



Polshea Farm, St. Tudy, Cornwall

Archaeological assessment of proposed wind turbines



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The viewshed mapping was carried out by Francis Shepherd, whilst the geophysical survey was carried out by GSB Prospecting.

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

Looking south from Helsbury Castle over Polshea 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

Planning application PA11/09829 was submitted on the 23rd November 2011 for the installation of two 50kw Endurance wind turbines mounted on 36m high monopole masts on 6m x 6m concrete bases, each having three 9.6m radius blades, together with cabling. A brief for site investigation was prepared by the Historic Environment Planning Advice Officer (East), Cornwall Council, and HE Projects was commissioned to carry out an assessment of the potential impacts of this proposal on 1st May 2012. Geophysical survey of the area surrounding the location proposed for the wind turbine and along the route for its cables was commissioned from GSB Prospecting.

The site chosen for the wind turbines lies in an area of former medieval farmland on a north western facing slope overlooking the valley of the River Allen, to the south west of Polshea Farm in the parish of St. Tudy.

The assessment consisted of a desk-based assessment, viewshed analysis, a geophysical survey and a walkover survey.

The geophysics revealed the potential for the development to negatively affect sub-surface archaeology within the site. The other aspects of the assessment did not suggest that the development was likely to produce any significant negative impacts on heritage assets within the site or in its surroundings.

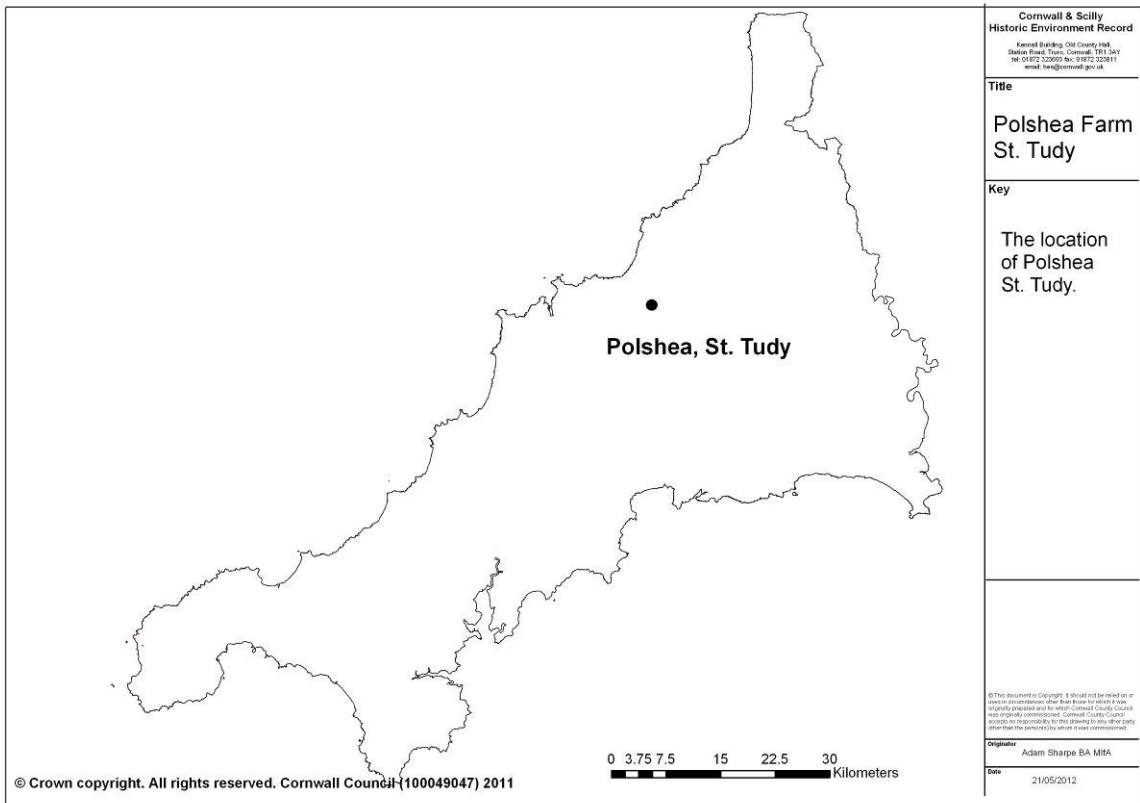


Fig 1. The location of Polshea Farm, St. Tudy.

