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Higher Trenhayle, Hayle, Cornwall

Archaeological assessment of proposed solar farm

Historic Environment Projects

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The viewshed mapping was carried out by Francis Shepherd, whilst the geophysical survey was carried out by Archaeophysica Ltd.

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.

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Cover illustration

Looking east from the north eastern field proposed for the Higher Trenhayle solar farm.

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Abbreviations

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

1 Summary

Pre-application CC045047 for a 12.6Ha solar farm on fields at Higher Trenhayle adjacent to Wheal Alfred Road between Hayle and Fraddam was responded to by the Historic Environment Planning Advice Officer (West), who indicated that a development of this nature at this location would require archaeological assessment, given its proximity to a scheduled Iron Age round (Castle Kayle).

The site chosen for the solar farm occupies a hilltop location just to the north of Castle Kayle within an area of the landscape which was enclosed during the medieval period.

A brief for site investigation was prepared by the Historic Environment Planning Advice Officer (West Cornwall), Cornwall Council, and HE Projects was commissioned to carry out an assessment of the potential impacts of this proposal on 23rd May 2012. Geophysical survey of the area surrounding the location proposed for the solar farm was commissioned from Archaeophysica Ltd. The assessment consisted of a desk-based assessment, viewshed analysis, a geophysical survey and a walkover survey.

The desk based assessment and walkover survey did not reveal the presence of any archaeological features likely to be impacted upon by the proposed solar farm.

The geophysics revealed the potential for the development to negatively affect sub-surface archaeology within the site, this consisting primarily of a system of ploughed-out field boundaries which are likely to be of medieval origin, and a possible enclosure in the north eastern corner of the south western field.

A report summarising these findings was prepared for the client.

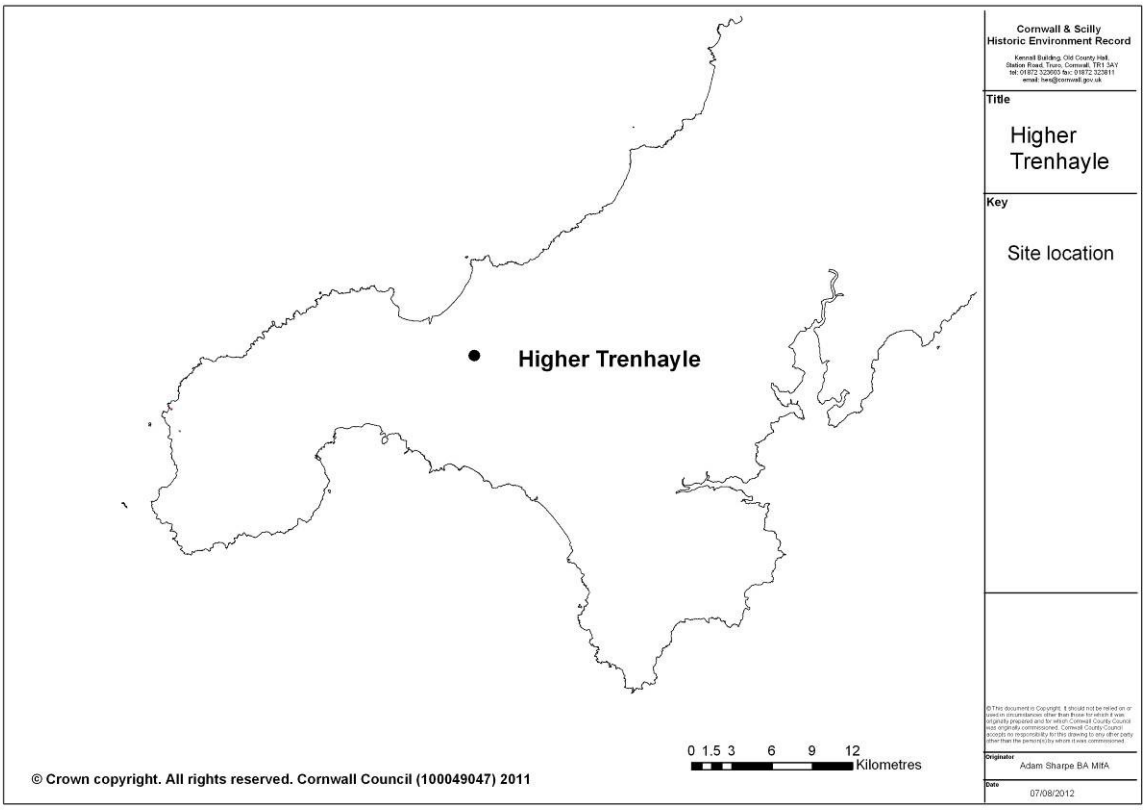

Fig 1. The location of Higher Trenhayle near Fraddam.

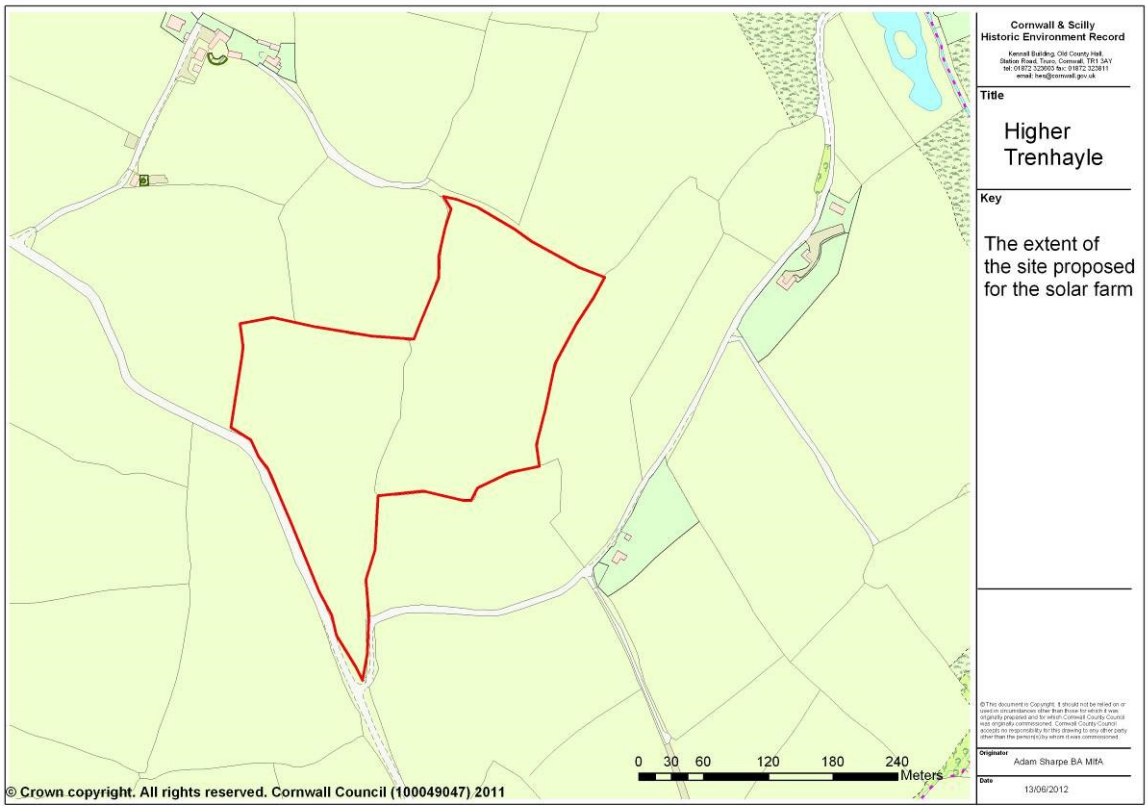

Fig 2. The fields proposed for the Trenhayle solar farm.

2 Introduction

2.1 Project background

Pre-application CC045047 for a 12.6Ha solar farm on fields at Higher Trenhayle adjacent to Wheal Alfred Road between Hayle and Fraddam was responded to by the Historic Environment Planning Advice Officer (West), who indicated that a development of this nature at this location would require archaeological assessment, given its proximity to a scheduled Iron Age round (Castle Kayle).

A brief for site investigation was prepared by the Historic Environment Planning Advice Officer (West Cornwall), Cornwall Council, and HE Projects was commissioned to carry out an assessment of the potential impacts of this proposal on 23rd May 2012. Geophysical survey of the area surrounding the location proposed for the solar farm and along the route for its cables was commissioned from Archaeophysica Ltd. and undertaken on 24 July 2012. The walkover survey and viewshed check were undertaken on the 12th June 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 on land at Higher Trenhayle in the ecclesiastical parish of Phillack and the civil parish of Hayle.

The overall project aims are to:

- Follow the approach outlined in Section 3 of the English Heritage guidance on setting.

The site specific project aims are to:

- Establish viewsheds of the proposal site.
- Draw together historical and archaeological information about the development site and its surroundings, including relevant information held within the Cornwall Historic Environment Record.
- Review and analyse historic map evidence for the site.
- Produce statements of significance for all designated heritage assets that are identified as potentially impacted on by the current proposals. Where currently undesignated assets are identified their likely significance will be indicated.
- Inform whether archaeological recording of any extant remains is required.
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains is required.
- Inform whether paleo-environmental sampling would be required.
- Undertake a geophysical (magnetometer) survey.
- Identify the construction, use and 'end of life' impacts of the current proposals on the significance of the setting of these assets and the proposal site.
- 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 or other mitigation is recommended.

The objective of the project is to produce a report setting out the likely range of impacts (both direct and on settings) of the development on heritage assets within the site or the surrounding locality, as defined above.

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 in the Cornwall and Scilly HER
- Historic maps including
    - Joel Gascoyne's map of Cornwall (1699)
    - The *circa* 1699 Lanhydrock Atlas
    - Norden's Map of Cornwall (1728)
    - Thomas Martyn's map of Cornwall (1748),
    - OS 1 inch survey (*circa* 1810)
    - Phillack Tithe Map (*circa* 1840),
    - 1st and 2nd Editions of the OS 25 inch maps (*circa* 1880 and *circa* 1907).
- 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 was also considered during this stage of the assessment in order to establish the nature of the 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 was made from the surrounding area 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 the proposed solar farm 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 three 'observer points' based on the centroids of the fields proposed for the solar farm.

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 two fields proposed for the solar farm at Higher Trenhayle, 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 2m to represent the height of the solar arrays. This viewshed was checked on the ground, given that vegetation and other factors may block views to key sites, whilst significant heritage assets within the theoretical viewshed were visited (where access was possible) to determine intervisibility with the proposed development site, and hence the

scale and type of any visual impacts which may affect their settings, as required by English Heritage (2011). A viewshed radius of either 5Km or 3Km was used to determine potential impacts on designated heritage assets and a radius of 1Km for undesignated heritage assets (see Figs 16-22).

2.3.3 Fieldwork

In order to check the validity of the Zone of Theoretical Visibility (ZTV) indicated by the viewshed analysis, and thus the potential impacts on key heritage assets within the ZTV, site visits were made to both the sites proposed for solar arrays, and to key locations within the surrounding landscape. A visual check and photographic record were made of intervisibility (or the lack of it) between the proposed development site and significant heritage assets indicated by the ZTV mapping as being likely to be within the viewshed. A walkover survey of the site proposed for the solar farm was also undertaken to examine the site for upstanding archaeology and to record the nature of the boundary types which might be impacted upon during the development.

2.3.4 Fieldwork – geophysical survey

A geophysical survey of the four fields proposed for the solar farm was commissioned from Archaeophysica Ltd. The fieldwork was undertaken on 24 July 2012.

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 strengths of anomalies from surface, whilst a line separation of 0.5m was used. 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, less 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 GNSS receiver mounted on the sledge. Coverage can be guided by real time track plotting visible to the driver 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 3m of ground and also a pseudo-gradient data set which models the response of a 1m 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 (see Figs 29 & 30 in this report). Significant aspects of the results were discussed, and were accompanied by a detailed methodological description, and 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. Its findings have been summarised in this assessment report and form the basis of recommendations for any further investigative work on 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 will be lodged with the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation once a planning application for the site has been made. 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 will be 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 two fields proposed for the solar farm are centred at SW 58180 36218 and SW 58330 36306 on land immediately to the east of Wheal Alfred Road just to the north of Castle Kayle between Hayle and Fraddam. The site lies between 98m and 85m OD on the upper slopes of a hill which slopes to the south towards St. Erth Praze and to the east towards the valley of the River Hayle (Fig 2).

