



Hope Farm, Gwithian, Cornwall

Archaeological Assessment



Historic Environment Projects

Hope Farm, Gwithian, Cornwall

Archaeological Assessment

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The generation of the Zone of Theoretical Visibility was undertaken by Carolyn Royall.

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

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Cover illustration

Martin Roseveare (Archaeophysica) undertaking the geophysical survey of the additional field at Hope Farm using a towed sled-mounted magnetometer rig.

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Abbreviations

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

1 Summary

Proposals were under consideration for an application for a solar farm at Hope Farm, Gwithian in early 2011, but these initial proposals were abandoned and the scheme was not submitted for planning permission. This development of this site is now being reconsidered by Low Carbon Developers, who currently operate a site immediately to its north at Churchtown Farm. The revised proposal has been enlarged to take in one of the fields separating the Churchtown Farm site and the original Hope Farm site, increasing the size of the original Hope Farm proposal by 4.9Ha.

A brief for archaeological recording was issued by the HEPAO (Phil Markham) on the 23 November 2011, setting out the minimum requirements for archaeological recording at the site in advance of an application for planning permission for a solar farm. The brief was based on the need to assemble the evidence base necessary to identify those heritage assets which would be impacted upon by the development, to identify their significance and that of their settings, and to identify any likely impacts on their settings, whether direct or indirect.

Viewshed analysis to establish a Zone of Theoretical Visibility (ZTV) for the site was undertaken and the information resulting from this was drawn together with the results of a walkover survey, an assessment of the original site undertaken by CgMs and a geophysical survey undertaken by Stratascan, together with geophysical survey of the additional field undertaken by Archaeophysica in December 2011.

Analysis of the viewshed suggested that the location and topography of the site chosen for the Hope Farm solar development would make it almost wholly invisible from key heritage assets within the surrounding landscape, except at distances where its visual impact would be very considerably attenuated.

No new archaeological features were added through the walk-over survey. The two geophysical surveys undertaken at the site revealed some removed post-medieval boundaries, but also rather fragmentary elements of an underlying field system together with parts of two small enclosures. These have been interpreted as representing elements of the late prehistoric/Romano-British agricultural landscape. The 2011 geophysical survey also revealed the location of a barrow which had been documented within this general locality.

Management recommendations to protect the barrow and the two late prehistoric enclosures during the development of the solar farm were included in the report.

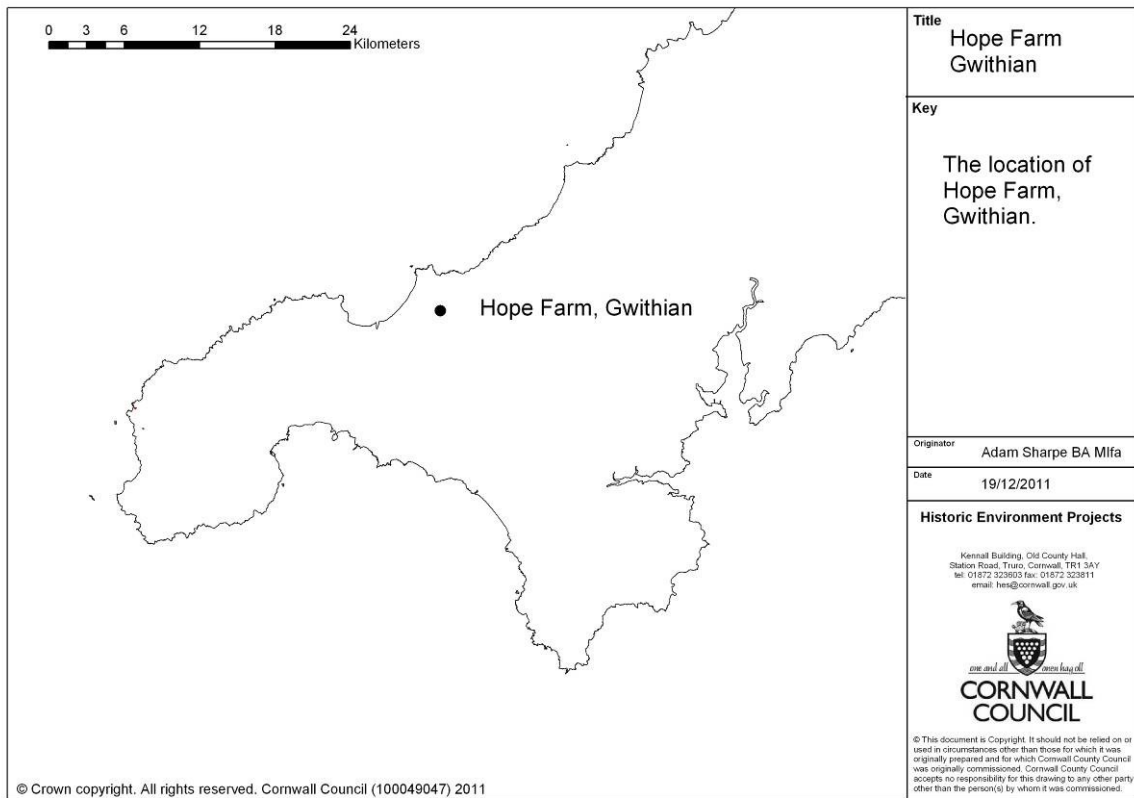


Fig 1. The location of Hope Farm, Gwithian.

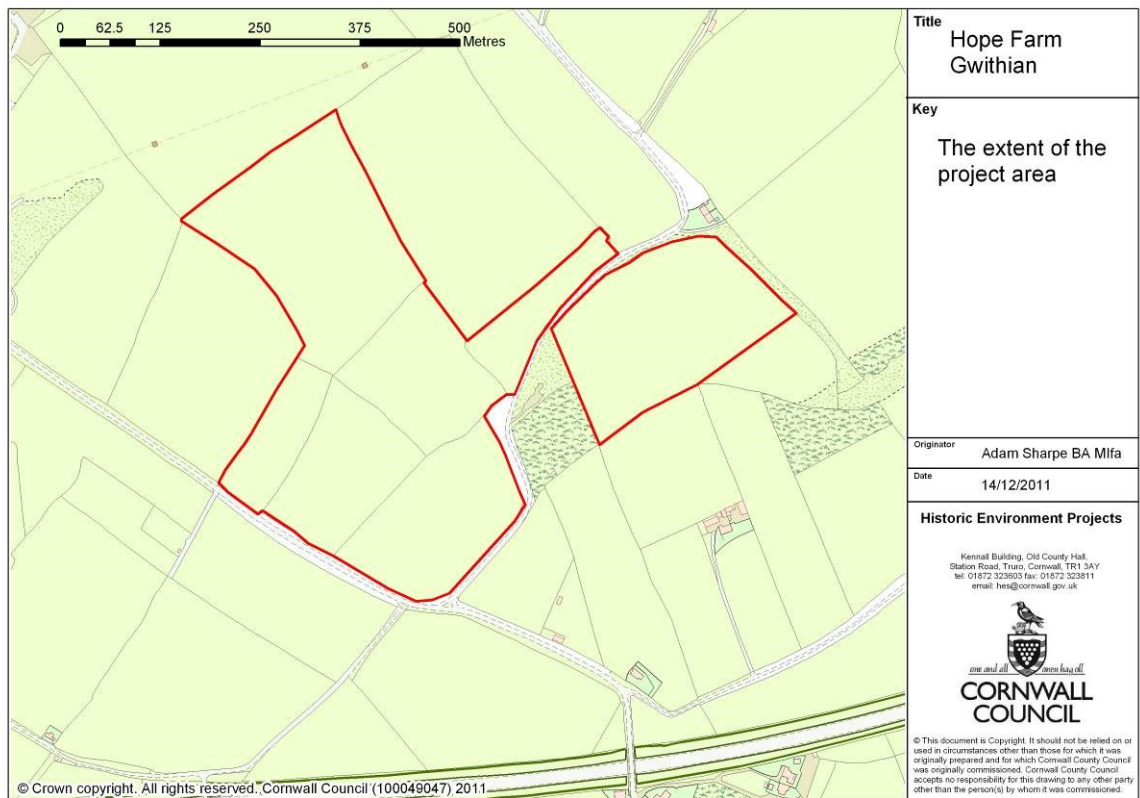


Fig 2. The extent of the proposed solar farm at Hope Farm, Gwithian.

2 Introduction

2.1 Project background

Proposals were under consideration for an application for a solar farm at Hope Farm in early 2011, but these initial proposals were abandoned and the scheme was not submitted for planning permission. This development of this site is now being reconsidered by Low Carbon Developers, who currently operate a site immediately to the north (Churchtown Farm). The former site extent has been enlarged to take in one additional field separating the Churchtown Farm site to the north and the original Hope Farm site, increasing the size of the original proposal by 4.96Ha to a total of 19.6Ha.

A brief for archaeological recording was issued by the HEPAO (Phil Markham) on 23 November 2011, setting out the minimum requirements for archaeological recording at Hope Farm, Gwithian in advance of an application for planning permission for a solar farm. The brief is based on the need to assemble the evidence base necessary to identify those heritage assets which would be impacted upon by the development, to identify their significance and that of their settings, and to identify any likely impacts on their settings, whether direct or indirect. Historic Environment Projects, Cornwall Council was commissioned to undertake a re-assessment of the site, drawing together a previous assessment by CgMs and a geophysical survey by Stratascan, and a geophysical survey undertaken in December 2011 by Archaeophysica Ltd. covering the extension to the original proposal.

2.2 Aims and objectives

The aims of the desk-based assessment are:

- To draw together existing historical and archaeological information about the site and its landscape setting from published and unpublished sources and information on designated and undesignated assets. To review and analyse historic map evidence for the site.
- To produce 'statements of significance' for all designated historic assets that are identified as potentially impacted on by the current proposals. Where currently undesignated assets are identified their likely significance are to be indicated i.e. 'national', 'regional' or 'local'.
- To undertake a view shed analysis to establish the Zone of Theoretical Visibility (ZTV) of the proposal site.
- Inform whether archaeological recording of any extant remains is required.
- Identify the construction, use and 'end of life' impacts of the current proposals on the 'national importance' of Scheduled Monuments, the 'Outstanding Universal Value of the World Heritage Site' and on undesignated historic assets as described in PPS5.

The aims of the archaeological geophysical survey are to:

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

The objectives are to obtain information concerning the sub-surface archaeology of the site through desk-based assessment, a site walkover and geophysical survey. Collectively these will provide evidence for any recommendations made by the HEPAO for further archaeological recording, or for recommendations for the preservation *in situ* of archaeological remains through variations in site design and implementation.

2.3 Methods

2.3.1 Desk-based assessment

The desk-based assessment undertaken by CgMs was re-examined and a limited amount of further research was undertaken. Historical databases and archives were consulted in order to obtain information about the history of the site and the structures and features that were likely to survive. The main sources consulted were as follows:

- Cornwall HER
- Images of England online listed buildings database
- Early maps and photographs (see Section 11)
- Published histories (see Section 11)

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 with the arrangement of solar arrays proposed for the site and significant heritage assets within the surrounding landscape; the viewshed (ZTV or Zone of Theoretical Visibility) was generated using ArcGIS software. The methodology employs a Digital Surface Model (DSM), which takes account of surface features such as buildings, woodland, vegetation, roads etc, and provides a more accurate representation when compared to a 'bare earth' or DTM elevation model. A viewshed was generated for a range of 'observer points' based on the centroids of each of the fields in which the arrays are proposed. These have been combined to produce a *multiple viewshed* for the proposed solar farm area.

When performing a viewshed analysis, several variables are used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for each observer point. For the proposed solar farm at Hope Farm, 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 array. This viewshed was checked on the ground, given that vegetation 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. A viewshed radius of 3Km was used to determine potential impacts on designated heritage assets and 1Km on undesignated heritage assets.

2.3.3 Fieldwork - survey

A walkover survey was undertaken to assess the survival and condition of features noted from the desk based assessment and to ground-check the viewshed results. Digital photographs were taken looking from the site towards potentially intervisible heritage assets; images were also taken of the site from key viewpoints within the surrounding landscape.

2.3.4 Fieldwork – geophysical survey

A geotechnical survey of the additional field at the north-western end of the Hope Farm site has been commissioned by Low Carbon Developers from Archaeophysica Ltd., and its results are summarised in this project report.