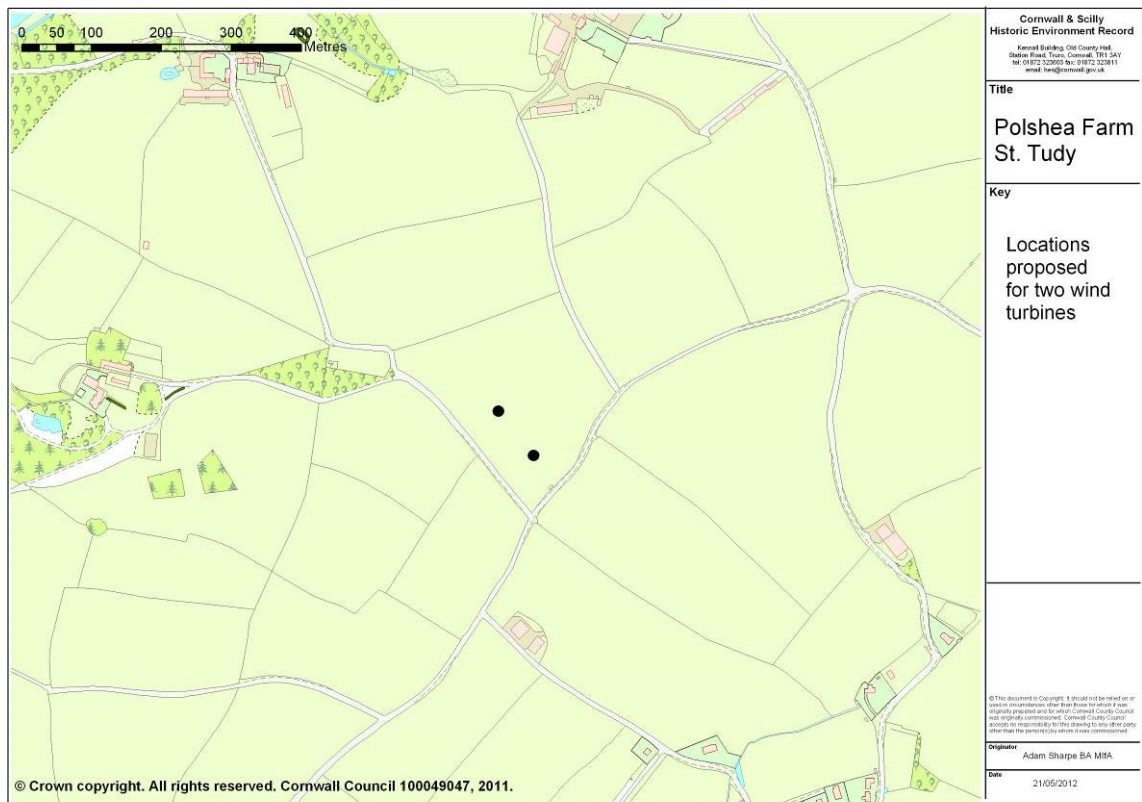


Fig 2. The locations proposed for the Polshea Farm wind turbines.

2 Introduction

2.1 Project background

Planning application PA11/09829 was submitted on the 23rd November 2011 and was for the installation of two 50kw Endurance wind turbines mounted on free standing 36m high monopole masts at SX 06179 77243 and SX 06129 77308 (Figs 1 and 2). The turbines would be sited on 6m x 6m concrete bases and would have blade radii of 9.6m. This application is currently pending consideration.

A brief for site investigation dated 19th April 2012 was prepared by Phil Copleston the Historic Environment Planning Advice Officer (East), Cornwall Council. The Planning officer is Gavin Smith. Requests for a Written Scheme of Investigation (WSI) and cost schedule for the work were received by Historic Environment Projects from Bowler Energy on 23rd April 2012. HE Projects Cornwall Council was commissioned to undertake an archaeological assessment on 1st May 2012. Geophysical survey of the area proposed for the turbines and the route proposed for their cabling was commissioned from GSB Prospecting. The walkover survey and viewshed check were undertaken on the 29th May 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 two wind turbines on land in the parish of St. Tudy, Cornwall, part of Polshea Farm to the north east.

The overall project aims are to:

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

The site specific project aims are to:

- Undertake an geophysical (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 or other mitigation is recommended.

The brief indicates that the impact of the development on the designated historic assets at Lamellen House and associated structures and the Registered Park and Garden may be subject to a separate visual impact assessment.

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)
 - Norden's Map of Cornwall (1728)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (*circa* 1810)
 - St. Tudy 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 wind turbines.

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 wind turbines 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 two 'observer points' based on the locations of the proposed wind turbines.

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 proposed wind turbines at Polshea 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 36m to represent the height of the turbine masts. 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 to 21).

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 the wind turbines, 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 heritage assets indicated by the ZTV mapping as being likely to be within the viewshed. A walkover survey of the site proposed for the wind turbines and for their cabling 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 two one hectare areas of the field proposed for the proposed wind turbines (centred on their proposed locations) and a 20m wide strip following the route proposed for their cabling was commissioned from GSB Prospecting by the developer. The fieldwork was undertaken on 22nd May 2012 using a Bartington Grad 601-2 magnetometer with a traverse interval of 1m and a sample interval of 0.25m.

The Bartington instrument operates in a gradiometer configuration which comprises two fluxgate sensors mounted vertically a set distance apart; on the Bartington, this is 1m. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried by hand, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method. Having two gradiometer units mounted laterally with a separation of 1000mm, the Bartington instrument can collect two lines of data per traverse.

Generally conditions for survey were good; the fields were under short pasture though Area 2b had longer grass and the ground had been badly rutted by cattle. A number of electric wire fences crossed the survey areas, but had a minimal effect on the data. The survey was carried out in hot, dry weather.