The proposed development area is characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Anciently Enclosed Land' (Farmland Medieval) (Fig 12).

The parent bedrock underlying the application site is recorded as Upper Devonian mudstones, siltstones and sandstones (BGS data). The soils in the fields proposed for the development are recorded as Trusham loams over hard rock, these typically being well-drained fine loams over deeply weathered rock, usually of a basic, igneous or metamorphic type.

4 Project extent

The archaeological assessment was focussed on those heritage assets (whether designated or not) which might be physically impacted upon through activities associated with the construction of the solar farm, including cable trenching, siting of temporary compounds, cranes or other equipment and with any associated semi-permanent infrastructure.

The assessment takes into account and quantifies impacts on the settings of heritage assets (both designated and undesignated) within the viewshed of the proposed solar farm site in line with Policy HE6 in PPS5, sections 16(2) and 66(1) of the Planning (Listed Buildings and Conservations Areas) Act 1990 Chapter 9, and English Heritage guidance relating to the setting of historic assets (2011), namely:

- Non-designated heritage assets – 1Km radius (Fig 20).
- Listed Buildings – 3Km radius (Fig 17).
- Conservation Areas – 3Km radius (Fig 18).
- Scheduled Monuments – 5Km radius (Fig 16)
- Registered Parks and Gardens – 5Km radius (Fig 15).
- Historic Battlefields – 5Km radius.
- World Heritage Site – 3Km radius (Fig 19).

5 Designations

5.1 International

The northern boundary of Area 3 of the Cornish Mining World Heritage Site lies just under half a kilometre to the south of the proposed development site, whilst the southern boundary of Area II of the WHS is 2.8KM to the north north west of the site (see Fig 19).

5.2 National

No national designations apply to the field proposed for the development.

The 5Km radius viewshed zone includes five scheduled monuments: the Iron Age round at Castle Kayle (DCO1174) immediately to the north of the site proposed for the solar farm, two prehistoric enclosures to the north at Trevarnon (DCO1184 and DCO1322), a medieval cross in Gwinear churchyard and a wayside cross in Lelant Lane (DCO989) to the north west. The viewshed mapping suggested that Castle Kayle and the rounds near Trevarnon would be intervisible with the proposed solar farm, though in practice, local factors prevent this (Fig 16).

The 3Km radius zone contains 254 Listed Buildings at grades from II* to II (see table in Section 12.2.2 for those which are potentially intervisible with the proposed solar farm).

The Grade II* Registered Park and Garden at Godolphin (DCO33) is 2Km to the south of the site proposed for the solar farm (Fig 15).

5.3 Regional/county

No regional designations apply to the three fields proposed for the solar farm development. The boundary of the Conservation Area at Hayle is just under 3Km away to the north and that for Gwinear is roughly the same distance to the north east. The Hayle Estuary is an AGSV whilst parts of the Penwith Moors and Godolphin Hill are designated as AGSVs.

5.4 Local

No local designations apply to the field proposed for the development.

5.5 Rights of Way

No public rights of way traverse the site proposed for the solar farm (Fig 23). This area is not registered as open access land under the CROW Act 2005.

6 Results of desk-based assessment

This block of landscape between Marazion, Camborne and Helston is predominantly long-established farmland, the layout of the boundaries which frame its fields having been established during the medieval period, and there are few indications, either in the form of upstanding monuments or as crop mark sites, to indicate the form which the landscape would have taken during prehistory. It to be expected that, during the Bronze Age, the higher hills and ridges would have sited barrow cemeteries, whilst farming settlements would have been found on their flanks. By the late Iron Age, areas of this sort would have been farmed from defended farmsteads (rounds) with a distribution similar to those of modern farms, though, with exception of the nearby Castle Kayle, almost no evidence for these now survives within this immediate area.

The first mapping depicting this area dates to the 17th century, when Joel Gascoyne produced his map of Cornwall (Fig 3). Gascoyne was also responsible for the detailed estate maps which now make up the Lanhydrock Atlas, and Treglistian Wartha was one

of the farms included amongst those surveyed (Fig 4). The four fields proposed for the solar farm were named in this source as 'Dry Ground'. Whilst the road between Trelissick (near modern Hayle) and Fraddam was shown, neither Kayle nor Trenhayle farms were marked on this map. John Norden's map dating to 1728 (Fig 5) does not depict Trenhayle or Kayle, but shows the nature of the hilly landscape between Hayle and Godolphin. Martyn's map of Cornwall dating to 1746 (Fig 6) again named and located Kayle Farm.

The 1st Edition of the Ordnance Survey 1" to a mile mapping (Fig 7), dating to the first decade of the 19th century, again showed the surrounding landscape with its network of lanes linking churchtowns to both established farms and also new smallholdings such as 'Normansland' (probably No Man's Land). The mapping is notable for the high density of smallholders' cottages within this section of landscape, these probably housing workers in the mines which were developing within the surrounding landscape.

The *circa* 1840 Phillack Tithe Map (Fig 8) showed a fully developed agricultural landscape almost identical to that which exists today. The fields chosen for the development of the solar farm were, at the time, part of Treglistian Wartha, as they had been in 1699 and were described as follows:

Treglistian Wartha, owned by The Hon Anna Maria Agar 1/6, J. Wentworth Buller 1/6, W. Malett Hoblyn 1/6 and John Vivian Esq ½. Leased by John Bowden and occupied b William Mitchell. The four fields were described as: 313 – Higher Three Acres, arable, 5 acres, 2 poles and 23 perches; 314 – Little Three Corners, arable, 1 acre, 3 poles and 16 perches; 315 – Outer Dry Field, arable, 3 acres, 3 poles and 7 perches; 316 – Inner Dry Field, arable, 4 acres, 2 poles and) perches.

In 1877 (Fig 9) the fields had undergone no discernible changes, but between 1877 and 1907 (Fig 10) the internal boundaries of the fields were removed. No further changes to the fields seem to have taken place, as can be seen from the modern OS mapping (Fig 2) and the 205 CCC aerial photograph (Fig 11).

The Historic Landscape Character mapping (Fig 12) summarises this history of landscape development, whilst the NMP mapping (Fig 13) records two removed boundaries in the eastern field, one of which must have been removed pre-1699, as it has the appearance of a strip field boundary parallel to the eastern hedge of the site, and does not appear on the Lanhydrock Atlas survey for Treglistian Wartha.

7 Results of site walkover

A site walkover was undertaken on 12th June 2012. The weather was overcast, with occasional drizzly showers, though on the whole clear views of the surrounding landscape were available. The two fields proposed for the solar farm were in a densely-sown and high nutrient input grass crop for silage rendering any subtle earthwork archaeology which might have been within these fields invisible (Fig 24).

The south western field was triangular in shape and sloped fairly steeply up towards the north, whilst the roughly rectangular north eastern field sloped more gently to the east. The fields were bounded by relatively low banks; vegetation cover made it impossible to determine whether these were stone faced or not. These banks were, in turn, topped with thorn hedging (a mixture of blackthorn and hawthorn, with some mature European gorse) averaging between 2.0m and 3.0m high (Fig 24). This vegetation screen effectively blocked most views out of the site to the north, south and west, though the slope of the eastern field allowed more open views in this direction.

Given the density of the grass barley planting, any subtle archaeological earthworks which might exist within these fields were rendered unobservable and unrecordable. Two (or possibly three) dividing boundaries are recorded as having been removed in these fields, but no traces of these could be detected.

8 Summary results of geophysical survey

See Table at end of report for feature references.

The two fields proposed for the solar farm were surveyed by Archaeophysica Ltd on 24 July 2012, preliminary results being supplied to HE Projects at the beginning of August 2012.

The survey revealed a field system of probably medieval date underlying and unrelated to the modern arrangement of field boundaries. Superimposed on top of this are what appear to be an earlier alignment of the road to the west of the site, and on top of this, evidence for a number of removed Cornish hedge boundaries.

Apart from a small number of possible drainage ditches, the only other feature (10 on Fig 29) consists of a group of anomalies which collectively resemble a small enclosure. The function, identification and age of this feature are uncertain.

9 Results of viewshed analysis

See Figs 16 to 22.

Given the elevated, hillslope location of the site proposed for the solar farm at Higher Trenhayle, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be far-reaching. In line with the requirements of the brief, the ZTV has been mapped to a distance of 5Km from the site in order to assess potential impacts on Registered Parks and Gardens, Registered Battlefields and Scheduled Monuments. The ZTV will inevitably extend a considerable distance beyond this, but the visibility of the solar arrays will diminish significantly with distance, and will be increasingly blocked by intervening buildings within settlements or by tree plantings.

The landscape between Hayle, Camborne, Helston and Marazion is characterised as a dissected plateau. Although, with the exception of that containing the Hayle River, there are no major valleys in this part of Cornwall, and no major hills except Godolphin and Tregonning to the south east, this is a landscape of small hills and ridges. As a result, within the 1Km radius of the site, it will be visible from about 75% of the surrounding landscape, this being predominantly to its north and south. Within the zone from 1Km to 3Km out from the site, it will be visible from all quadrants from the facing slopes of surrounding hills, some of these being quite close to the proposed development location, but not from their backslopes. These nearby hills and ridges will also tend to block visibility for some distance beyond them, with the result that the site will only be visible within about 35% of this zone. Within the outer zone from 3Km to 5Km from the site, the site will again be visible from about 35% of this area. To the north east, this is likely to be furthest away that the site will appear in views of the landscape, though there will be views to Carn Brea and Carnmenellis. To the north west, it is probable that it will be visible (albeit as a minor component) of views from the eastern part of the Penwith Moors round to Steeple Hill above St. Ives. To the south west and the south, the site will appear within some landscape views from considerable distances away, though significant attenuation of the visibility of the solar arrays will occur with distance, and there is a greater likelihood of the blocking of intervisibility due to local factors such as trees, hedge vegetation and buildings.

The solar farm will be not be visible from Area II (Hayle) of the Cornish Mining Word Heritage Site, but it be visible from a small number of elevated parts of Area III (Tregonning and Gwinear) of the WHS (see Fig 25).

The viewshed mapping indicated clear intervisibility between it and the Scheduled Monument at Castle Kayle (Fig 25).

In relation to the Hayle and Gwinear Conservation Areas, the viewshed analysis indicates that local topography will block all views of the proposed solar farm from the former and almost all views from the latter (Fig 18).

There are 254 Listed Buildings within the 3Km radius of the site proposed for the solar farm at Higher Trenhayle (Fig 17). Of these, the ZTV mapping suggests that 13 will have some degree of intervisibility with the proposed solar farm, the closest to the site being Taskus Farmhouse (Grade II) just under 1Km to the south east. Trelean is just over 1Km to the south east and Deveral Chapel just over 1.5Km to the south east.

Intervisibility between the site and the Listed Buildings is likely to be partial and for those further away, tree screening or blocking by other structures is likely to almost wholly block views of the solar arrays. Given the nature of this landscape, for most Listed Buildings in the ZTV, intervisibility with the solar farm will be very patchy and impacts on their settings will be either neutral or negative/minor in character. None will experience the solar farm as a major landscape feature.

Given the relative proximity of the proposed solar farm to the Registered Park and Garden at Godolphin, the viewshed mapping inevitably indicates that there will be clear intervisibility between areas that part of the Park formed by the northern flanks of the prominent Godolphin Hill; intervisibility between the remainder of the Park, the house and gardens will be very patchy and blocked by tree screens to the north west of the Park (Fig 15).

Field verification of ZTV

The viewshed mapping and potential impacts were ground checked from a number of locations, principally Gwinear Churchtown and Godolphin Hill, as well as locations closer to the proposed solar farm site where access was possible. At each accessible designated heritage site the potential visibility (and proportional visibility) of the proposed solar farm was considered. Views out from the site towards key heritage assets were checked from each of the fields proposed for the solar farm, and an assessment of the degree of openness of the views out from the site was also made.

The almost flat topography and the heights and natures of the hedge plantings blocked views in and out of many parts of the site, particularly to the west and north. Views to the south extend to Tregonning and Godolphin Hills, which were prominent skyline features (Fig 25). The views to the east from the north eastern field were also extensive, extending to the high ground to the south of Camborne and Redruth (Fig 27). Views to the north were blocked by the neighbouring rising ground. The combination of woodland or tree clumps and the incised plateau which forms the surrounding landscape out to the east produced very flattened views of the surrounding countryside, and it was almost impossible to distinguish individual archaeological sites, settlements or designated structures.