Geometrics MagMapper G858 caesium vapour magnetometers were used for the survey, using a high performance sledge mounted acquisition system. The four sensors

were sited approximately 0.3m above the ground surface to maximise sensitivity while decreasing the 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 Fig 26 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, and its findings have been incorporated into the HEP 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 dba and fieldwork 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 majority of the Hope Farm project area occupies a relatively level landscape with a general height of 80m OD, though its north-eastern part slopes gently towards a tributary of the Red River. The bedrock geology underlying the site is recorded as the Devonian Mylor Slate Formation, which includes slates, siltstones and sandstones. Locally these can be overlain by deposits of windblown sand or alluvium (given the proximity of the dune formations backing Hayle Bay and the silted up extension to Copperhouse Creek). The coast is 2.5Km away to the north. The soils are recorded as

Denbigh 2 loams over slates and siltstones; these are notably reddish in colour and incorporate substantial amounts of broken quartz.

4 Designations

4.1 National

No national designations apply to the project area.

There are three scheduled monuments within 1Km of the site boundary, these comprising two late prehistoric rounds (CO985 and CO131) and Roseworthy arsenic works (36047) (Fig 15).

There are also two Listed Buildings (all at Grade II) within 1Km of the site boundary: a boundary stone at Connor Downs (DCO12007) and a milestone at Connor Downs (DCO11461) (Fig 16).

4.2 Regional/county

No regional or county designations apply to the project area, or to the 1Km radius area surrounding it.

5 Site history

The only archaeological site recorded within the project area itself is that of a documented barrow (MCO3174) located within the northern part of the application site. Information held within the Cornwall and Scilly HER, including maps of cropmark features drawn up by the National Mapping Programme (NMP) show that the area immediately surrounding the Hope Farm application site was occupied by a number of defended farmsteads (rounds) and their associated fields in late prehistory and into the Romano-British period. A number of settlements were established in the surrounding landscape during the early medieval period and have names incorporating Cornish language elements. The majority survive as modern farmsteads, example being Treeve, Trevarnon, Nanterrow, Boskensa and Pennance.

The Historic Landscape Characterisation for the area is recorded as Recently Enclosed Land (post-medieval), this area of the local landscape having been open downland in 1809, though enclosed by 1840. Modern farms established during this period of enclosure have names in English such as Hope Farm, Fern Farm, Cornhill Farm, or Random Stack Farm and the apportionment to the Gwithian Tithe Map (Fig 5) shows that almost all of the field names within this vicinity included the name 'Croft', indicating that they were relatively unimproved pasture around 1840. Some remnant rough ground survived here until *circa* 1877 within the elongated field at the centre of the site proposed for the solar farm.

Evidence for small scale mining is recorded immediately to the north of the project area, part of the workings of Wheal St. Andrew, two explosives magazine associated with this undertaking having been sited within the north-western field (Fig 6), and in a field immediately to the north-east of the project area *circa* 1877. The westernmost of these had been demolished by 1908 (Fig 7). The site of Roseworthy arsenic refinery lies downslope a short distance to the east of the site.

6 Archaeological results

6.1 CgMs assessment 2011

A 13.8Ha area was assessed by CgMs. Their report concluded that the Hope Farm site occupied an area of former upland downs fringed by areas which had been traditionally

cultivated, and had long been open grazing land. In late prehistory the report concluded that this area had been surrounded by enclosed farmsteads and their associated fields, some examples of which had been plotted by the National Mapping Programme (NMP) (see Fig 11). The fields at Hope Farm were enclosed from the former downs about two centuries ago and are thus classified as Recently Enclosed Land. At the time of the CgMs survey they were being used for growing a brassica crop. No additional archaeological features were recorded from the walkover survey.

6.2 Stratascan geophysics 2011

See Fig 25.

Six fields totalling 13.8Ha were surveyed by Stratascan in January 2011. The majority of the fields displayed weak positive area anomalies with little definition. Most fields included small, discrete positive anomalies interpreted as possible pits; there were also abundant indications of plough furrows over much of the area, indicating intensive cultivation activity. This may have obscured any underlying archaeological detail, though no major features are likely to have been hidden in this fashion. Some indications of archaeological features were identified - one field near the centre of the survey area contained a number of positive linear anomalies which it was considered might indicate the sites of ditches of archaeological origin which may represent fragmentary elements of a contouring late prehistoric field system. A large bi-polar anomaly in the northern part of the site was identified as a possible thermoremnant feature, possibly reflecting the site of a kiln or hearth. A number of ploughed out post-medieval field boundaries were also recorded.

6.3 Viewshed analysis

Analysis of the viewshed created for the observer points scattered across the application site showed it to be likely to be visible to some degree from much of the surrounding landscape within the 3Km radius of the site, the areas having highest intervisibility being eastward towards the outskirts of Camborne, northwards along the coast between Godrevy and North Cliffs and westwards to the outskirts of Copperhouse and Gwithian. Visibility to the south was more restricted, and mostly confined to small areas around the settlements of Connor Downs and Gwinear.

The ZTV (Zone of Theoretical Visibility) suggested that within a 3m radius of the site most of the Gwinear Conservation Area would be intervisible with the development (though at a distance of nearly 3Km which would significantly attenuate any impacts), whilst parts of the Copperhouse, Hayle and Phillack Conservation Area would be intervisible with it (Fig 17), though lying in a zone from 3Km to 5Km distance from the site. The boundary of the Cornish Mining World Heritage Site at Copperhouse/Hayle lies just over 3Km away from Hope Farm. Parts of the Cornwall AONB to the north of the Red River and stretching from Godrevy eastwards towards North Cliffs would be intervisible with the development site (Fig 18).

In relation to designated sites (as opposed to areas), the ZTV suggested intervisibility with a scheduled late prehistoric round 2Km to the west of north at Gwealavellan, with the scheduled Godrevy Towans prehistoric complex and the adjoining scheduled Crane Godrevy Round 2.75Km away just to the east of north; partial intervisibility was also suggested with the sites of two scheduled late prehistoric enclosures 1.1Km and 1.5Km to the west (Fig 15).

The viewshed analysis also suggested that a number of listed buildings would also be likely to be intervisible with the solar farm, these being to the east, Polstrong House, and, near Roseworthy, Old Mill Farmhouse and Rosehill in the Fern; to the south, Gwinear Church, a chest tomb in its churchyard and a nearby cross, and to the west, Loggan's Mill (Fig 16). Gwinear Church is Listed Grade I; the remainder of these sites are Listed Grade II.

For undesignated archaeological sites, a 1Km ZTV was utilised. A small number of sites fell within the viewshed at this radius, including a documented barrow site within the project area (MCO3174) and a barrow at Horsepool on the northern edge of the A30 (MCO2982); the post-medieval mine site of Wheal St. Andrew (MCO13136) has some surviving remains a short distance to the north, a post-medieval manse (MCO32755) and a nonconformist chapel (MCO32756) are at Connor Downs 1Km to the south, and a documented medieval settlement (MCO17825) and associated cropmark field system (MCO33828) are noted at Trevarnon, 650m to the west.

For a full list of intervisible sites and an assessment of the potential impacts on their settings see Section 9.2.

6.4 Historic Environment Projects desk-based assessment

Sources assessed by CgMs were reviewed, together with archive maps (see Section 11), aerial photographs and other information held by Historic Environment, Cornwall Council. The map regression, in particular, confirmed the date of enclosure of this part of the local landscape as lying between 1809 and 1840, suggesting that this area could be expected to have contained features typical of those which had been open upland grazing in prehistory – sites linked to ceremonial and funerary activity in particular. A Bronze Age barrow site (MCO3174) recorded in the HER as lying within the project boundary (Fig 10) forms one of a scattered group within this area of upland overlooking the eastern part of the Hayle Estuary. The landscape history also pointed up the potential for the survival of evidence for medieval outfields – groups of strip fields established in such open areas but cultivated only very intermittently.

As indicated by the CgMs desk based assessment, in 1840 (when the Gwithian Tithe Assessment was drawn up) it is clear that this area of the landscape was only enclosed from open rough grazing land during the early decades of the 19th century. In 1840, the fields within the project area were being farmed by three tenants: John Eustis, Richard Hockin and Ann Mitchell, these being the tenants of four small farms – Pennance Vean, James' Ground, Churchtown Tenement and Engear. With one exception (*Cross Garrack*), all of the field names in these tenements included the word 'Croft' (rough grazing). Historic mapping showed a series of small, dispersed farmsteads consisting of cottages and outbuildings set within a landscape of small, straight-sided, often elongated rectangular fields. These are typical of the smallholdings of this date which were established by local miners during a period of population expansion brought on by the development of industrialised mining in this part of Cornwall.

6.5 Walkover survey 2011

Field checking of the ZTV from the surrounding area was undertaken on 20 December 2011, whilst a walkover survey of the seven fields proposed for the enlarged solar farm was undertaken on 21 December 2011. The weather on the first day was somewhat grey, but the site was visible from the target viewpoints; on the following day the cloud base was low in the early morning, though lifted sufficiently as the day progressed to allow survey to take place.

The visibility of the site was assessed from a number of locations within the surrounding landscape noted within the viewshed analysis as containing key heritage assets likely to be intervisible with it. These included the southern parts of Godrevy Towans to the north north west, the B3901 adjacent to Trevarnon Round to the west, Horsepool Barrow at Connor Downs and Gwinear Churchtown to the south, Roseworthy to the east south east, an area between Kehelland and the site to the east and the hillslope between Menadarva and Gwealavellan to the north east.

The ZTV checking showed that the elevated location selected for the solar farm is not overlooked from any areas of the surrounding landscape, except from land adjacent to the B3901 along North Cliffs and from the higher sections of Godrevy Towans, both areas lying at about 3Km from the centre of the proposed solar farm. Trees prevented

the site being visible from the Gwinear Conservation Area, church and associated features, buildings blocked views from the site of Horsepool Barrow at Connor Downs, whilst from Roseworthy, although the crest of the hill on which the arrays are to be sited was visible, hedgerows and topography blocked views into the site. The only potentially clear views of the site were from the sections of the coast road to the north, where the existing arrays forming the north-western and north-eastern part of the Churchtown Farm solar farm appeared as skyline features. These would, however, block views to the proposed Hope Farm development which lies just to their south and south east. It seemed likely, therefore, that there would be little chance of the development having an impact on the setting of key heritage sites within its environs.

Checking views outward from the site confirmed these conclusions. The scrub-toppings to the Cornish hedges and banks which make up the boundaries of the site, and which divide it up into fields are between 1.5m and 2.2m high, and effectively block most views out of the site. From the southern part of Hope Farm, partial views were available of the northern parts of the settlement of Connor Downs and of the landscape beyond to its south, theoretically including Gwinear Churchtown Conservation Area. However, historic assets within these areas were not readily distinguishable due to distance. To the west, partial views of the upper sections of Gwithian and Upton Towans were available, though at distances between 2.5Km and 2.75Km. Similarly partial and attenuated views of Godrevy Towans and parts of North Cliffs and Reskajeage Downs were available to the north at distances between 2.75Km and 4Km. The only open views out of the site were from its eastern corner, where the upper sections of Roseworthy arsenic works chimney could be clearly seen fairly close by, Roseworthy settlement being in the mid distance and Camborne Beacon forming the skyline.

The site walkover confirmed the Historic Landscape Character of the site as being Recently Enclosed Land. The soils are reddish, clayey and appear relatively low in the organic matter which would have built up as a result of centuries of cultivation and manuring typical of Anciently Enclosed Land. They also contain abundant pieces of quartz, the larger pieces of which had either been incorporated into hedge facings or into stone dumps in field corners. All fields were in barley stubble at the time of survey, there being round bales in most (Fig 21); an undersown grass crop a few centimetres high was relatively ubiquitous. The fields were almost completely level and there were no barriers to survey.

The fields were defined and separated by earth banks between 0.8m and 1.1m high and up to 2.0m wide, some of these having remnant traces of quarry ditches flanking them. In places, semi-formalised quartz facings were present on the banks, giving them the appearance of Cornish hedges, though most stretches of boundaries lacked facings. Some un-faced sections of bank had been affected by destabilisation caused by animal burrowing; in others, slumped sections of banks seem to have been trimmed back by ploughing. Where gateposts were present, most were of granite, with iron or steel pintles, though some gateposts were of pre-cast concrete. A number of blocked gateways were noted, the blockings frequently being of field clearance stone (usually lumps of quartz). Most gateways had been opened up to allow the passage of a combine harvester between fields, and lacked either one or both gateposts. Concrete blocks had been used to repair damaged or gappy banks in several places.