All survey grid positioning was carried out using Trimble R8 Real Time Kinematic (RTK) VRS Now dGPS equipment and the survey areas were georeferenced to the Ordnance Survey National Grid by tying the survey into local detail and corrected to the OS MasterMap. Data processing was performed as appropriate using both in-house and commercial software packages (Geoplot), including the following: Zero Mean Traverse, Step Correction (De-stagger) and Interpolation (on the Y axis).

The data was presented as a greyscale image overlaid onto map data georeferenced to the Ordnance Survey grid. A 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 GSB report (see Fig 23 in this report). Significant aspects of the results were discussed in the report, and were accompanied by a 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 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 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 sites proposed for the wind turbines are at SX 06179 77243 and SX 06129 77308 on land 520m to the south west of Polshea Farm, between 137m and 142m OD on a north-west facing slope near a hillcrest to the east of the valley of the River Allen (Fig 2).

The development area is characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Anciently Enclosed Land, Farmland Medieval (land enclosed during the Medieval period), part of a formerly very extensive block of land enclosed at this time around the parish centre of St. Tudy, and extending to the edge of the Allen Valley (Fig 11).

The field selected for the construction of the wind turbines is one of a block of contiguous enclosures arranged around Polshea Farm, in 1840 this being part of neighbouring Penvose Farm.

The parent bedrock underlying the application site is recorded as Devonian siltstones and slates of the Trevoise Formation and Rosenum Formation (BGS data). The soils in the field proposed for the development are recorded as Denbigh 2 loams over shale.

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 erection of the wind turbines, 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 turbine 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) and on wind energy and the historic environment (2005), namely:

- Non-designated heritage assets – 1Km radius (Fig 21).
- Scheduled Monuments, Listed Buildings – 3Km radius (Figs 16 to 18).
- Conservation Areas – 3Km radius (Fig 20).
- Registered Parks and Gardens – 5Km radius (Fig 19).
- Historic Battlefields – 5Km radius.

5 Designations

5.1 National

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

The 3Km radius viewshed zone includes a Scheduled Medieval holy well (DCO953) and Medieval cross (DCO817) in Michealstow churchyard and a Scheduled holy well (DCO1687) near St. James' Chapel near St. Breward. The Scheduled Iron Age hillfort of Helsbury Castle (DCO1620) is immediately outside the 3Km radius zone. This zone contains a large number of Listed Buildings at grades from I through II* to II (see table in Section 12.2.2 for those which are potentially intervisible with the proposed wind turbines) at Treburgett, Carkeen, Trewarne, Pengenna, Trehannick, Treveghan, Tredarrup, Tregawn and Polshea to the north, Trelill, Lamellen (II*), Bokelly, Great Brighter Farm, Tretawn and Kellygreen to the west, Michaelstow, Michaelstow House and Hengar to the east and Tremeer, St. Tudy, Wetherham, Tinten Manor, Tamsquite and Polglaze to the south. Not all of these structures will be intervisible with the wind turbines.

The Grade II Registered Park and Garden at Lamellen is 500m to the west of the site (Fig 15).

5.2 Regional/county

The field proposed for the development lies within an area designated as an Area of Great Landscape Value (AGLV). The Conservation Area at St. Tudy is 1Km to the south of the application site (Fig 20), whilst the Conservation Areas at St. Teath and St. Kew lie just outside the 3Km radius zone.

5.3 Local

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

5.4 Rights of Way

No rights of way traverse the sites proposed for the wind turbines, nor the remainder of the field through which the cabling will be undergrounded. This area is not registered as open access land under the CROW Act 2005.

6 Results of desk-based assessment

The majority of this north-east to south-west aligned block of landscape to the west of Bodmin Moor, bounded to the west by the Allen Valley and to the east by the valley of the River Camel is long-established farmland, enclosed since at least the medieval period and surrounding the churchtown at St. Tudy.

So thorough was this medieval reorganisation of the landscape, that almost all traces of pre-existing, prehistoric landscapes have been over-written. A Bronze Age barrow site at Hengar (MCO2812) to the south east and a further possible barrow site at Trehannick (MCO3662) to the north east, together with a findspot of Bronze Age axes at Tregarrick (MCO36192) to the east provide some indications of earlier prehistoric activity, and it is likely that this relatively fertile off-moor land would have been extensively settled and farmed during the Bronze Age and into the Iron Age. Transhumance agriculture may well have been practiced by these farmers, family members taking stock up onto the nearby flanks of Bodmin Moor to make use of available summer grazing. During the Iron Age, the substantial hillforts at Castle Killibury to the south-west, Tregear Rounds to the north west and Helsbury Castle to the north-east would have been important local centres.

Evidence for late prehistoric settlement is much more readily available, with enclosed farmsteads (rounds) of the Iron Age and Romano-British periods being documented

within the 3Km radius of the site in the Cornwall and Scilly HER at Lanterrick (MCO57400) to the south west, Hengar (MCO24730) to the east, Bear Oak (MCO37362) to the east north east, Pengenna Wood (MCO8322) to the north, Tamsquite (MCO37429), Bodinnick (MCO7591), Polglaze (MCO36902) and Tinten (MC8537) to the south, and Trequite (MCO8712) to the west. Other enclosed farms dating to this period would probably have occupied apparently blank areas of the late prehistoric landscape (see Fig 12 for the distribution of known rounds within the vicinity of Polshea).