Views back to the site were checked from those locations where it seemed possible that intervisibility might occur. Castle Kayle was completely screened by tree planting around the farm, by modern farm buildings, and by the tree plantings along the edges of the road running past it. The viewshed was also checked from the summit of Godolphin Hill, but despite the elevated viewpoint this allowed, the fields proposed for the solar farm were grossly foreshortened by distance (4Km) and it was thought likely that the development would be barely visible as a landscape feature from this distance (Fig 28).

Photographs were taken from key sites within the surrounding landscape and from the fields proposed for the solar farm back to these sites.

In practice, field hedges, woods and other tree plantings blocked views in many of the rural areas; within settlements, groups of buildings and mature garden trees and shrubs also blocked many views back to the site, whilst the topography and wooded nature of the Godolphin parkscape almost wholly blocked intervisibility between this site and its house and the proposed solar farm except from the summit of Godolphin Hill (see above). The visibility cut-off imposed by the local topography which was suggested by the viewshed mapping was confirmed.

There are a few 'modern' features within the surrounding landscape, including very prominent power transmission line pylons just to the south and east of the site, a farm wind turbine just to the east of the site and a very large and visually dominating agricultural shed adjacent to the road to the south.

10 Synthesis

Whilst the walkover survey did not indicate the presence of any upstanding archaeology which might be impacted upon by the proposed solar farm at Higher Trenhayle, the geophysical survey data suggests that this area includes a number of sub-surface features which may be of some archaeological significance and whose identification, state of preservation, importance and vulnerability to intrusive activity might need to be established by evaluation trenching.

Impacts on the settings of both designated and undesignated heritage assets within the local landscape resulting from the construction of a solar farm on land adjacent to Wheal Alfred Road will vary with their distance from the proposed development, their state of preservation, their nature and their sensitivity to impacts on their settings. Other significant factors will include the effects of reduced or blocked intervisibility due to local topography, vegetation (including hedge plantings) or the presence of other buildings. In some cases, even where intervisibility will be present, topography will be limited to glimpses or fragments. With the exception of the upper parts of Godolphin Hill (Figs 25 & 28), almost none of the designated sites within either the 3Km or 5Km radius zones around the site will have clear and uninterrupted intervisibility with it. Even in this case, the solar farm will form only a relatively small element within views from the hilltop and the upper section of the designated park.

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 Penwith Local Plan 2004

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

Local Plan Objectives 1. To ensure that development does not have an adverse effect on landscape, nature, conservation, historic, archaeological and geological values;

Local Plan Objectives 15. To provide a framework that supports initiatives for the management and enhancement of the countryside in terms of its landscape, nature conservation, historic, archaeological and geological values;

Policy GD-1: Development should be integrated with its surroundings in terms of scale, siting and design and be in keeping with the character of the District.

Policy CC-1: Development will not be permitted where it would significantly harm the landscape character, amenity, nature conservation, archaeological, historic or geological values of the coast and countryside of Penwith.

Policy CC-2: Proposals which maintain, enhance and facilitate the enjoyment and understanding of landscape character, amenity, nature conservation, archaeological, historic and geological values in the coast and countryside will be permitted.

Policy CC-12: Proposals for development which would result in the loss or damage to trees, woodland, hedgerows and Cornish Hedges which make a significant contribution to the character of the landscape and nature conservation will not be permitted.

Policy CC-15: Proposals for development which would damage Scheduled Ancient Monuments and other nationally important archaeological remains, or their setting, will not be permitted.

Policy CC-16: Proposals for development within areas of great historic value and those affecting archaeological remains of County importance will nit be permitted where it would harm:-

(i) The historic character of the landscape; or

(ii) The value, character or setting of the remains.

Policy CC-17: Proposals for development which would adversely affect Historic Parks and Gardens, or their setting, will not be permitted.

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

The construction of the solar farm could have direct, physical impacts on the buried archaeology of the site through the placing of array foundations, 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. Such impacts would be **permanent** and **irreversible**.

12.1.2 Types of impact, operational phase

The arrays, inverter units and security fencing around the site might be expected to have a visual impact on the settings of some key heritage assets within their viewshed during the operational phase, given the likelihood of their visibility from areas within the local landscape. Given the area of land take for such sites, it is likely that the development would have an impact on Historic Landscape Character. These impacts would be **temporary** and **reversible**.

12.1.3 Scale and duration of impact

The impacts of the 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

Potential 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 farm on the archaeological resource is assessed as having a potential scored as **negative/minor**, principally dependant on proximity to the proposed solar farm, the degree of intervisibility with them, their sensitivity to physical disturbance and their sensitivity to visual intrusion on their settings.

Impacts on the settings of the designated heritage sites within 3Km of the proposed solar farm have been assessed as **neutral**. Impacts on potential sub-surface archaeology within the development site may be higher, but could be limited to **negative/moderate** 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, Historic Landscape Character, 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 Impacts on archaeological sites within the development area

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

Scales of impact will vary with the degree of significance of individual sites, and with the proportion of the whole 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 full 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** provided that appropriate mitigating work is carried out. These impacts would be **permanent** and **irreversible**.

No sites are recorded in the Cornwall and Scilly Historic Environment Record within the fields proposed for the construction of this solar farm.

The geophysics results suggest the potential for the existence of an underlying field system of medieval date, as well, perhaps, for some elements of a prehistoric field system.

12.2.2 Impacts on the settings of surrounding key heritage assets

The proposed solar farm is considered likely to have an impact on the setting of key surrounding heritage assets, this being summarised as **negative/minor to neutral** and **temporary/reversible** overall:

- There are five Scheduled Monuments within the 5Km radius viewshed of the site of the proposed solar farm, though none of these are likely to be significantly intervisible with it. Given this lack of intervisibility, impacts on their settings are assessed as neutral.
- Godolphin Hill (with Tregonning Hill) forms a distinct skyline feature from the proposed development site, but given the considerable distance between the site proposed for the solar farm and the Designated Park and Garden at Godolphin, there will be no points in the local landscape where the proposed solar farm and

Godolphin Hill would appear in the same view. The impact on the setting of the Godolphin RPG is therefore assessed as neutral.

- The proposed development lies close to two Areas of the Cornish Mining World Heritage Site, both of these falling within the 5Km radius viewshed. That at Hayle (Area II) will not be intervisible with the proposed development. Area III (Tregonning and Gwinear) covers a large extent, and some areas within the inscribed WHS will be intervisible with the proposed development. Given various historical factors, the majority of this landscape no longer contains a large number of upstanding mining structures, and it is characterised by swathes of agricultural land, small, often industrially-derived hamlets and the great houses and estates at Clowance and Godolphin. This landscape is threaded through by chains of mine shafts and associated dumps which follow the lode outcrops, often for many miles. Both great houses and their associated gardens are enclosed within extensive wooded parks, whilst many of the mine dumps have revegetated and now contribute important islands of wildscape. For this multi-faceted landscape, the development of a solar farm nearby would have little or no impact on the settings of its elements.
- During the operational phase the solar farm is unlikely to impact to any significant degree on the settings of the thirteen Listed Buildings within its viewshed, given the relatively large distances between the solar farm and these designated structures (see Fig 17) and likely constraints on intervisibility.
- The 3Km radius zone around the Higher Trenhayle site contains one Conservation Area (Gwinear) and parts of two others (Hayle and St. Erth). None will be intervisible with the development.
- There are no Registered Battlefields within the 5Km radius viewshed of the proposed solar farm.
- During its operational phase the proposed solar farm is felt unlikely to have any significant impacts on the settings of the majority of the undesignated heritage assets within the 1Km viewshed, of which eleven will be theoretically intervisible with it. In practice, intervisibility will be very limited.
- Any impacts on heritage assets within the landscape surrounding the proposed solar farm would be **temporary** and **reversible** should the solar farm be dismantled in the future.

Designated heritage assets within the 5Km radius viewshed

Registered Parks and Gardens (RPG) - see Fig 15.

Identifier	Site	NGR	Impact
DCO33	Godolphin	SW 59873 32030	Neutral

World Heritage Site (WHS) – see Fig 19.

Identifier	Site	Impact
Area II	Hayle	Neutral
Area III	Tregonning and Gwinear	Neutral

Scheduled Monuments (SM) – see Fig 16.

Identifier	Site	NGR	Impact
DCO944	Wayside cross in Gwinear	SW 59496 37411	Neutral

Identifier	Site	NGR	Impact
	churchyard		
DCO1174	Castle Kayle	SW 58354 35663	Neutral
DCO989	Wayside cross in Lelant Lane	SW 54181 37877	Neutral
DCO1322	Camp SW of Trevarnon Round	SW 58464 39836	Neutral
DCO1184	Trevarnon Round	SW 58794 40131	Neutral

Designated heritage assets within the 3Km radius viewshed

Conservation Areas (CAs) – see Fig 18.

Identifier	Site	NGR	Impact
DCO181	Hayle	SW 55383 37274	Neutral
DCO80	Gwinear	SW 59508 37320	Neutral
DCO74	St. Erth	SW 54858 35001	Neutral

Listed Buildings (LBs) with grades - see Fig 17.

Identifier	Site	NGR	Impact
DCO11455	Deveral Chapel (II)	SW 59246 35167	Neutral
DCO11459	Taskus Farm (II)	SW 58981 35552	Neutral
DCO11444	Milestone (II)	SW 586668 38432	Neutral
DCO11435	Parc Venton (II)	SW 60993 36914	Neutral
DCO12028	Parc Tye (II)	SW 60616 36634	Neutral
DCO12025	Reawla House and Slate Villa (II)	SW 60468 36486	Neutral
DCO11372	Barns at Tregenhorne (II)	SW 56698 34520	Neutral
DCO12089	Barns at Trelean (II)	SW 57610 34764	Neutral
DCO11373	Trelean farmhouse (II)	SW 57635 34764	Neutral
DCO12657	Hodge Tomb, Gwinear (II)	SW 59485 37343	Neutral
DCO12663	Higher Gonvena Farm (II)	SW 60812 36974	Neutral
DCO11457	Cartshed at Lanyon Farm (II)	SW 60439 37745	Neutral
DCO12658	Churchyard wall at Gwinear (II)	SW 59523 37347	Neutral

Undesignated heritage assets within the 1Km radius viewshed

See Fig 20.

Identifier	Site	NGR	Impact
MCO13316	Bandowers medieval settlement (doc)	SW 58545 35853	Neutral
MCO39763	Prince George mine	SW 59050 36799	Neutral
MCO7929	Drannack Round	SW 59058 36618	Neutral
MCO34004	Drannack field system	SW 59009 36571	Neutral
MCO13008	Wheal Kayle	SW 58295 35206	Neutral
MCO12851	Wheal Carpenter	SW 58498 45405	Neutral
MCO16956	Taskus medieval settlement	SW 58956 35590	Neutral
MCO27887	Kayle blowing house	SW 58146 35718	Neutral
MCO33997	Kayle Round	SW 58076 35594	Neutral
MCO15075	Kayle Farm	SW 57928 35619	Neutral
MCO33998	Kayle mound	SW 57813 35800	Neutral

12.2.3 Impacts on Historic Landscape Character

A solar farm installation at Higher Trenhayle can be predicted to have an impact on the historic character of the landscape to some degree. The expected effect on HLC has been assessed as **negative/moderate** to **negative/minor**. Factors contributing to this assessment are as follows;

- The land-take for the proposed development is small in comparison with the areas of the HLC Units of Anciently Enclosed Land and Recently Enclosed Land within the surrounding landscape.
- 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 provided that cabling is routed through existing gateways and gaps.
- Some visual impact throughout the operational phase would occur, affecting the integrity of this area as partly medieval-derived farmland, in particular through the introduction of highly visible modern features into this landscape.
- 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 on this site 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 provided by documentary records, aerial photography and geophysical survey. Features or artefacts may not survive in forms recordable by these methods and the absence of evidence should not be taken as inferring evidence for absence. It is likely that any such impacts 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, who may choose to recommend one or more of the following.

13.1 Site re-design

Based on the results of available evidence, the HEPAO might ask the site developer to avoid or bridge archaeologically sensitive locations within the area of the application site. Such an approach would limit any impacts on known significant below ground archaeology and would reduce the direct impacts on the below ground archaeology of the site to **neutral**.

13.2 Controlled soil stripping or watching brief

In a case where the finalised site design would seem likely to result in unavoidable impacts on below-ground features, a brief for archaeological investigation or recording would be prepared by Cornwall Council's Historic Environment Advice Officer, setting out its scope. A Written Scheme of Investigation (WSI) to meet the brief would need to be prepared and agreed to establish and direct a programme of mitigating archaeological work.

