crantock, Mid Cornwall.

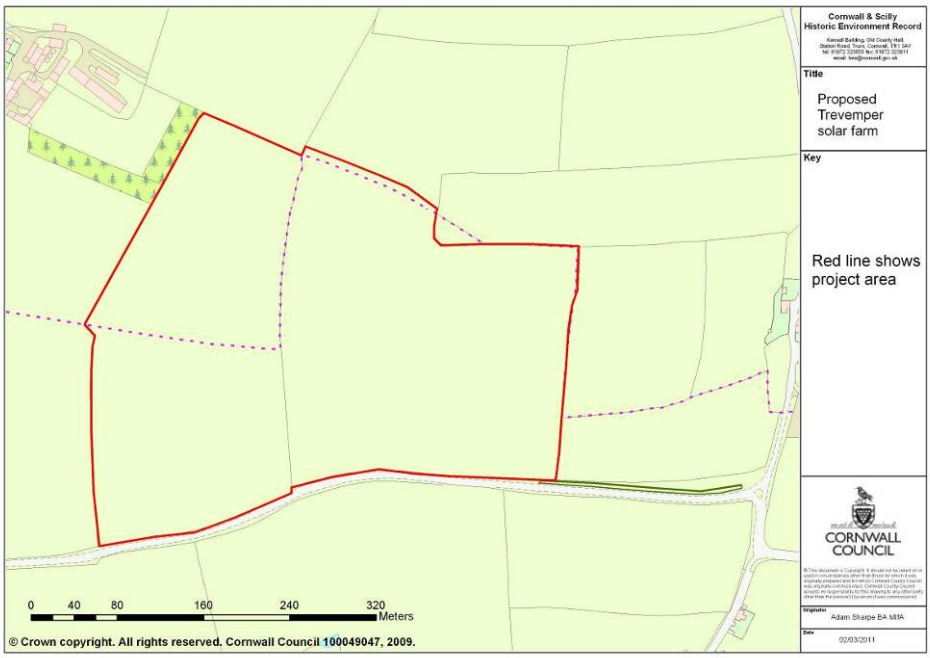


Fig 2. The extent of the proposed solar farm at Trevemper.

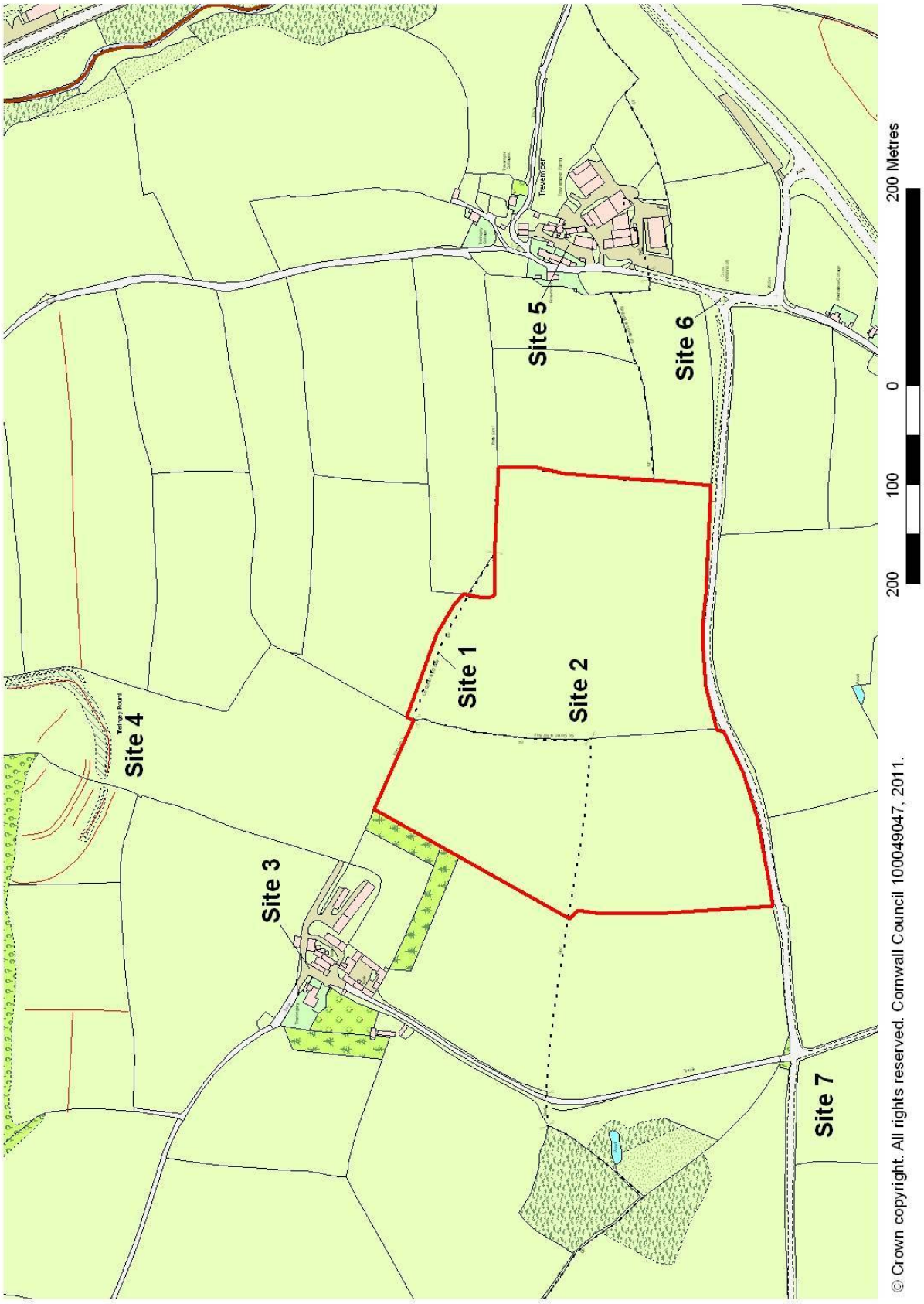


Fig 3. Inventory key map for sites at Trevemper and its immediate surroundings.

Fig 4. An extract from Joel Gascogne's 1699 map of Cornwall. Trevemper is shown as an important house and labelled 'Trevimper'.

Fig 5. An extract from Martyn's 1749 map of Cornwall, showing Trevemper (Tremper) and Treringey (Treringy).