Most of the farmsteads within this area have names which incorporate elements in Cornish suggesting pre-Conquest origins, though first documented references to them are almost always later. As an example, Polshea (from the Cornish *Pol* meaning stream or pool and *Segh* meaning dry) was first recorded in 1306. Several local manors were mentioned in the Domesday Survey including Tinten, St. Tudy, Trewen, Lamellen and Polroad. The house at Lamellen, originally built in 1698 for Samuel Furness was almost entirely rebuilt in the Elizabethan style in 1849 by J.P. Magor, is Listed at Grade II* and is surrounded by a Grade II Registered Park and Garden.

With the exception of some of the more exposed hilltops, all land within this block of land between the Camel and the Allen would have been enclosed for agriculture during the earlier part of the medieval period, and most field boundaries here would have been laid out at this time. To the south of Michaelstow, narrow, elongated fields with parallel boundaries betray the former existence of a network of medieval strip fields, as also to the east of Lamellen. Elsewhere around St. Tudy, relatively recent boundary removal and reorganisation to make the farming of this landscape more economic and amenable to the use of modern machinery has removed much of the Medieval character of the agricultural landscape, though in places this is still evident in the form of the cropmarks mapped by the National Mapping Programme (NMP).

The first mapping depicting this area dates to the 17th century, when Joel Gascoyne produced his map of Cornwall (Fig 3). Gascoyne depicted the churchtown at St. Tudy (as St. Udy), but omitted Polshea Farm, showing this landscape as characterised by a scatter of relatively dispersed farmsteads.

John Norden's map dating to 1728 (Fig 4) depicted the Hundred of Trigg, showing the landscape around St. Tudy, again characterised by a scatter of farms. Polshea was not named on this source, but may be one of the farms depicted. Martyn's Map of 1746 (Fig 5) includes Polshea Farm, using a circle symbol, rather than that of a small building.

The 1st Edition of the Ordnance Survey 1" to a mile mapping (Fig 6), dating to the first decade of the 19th century, again shows this landscape with its network of roads and lanes linking churchtowns and farms. The mapping seems to suggest that all of the landscape surrounding the application site was already enclosed farmland by the beginning of the 19th century.

The *circa* 1840 St. Tudy Tithe Map (Fig 7) shows an agricultural landscape very much like that existing today. The field chosen for the wind turbines was, at the time, part of neighbouring Penvose Farm. Named as *Great Field*, it was recorded as 13 Acres, 1 Pole and 5 Perches in extent and was in arable use, as was most of the rest of this farm. The land at Penvose of which this field formed a part was owned by Samuel Trehawke Kekewich Esquire, and was being farmed by Elizabeth Billing.

By the late 19th century and into the first decade of the 20th century (Figs 8 and 9) it can be seen from the 1st and 2nd Editions of the Ordnance Survey 25" to a mile mapping that this was a landscape of large fields and fairly dispersed farms, much as it is today. Some boundary removal and rationalisation evidently took place during the 20th century, as can be seen by comparing this mapping to the modern OS MasterMap (Fig 2) and the 2005 Cornwall Council aerial photograph (Fig 10). Polshea Farm now includes a number of substantial modern animal sheds set amongst large fields given over to grass crops. Polshea is farmed by Mr. Mark Button.

7 Results of site walkover

A site walkover was undertaken on 29th May 2012. The weather was fine and warm, with very little cloud, allowing clear views of the surrounding landscape. The field proposed for the wind turbines was in a recently cut grass crop, subdivided by electric fences. The lane which will form the route for the cable trench is 6.0m wide and appears to have been hard-surfaced in quartz-rich spoil material.

The fields have the appearance of medieval baron-type enclosures, and contained no visible archaeological features. They are all bounded by Cornish hedges around 2.0m high with relatively close-clipped vegetation growth, including small trees in places.

The surrounding landscape is notably open in character, though dissected by steep-sided wooded valleys carved out by tributary streams of the Rivers Allen and Camel, and views are readily available across considerable swaths of the surrounding countryside, those to the west and north west extending out to the coast, to the north north east to Delabole, to the north east to the ridge which is topped by Helsbury Castle, to the east to Brown Wily and Roughton on Bodmin Moor, to the south west by the Hensbarrow Moors.

8 Summary results of geophysical survey

See Fig 23 for feature references.

A one hectare area surrounding each of the proposed turbine sites and the corridor for the cabling were surveyed by GSB Prospecting on 22nd May 2012, preliminary results being supplied to HE Projects at the end of May 2012. The following paragraphs have been extracted from the GSB report.

The data reveals a few curvilinear and linear trends which could be of archaeological interest; however, they are not particularly well-defined and in the lack of a wider (definite) archaeological context they could easily be spurious results. Other anomalies have been classified as Uncertain Origin; ploughing and other agricultural effects are visible in the data as are service pipes / electric fences.

Area 1 covered the two turbine locations and the first section of cable route; Area 2 (crossing two fields and divided into two: 'a' and 'b') covered the main cable run; and Area 3 investigated the only bit of surveyable ground in and around the farm buildings.