Archaeological evaluation trenching might be required to test the nature, significance and sensitivity to disturbance of archaeological features or sites revealed through the desk based assessment, site walkover or geophysical survey which might be impacted upon by the construction and operation of a solar farm.

An archaeological watching brief (observation by an archaeologist during mechanical topsoil and subsoil stripping) or a controlled topsoil strip under archaeological supervision might be required either where any significant areas of ground are to be disturbed, in areas where significant results had been identified from aerial photographs or through geophysical survey and which remain proposed for ground disturbance in the final scheme design, or where the balance of probability and proximity to known significant heritage assets such as Scheduled Monuments suggests that sub-surface archaeology might survive. 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

Joel Gascoyne's 1699 Map of Cornwall

Joel Gascoyne's mapping for the Lanhydrock Atlas, *circa* 1699

Martyn's 1748 Map of Cornwall

Ordnance Survey, 1809, *1 inch mapping* First Edition (licensed digital copy 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*

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

14.2 Publications

English Heritage 2011, *The setting of Heritage assets: English Heritage guidance*

Herring, P. 1998, *Cornwall's historic landscape: presenting a method of historic landscape character assessment,* Cornwall Archaeological Unit

Norden, J. 1724, *Map of Cornwall*, reprinted University of Exeter 1972

Thorn, C. and Thorn, F. (eds) 1979, *Domesday Book, 10: Cornwall*, Chichester

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 **PR146154**

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 Trenhayle solar farm assessment 2012
3. English Heritage/ADS OASIS online reference: cornwall2-131915
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites H\Higher Trenhayle solar farm assessment PR146154\Report\Higher Trenhayle solar assessment.doc

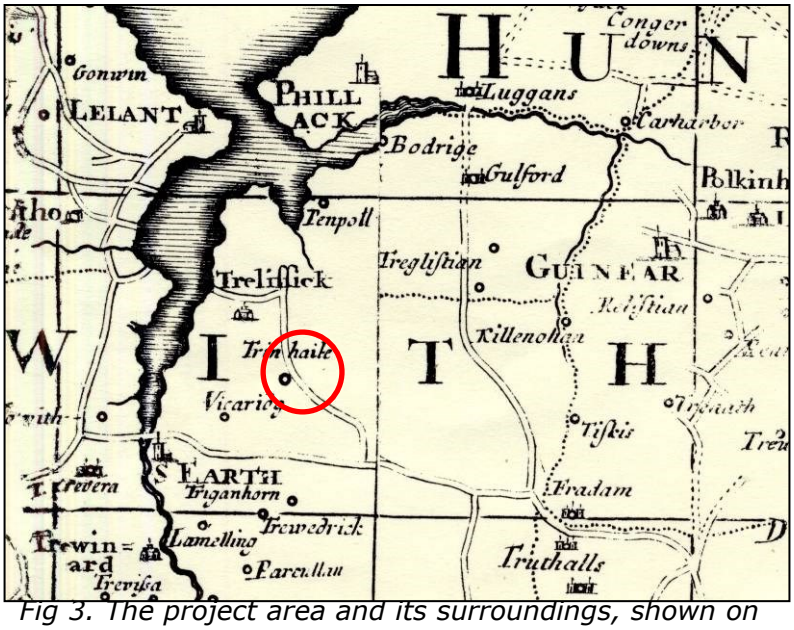

Fig 3. The project area and its surroundings, shown on Joel Gascoyne's 1699 Map of Cornwall. Trenhayle is circled in red.

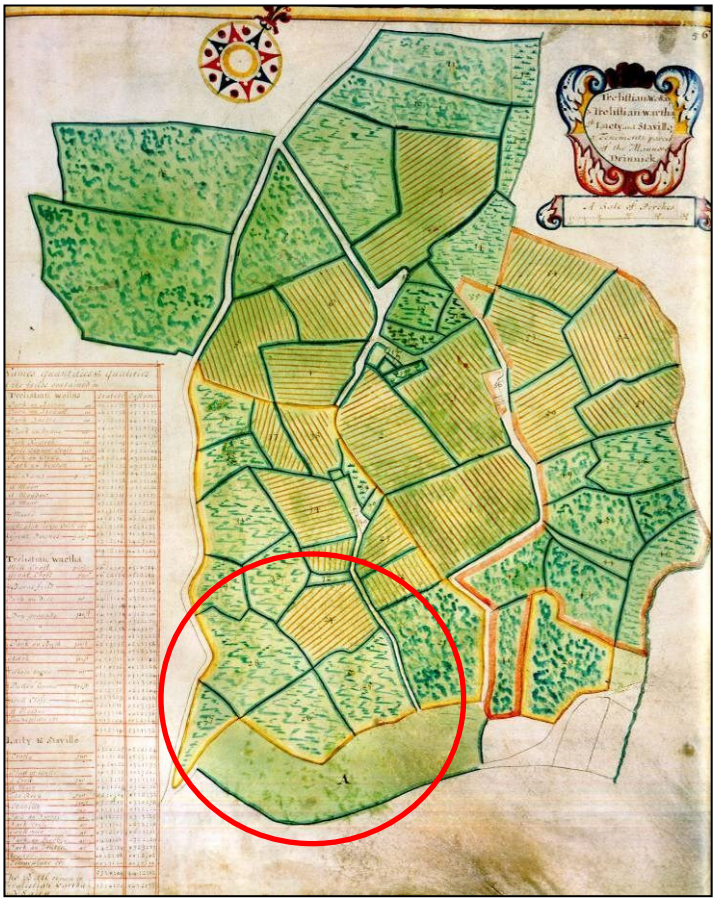

Fig 4. The proposed solar farm site, as shown on Joel Gascoyne's circa 1699 Lanhydrock Atlas. North is at two o'clock. The fields proposed for the solar farm are circled in red.

Fig 5. The project area as shown on John Norden's 1726 map of Cornwall. The general location of Trenhayle is circled in red.

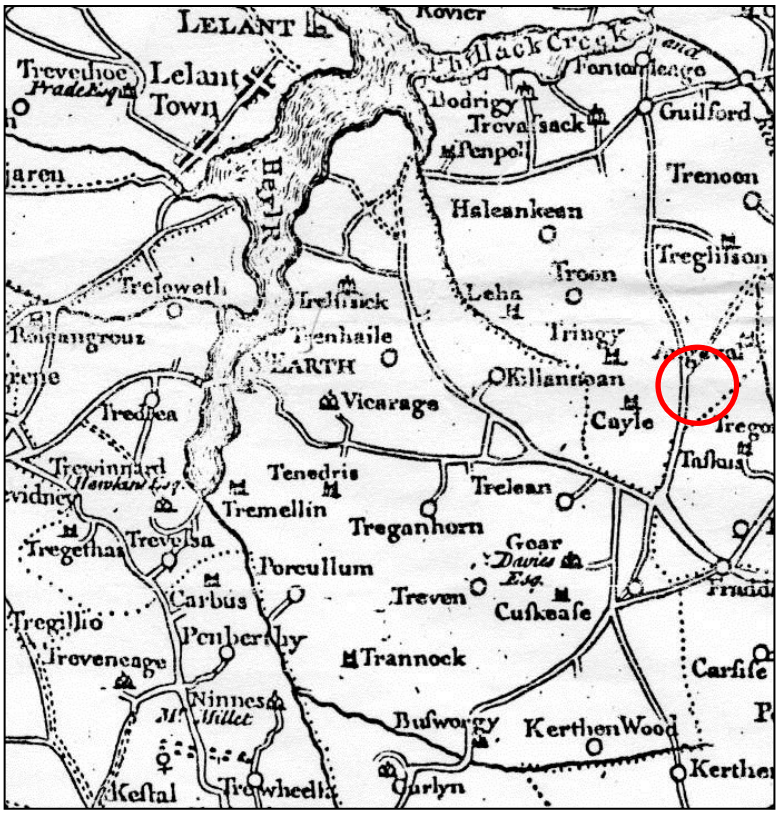

Fig 6. The proposed solar farm site and its surroundings, as shown Martyn's 1748 Map of Cornwall. The project area is circled in red.

Fig 7. The project area as shown on the 1807 1st Edition OS 1" to the mile mapping. The offset with between the project area and the mapping is due to the different projections used by archive and modern OS mapping.

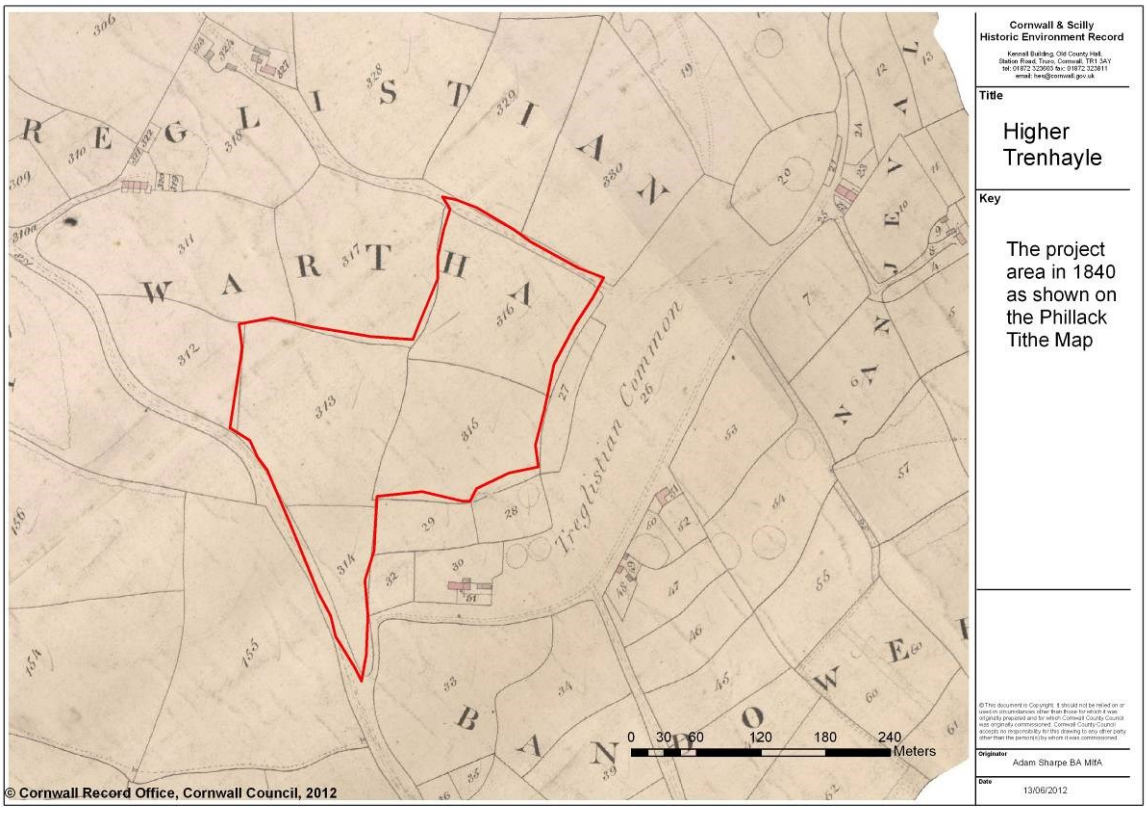

Fig 8. The project area as shown on the circa 1840 Phillack Tithe Map.