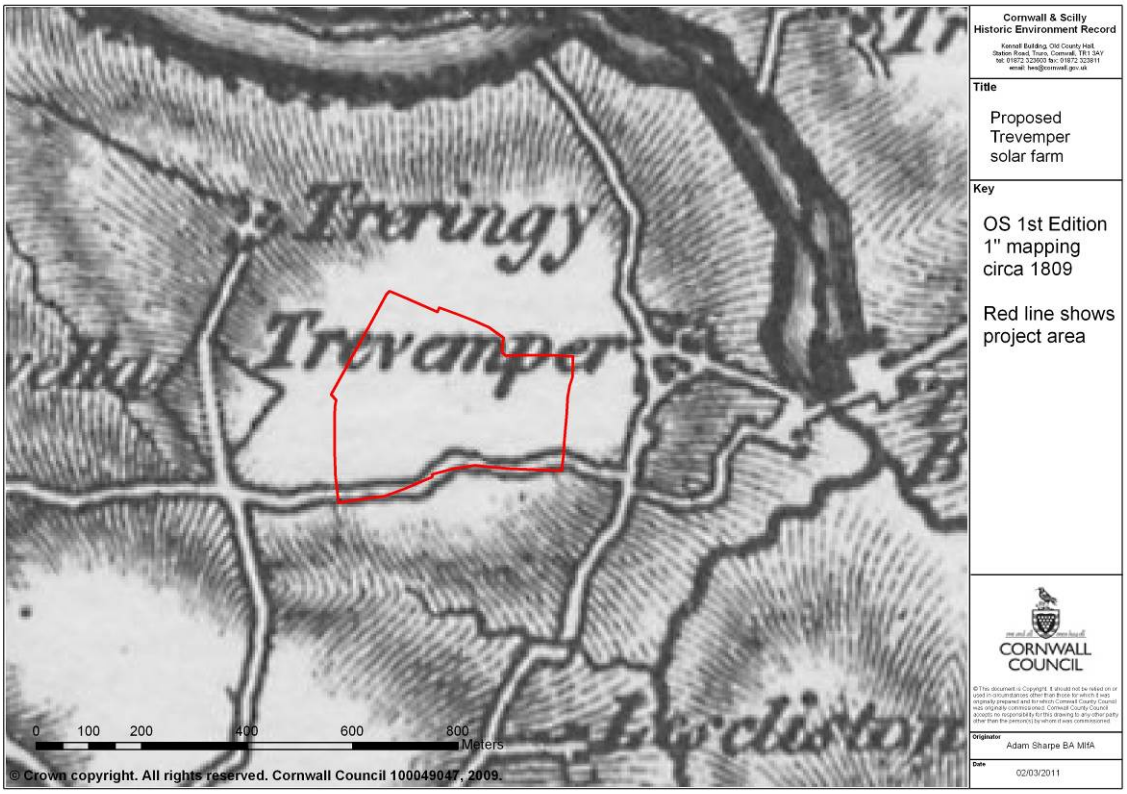


Fig 6. Trevemper, as depicted by the Ordnance Survey on the 1st Edition 1" to the mile mapping dating to 1809.

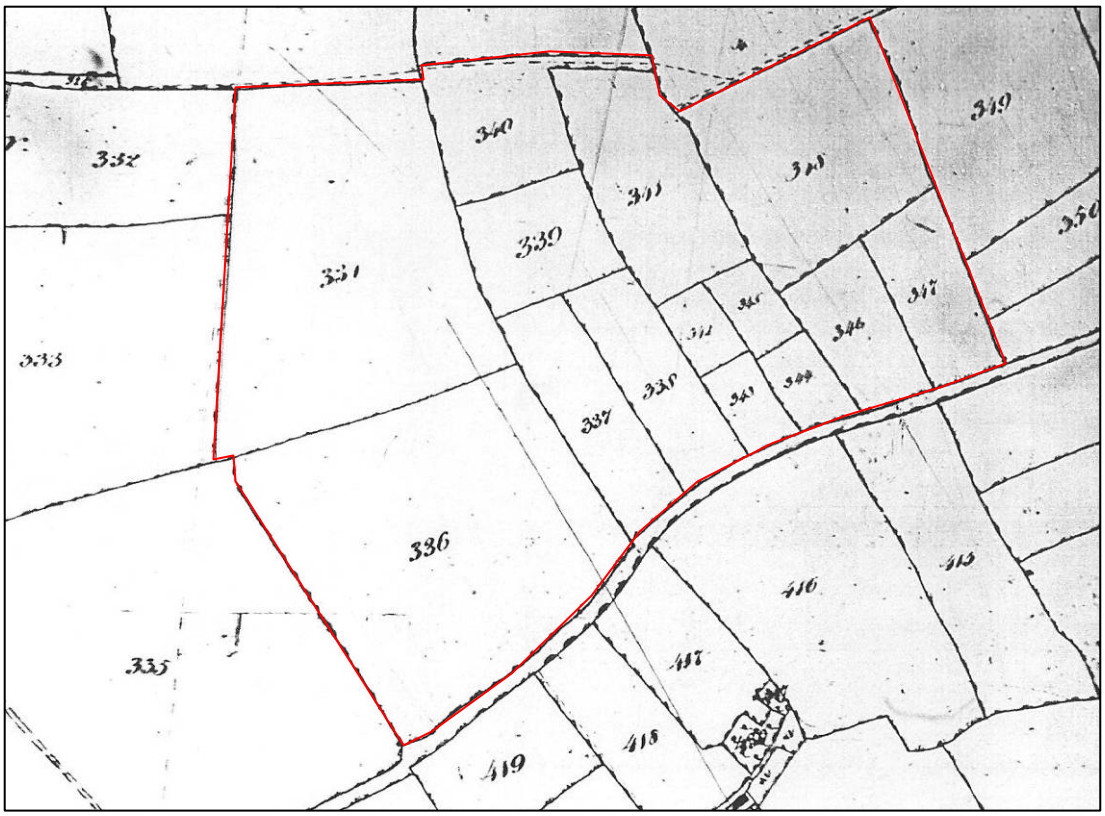


Fig 7. The project area at Trevemper, as shown on the 1839 Crantock Tithe Map.