Area 1

*The results from this area indicate a number of linear anomalies and trends. Apart from ploughing responses, which run parallel to the modern boundaries, the linears are thought to represent old field boundaries (interpreted as such) or field systems (interpreted as ?Archaeology) even though none are shown on Ordnance Survey (OS) historic mapping (OS 2012). The ?Old Field Boundary anomaly has the potential to line up with a current boundary to the south west as seen on the modern digital mapping. There are a few groups of curvilinear trends [**1 & 2**] which might represent archaeological features – partial ring ditches? - but the results are not totally convincing. They may simply be a processing effect and / or a combination of natural or agricultural effects. Similarly the responses [**3, 4 & 5**] are difficult to interpret; while they have archaeological potential, they are equally likely to be a result of localised pedological or geological variations. Two electric fences cross the field.*

Area 2 (a & b)

*In Area 2a, apart from a scatter of Uncertain responses, there is an unusual anomaly [**6**] which appears to have a strong ferrous component; though it might be highly fired; alternatively it could be an igneous outcrop. While an archaeological origin cannot be totally ignored, the response is unusual and it might warrant discussion with the landowner re: any known buried material or bonfires.*

In Area 2b, there appears to be a pattern of rectilinear fields systems [7] which have been marked as having archaeological potential, although the narrow survey area makes this interpretation cautious. Elsewhere responses have been interpreted as being Uncertain; those at [8] may be related to an earlier course of the track which runs down the eastern side of the survey area. There were two electric fences in this area.

Area 3

At least one pipe crosses this area but the results are generally disturbed and nothing of archaeological potential has been identified.

Conclusions

The survey has recorded a number of ditches / linear features which equate to old field boundaries / field systems of unknown date. While there are hints of some curvilinear features, none are particularly well-defined and their interpretation remains at best speculative.

9 Results of viewshed analysis

See Figs 16 to 21.

Given the elevated location of the site and the height of the turbine masts, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be very far-reaching. In line with the requirements of the brief, the ZTV has been mapped to a distance of 3Km from the site, though will inevitably extend a considerable distance beyond this. However, the visibility of the turbines will diminish with distance, and may be locally blocked by intervening buildings within settlements.

The ZTV mapping shows that the wind turbines will be almost ubiquitously visible within a 1.5km radius of the site. Within the zone from 1.5Km radius to 3Km radius out from the site, the wind turbines will be visible from about 60% of the local landscape due to topographical factors, localised blocking being caused by the north east to south west grain of the landscape. To the north west of the site, the wind turbines will be visible along the north western side of the Allen Valley within the 3Km radius in a relatively narrow band extending from St. Kew Highway to the outskirts of St. Teath, and locally out to Trewethen. Immediately surrounding the site, the viewshed mapping shows that the wind turbines will be fully visible at Polshea, in some areas within Lamellen Park and to the south to St. Tudy. The ZTV will extend to the north east towards Michaelstow (Fig 28) and Helsbury Castle (Figs 22 and 30), whilst to the south west visibility will be more patchy towards Cross Hill. Visibility will also become more intermittent to the south east, where it will be more or less confined to hilltops and elevated areas of west-facing slopes.

Given the topography of the site proposed for the wind turbines, the viewshed will extend beyond the 3Km zone in all directions, notably to the east towards the western slopes of Bodmin Moor (Fig 36), which overlook this landscape, but also to the north, south and west. However, attenuation of the visibility of the turbines 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 viewshed mapping suggests intervisibility between the Scheduled Monuments at Michaelstow Church (though this was likely to be subject to localised blocking) as also with Helsbury Castle and Tregeare Rounds, these lying immediately outside the 3Km radius area (Fig 16).

In terms of the St. Tudy Conservation Area, some level of intervisibility with the wind turbines is suggested by the viewshed analysis, particularly on the western side of the settlement and at its northern end (Fig 20). Visibility is likely to be significantly less within the core of the settlement (due to total or partial blocking of sight lines by buildings) and to its south and east (Figs 26 and 34).

Given the nature of the local topography, the ZTV mapping suggested that a substantial number of the Listed Buildings within the 3Km radius zone would be intervisible with all or parts of the wind turbines (Figs 17 and 18). Again, increasing distance will attenuate impacts and raise the likelihood of localised blocking of sightlines, whilst conversely, those lying closest to the site are likely to experience the wind turbines as significant landscape features. The viewshed mapping suggests that this is likely to occur for some of the buildings and structures at Lamellen (though the viewshed mapping suggests that views of the turbines will be available from only particular locations, and these are likely to be reduced in number by tree screening), at St. Tudy (again, there will be significant localised blocking by other buildings) and at Bodinnick.

Despite the proximity of the proposed wind turbine sites to the Registered Park and Garden at Lamellen, the viewshed mapping suggested that intervisibility between areas of the park and garden and the wind turbines will be patchy and perhaps significant only at its upper, eastern end (Fig 19). Even here, tree cover is likely to significantly screen the turbine masts from areas away from the periphery of the Park.