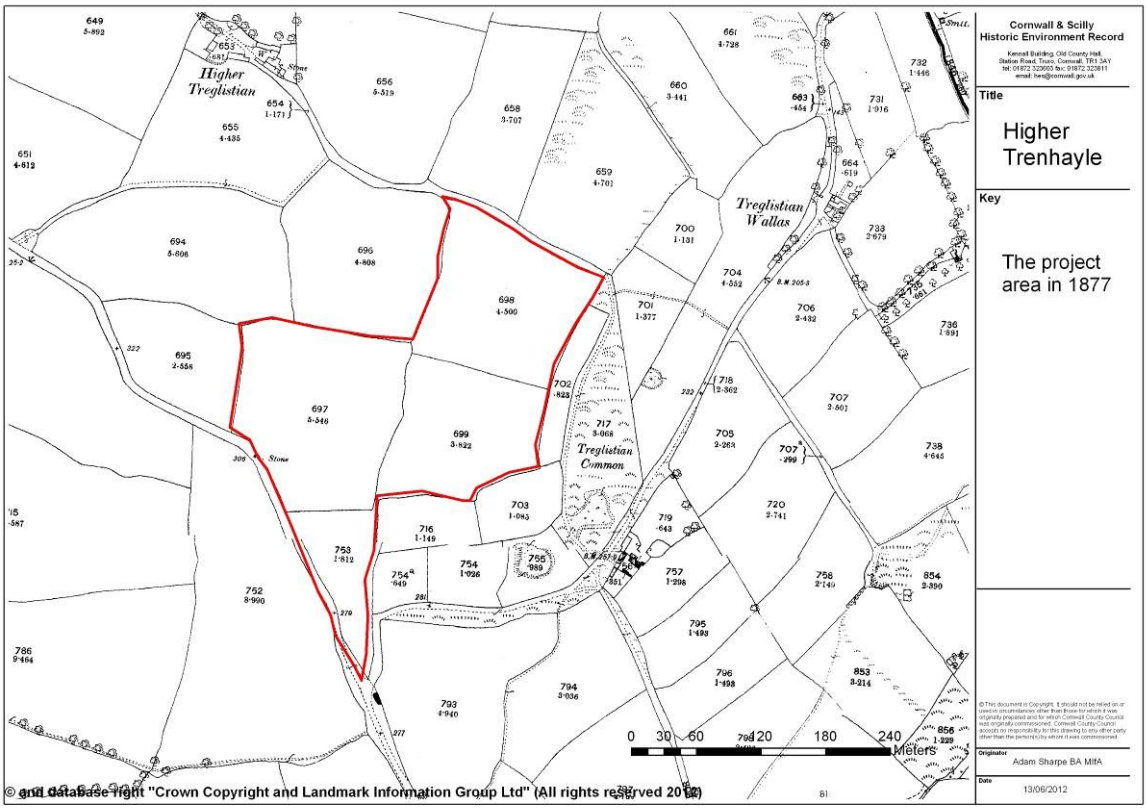

Fig 9. The project area as shown on the circa 1877 OS 25" to the mile mapping.

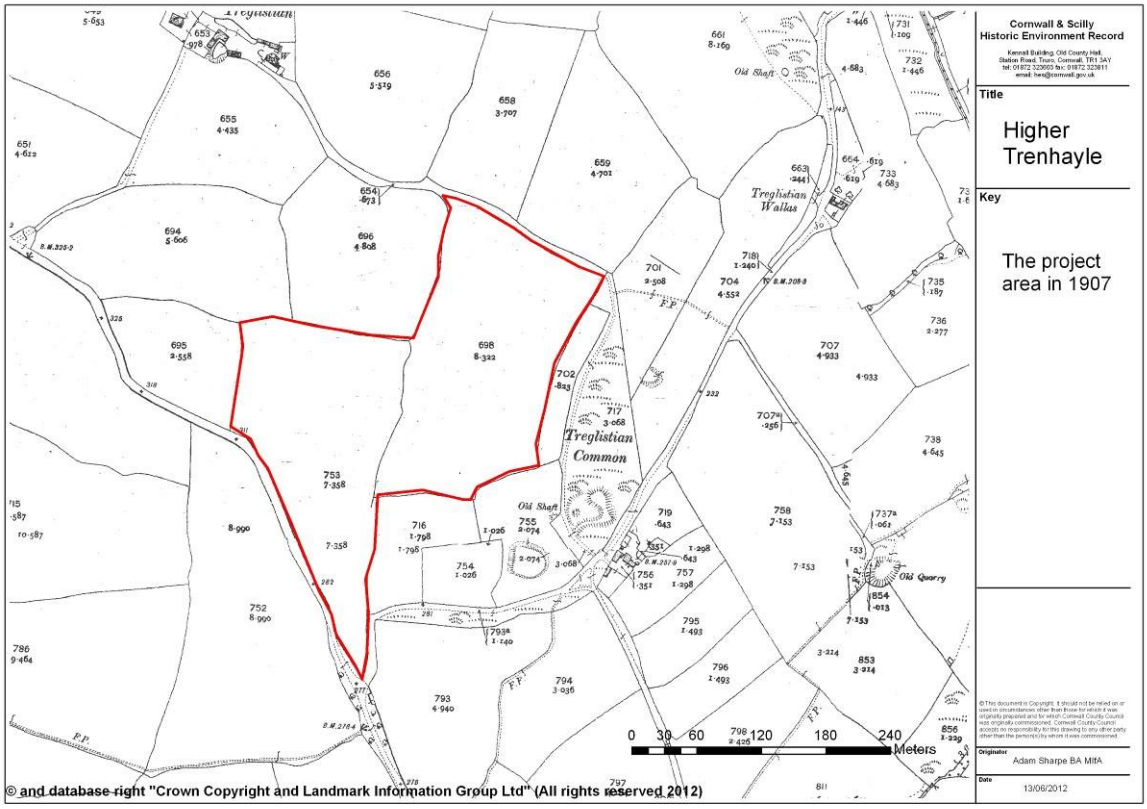

Fig 10. The project area as shown on the circa 1907 OS 25" to the mile mapping.

Fig 11. A 2005 Cornwall County Council aerial photograph showing the agricultural character of the project area.

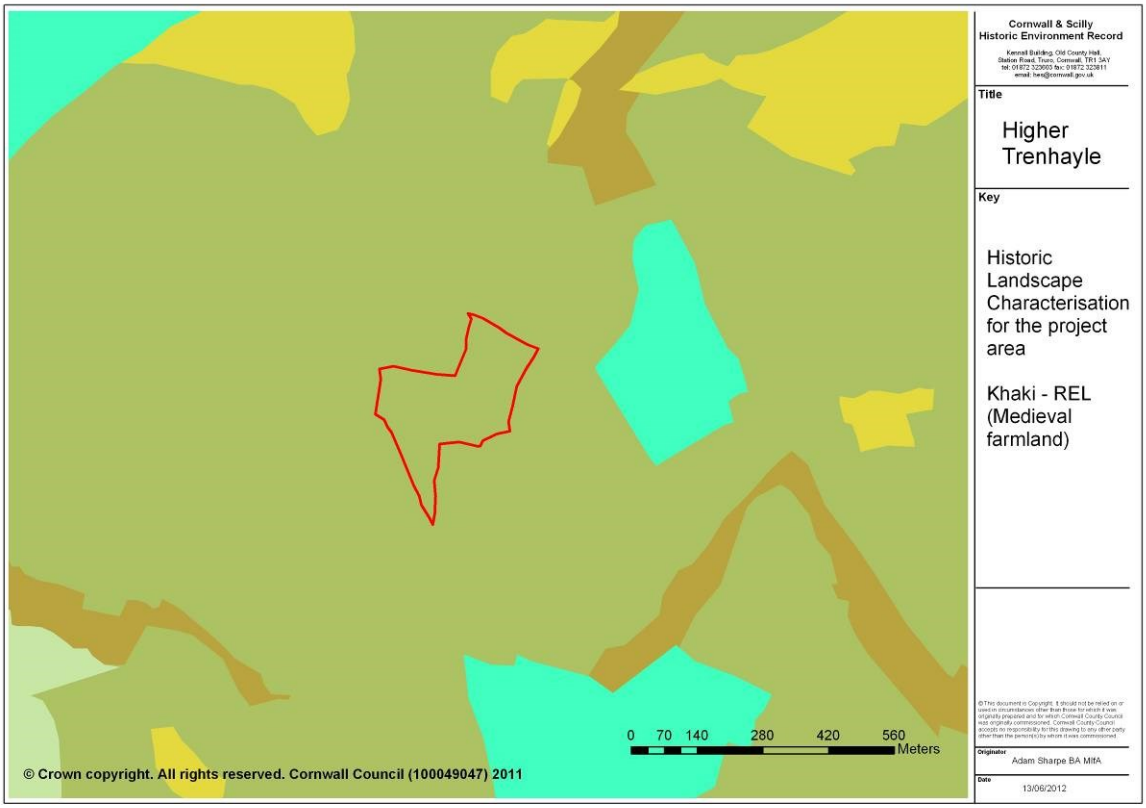

Fig 12. Historic Landscape Character mapping for the area surrounding the proposed Higher Trenhayle Farm solar farm, showing how the site is part of large block of Anciently Enclosed Land (khaki), this representing medieval fields.

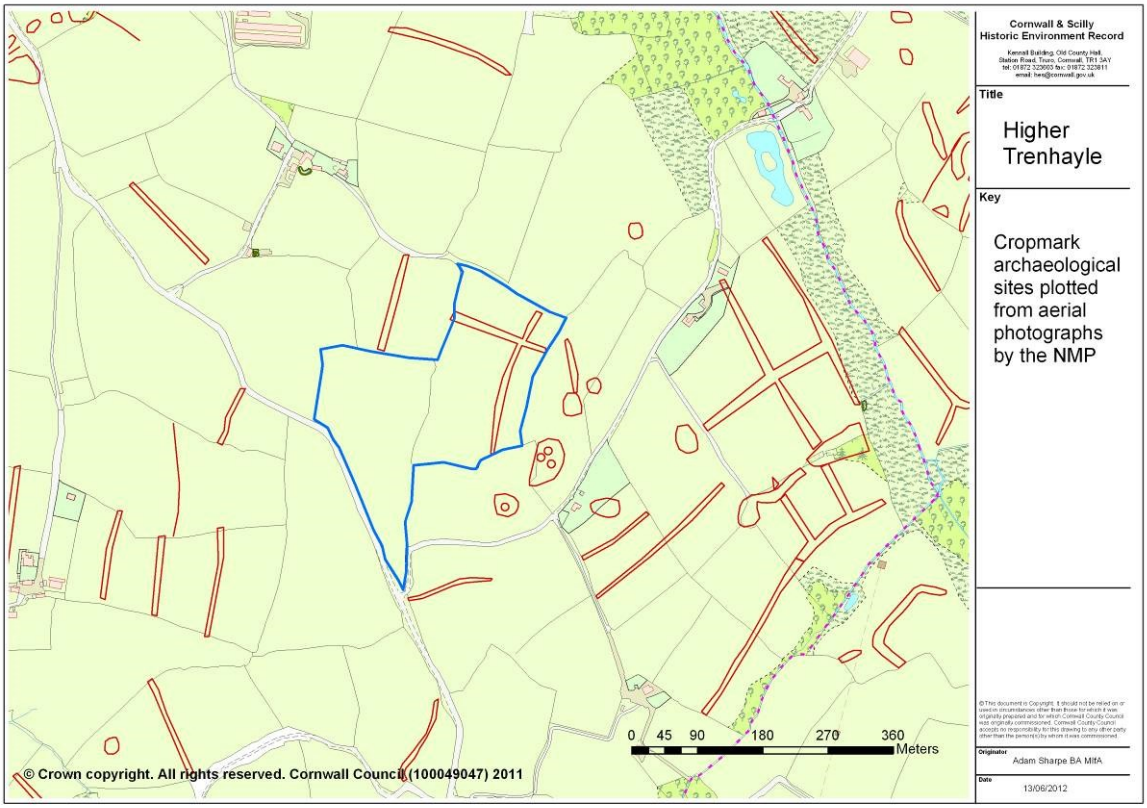

Fig 13. Archaeological features (red) revealed through aerial photographic plotting undertaken by the National Mapping Programme in the area surrounding the proposed solar farm.