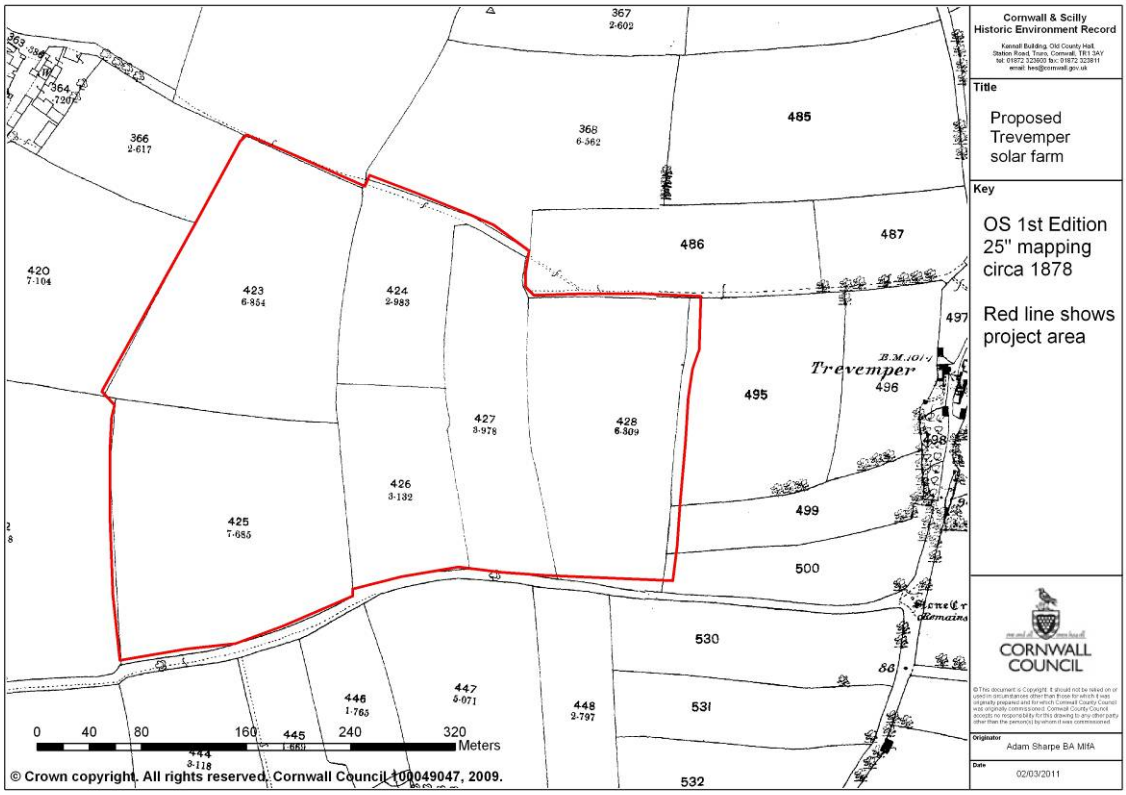


Fig 8. The Trevemper project area as shown on the Ordnance Survey 1st Edition 25" to the mile mapping c1880.

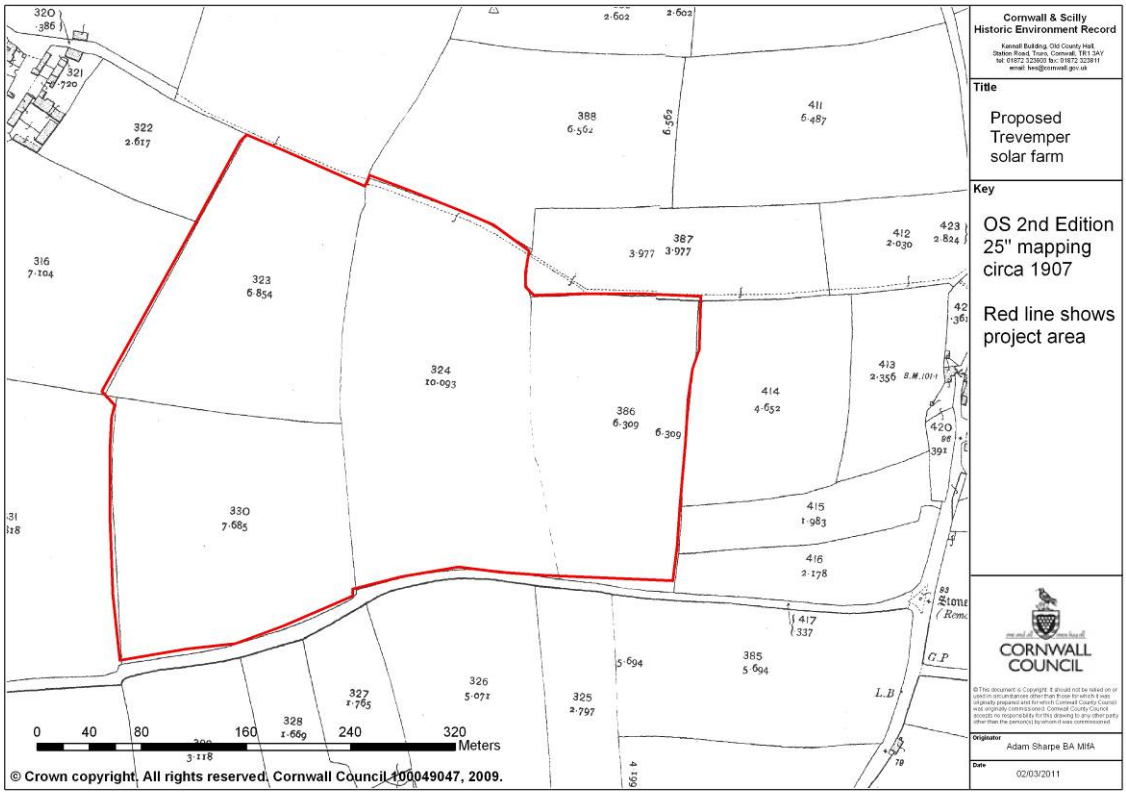


Fig 9. The Trevemper project area as shown on the Ordnance Survey 2na Edition 25" to the mile mapping c1907.

Fig 10. The Trevemper project area as shown on the CCC 2005 aerial photographs. Boundary loss is evident in comparison with earlier maps.

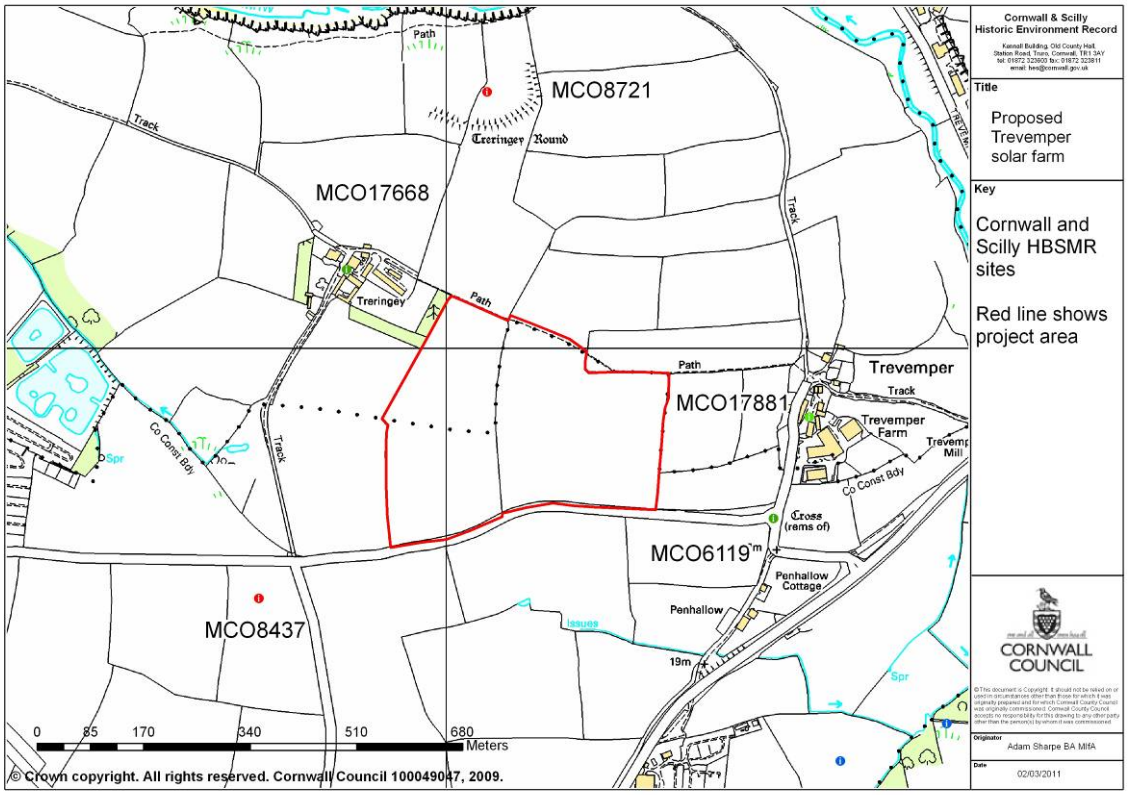


Fig 11. Sites recorded in the Cornwall and Scilly HER in and surrounding the area proposed as the Trevemper solar farm.