Most of the hedges were topped with bramble scrub, though in some areas blackthorn had begun to develop (Fig 20). This was most notable towards the eastern end of the site, though blackthorn had completely infilled the 5.0m wide lane dividing the narrow, westernmost field from its neighbour to the east.

A broad lynchet up to 1.0m in height was noted in the westernmost of the surveyed fields. This feature ran counter to that of the 19th century field pattern, though did not appear to extend from this field into its neighbours, and was not apparently part of a network of possible ploughed down boundaries which could be interpreted as an earlier field system. It was unclear, therefore, whether this feature had formed through ploughsoil movement up to the line of a former boundary or was of geological origin.

No upstanding evidence was found of the prehistoric barrow (MCO3174) documented on a Tehidy Estate map as having been sited in this western field.

6.6 Archaeophysica geophysical survey 2011

See Fig 26.

Archaeophysica undertook the magnetometer survey of the additional, north-western field on 22 December 2011, utilising four caesium vapour magnetometers mounted on a non-magnetic sled towed by a quad bike (see cover illustration and Fig 24). Data from the magnetometers together with positional data from a GPS unit mounted on the sled was fed back to a continuously-recording laptop mounted on the front of the quad bike. The laptop display allowed the sled track to be continuously monitored, allowing the survey coverage to be checked in real time and to be undertaken without any necessity for setting out temporary grids.

Data checking was undertaken immediately following the completion of the survey, allowing the raw data to be viewed before leaving site.

The December 2011 geophysical survey revealed evidence for a number of sub-surface archaeological features within the field (see Fig 26). Most obvious of these is feature [5] which represents a ploughed out post-medieval field boundary. This was depicted on the Gwithian Tithe Map (Fig 5) and the first two editions of the OS 25" to the mile mapping (Figs 6 & 7), so was evidently removed during the 20th century, almost certainly in order to make the working of the field by mechanised farm machinery more easy. A double-ditched feature spurring off this to the south-west near its centre appears very likely to be contemporary with removed boundary [5], though does not appear on any of the historic maps. It is thus of uncertain date, but is likely to have been created during the period during which these fields were first enclosed from downland, as there seems to have been a history of progressive boundary removal during the following centuries.

In the southern corner of the field, feature [2] represents part of a small apparently rectangular enclosure with one curved corner. Its alignment differs from the nearby field system boundaries, and it is likely to predate them. The feature was not picked up by Stratascan in the adjacent fields to the south and south-east, though some of the linear features detected in the field to the south-east through the Stratascan geophysical survey are aligned on the enclosure and may therefore be associated with it. The period during which this feature was created is uncertain, and its full extent is unclear, though it may be that its existence determined the alignment of the small south-eastern extension of the post-medieval field within which it lies. Nothing shows up within the interior of the enclosure, which has been tentatively identified as a small farmstead enclosure dating to the Romano-British period.

Feature [1] near the centre of the south-western part of the survey is clearly incomplete, and appears to represent a section of curving ditch similar in scale to feature [1] to its south, and may be of similar date and also represent the remains of a small late prehistoric enclosure. The fragmentary nature of this feature is likely to reflect the effects of repeated ploughing.

Feature [3] against the northern boundary of the site represents a fairly well-defined and discrete roughly 20m diameter, slightly ovoid area of magnetic disturbance. Although the detail of this feature is far from distinct, there are hints of sections of linear arcs defining its perimeter, and is possible that this represents the surviving evidence for the barrow documented as having been located somewhere in this field as site MCO3174. This interpretation should, however, be treated as likely though tentative in the absence of any confirmatory evidence.

The whole of the field shows clear evidence for cultivation both along and across the axis of the field; curving headlands are visible adjacent to the hedgelines in both directions, possibly suggesting that the ploughing was undertaken using horses, rather

than a tractor. Given that this evidence for relatively deep ploughing clearly crosses the line of removed boundary [5] this represents 20th century activity designed to deepen the ploughsoil and improve the crop carrying capacity of the field. The Stratascan survey of the surrounding fields shows evidence for similarly intensive ploughing in all the fields except that immediately to the south-east of the field surveyed by Archaeophysica. It is likely that this ploughing will have contributed to the poor preservation of feature [1] and possible barrow site [3]. Enclosure [2] may have survived rather better because of its location in a field corner which could not be easily deep ploughed. Feature [4] is indistinct but appears to share its orientation with the northwest – southeast aligned plough marks, and probably reflects the effects of deep ploughing on a removed boundary.

6.7 Synthesis

Fig 27 draws together all known archaeological information relating to the area at Hope Farm proposed for the development of a solar farm.

Perhaps the most striking thing revealed through geophysical survey at Hope Farm has been the evidence for intensive efforts to improve the crop-carrying capacity of this area of former downland, something which may have taken place during the early or middle decades of the 20th century, perhaps in response to national requirements for increased food production during periods of war and naval blockade. This intensive and relatively deep ploughing has clearly truncated, fragmented or destroyed much evidence for pre-enclosure activity on these former downs, though in places, enough survives to provide useful hints and clues.

Whilst many of the boundaries associated with the enclosure of this area of downland in the late 18th or early 19th centuries have survived as partly revetted earth banks, evidence for enlargement of the fields through the removal of internal boundaries has been revealed, much of this activity having taken place during the early decades of the 20th century. As well as documented features, the Stratascan geophysical survey also revealed undocumented removed boundaries near the centre of the site, these possibly representing the site of a now-lost and otherwise undocumented smallholders' cottage and garden plots which would have been established during the period when the downs were first being broken in.

Underlying the 'modern' field system, both geophysical surveys revealed fragments of an underlying and relatively open arrangement of boundaries which may represent activity during late prehistory or during the Romano-British period. These may be linked to a small sub-rectangular enclosure (or possibly two) in the south-western corner of the recently-surveyed field, and appear to encircle the higher parts of the ridge, though do not cross it.

A series of small features, interpreted by Stratascan as humanly-created pits, including a possible area of heat-altered bedrock which has been interpreted as a kiln or hearth may be associated with these earlier enclosures, but may be of either earlier or later date; they may alternatively be of geological origin or merely data artefacts.

From earlier prehistory, when this area of the landscape would certainly have been open downland, one source has documented a bronze age barrow. Although no upstanding remains have survived, an ovoid area of magnetic disturbance near the northern end of the northern field seems a good candidate for its site. This location would have made a barrow of these relatively large dimensions (20m diameter) visible within much of the surrounding landscape, particularly to the north and south; it would have been intervisible with Horsepool Barrow to the south, from which direction it would have been a skyline feature.

6.8 Further archaeological potential

In addition to the known sites, other, buried archaeological remains as yet unrecorded may be expected to survive within the area proposed for the solar farm.

Areas of 'Recently Enclosed Land' of the Type found at Hope Farm 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 may remain in land of this Type. There is also the potential for 'stray' or even *in-situ* artefacts such as pottery and flint surviving on the site.

7 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.

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

7.1.1 Policy HE9.6

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

7.1.2 Extracts from Policies HE9.1 to HE9.4 and HE10

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

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

7.2 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.'

7.3 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.

7.3.1 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.'

7.3.2 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.'*

7.4 Former Penwith Local Plan

Although now part of Cornwall Council, Penwith District 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:

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 2. To preserve and enhance the character and appearance of the built environment.

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.

General Development Guidance

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 GD-2: The design and layout of development should:

- (i) Respect traditional patterns of development and styles, form and detailing
- (ii) Incorporate materials that are in keeping with the locality

Coast and Countryside

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 not be permitted where it would harm:

- (i) The historic character of the landscape, or
- (ii) The value, character or setting of the remains.

Where development is permitted which would affect remains of county importance conditions will be imposed, or a planning obligation sought, to secure further site investigations and archaeological recording.

7.5 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.

8 Likely impacts of the proposed development

8.1 Types and scale of impact

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

8.1.1 Types of impact, construction phase

Construction of the solar farm could have direct, physical impacts on the buried archaeology of the site through the installation of mountings for solar panels and associated control plant, through the undergrounding of cables, and through the provision of any works compound, together with any permanent or temporary vehicle access ways into and within the site.

8.1.2 Types of impact, operational phase

A solar farm might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during the operational phase, given the scales of such developments and the introduction of large areas of new materials into the rural landscape.

8.1.3 Scale and duration of impact

The impacts of a solar farm on the historic environment may include positive as well as adverse effects. For the purposes of assessment these are evaluated on a seven-point scale:

positive/substantial

positive/moderate

positive/minor

neutral

negative/minor

negative/moderate

negative/ substantial

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

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

8.1.4 Potential and residual impacts

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 9.2, 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 10.

8.2 Assessment of impact

Overall, the impacts of the proposed solar power installation on the archaeological resource are assessed as having a potential scored as **negative/minor** to **neutral** without appropriate mitigating work. Impacts on potential sub-surface archaeology

within the development site could be reduced to **negative/minor** provided that the recommended mitigation is undertaken.

The assessments supporting this general statement are outlined in the following sub-sections. To comply with current policies and guidance (Section 7) these provide assessments of impact in terms of different aspects of the archaeological resource - its individual sites, the settings of sites, HLC, and field boundaries. There are inevitably areas of overlap between these categories of impact; the assessment is adjusted accordingly to avoid 'double counting' of impacts.

8.2.1 Impact on archaeological sites within the development area

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

The scale of impact will vary with the significance of the individual site, and with the proportion of the whole site which would be affected. 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, 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**.

Identifier	Site	NGR	Impact/recommendations
MCO3174	Documented barrow site	SW 59737 40252	Damage to sub-surface archaeology through foundation and cable trenching. Exclude area from development or bridge with concrete shoes.
None	Buried archaeological sites, possibly including prehistoric barrow, enclosures and associated boundary features.	Fields centred SW 59945 40013	Archaeological watching brief during groundworks within sensitive areas.

8.2.2 Impacts on 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, this being summarised as **negative/minor to neutral** overall:

- In operation the solar farm could possibly have some degree of adverse impact on the setting of one Scheduled Monument (SM) at Roseworthy Arsenic Works, as identified in the generated viewshed within a 3Km radius of the site (see Fig 15). Inter-visibility between this SM and the solar farm will, however, be significantly limited by topography to the upper section of the chimney, the remainder of this site not being intervisible with the solar farm. A small proportion of the easternmost part of the solar farm would appear in the backdrop of views of the scheduled monument from the east, particularly from the nearby A30. The site is also intervisible with Gwealavellan Round and with parts of the scheduled landscape at Godrevy Towans, but at such a distance that any impacts on their setting would be negligible. Any such impacts would be **temporary** and **reversible**, being limited to the lifespan of the wind farm.

- During the operational phase the solar farm is unlikely to impact on the setting of the Listed Buildings within its viewshed, given the partial nature of the intervisibility and their distance from the site (see Fig 16).
- During the operational phase the solar farm is unlikely to impact on the setting of the Conservation Area at Gwinear given the very limited nature of the intervisibility and its distance from the site (see Fig 17).
- The proposed solar farm would be intervisible with parts of the Cornwall AONB between Godrevy Towans and North Cliffs, but the topography of the site would significantly limit any impacts.
- During its operational phase the wind farm is felt unlikely to impact on undesignated heritage assets within the 1Km viewshed given the partial nature of the intervisibility and their distance from the site.