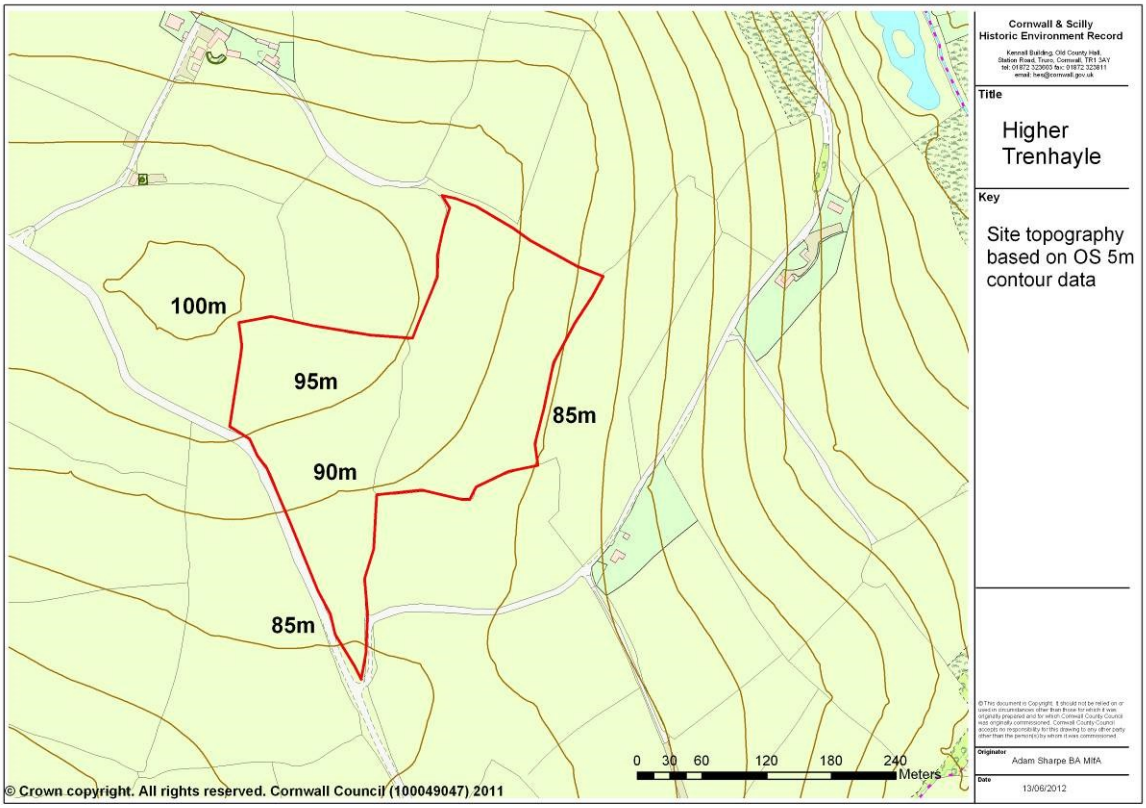

Fig 14. OS 5m interval contour data showing the topography of the site proposed for the solar farm.

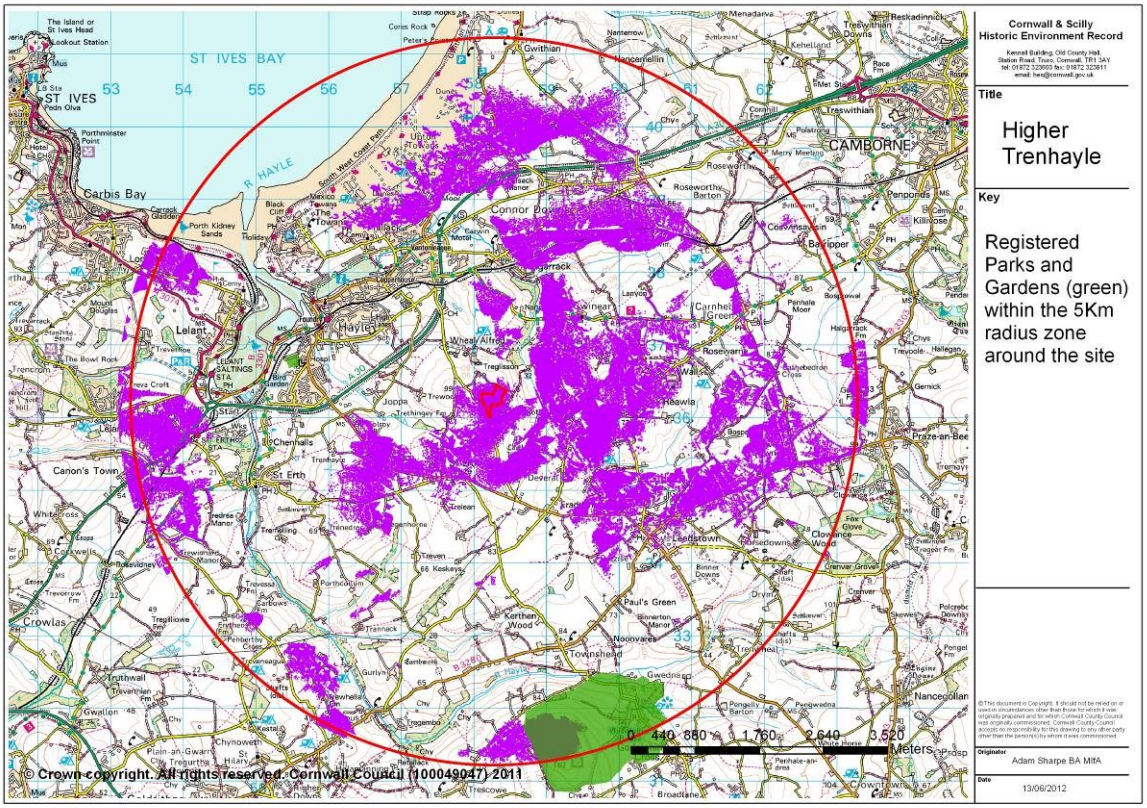

Fig 15. The extent of the Registered Park and Garden at Godolphin (green) and its potential intervisibility with the 5Km viewshed from the site purple).

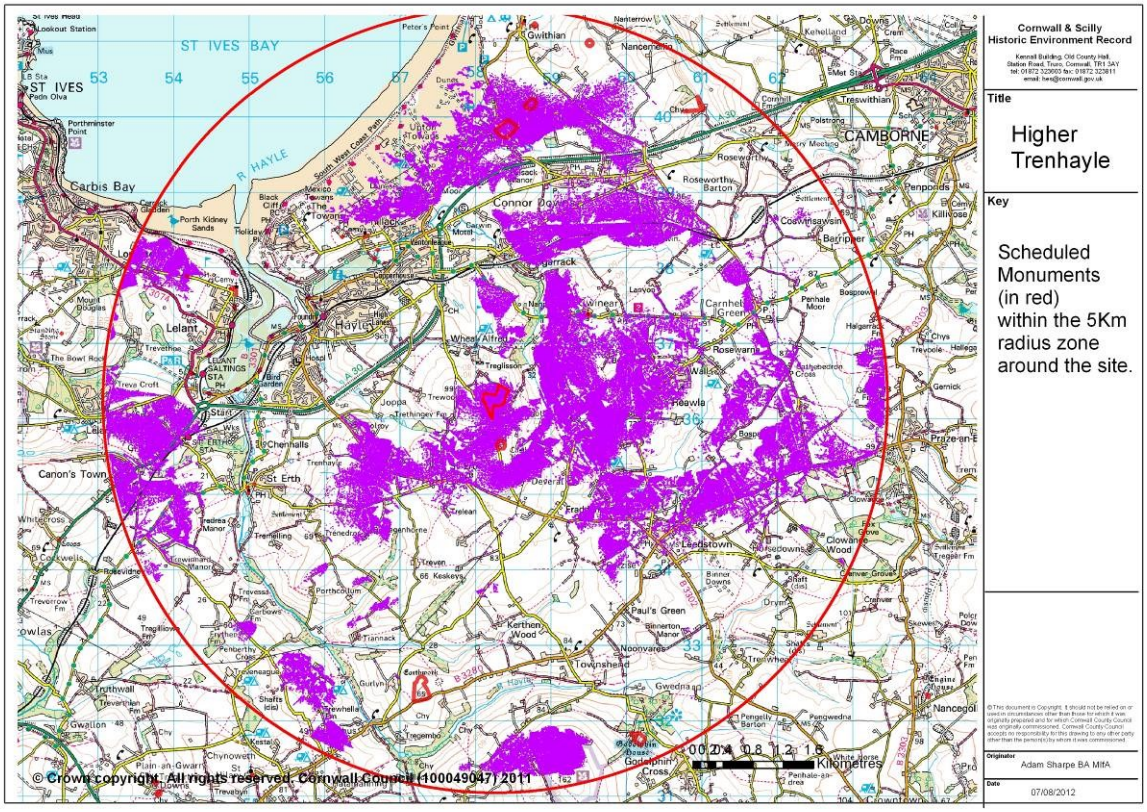

Fig 16. Mapping showing the ZTV within a 5Km radius of the site proposed for the solar farm, showing potentially intervisible Scheduled Monuments (red) at Castle Kayle, Trevarnon and Gwinear.

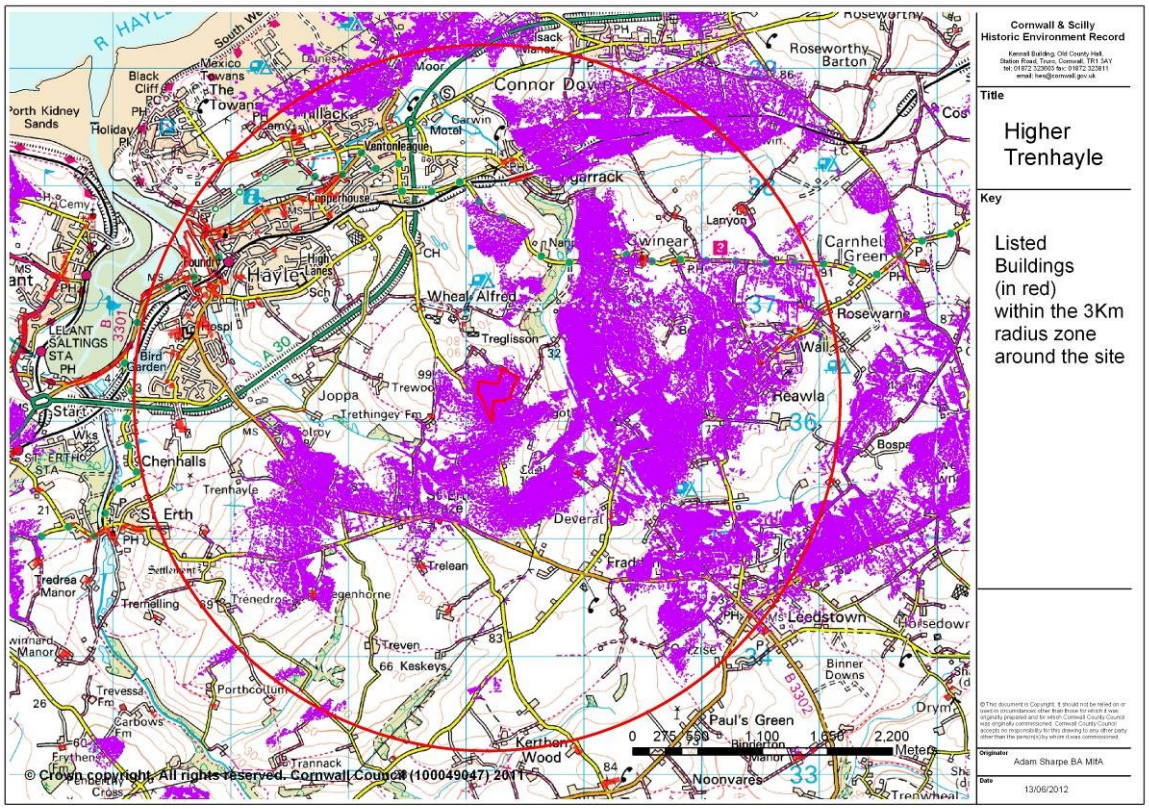

Fig 17. Mapping showing the ZTV within a 3Km radius of the site proposed for the solar farm, showing potentially intervisible Listed Buildings (red).