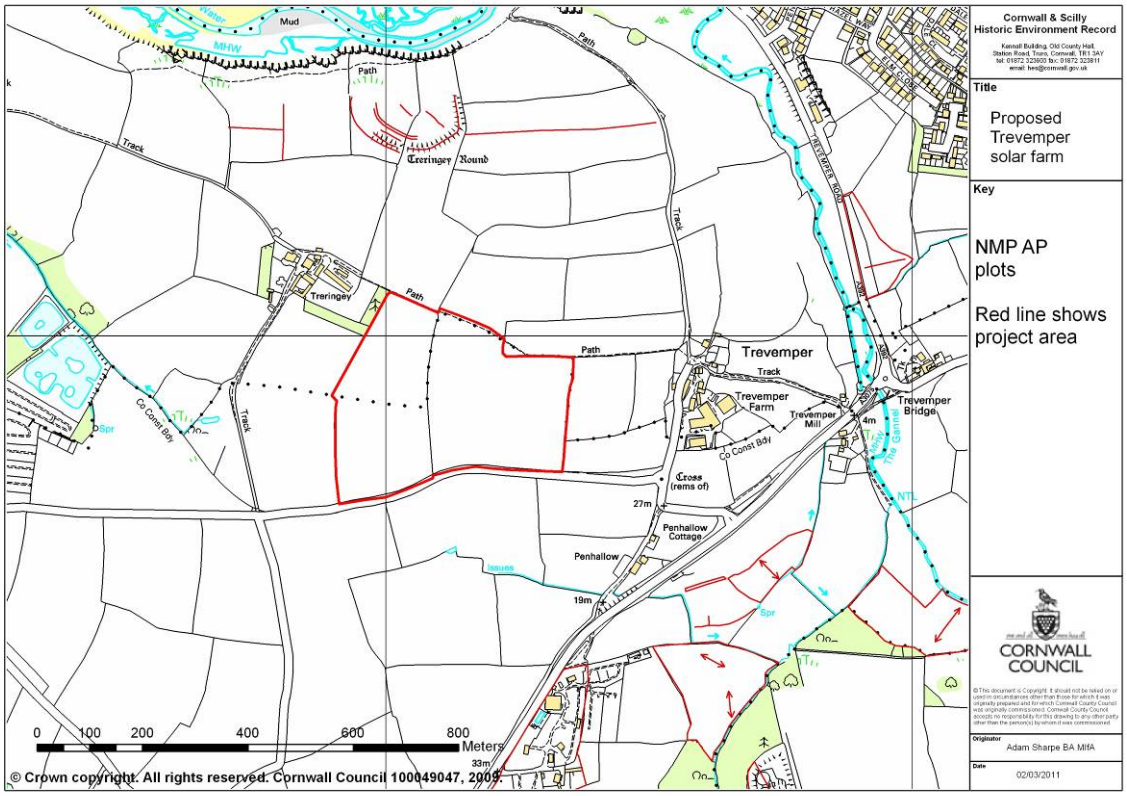


Fig 12. NMP plots from aerial photographs showing cropmark archaeology in the area surrounding Trevemper.

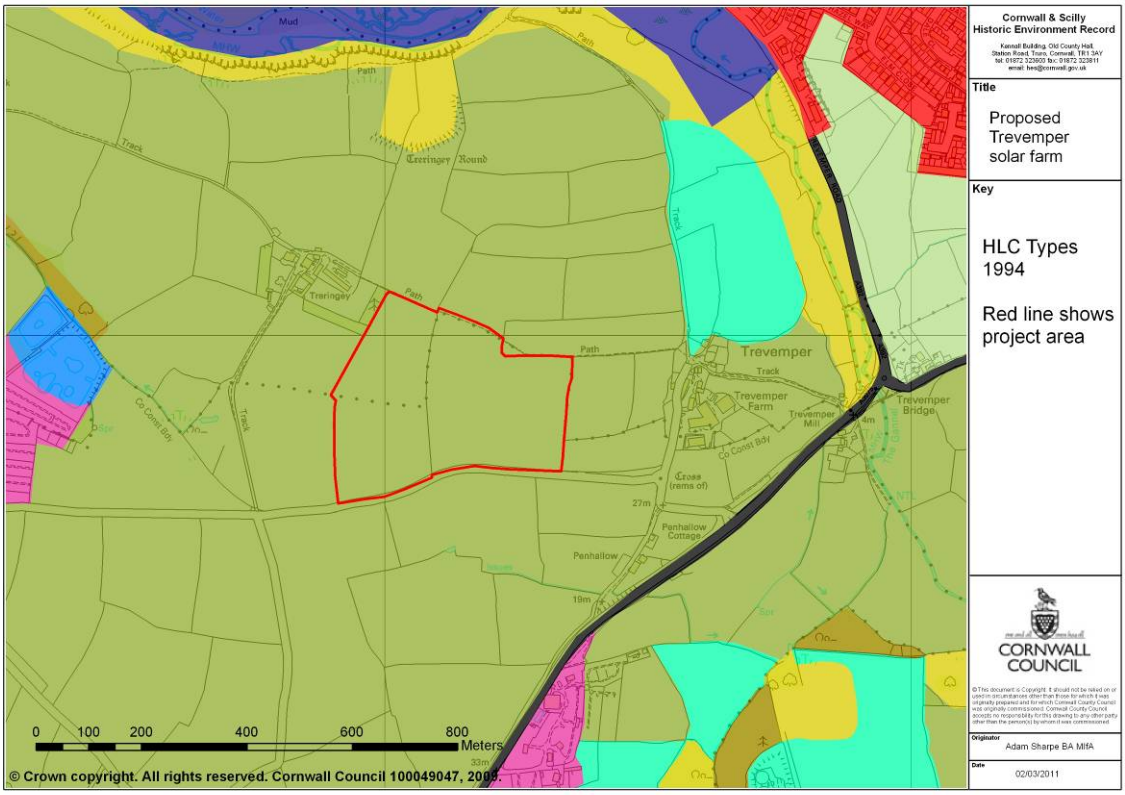


Fig 13. HLC mapping for Trevemper and its surroundings. Key: Green -AEL (medieval), Pale green- REL (post-medieval), Turquoise- Modern Enclosed Land, Yellow- Upland Rough Ground, Pale Blue- Reservoir, Red – Urban, Pink- Recreational, Khaki- Plantations and scrub.