Designated heritage assets within the 3Km radius viewshed

Scheduled Monuments (SM), Listed Buildings (LB), Conservation Area (CA)

Identifier	Site	NGR	Impact
DCO1127	Gwealavellan Round (SM)	SW 6013 41781	Negative/minor
DCO1586	Godrevy Towans (SM)	SW 58880 42437	Negative/minor
DCO1184	Trevarnon Round (SM)	SW 58780 40214	Neutral
DCO1322	Camp near Trevarnon (SM)	SW 58458 39814	Neutral
DCO6406	Polstrong House (LBII)	SW 62869 39814	Neutral
DCO2635	Old Mill Farmhouse (LBII)	SW 62147 39314	Neutral
DCO4611	Rosehill in the Fern (LBII)	SW 61591 39848	Neutral
DCO12013	Gwinear Church (LBI)	SW 59501 37371	Neutral
DCO11428	Tomb at Gwinear Church (LBII)	SW 59492 37389	Neutral
DCO12638	Cross at Gwinear Church (LBII)	SW 59506 37398	Neutral
DCO11390	Loggan's Mill (LBII)	SW 57346 38570	Neutral
DCO80	Gwinear (CA)	SW 59685 37331	Neutral
	Cornwall AONB		Negative/minor

Undesignated heritage assets within the 1Km radius viewshed

Identifier	Site	NGR	Impact
MCO3174	Nanterrow Cot barrow	SW 59896 40096	Negative/moderate
MCO2892	Horsepool barrow	SW 60163 39551	Neutral
MCO13136	Wheal St. Andrew	SW 58485 40308	Neutral
MCO32755	Manse at Connor Downs	SW 59507 39191	Neutral
MCO32756	Chapel at Connor Downs	SW 59474 39184	Neutral
MCO17825	Trevarnon settlement	SW 59031 40006	Neutral
MCO33828	Trevarnon field system	SW 59348 40042	Neutral

8.2.3 Impacts on Historic Landscape Character

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

- The land-take for the project is relatively substantial in comparison with the area of the HLC Unit of Recently Enclosed Land within the surrounding landscape, parts of which have already been developed as the Churchtown Farm solar farm. That having been said, Recently Enclosed Land is notably dynamic in character, and adjacent areas are already occupied by mine spoil dumps, by polytunnels and by large agricultural sheds.
- 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.

- Some visual impact throughout the operational phase would occur, affecting the integrity of this area as historic open farmland and the introduction of modern features into this area. However, this part of the landscape is not over-looked, except at significant distances from the site, rendering the visibility of changes to its character low within the landscape.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the solar farm be dismantled in the future.

8.2.4 Other archaeological impact

Any ground disturbing works here could encounter significant buried prehistoric or medieval remains, resulting in permanent, irreversible loss of these, or elements of them. This potential impact is assessed as **negative/unknown** as specific evidence for the nature and extent of any such remains is limited to that of aerial photography. It is likely that it could be mitigated satisfactorily though archaeological recording, reducing the residual impact to **neutral** or **negative/minor**. These impacts would be **permanent** and **irreversible**.

9 Mitigation Strategy

See Fig 28.

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

9.1 Site re-design

Based on the results of geophysical survey, the HEPAO might ask the site developer to either avoid some areas of the site or to mount arrays on non-intrusive concrete shoes to avoid direct impacts on sensitive areas of the site. These are likely to include the ploughed down barrow and the two small sub-rectangular enclosures, both in the northern field.

Should the finalised site design seem likely to result in unavoidable impacts on below-ground features, a Written Scheme of Investigation (WSI) will need to be prepared and agreed to establish and direct a programme of mitigating archaeological work. This should follow a brief set by Cornwall Council's Historic Environment Advice Team, which would set out the scope of any further work required.

9.2 Controlled soil stripping and archaeological watching brief

An archaeological watching brief (observation by an archaeologist during mechanical topsoil and subsoil stripping) might be required either where any significant areas of ground are to be disturbed (for instance the foundations for inverter units), or in areas where significant results have been identified through aerial photographs or geophysical survey and which remain proposed for ground disturbance (by, for example cable trenching) in the final scheme design. This would provide for preservation by record of buried archaeological features or artefacts.

9.3 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.

10 References

10.1 Primary sources

Gascoyne, J. 1699, *Map of Cornwall*

Martyn, T. 1746, *Map of Cornwall*

Ordnance Survey, c1880. *25 Inch Map* First Edition (licensed digital copy at HE)

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

Ordnance Survey, 2007. *Mastermap Digital Mapping*

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

10.2 Websites

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

11 Project archive

The HE project number is **2011105**

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\Hope Farm proposed solar farm 2011105
3. English Heritage/ADS OASIS online reference: cornwall2-116862
4. This report text is held in digital form as:
Cc\root\Pte\Tru\Groups\Twe\Waste&Env\Strat\Waste&Landscape\Historic Environment\Projects\Sites\Sites H\Hope Farm proposed solar farm 2011105\Report

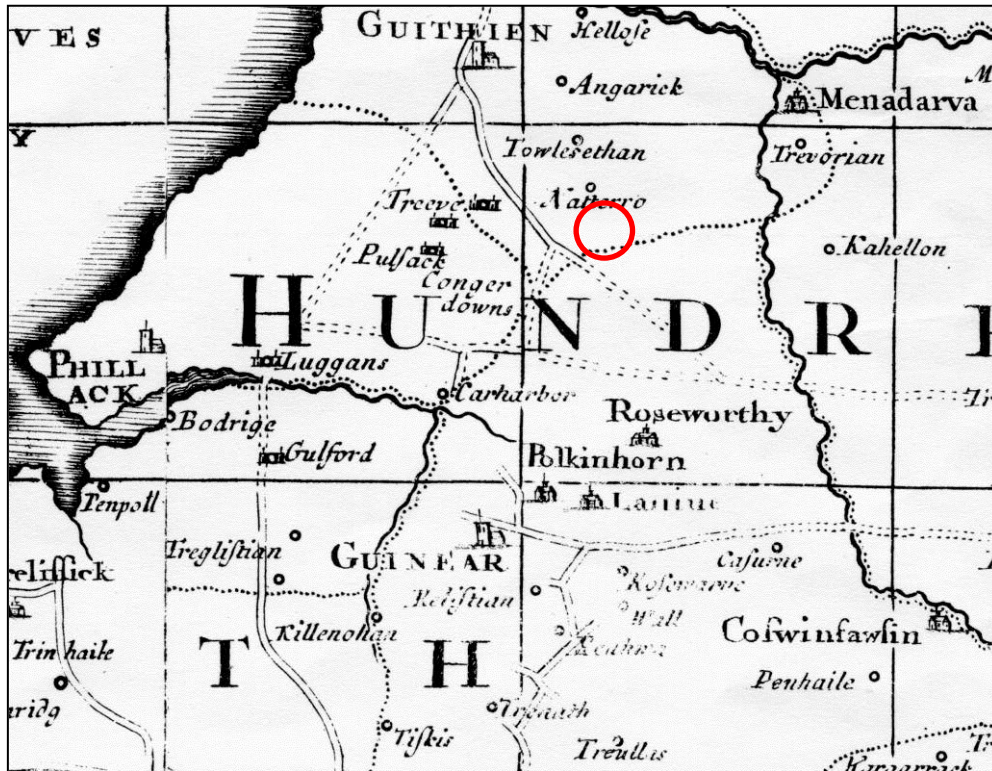


Fig 3. The area surrounding Hope Farm (circled in red) as shown on Gascoyne's 1699 map of Cornwall.

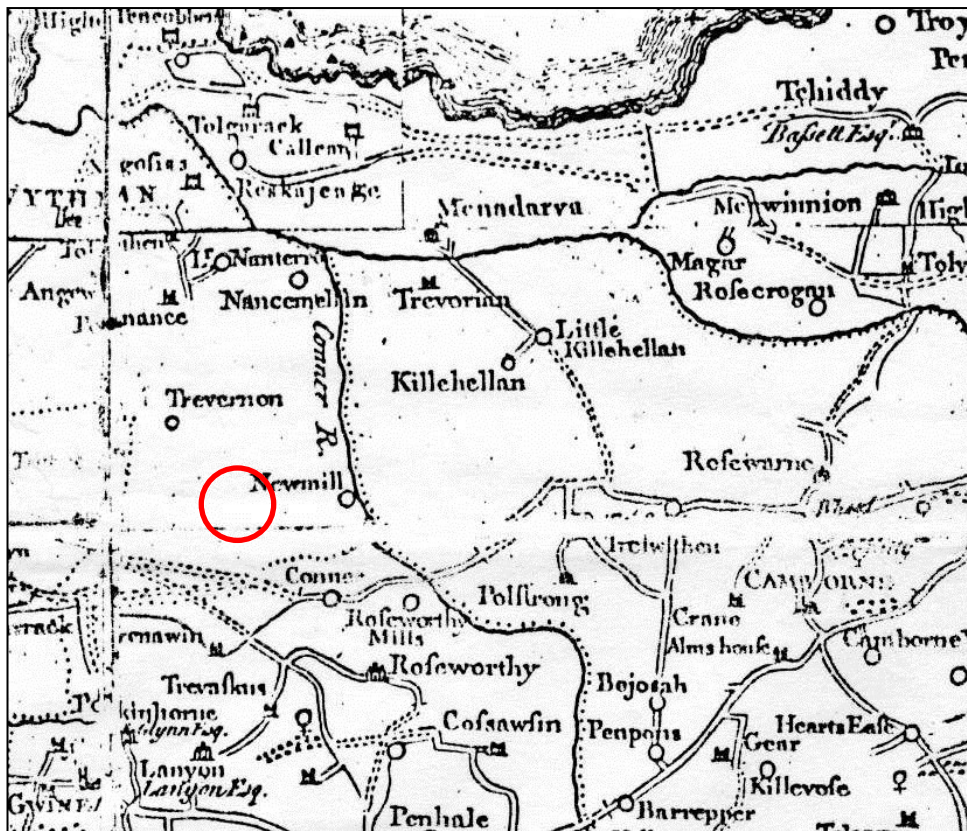


Fig 3. An extract from Martyn's 1748 map of Cornwall. The area of downs where Hope Farm was later established is shown within the red circle.



Fig 4. An extract from the circa 1809 1st Edition 1" to the mile OS mapping for the area at Hope Farm. The project area is shown outlined in red.

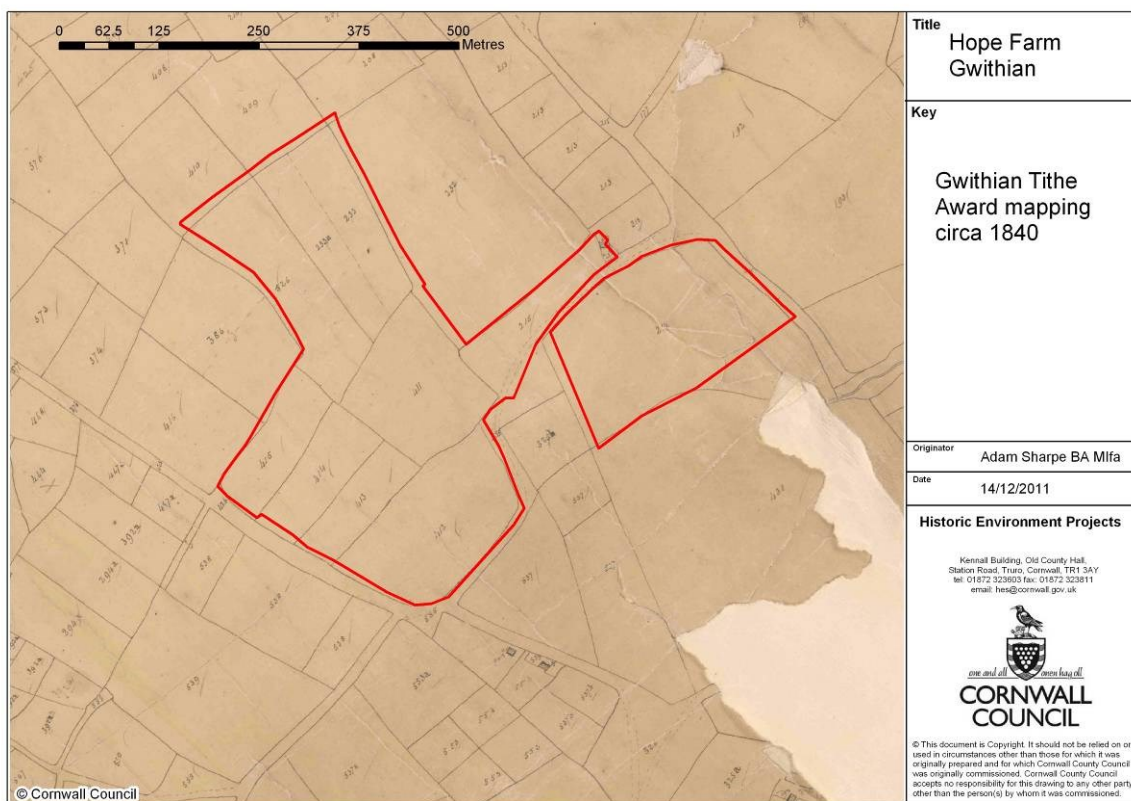


Fig 5. An extract from the circa 1840 Gwithian Tithe Map. The project area (outlined in red) was, at the time, being worked by four tenants and was reported as being croft land (unimproved grazing land).