Field verification of ZTV

The viewshed mapping and potential impacts were ground checked from a number of locations, including St. Kew Highway, the Allen Valley, Treburgett, St. Teath, Helsbury Castle (report cover image), Michaelstow (Fig 33), Tregooden (Fig 24) and St. Tudy (Fig 34), as well as from areas closer to the proposed wind turbines site. At each accessible designated heritage site the potential visibility (and proportional visibility) of the proposed wind turbines was considered. Views out from the site towards key heritage assets were checked from the water tank adjacent to the road running along the south eastern side of the site. Though true levels of intervisibility were impossible to determine from ground level given the proposed height for the turbine masts, the general degree of openness of the views out from the site could be assessed. Church towers could be seen at St. Mabyn 4.25Km to the south west (Fig 27), St. Teath 3.25Km to the north, St. Breward 3.5Km to the east (Fig 29) and St. Tudy 1Km to the south (Fig 26). Photographs were taken from key sites within the surrounding landscape and from the site back to these sites. A 360 degree photographic panorama was taken from the site.

In the absence of the turbine masts, the site proposed for them was not particularly evident within the landscape, despite its location on high ground. 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 Lamellen parkscape was thought likely to very considerably reduce intervisibility between this site and its house and the proposed turbines. The visibility cut-off imposed by the local topography which was suggested by the viewshed mapping was confirmed.

Whilst views from the site include wind turbines at Delabole (Fig 32) and St. Breock Downs, these are at a considerable distance from Polshea and are not intrusive within views. Power lines on tall pylons are visible 1Km to the east of the site and along the ridgeline 2Km to its west. A mobile phone mast immediately to the west of the site proposed for the wind turbines is concealed by tree planting, and the pair of wind turbines at Polshea would be the first significantly tall vertical features within the local landscape.

10 Synthesis

Whilst the walkover survey did not indicate the presence of any upstanding archaeology which might be impacted upon by the proposed wind turbines and cabling at Polshea Farm, 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 will probably need to be established by evaluation trenching.

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of wind turbines on land to the south west of Polshoa Farm will vary with their distance from the turbine site, their state of preservation, their nature, and 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 limit views of the wind turbines from archaeological sites in the local landscape to the upper sections of the turbine masts or to the upper parts of their blades. With the exception of Helsbury Castle (Fig 30), almost none of the designated sites will have clear and uninterrupted intervisibility with the wind turbines.

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 North Cornwall Local Plan

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

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

POLICY ENV12:

4. *Development proposals for the erection of a new building or other structure, or the use of land, will not be permitted where this would adversely affect the character or appearance of a listed building or its setting.*

POLICY ENV14:

1. *Development proposals affecting nationally important remains, whether scheduled or not, and their settings, will not be permitted unless:*

(a) there will be no significant damage to, or adverse effect on, a site or its setting; and

(b) the development can be controlled through the use of conditions or planning obligations to ensure the remains are preserved in-situ.

2. *Development proposals which adversely affect locally important archaeological sites or remains identified as a result of a prior archaeological investigation will only be permitted where:*

(a) physical preservation in-situ is not feasible in conjunction with the proposed development and the importance of the development clearly outweighs the case for preservation of the remains; and

(b) satisfactory arrangements are made for the investigation and recording of the remains before or during development.

3. *In areas of great historic value, historic settlements and all other locations where there is evidence to suggest that significant remains may exist on the site of a proposed development the extent and importance of which are unknown, applicants will be requested to carry out an archaeological evaluation of the proposal before the planning application is determined. The areas of great historic value and historic settlements are defined on the proposals map.*

POLICY ENV15:

Development proposals will not be permitted where they would adversely affect the character, appearance or setting of areas of great historic value, historic parks and gardens and historic battlefields.

North Cornwall District Council Policy ENV15 3. states: In areas of Great Historic Value, Historic Settlements and all other locations where there is evidence to suggest that significant remains may exist on the site of a proposed development the extent and importance of which are unknown, applicants will be requested to carry out an archaeological evaluation of the proposal before the planning application is determined. The Areas of Great Historic Value and Historic Settlements are defined on the Proposals Map.

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 wind turbine developments have been identified as follows.

12.1.1 Types of impact, construction phase

Construction of the wind turbines could have direct, physical impacts on the buried archaeology of the site through the construction of the turbine 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

These wind turbines 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 height of their masts (36 metres) and the open nature of the local landscape. Such factors also make it 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 wind turbines 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 wind turbines on the archaeological resource are assessed as having a potential scored as **negative/moderate** to **negative/minor**, principally dependant on proximity to the proposed turbine sites and intervisibility with them.

Impacts on the settings of the designated heritage sites within 3Km of the proposed turbine sites have been assessed as **negative/minor**. 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 wind turbines, 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**.

There are no sites recorded in the immediate vicinity of the locations proposed for the wind turbines or the cable runs, though the geophysics results suggest the potential for the existence of prehistoric ring-ditched features and for elements of a prehistoric field system within the areas immediately around the turbine locations and along the route chosen for the cable trench.