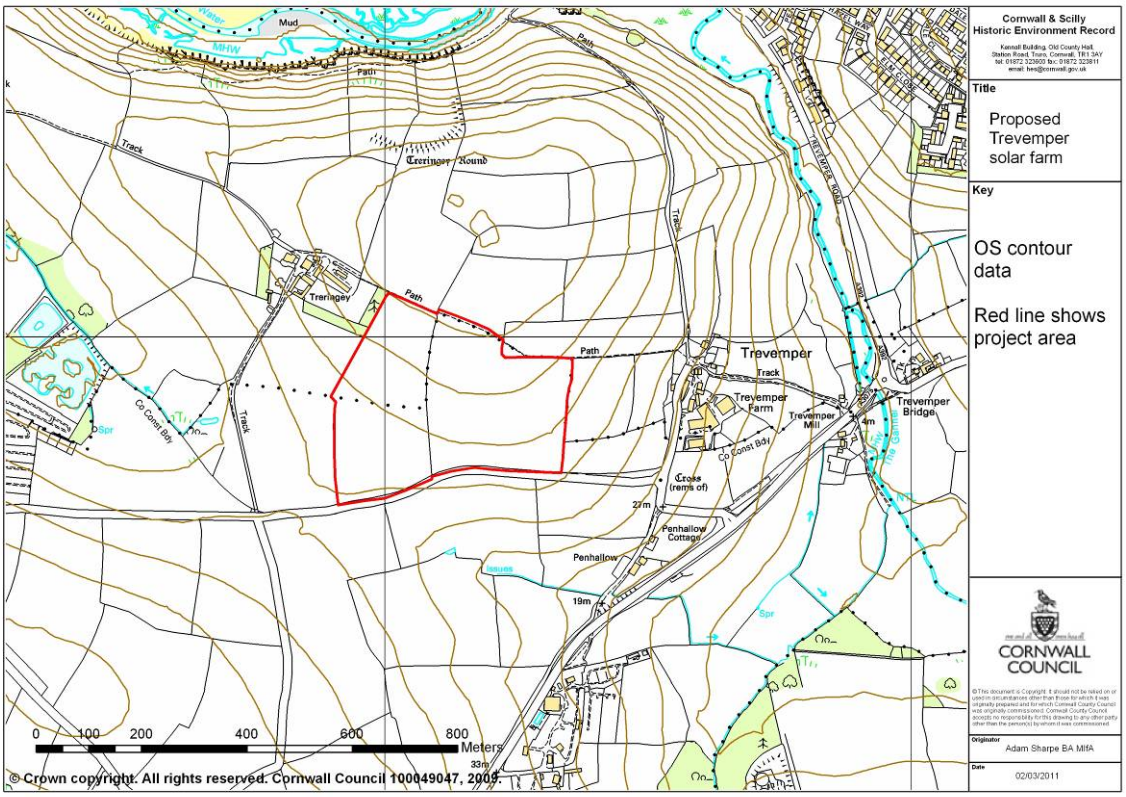


Fig 14. OS contour data for the proposed Trevemper solar farm, showing its predominantly southerly aspect.

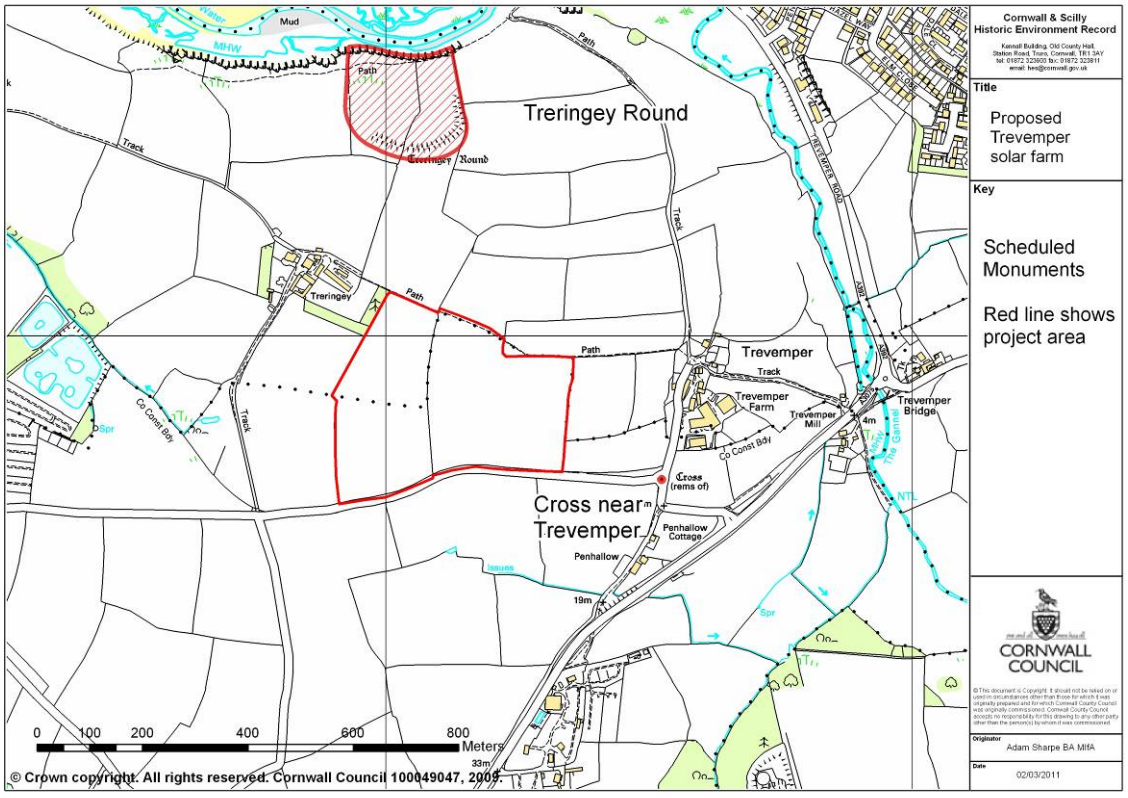


Fig 15. Scheduled Monuments in close proximity to the proposed Trevemper solar farm.