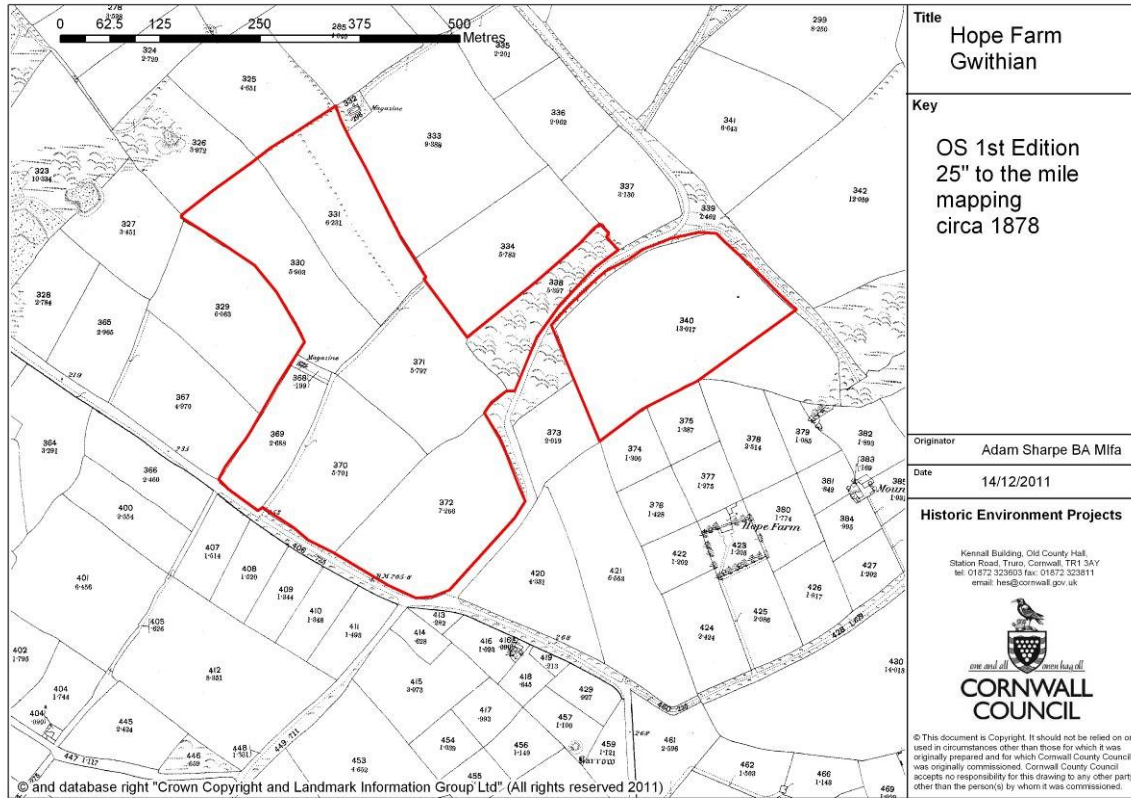


Fig 6. The project area as shown on the 1st Edition of the OS 25" to the mile mapping, circa 1878. Only the elongated field to east centre and the nearby lane are shown as being unimproved by this date. The cottage shown at the eastern end of this field on the 1840 mapping had been demolished and one boundary (to the south) had been removed.

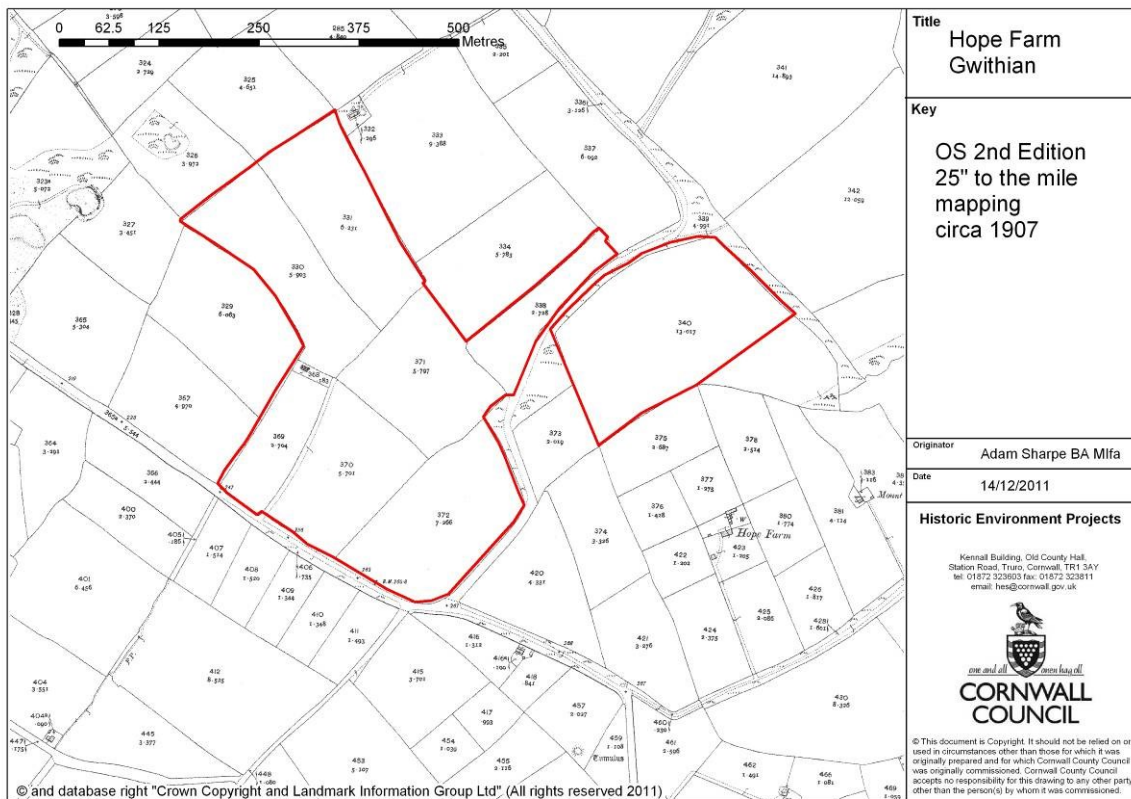


Fig 7. Hope Farm in 1907. All of the fields had been improved by this date.

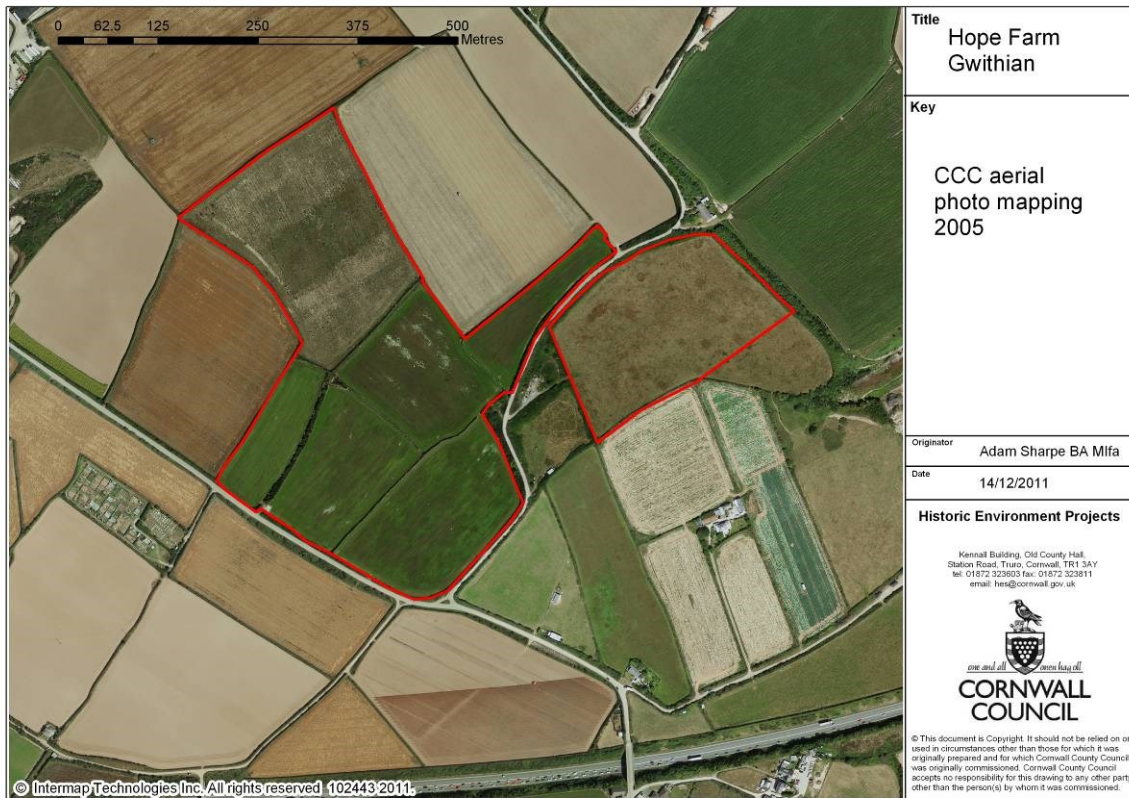


Fig 8. Aerial mapping undertaken for Cornwall Council in 2005 shows that a further field boundary had been removed in the northern field, and that the fields were, at the time, in mixed agricultural use.



Fig 9. Historic Landscape Character mapping for Hope Farm. Pale green indicates Recently enclosed Land, khaki indicates Anciently Enclosed Land (Medieval farmland).

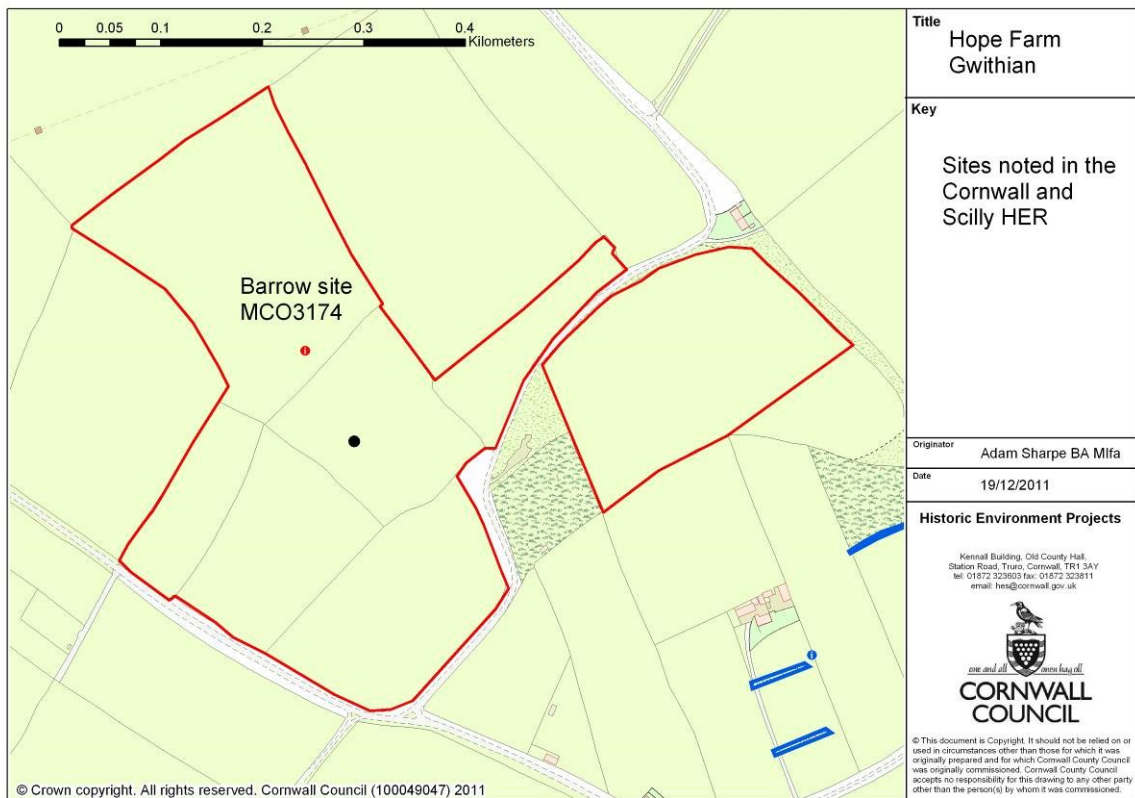


Fig 10. Sites noted within the Hope Farm project area in the Cornwall and Scilly Historic Environment Record.