12.2.2 Impacts on the settings of surrounding key heritage assets

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

- There are four Scheduled Monuments within or close to the 3Km radius of the site of the proposed wind turbines. Helsbury Castle was intended, when constructed, to be a highly visible focal point within the local landscape. There will be clear intervisibility between this site and the proposed wind turbines, but given the distance between the proposed turbines and the hillfort, there will be no significant impacts on its setting. The clearest views of the hillfort are from the south west, and the turbines will not intrude significantly into these.
- Additionally, as a result of the extensive process of enclosure within the surrounding countryside in the medieval period, the character and appearance of the landscape within which this prehistoric monument now sits has changed from that within which it was originally designed to be seen and understood.

- Whilst additional wind turbines can be seen at some distance at several points in the wider landscape surrounding this site, the Polshea Farm wind turbines would be the first in this immediate area.
- During the operational phase the wind turbine is unlikely to impact to any significant degree on the setting of the Listed Buildings within its viewshed, given the relatively large distances between the wind turbine and these designated structures (see Figs 17 and 18) and the constraints on intervisibility.
- The St. Tudy Conservation Areas lies within the 3Km radius viewshed of the proposed wind turbines. However, given the local topography and the presence of many trees in its surrounding, there are unlikely to be any negative impacts on its setting (Fig 26).
- The Lamellen Grade II Registered Park and Garden lies within the 3Km radius viewshed of the proposed wind turbine. Intervisibility between it and the turbines will be very limited, but the construction of the wind turbines will negatively affect its immediate setting, given their proximity.
- There are no Registered Battlefields within the 3Km radius viewshed of the proposed wind turbine.
- During its operational phase the proposed wind turbine is felt unlikely to have and significant impacts on the settings of undesignated heritage assets within the 1Km viewshed.
- Any impacts on heritage assets within the landscape surrounding the proposed wind turbine would be **temporary** and **reversible** should the wind turbines be dismantled in the future.

Designated heritage assets within the 3Km radius viewshed

Scheduled Monuments (SM) – see Fig 16.

Identifier	Site	NGR	Impact
DCO1620	Helsbury Castle	SX 08434 79636	Negative/minor
DCO507	Trevenning Cross and guide post	SX 07634 77521	Neutral
DCO953	Holy well in Michaelstow churchyard	SX 08073 78843	Neutral
DCO817	Medieval churchyard cross in Michaelstow churchyard	SX 08068 78848	Neutral

Registered Parks and Gardens - see Fig 19

Identifier	Site	NGR	Impact
DCO9	Lamellen (II)	SX 05320 77317	Negative/minor

Conservation Areas – see Fig 20

Identifier	Site	NGR	Impact
DCO134	St. Tudy	SX 06631 76355	Negative/minor

Listed Buildings (LBs) with grades (see Fig 18)

Identifier	Site	NGR	Impact
DCO8677	Great Brighter farmhouse (II)	SX 04299 76089	Neutral
DCO10933	Lamellen (II*)	SX 05553 77327	Neutral
DCO10305	Headstone of Mary Snawdon 10m to the NE of the Church of St. Michael (II)	SX 08094 78895	Neutral
DCO8815	Outbuilding 3m to the SW of	SX 08230 78444	Neutral

Identifier	Site	NGR	Impact
	Leathern Bottle (II)		
DCO10525	Gate piers 200m to the E of Michaelstow House (II)	SX 07487 78408	Neutral
DCO9738	Old Hall (II)	SX 05483 79441	Neutral
DCO8863	Chapel Row (II)	SX 06763 76438	Neutral
DCO9543	Aarons (II)	SX 05505 79439	Neutral
DCO9331	Churchyard Cross 2.5m to the SW of the W tower of the Church of St. Michael (II)	SX 08064 78854	Neutral
DCO8096	Post 10m to the SW of the Church of St. Michael (II)	SX 08059 78861	Neutral
DCO8097	Lychgate to the W of the Church of St. Michael (II)	SX 08057 78855	Neutral
DCO9069	Tomb chest of J. Bligh 6m to the SW corner of the S aisle of the Church of St.Uda (II)	SX 06609 76294	Neutral
DCO10512	The Smithy (II)	SX 06656 76343	Neutral
DCO9763	Oak Cottage (II)	SX 06724 76448	Neutral
DCO9934	Trenewth House (II)	SX 07980 78322	Neutral
DCO10306	Gate piers, flanking walls and terminal piers 200m to the NE of Michaelstow House (II)	SX 07468 78565	Neutral
DCO10322	Shippon, threshing floor, horse engine house, shippns, stable and cartshed to the W and NW of Tredarrup (II)	SX 07743 79230	Neutral
DCO10716	Tredarrup (II)	SX 07768 79225	Neutral
DCO8236	Cavalier Cottage (II)	SX 06698 76298	Neutral
DCO10709	Methodist Chapel (II)	SX 07577 79538	Neutral
DCO9512	School house and school (II)	SX 08007 78838	Neutral
DCO8817	Group of tomb chests of C. Allee, J. Lower and W. Rendle 11m to the NE of the Church of St. Michael (II)	SX 08085 78895	Neutral
DCO8816	Two headstones of Ann Pope and Ann Symons 6.5m to the E of the chancel of the Church of St. Michael (II)	SX 08101 78888	Neutral
DCO8094	Headstone of W. and J. Hocken 2.5m to the SE end of the chancel of the Church of St. Michael (II)	SX 08105 78880	Neutral
DCO8818	Trevenning Cottage (II)	SX 07941 78044	Neutral
DCO9350	Walled garden to the NE of Lamellen (II)	SX 05621 77385	Neutral
DCO9144	Church of St. Uda (I)	SX 06618 76305	Negative/minor
DCO9068	Walled garden and bee boles to the W of Fradd's Meadow (II)	SX 06779 76439	Neutral
DCO9470	The Green View and Churchtown (II)	SX 06665 76379	Neutral
DCO10950	Rectory and garden wall to the east (II)	SX 08010 78782	Neutral
DCO8862	Garden wall to the SW of Tremeer (II)	SX 06146 76649	Neutral
DCO8867	Un-named (II)	SX 06670 76338	Neutral
DCO9568	The Clink (II)	SX 06622 76340	Neutral
DCO10348	Headstone of C. Rounsfell 10m to the NE of the nave of the Church of St. Uda (II)	SX 06589 76323	Neutral
DCO10346	Headstone of John and Jenefer Runnals 7m to the N of the	SX 06597 76323	Neutral