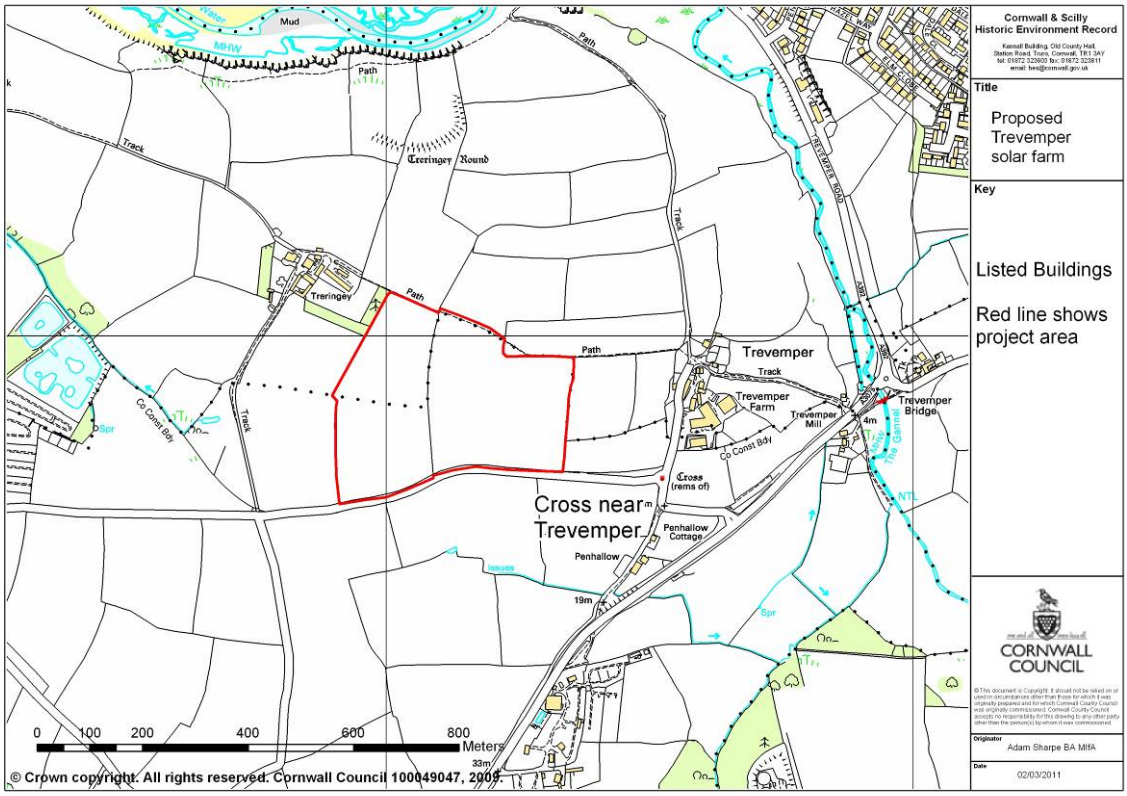


Fig 16. Listed Buildings within close proximity to the proposed Trevemper solar farm.

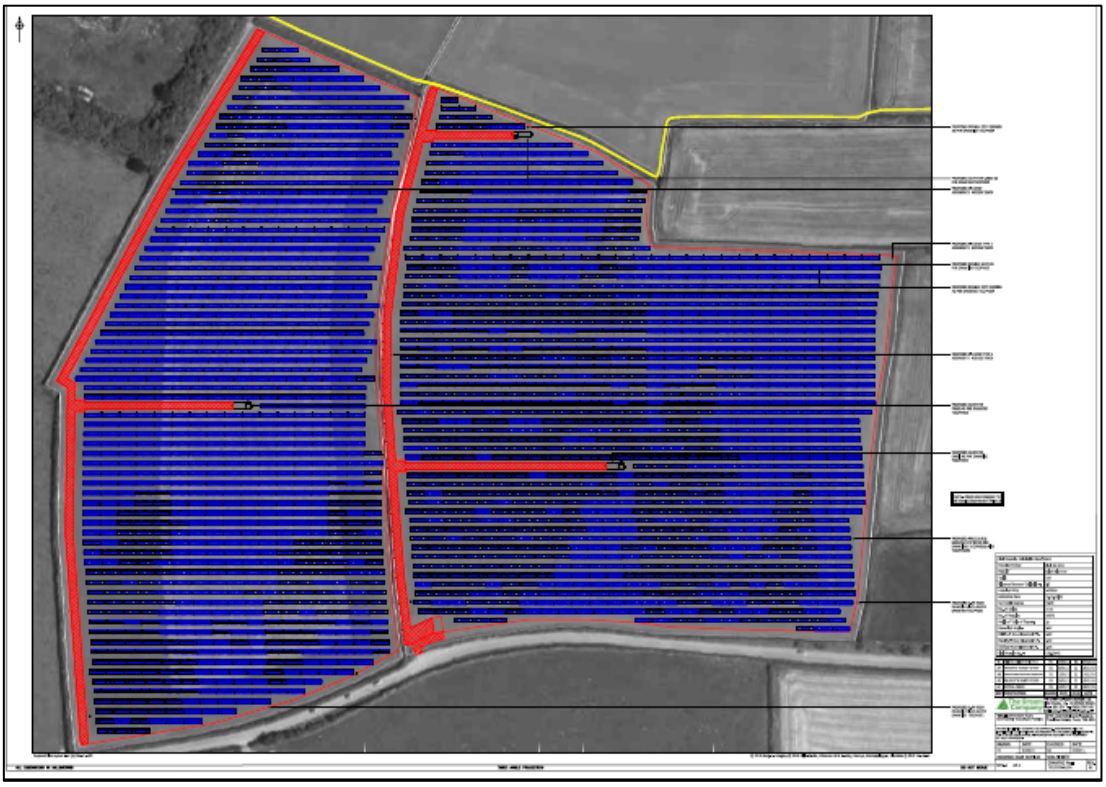
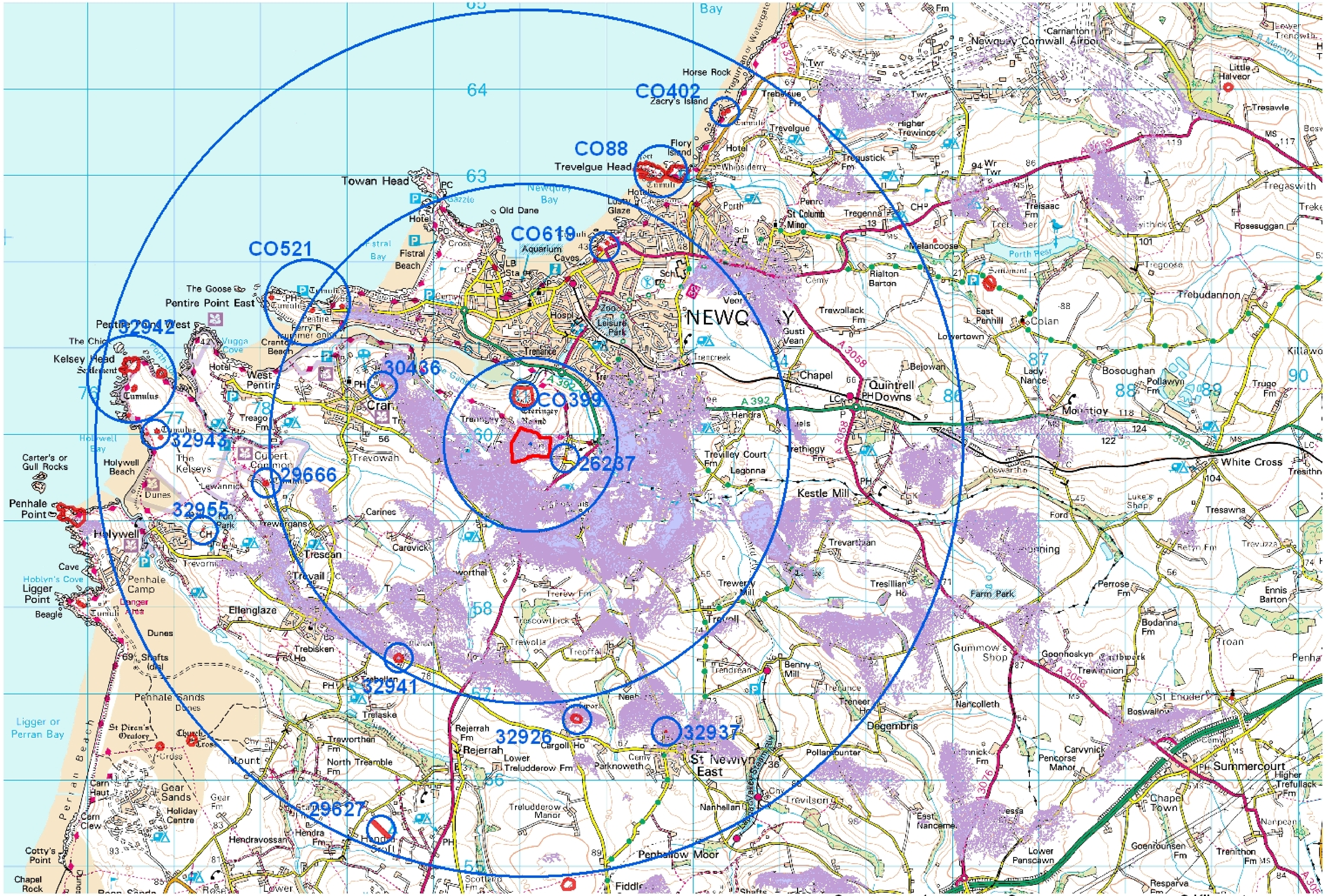