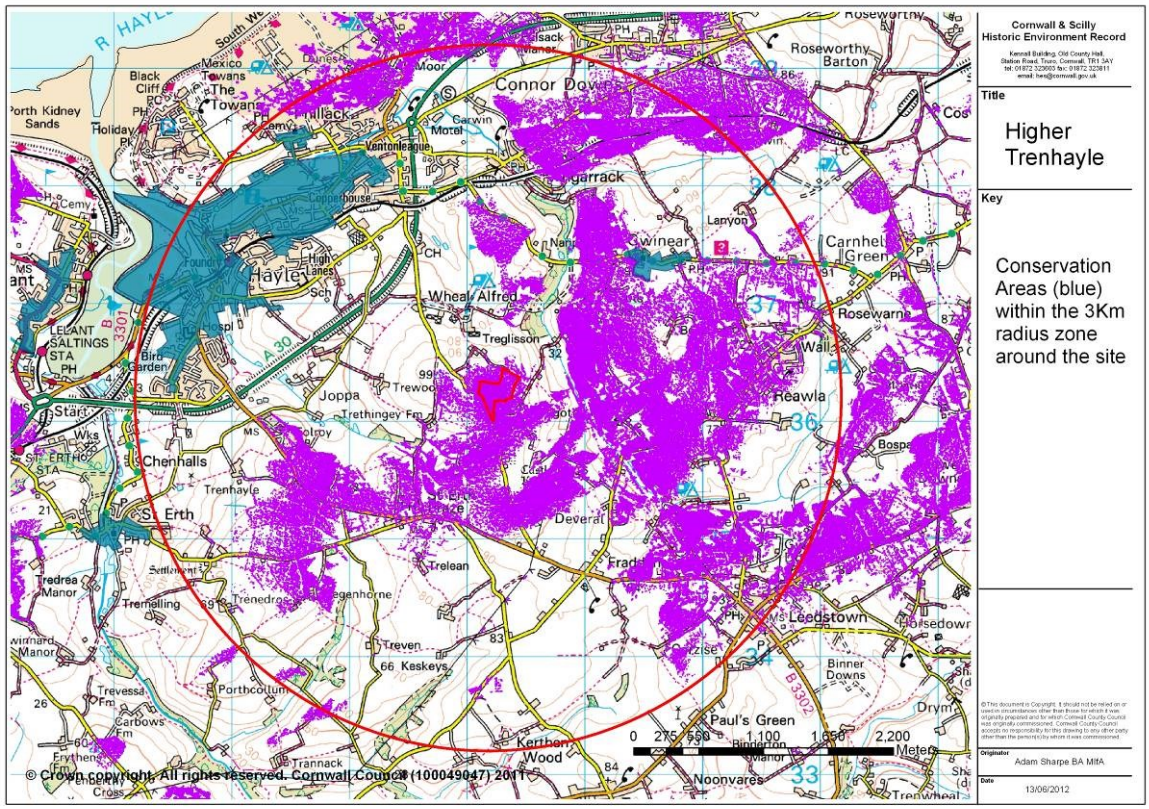

Fig 18. Mapping showing the 3Km radius ZTV for the proposed solar farm, showing potential intervisibility with the Hayle and Gwinear Conservation Areas.

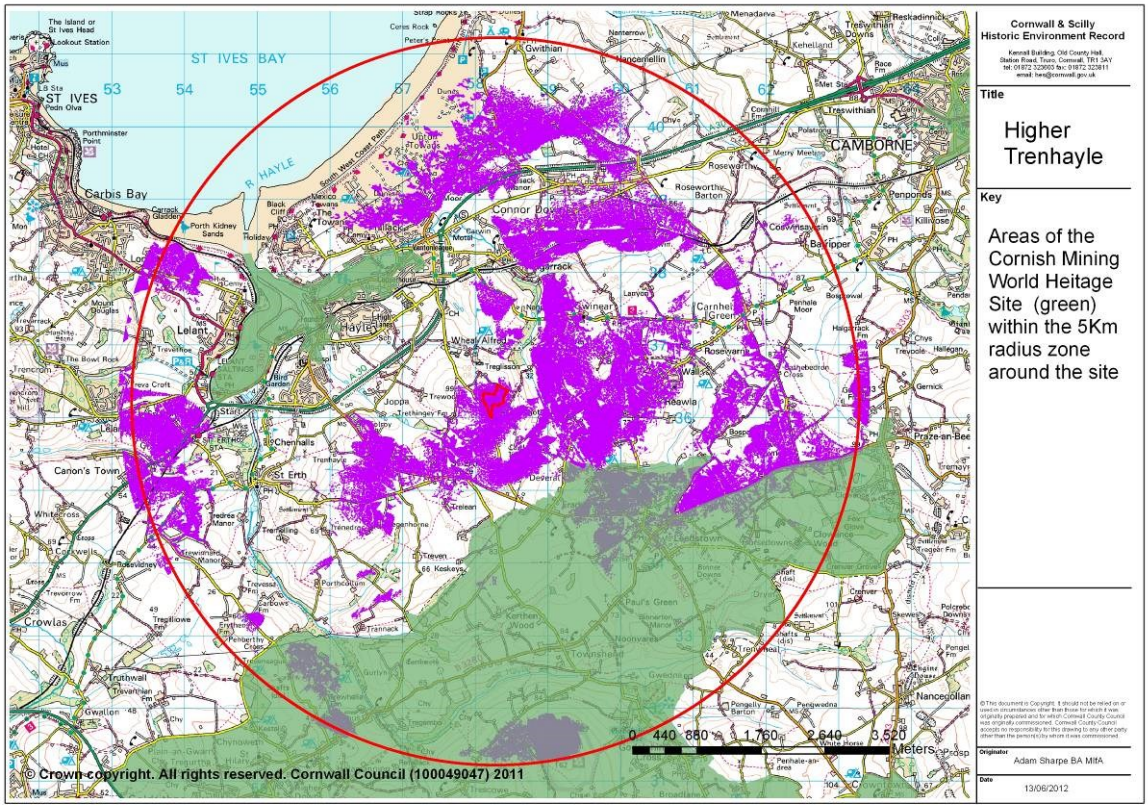

Fig 19. Mapping showing the 5Km ZTV showing potential intervisibility between the proposed solar farm and areas of the Cornish Mining World Heritage Site.

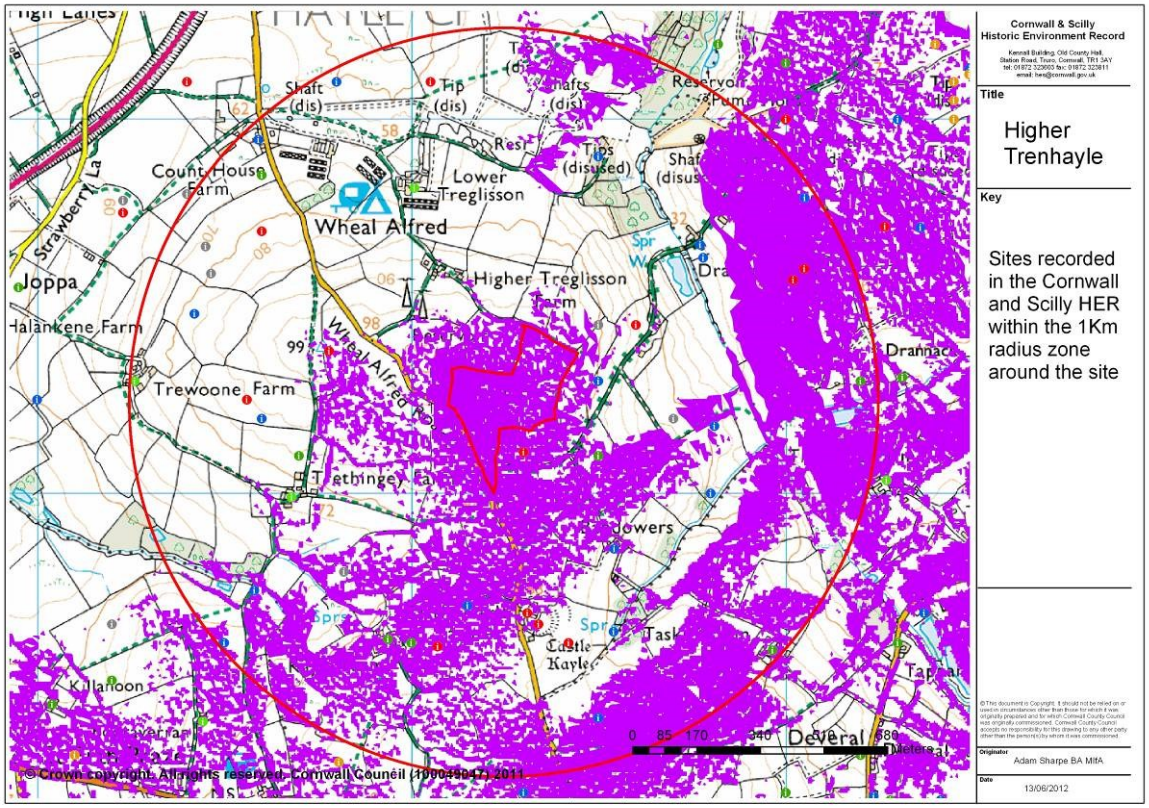

Fig 20. Mapping showing the ZTV within a 1Km radius of the site proposed for the solar farm, showing potentially intervisibility with undesignated sites.

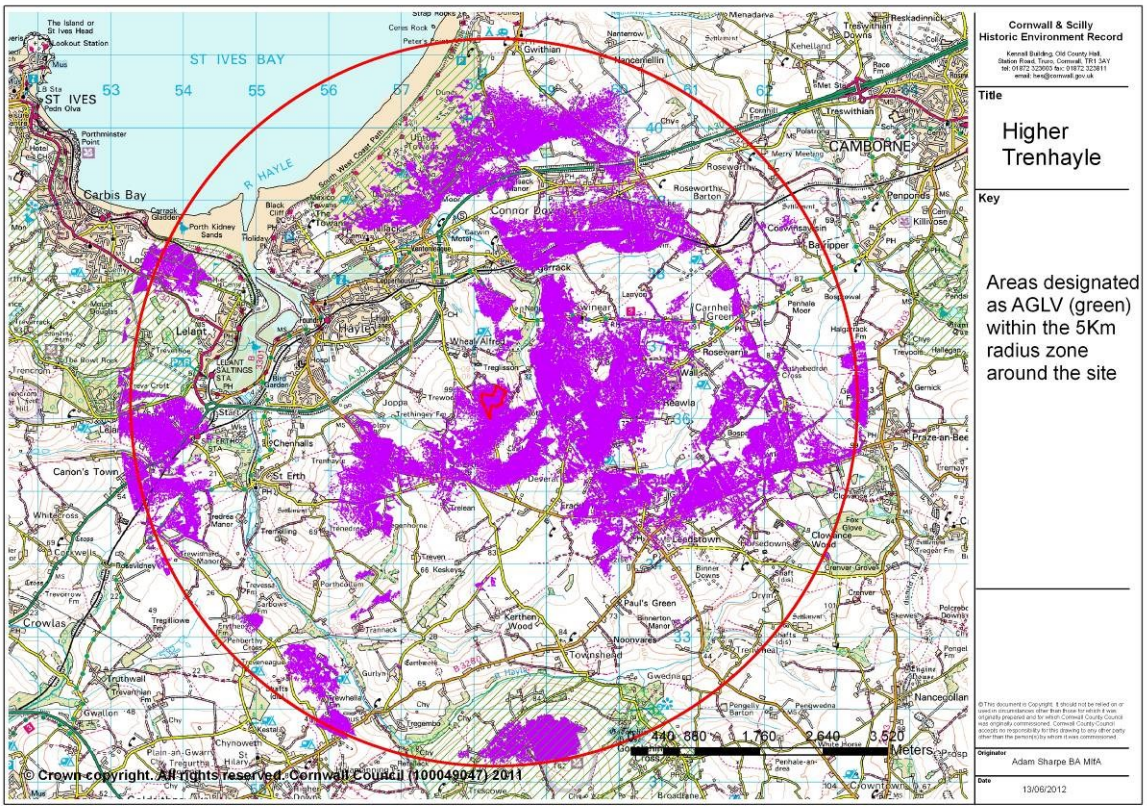

Fig 21. Mapping showing the ZTV within a 3Km radius of the site proposed for the solar farm, showing potentially intervisible areas of AGLV.