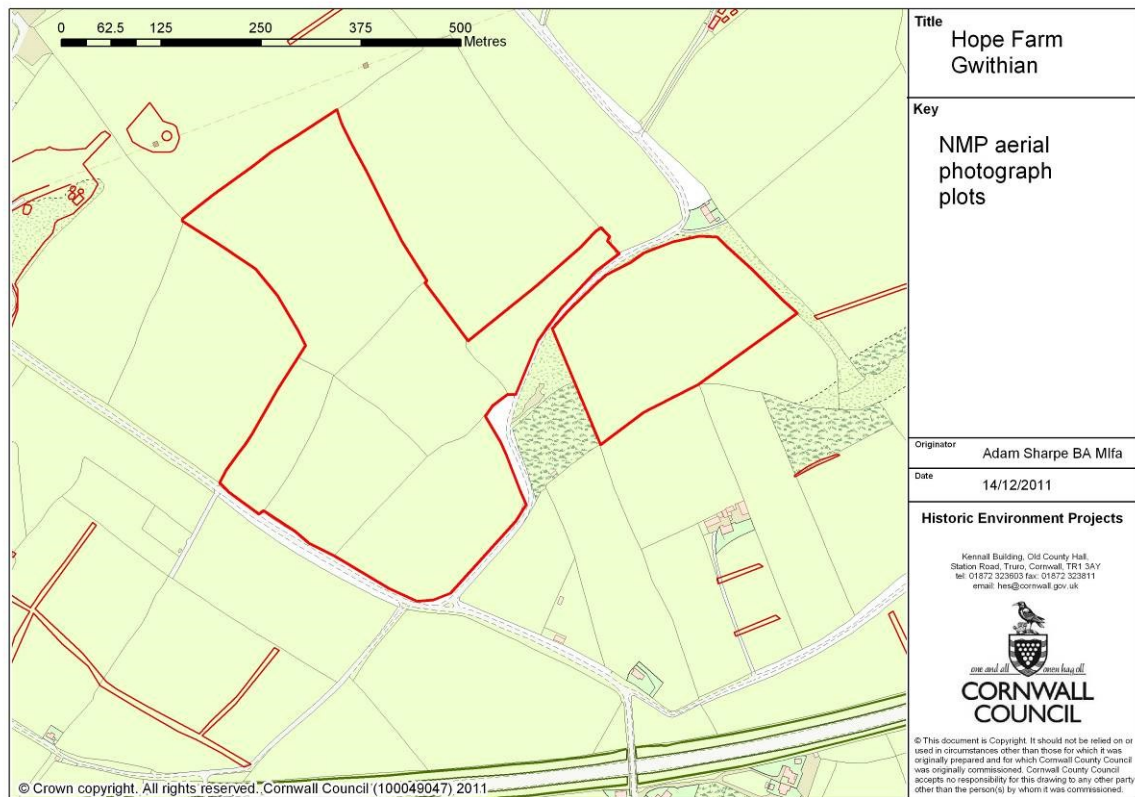


Fig 11. Sites and features plotted from aerial photographs by the National Mapping Programme at Hope Farm and in its surroundings. Most of these consist of ploughed out post-medieval field boundaries.

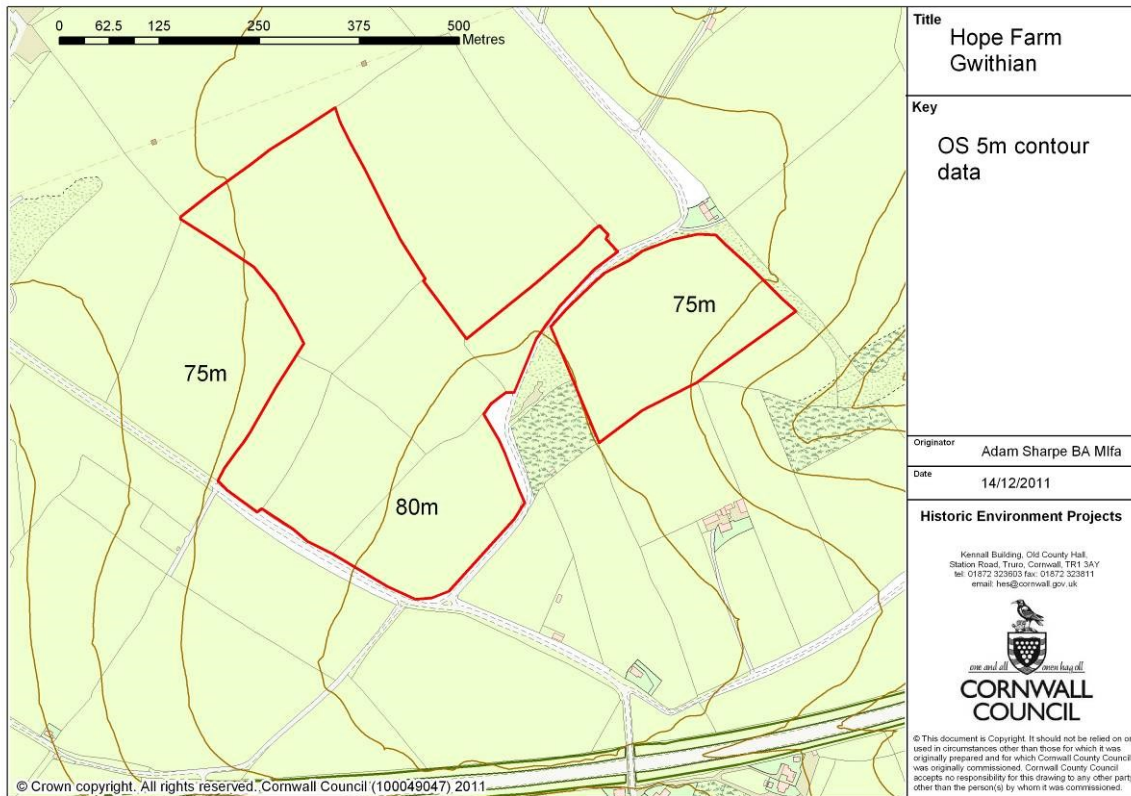


Fig 12. OS 5m interval contour data for the Hope Farm project area, showing that the site is almost level, though falls gently to the east and to the north-west.

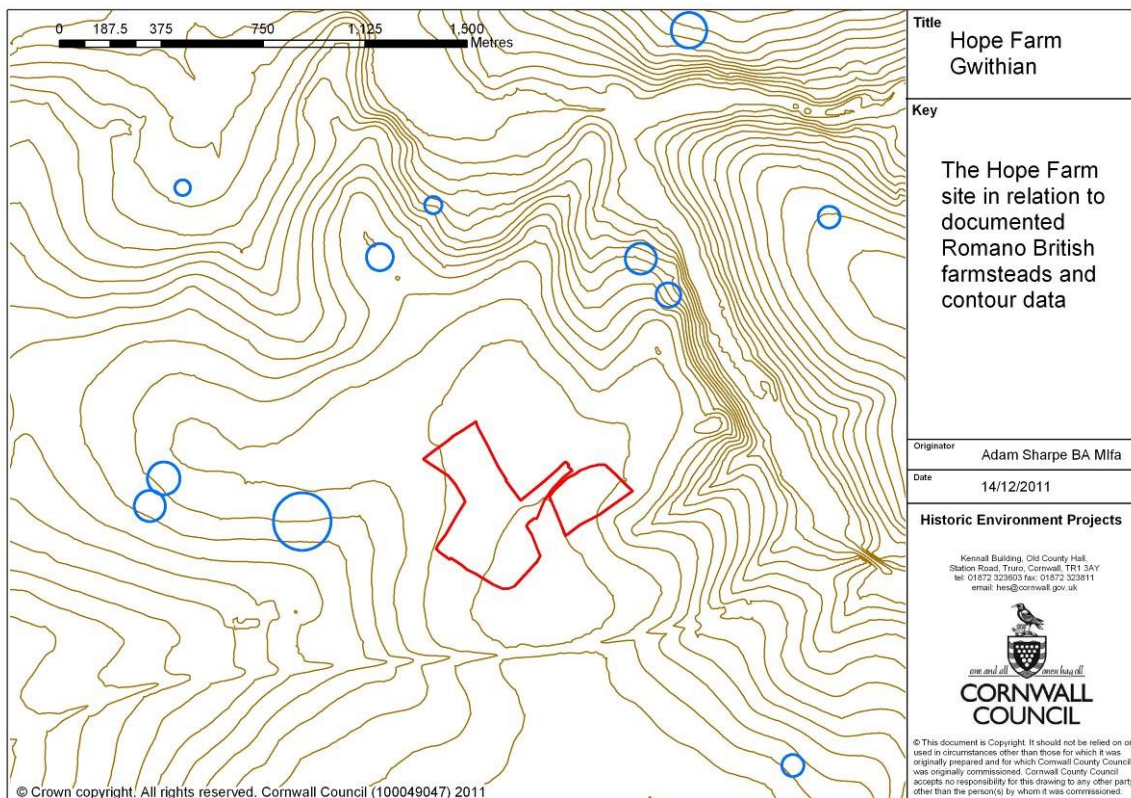


Fig 13. The Hope Farm site in its late prehistoric context. The blue circles show the sites of defended farmsteads dating to this period, all of which were sited around the periphery of the upland area containing Hope Farm.

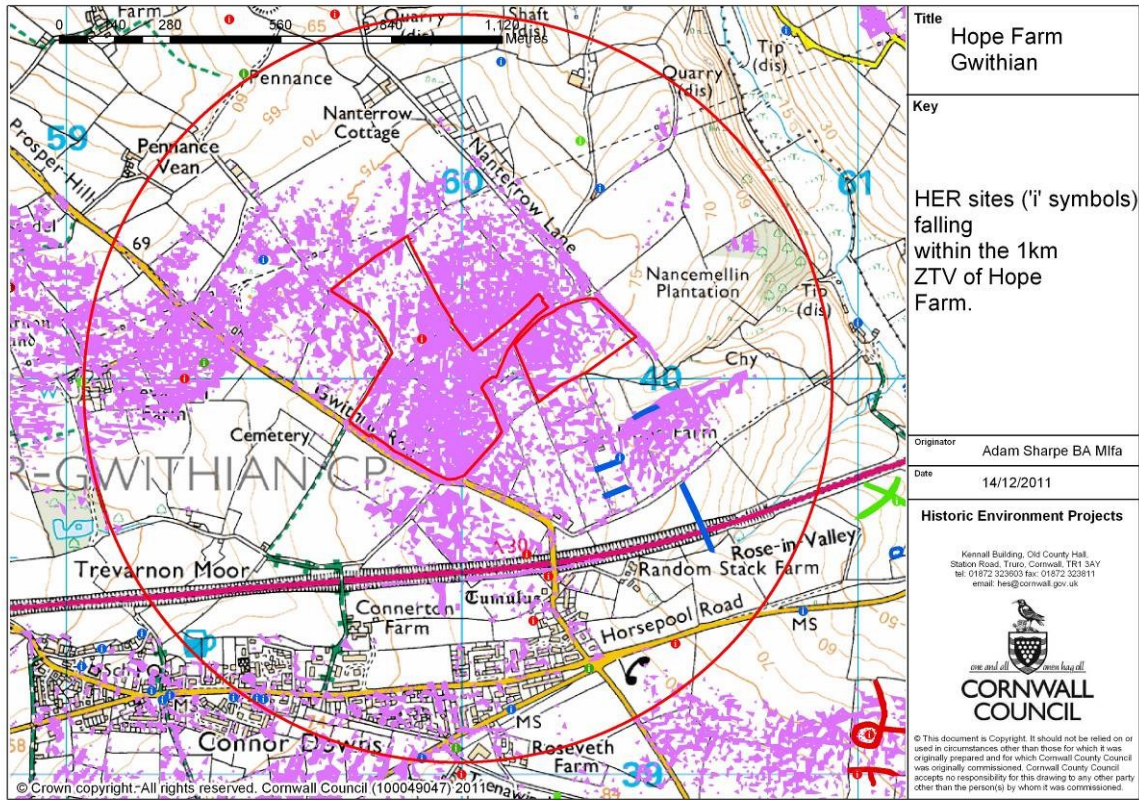


Fig 14. Sites recorded in the Cornwall and Scilly HER within a 1Km radius of Hope Farm. Red symbol = prehistoric, Green = medieval, blue = post-medieval. The viewshed shown in purple indicates areas of probable intervisibility with the site.