Fig 17. The preliminary layout of solar panels proposed for the Trevemper site.

Fig 18. View from the western half of the site looking west towards Trevella Farm including listed buildings 71038 and 71039

Fig 19. View from the northern part of the site looking south towards an Iron Age/Romano-British hillfort NW of Cargoll Farm SM 32926

Fig 20. Part of the southern earthworks of Treringey Round SM CO399



2 1 0 2 Kilometers

Fig 21. 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

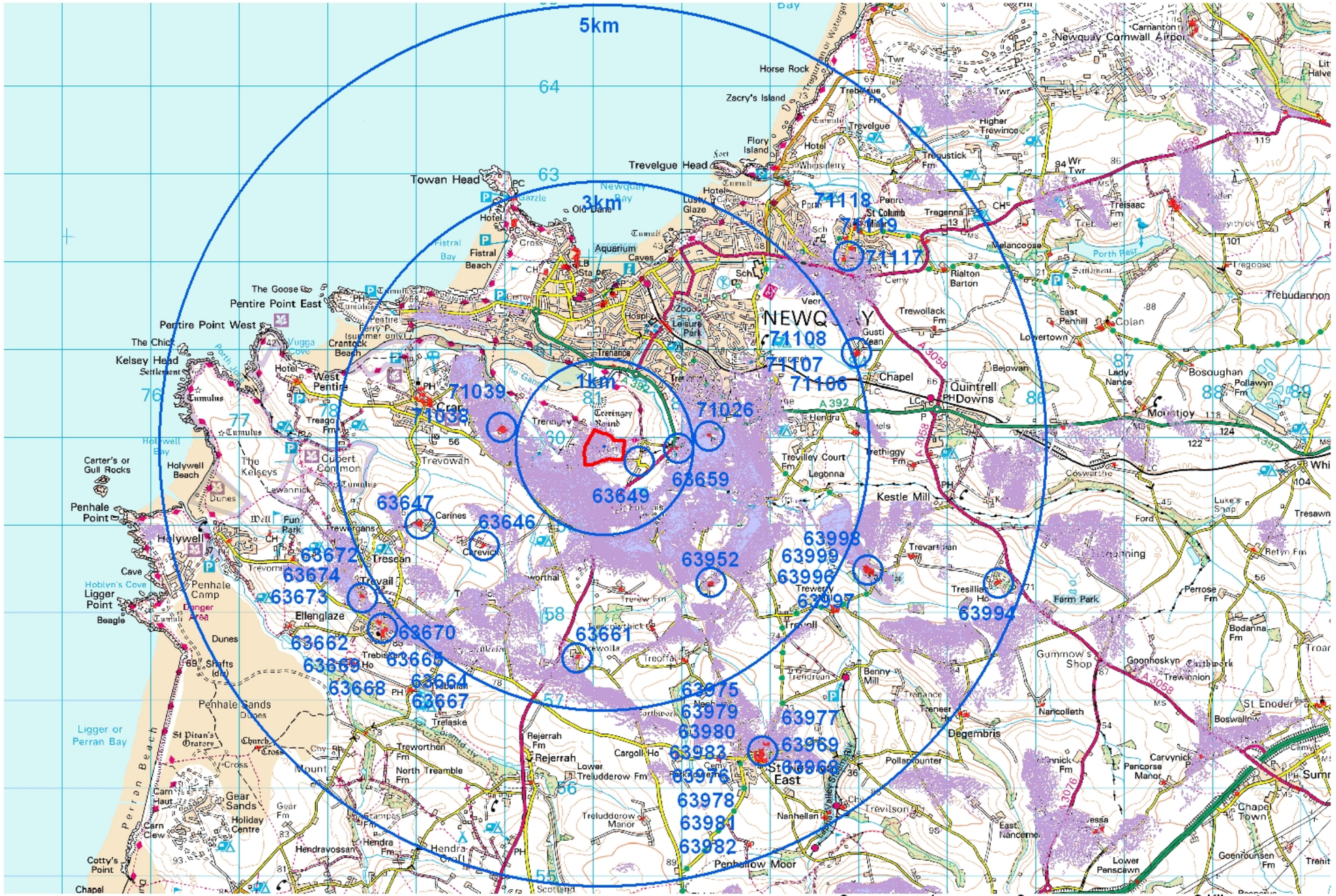


Fig 22. Map showing the computer generated viewshed of the proposed solar farm (in purple), and listed buildings (red but circled in blue) potentially visible within a 5km radius.