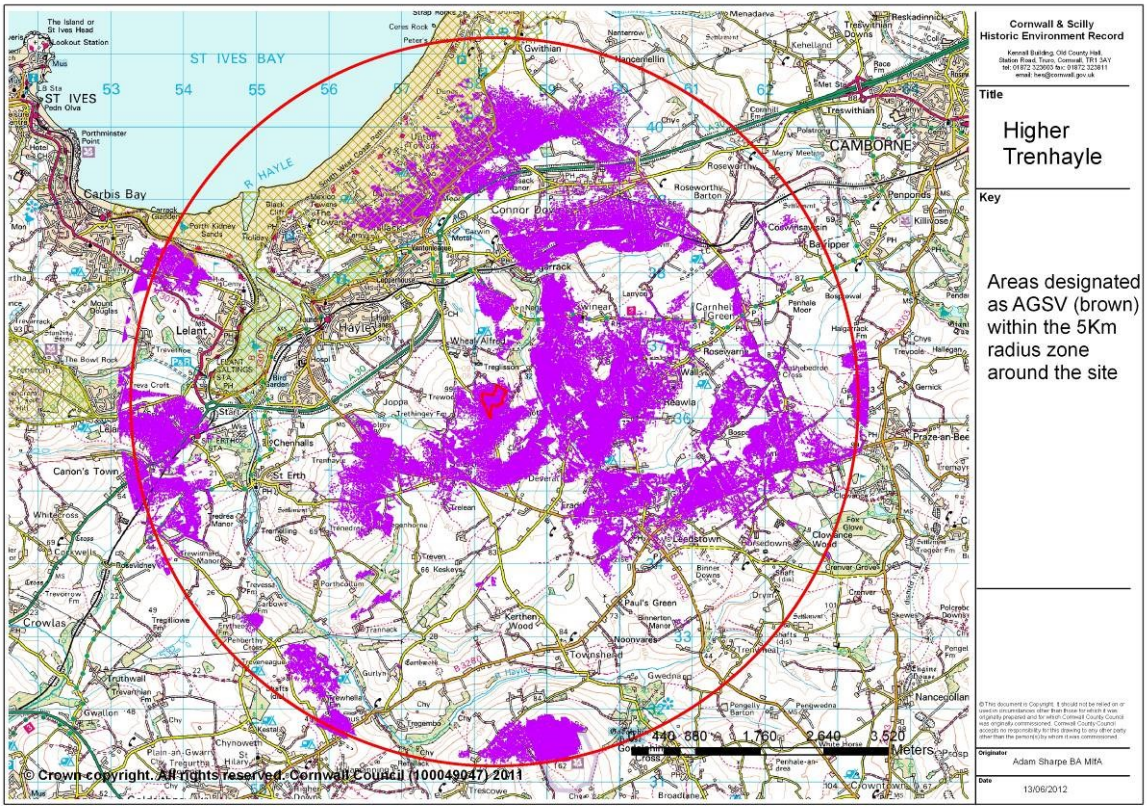

Fig 22. Mapping showing the ZTV within a 3Km radius of the site proposed for the solar farm, showing potentially intervisible areas of AGSV.

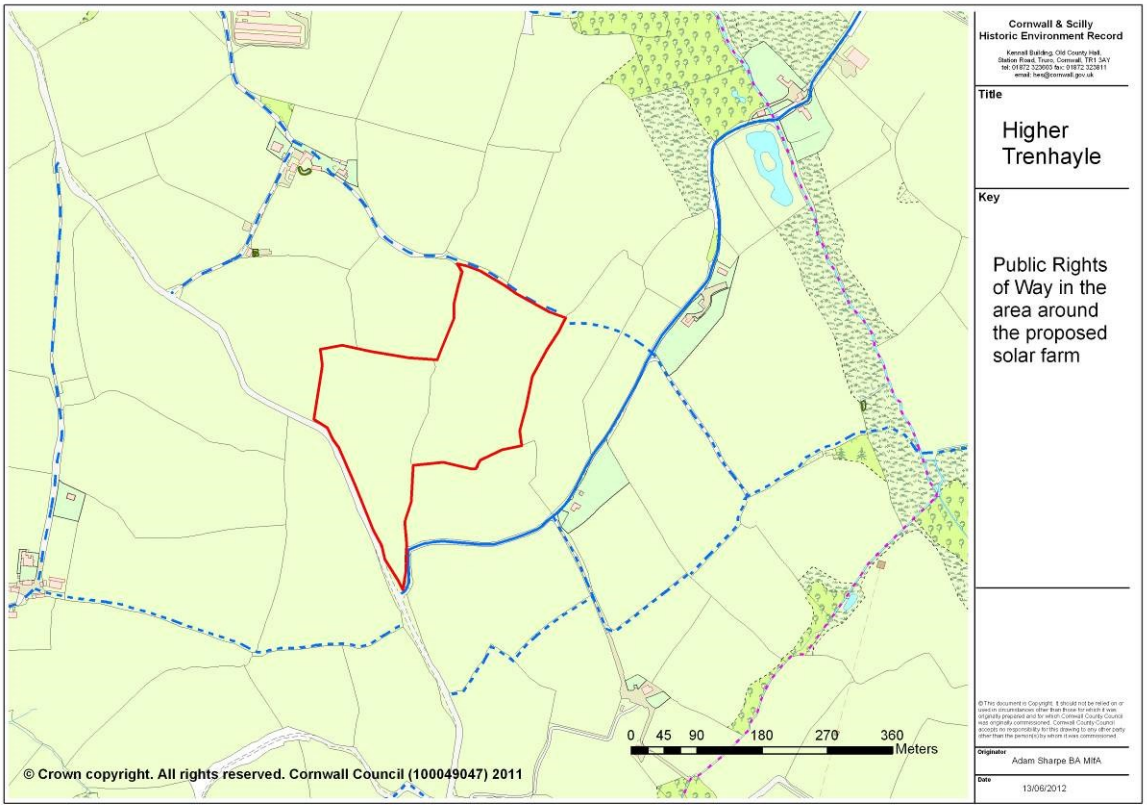

Fig 23. Mapping showing Public Rights of Way in the area surrounding the proposed solar farm.

Fig 24. A general view of the south western field at Higher Trenhayle looking north and upslope, showing the tall grass present at the time of the survey visit.

Fig 25. Looking south across the southern field at Higher Trenhayle towards Tregonning and Godolphin Hills in the distance and Castle Kayle in the mid distance.

Fig 26. Looking north from the north eastern field at Higher Trenhayle across the remains of Wheal Alfred (left) towards the Penwith moors in the distance.

Fig 27. Looking east from the north eastern field at Higher Trenhayle showing its far-reaching views.

Fig 28. The view north from the summit of Godolphin Hill. The proposed solar farm would be next to the line of pylons on the skyline.

Fig 29. The geophysics data catalogue for the south western field at Higher Trenhayle, showing components of an underlying medieval field system, and some possibly earlier boundaries.

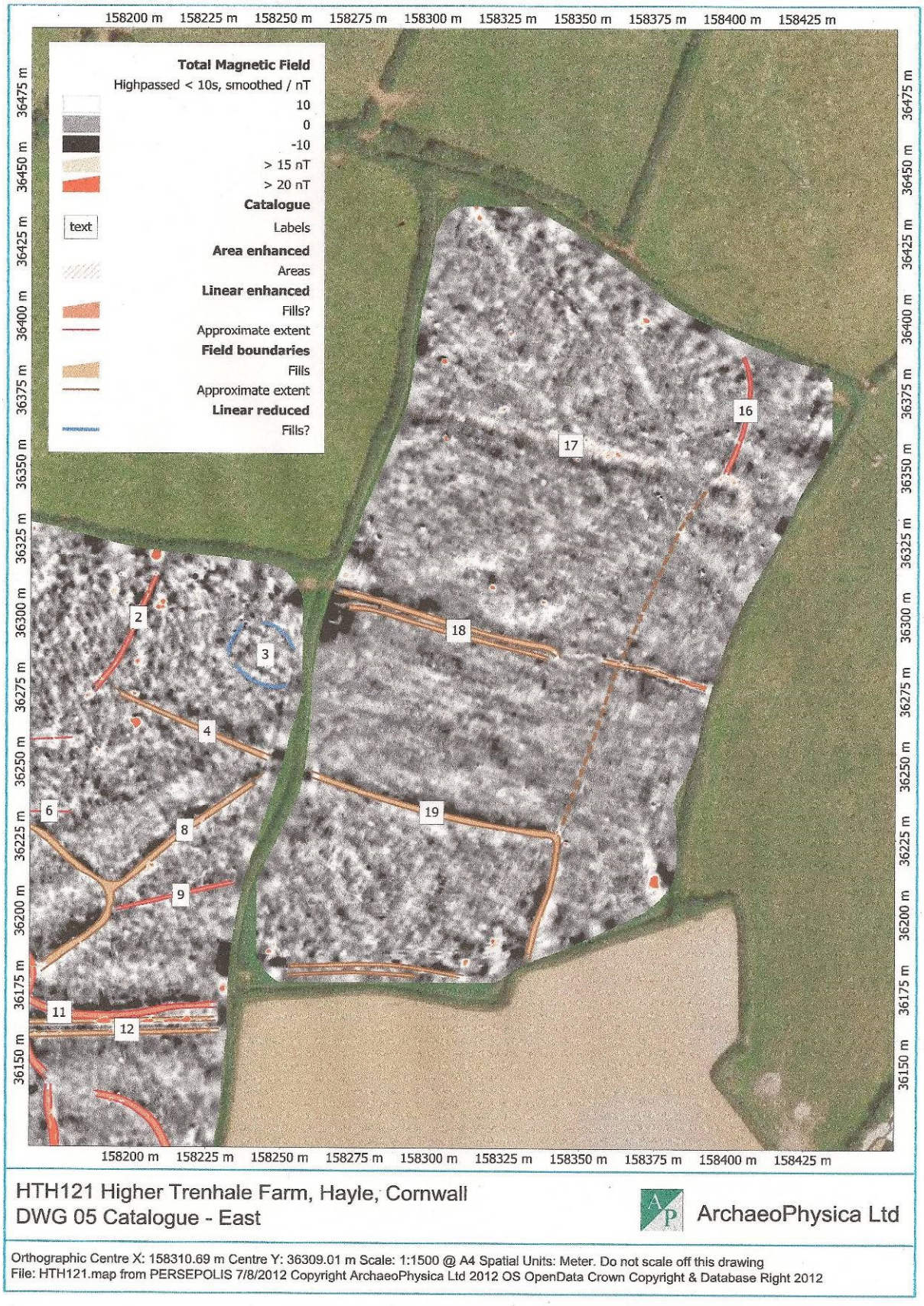

Fig 30. The geophysics data catalogue for the north eastern field at Higher Trenhayle, showing ploughed out elements of an underlying medieval field system.

Label	Anomaly Type	Feature Type	Description	Easting	Northing
1	Enhanced dipolar linear	Fill – Ditch	Former field boundary, one of a set defining a series of probably medieval small fields that represent an earlier system unrelated to the present layout. It is likely to be continuous with [4] and probably also [19]	158135.7	36292.7
2	Enhanced dipolar linear	Fill – Ditch	Probable former field boundary	158202.0	36298.7
3	Reduced linear (group)	Uncertain	May be natural or due to cultivation practices, however, an artificial origin cannot be discounted	158244.5	36286.5
4	Enhanced dipolar linear	Fill - Ditch	See [1]	158225.1	36260.6
5	Enhanced linear	Fill? - Ditch? / Cultivation?	Indistinct, probably not natural, however, deep cultivation furrows or drains would appear similar	158157.4	36257.8
6	Enhanced linear	Fill? - Ditch? / Cultivation?	See [5]	158172.4	36233.6
7	Enhanced dipolar linear	Fill - Ditch	See [1]	158156.7	36233.4
8	Enhanced dipolar linear	Fill - Ditch	See [1]	158217.8	36227.4
9	Enhanced dipolar linear	Fill - Ditch?	Unknown origin, a narrow (< 1m) anomaly typical of a small ditch	158216.6	36205.6
10	Enhanced dipolar linear	Fill - Ditch	See [1] because being parallel to [7] this is likely to be part of the same system, however, with [13] it appears also to mark a former (pre-1840) course of the road	158151.1	36204.4
11	Enhanced dipolar linear	Fill - Ditch	Ditch fill, apparently unrelated to other structures at the site unless it is a continuation of the return from [19] in which case it is a former field boundary	158176.1	36165.9
12	Enhanced dipolar linear (group)	Fills - Ditches	Former field boundary - Cornish hedge	158198.7	36160.3
13	Enhanced dipolar linear	Fill - Ditch	See [10]	158174.1	36117.5
14	Enhanced dipolar linear	Fill - Ditch	See [10]; this example appears to mark a former (pre-1840) course of one of the roads, with perhaps two phases of alignment across the NS and EW roads	158212.2	36117.5
15	Enhanced dipolar linear	Fill - Ditch	Interpretation uncertain, however, if [13] and [14] were both in use at the same time then [15] may have closed the angle between them to form a separate enclosure?	158197.1	36107.5
16	Enhanced dipolar linear	Fill - Ditch	Probable field boundary ditch	158404.7	36369.1
17	Area enhanced	Fill?	Although there is no distinct linear anomaly typical of a ditch fill the alignment of the anomaly and distance from [18] and [19] might suggest it is also a former field boundary	158346.4	36357.2
18	Enhanced dipolar linear (group)	Fills - Ditches	Former field boundary - Cornish hedge	158309.1	36294.9
19	Enhanced dipolar linear	Fill - Ditch	See [1]	158300.3	36233.8

Geophysics feature catalogue – see Figs 29 & 30.