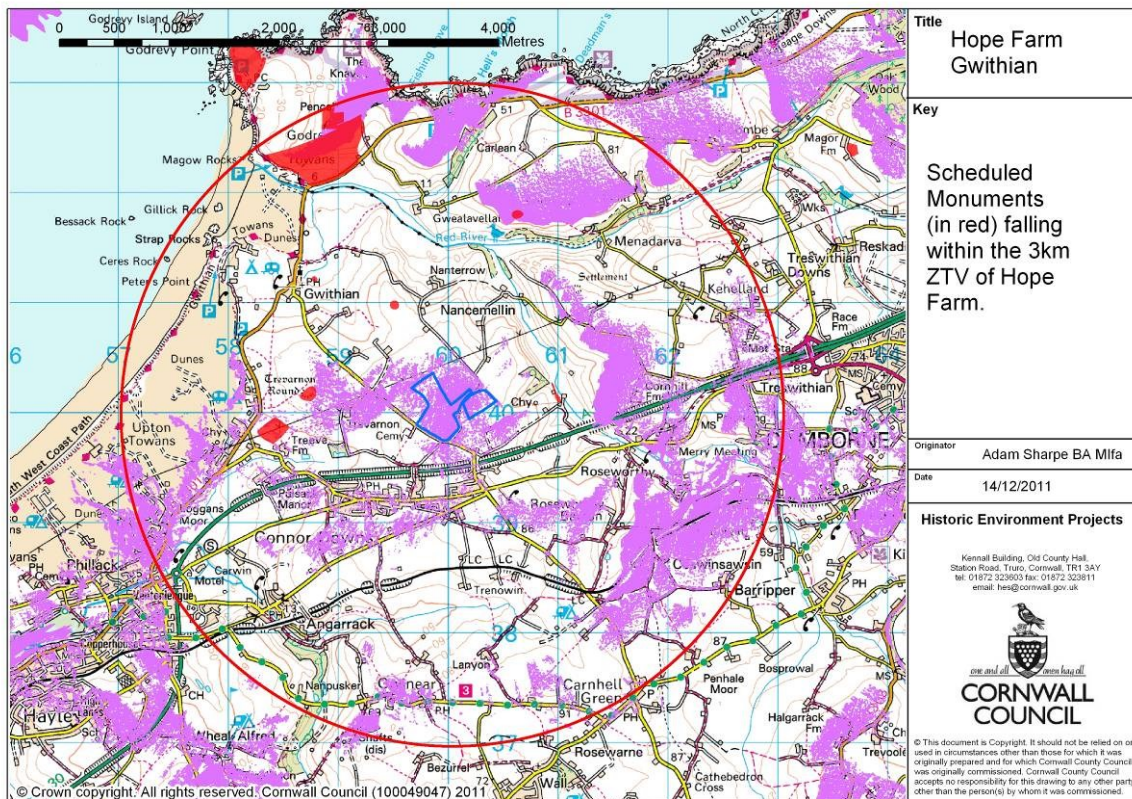


Fig 15. Scheduled monuments (in red) sited within 3Km radius of Hope Farm. As well as the arsenic works to the east and a number of late prehistoric rounds to the west and north, there are also important areas of prehistoric landscape at Godrevy to the north.

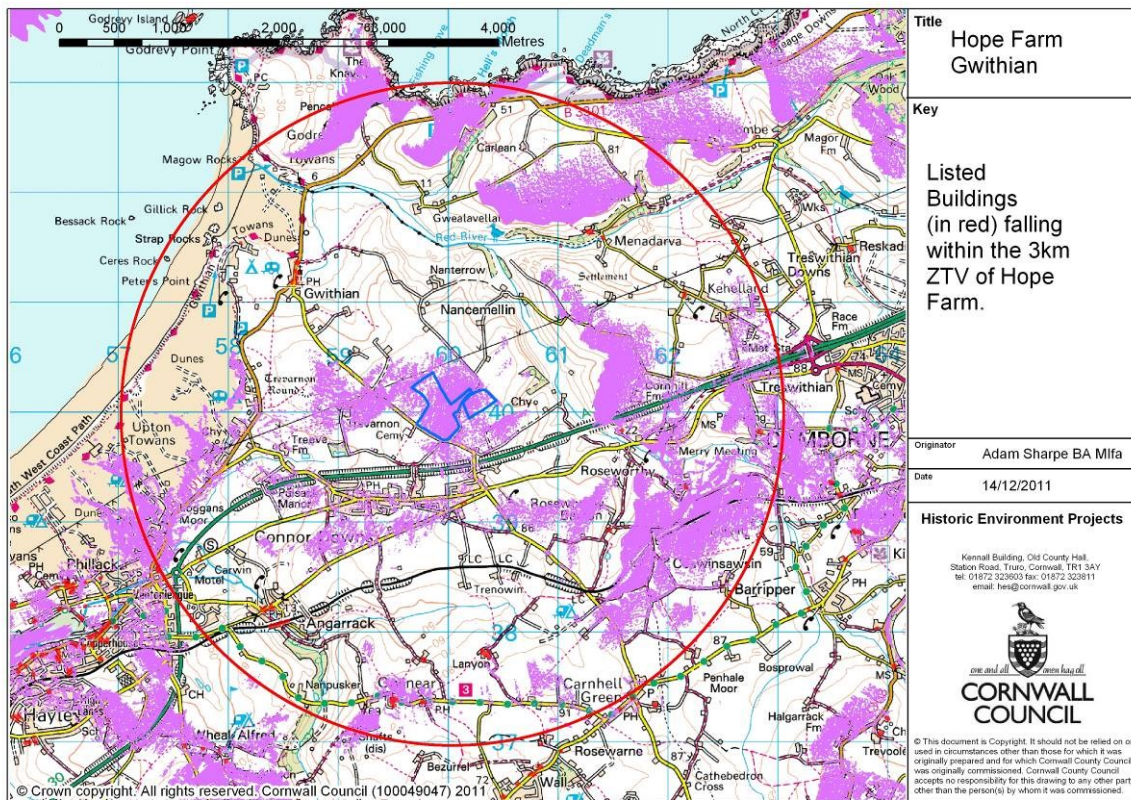


Fig 16. Listed Buildings (in red) sited within a 3Km radius of Hope Farm are principally sited at Gwinear to the south, Angarrack to the south west and Gwithian to the north west. Only some are intervisible with the site.

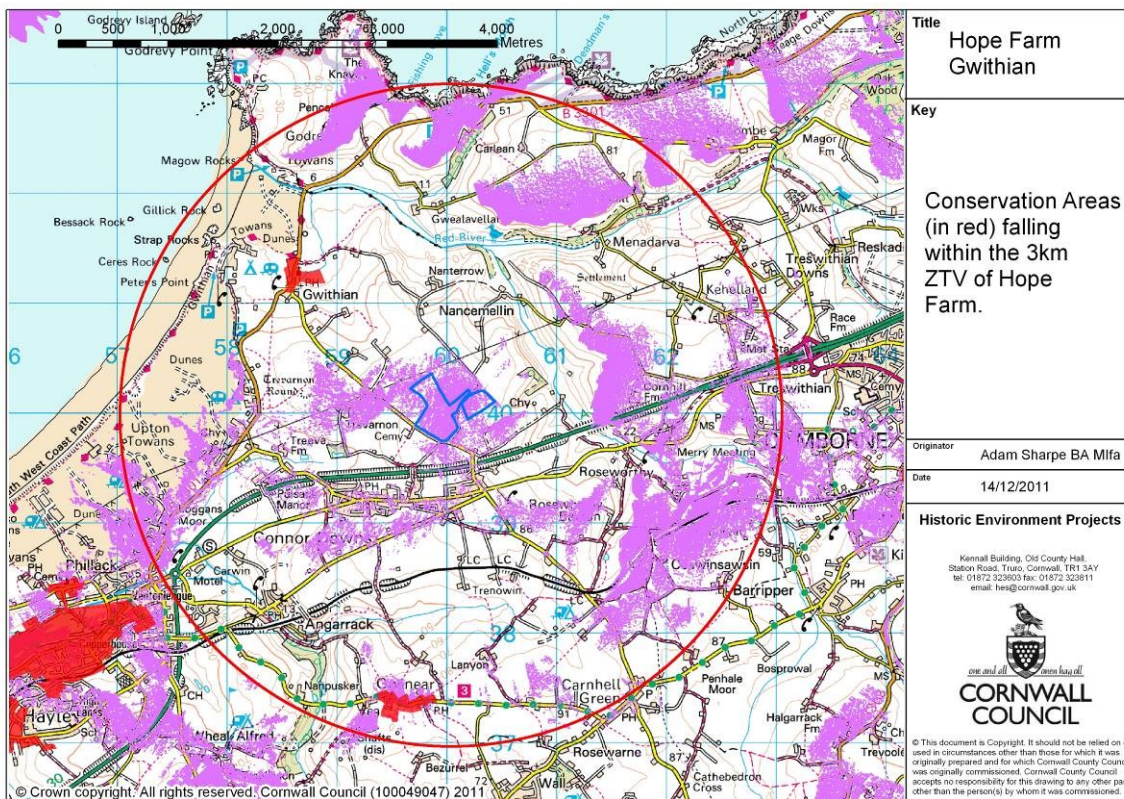


Fig 17. Conservation Areas (in red) within and bordering the 3Km radius of Hope Farm are Gwinear to the south, Hayle/Copperhouse to the south west and Gwithian to the north west. The boundary of the Conservation Area at Hayle is coincident with that of the Cornish Mining World Heritage Site.

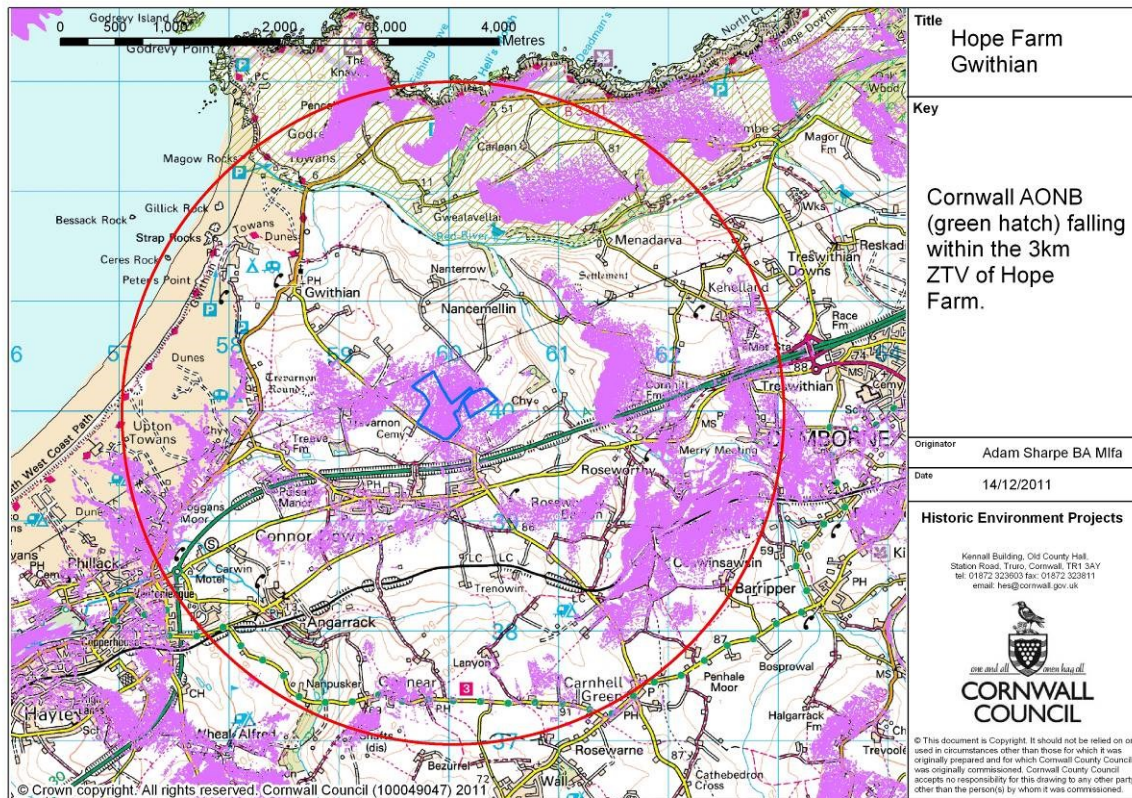


Fig 18. A section of the Cornwall Area of Outstanding Natural Beauty (green hatch) falls within the 3Km radius of the proposed Hope Farm solar farm to its north, running from Godrevy to North Cliffs, Tehidy.