Addendum for Trevemper solar farm archaeological assessment

Following the completion of the archaeological assessment of the proposed solar farm at Trevemper a geophysical survey was carried out to include the entire proposal area (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 initial results of the magnetometer survey along with some preliminary interpretation (supplied by Martin Roseveare of ArchaeoPhysica, Fig 3) are all that are available at present and a full report enabling a complete review of the survey results is forthcoming. 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 drawing (Fig 3) shows multi-phase prehistoric and medieval activity of high archaeological significance scattered across most of 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. The earliest features are likely to represent Bronze Age settlement (sunken round houses) with associated field systems (rectilinear ditched enclosures) and a funerary monument (round barrow). Later prehistoric activity dates to the Iron Age or Romano-British period and is represented by at least two phases of field system (rectilinear ditched enclosures) associated with unenclosed settlement (round houses with ring ditches). Medieval activity is represented by features associated with a former strip field system and remnants of plough furrows. The medieval field system itself is partially preserved in the existing field boundaries.

An initial interpretation (Martin Roseveare pers. comm.) of some of the more significant features identified on Fig 3 is as follows:

51, 52, 53, 54: group of Bronze Age houses

38, 39, 56, 57 Bronze Age enclosure and ditches associated with houses 51-54

50: Bronze Age house

17, 18, 19, 20, 21, 22, 26, 46, 47, 48, 49: Bronze Age or Iron Age/Romano-British pits

7: Bronze Age barrow

41, 42, 43, 44: Iron Age/Romano-British enclosure

4, 5, 6, 8, 9: Iron Age/Romano-British field system

1, 2, 3: Two Iron Age/Romano-British houses with intact internal stone walls

25: Iron Age/Romano-British house

30, 31, 32, 55: Iron Age/Romano-British house with associated structure

11, 13, 14, 15, 16, 23, 27, 28, 35, 36, 37, 40: Bronze Age or Iron Age/ Romano-British field systems

The prehistoric elements of the site should be viewed as of regional or potentially national importance. It seems likely that the Iron Age or Romano-British settlement and fields within the area are associated with the scheduled monument of the same date 'Treringey Round' just to the north of the site.

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.

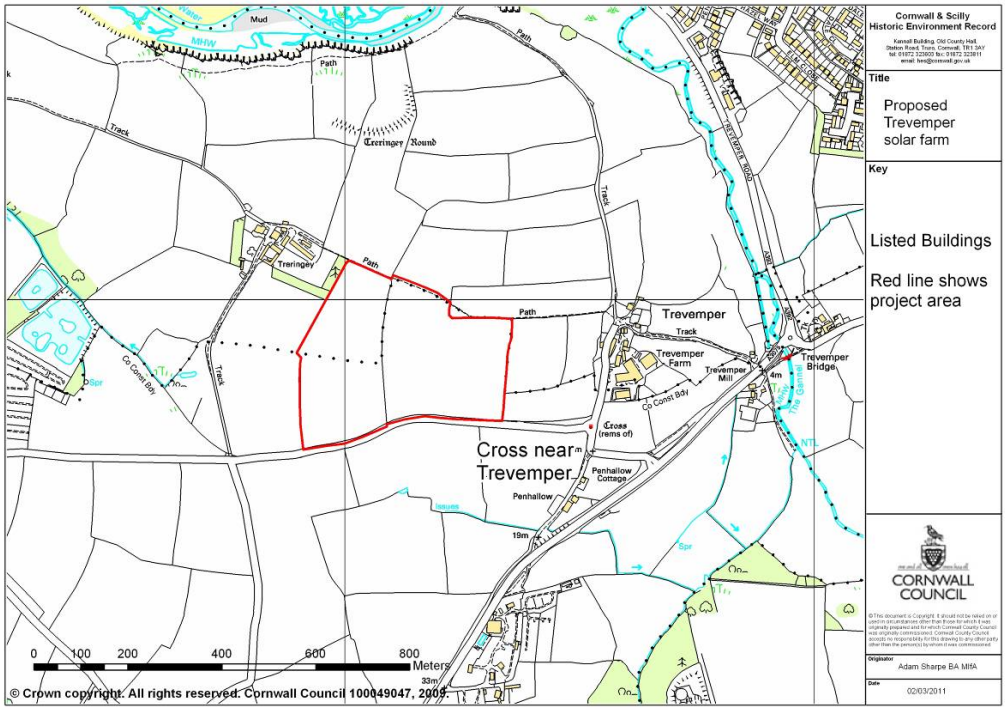


Fig 1: Extent of geophysical survey area

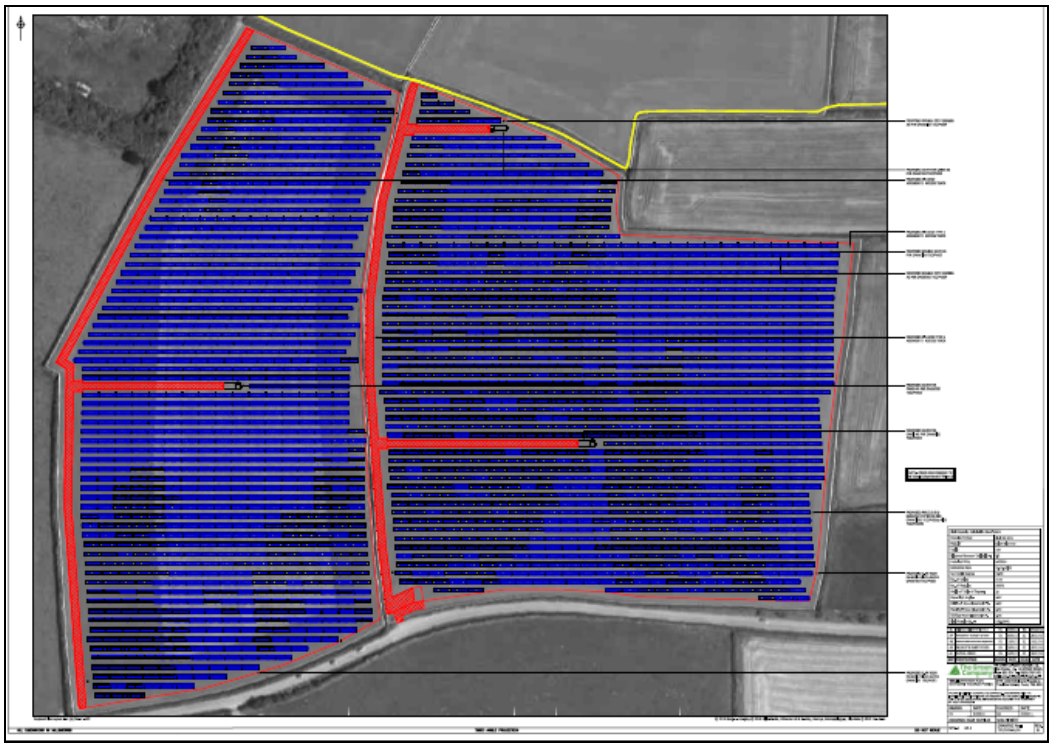


Fig 2: Solar array proposal plan (supplied by The Green Company (Europe) Ltd)

Fig 3: Interim geophysical survey interpretation drawing (© ArchaeoPhysica)