Fig 19. Looking west from the western end of the proposed Hope Farm site towards the neighbouring Churchtown Farm solar farm.



Fig 20. A view of the central part of the area proposed for the Hope Farm solar farm. Note the hedge vegetation which blocks views in and out of the site.



Fig 21. A view looking north across one of the south-eastern fields proposed for the Hope Farm solar farm.



Fig 21. Looking south towards Hope Farm from the road near Godrevy Towans. The Churchtown Farm solar farm can be seen on the skyline in the mid distance.



Fig 22. Looking south-west towards Hope farm from Gwealavellan. Again, the Churchtown Farm solar farm skylines in the mid distance.



Fig 23. Looking eastwards from the eastern part of the proposed solar farm towards Roseworthy arsenic works. The ground in the foreground is not included in the proposed solar farm development.



Fig 24. Anne Roseveare of Archaeophysica with the sled-mounted four sensor magnetometer rig. Note the minimal impact its use has had on the young barley crop.

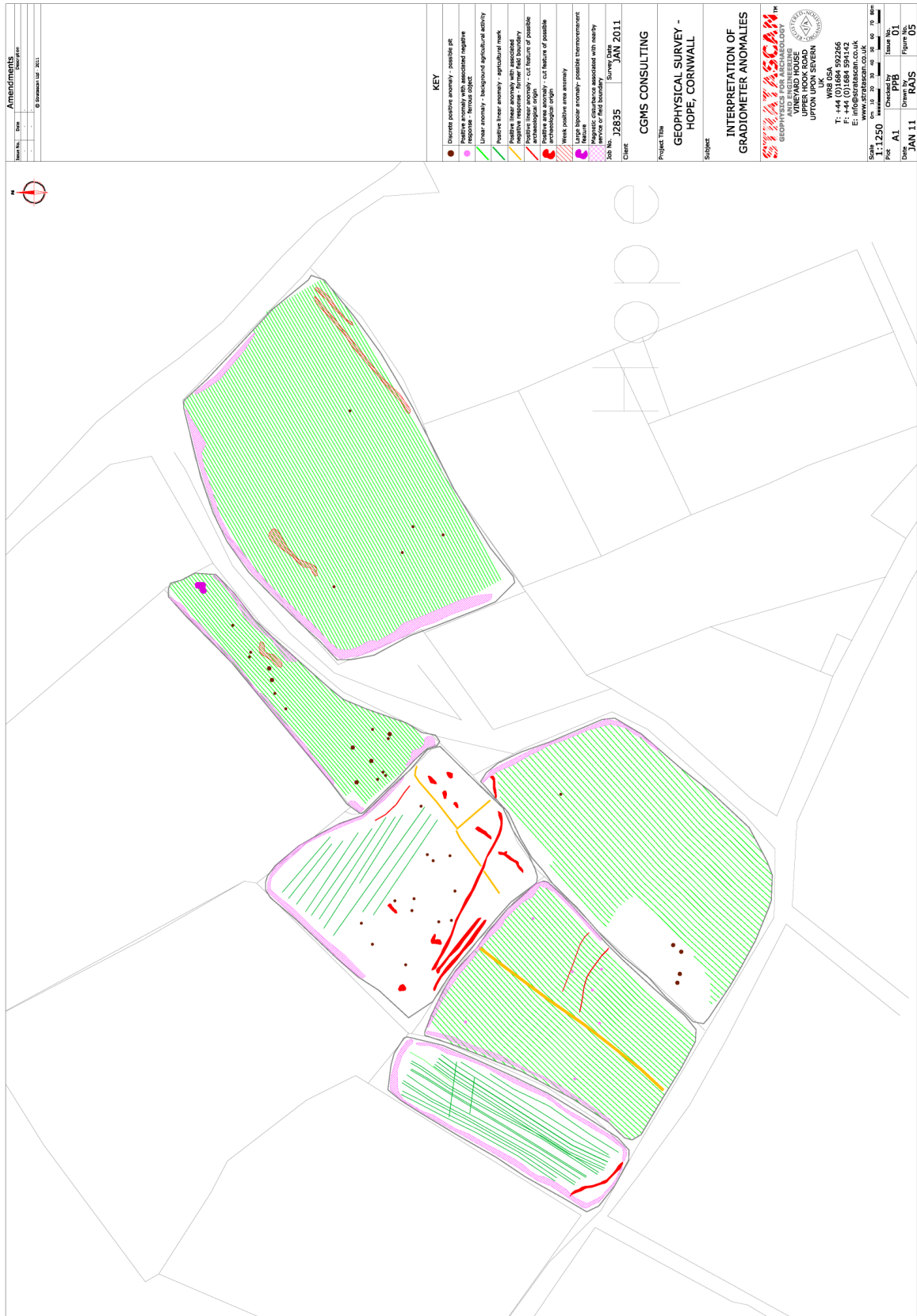


Fig 25. The interpreted Stratascan geophysics plot, showing a number of linear archaeological features in the central field, and part of a curvilinear boundary in the western field (north is to the left).



Fig 26. The interpreted Archaeophysica 2011 geophysical survey for the additional northern field, showing (in brown) removed post-medieval boundary [5], probable ploughed out bronze age barrow [3], probably prehistoric enclosure [2] and probably prehistoric ditched feature [1]. The effects of 20th century ploughing along and across the field are particularly clear in the data.

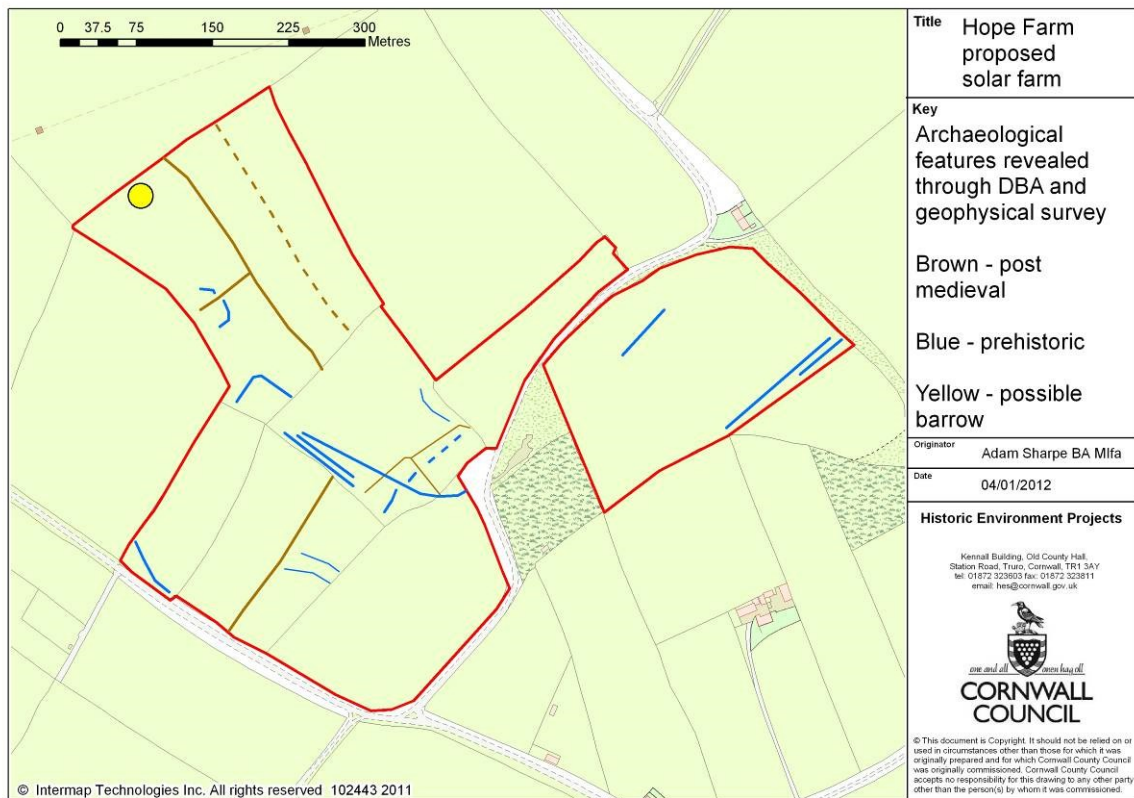


Fig 27. Summary of results of DBA and geophysics at Hope Farm. As well as a number of removed post medieval boundaries (brown), this has revealed fragmentary elements of a probably prehistoric field system and associated enclosures (blue), and the site of a documented bronze age barrow (yellow).

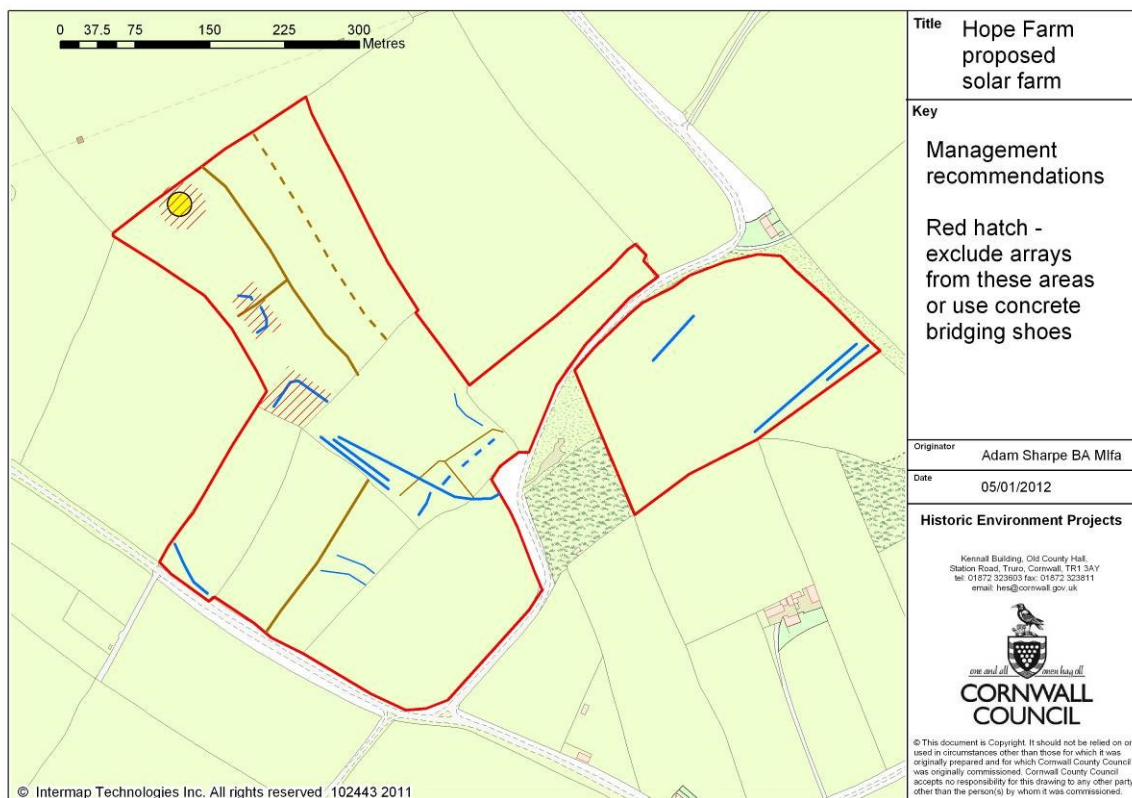


Fig 28. Summary management recommendations, highlighting what appear to be the areas of the site most sensitive to disturbance during the construction of a solar farm at the Hope Farm site.