Identifier	Site	NGR	Impact
	nave of the Church of St. Uda (II)		
DCO8006	Headstone of Reginald Billing 8m to the NE of the N transept of the Church of St. Uda (II)	SX 06626 76335	Neutral
DCO10553	Spare Hill House (II)	SX 06687 76286	Neutral
DCO10267	Methodist chapel, school room and garden walls to west (II)	SX 06836 70000	Neutral
DCO9919	Trevean (II)	SX 07922 78010	Neutral
DCO9804	Tretawn (II*)	SX 03934 75750	Neutral
DCO9729	Milestone 580m to the NNW of bridge at Wenford Bridge (II)	SX 08231 75771	Neutral
DCO9885	Bodinnick (II)	SX 06661 76908	Negative/minor
DCO9469	Headstone of J. Andrew 10m to the NW of the tower of the Church of St. Uda (II)	SX 06589 76302	Neutral
DCO9112	Tregawn (II)	SX 07301 78822	Neutral
DCO9723	Headstone of J. Gatly 13m to the N of the nave of the Church of St. Uda (II)	SX 06598 76330	Neutral
DCO9566	Guidepost 320m to the N of Bodinnick Farm (II)	SX 06649 77475	Neutral
DCO10134	Holy well to the S of the Church of St. Michael (II)	SX 08087 78848	Neutral
DCO8784	Trehannick farmhouse and service buildings to rear (II)	SX 06469 79314	Neutral
DCO10312	Guidepost 900m to the S of Bearoak (II)	SX 07368 77473	Neutral
DCO9140	Milestone 210m to the SW of Bravery (II)	206593.11493800 000	Neutral
DCO14985	B3266 Guidestone 400m NE of Tregooden (II)	SX 07296 75941	Neutral
DCO14988	Milestone SE of Trehannick Farm (II)	SX 06624 79240	Neutral
DCO8159	Two cross heads 5m to the W of Trevennen farmhouse (II)	SX 07934 78064	Neutral
DCO8149	Church of St. Michael (I)	SX 08073 78867	Neutral
DCO9933	Cottage directly to the N of Leathern Bottle (II)	SX 08240 78463	Neutral
DCO14984	B3266 Milestone east of Michaelstow junction (II)	207412.00002800 000	Neutral
DCO8381	Milestone 170m to the SW of Lanseague Cottage (II)	SX 04779 76688	Neutral
DCO8004	Group of three headstones of A. and T. Sleeman and P. Autridge 6 - 12m to the N of the N transept of the Church of St. Uda (II)	SX 06615 76338	Neutral
DCO8865	Group of three headstones of J. Sleeman, J. Sleeman and A. Jory 17m to the SW of the tower of the Church of St. Uda (II)	SX 06601 76287	Neutral

Undesignated heritage assets within the 1Km radius viewshed

See Fig 19.

Identifier	Site	NGR	Impact
MCO24735	POLROAD - Medieval deer	SX 06000 78000	Neutral

Identifier	Site	NGR	Impact
	park		
MCO37433	BODINNICK - Early Medieval field boundary, Medieval field boundary	SX 07190 77460	Negative/minor
MCO37409	ST TUDY - Early Medieval ridge and furrow, Medieval ridge and furrow	SX 06470 76870	Negative/minor
MCO37436	BODINNICK - Post Medieval quarry	SX 07220 77150	Negative/minor
MCO54462	BODINNICK - Post Medieval signpost	SX 06645 77474	Negative/minor
MCO13436	BODINNICK - Medieval settlement	SX 06736 77052	Negative/minor
MCO7591	BODINNICK - Iron Age round, Romano British round	SX 06560 76803	Negative/minor
MCO16416	POLSHEA - Medieval settlement	SX 06229 77866	Negative/minor
MCO37402	LANTERRICK ROUND - Iron Age round	SX 05538 76798	Neutral
MCO37400	LANTERRICK ROUND - Iron Age round	SX 05550 76859	Neutral
MCO17533	TREMEER ROUND - Iron Age round	SX 06131 76662	Neutral

12.2.3 Impacts on Historic Landscape Character

A wind turbine installation at Polshea Farm 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 area of the HLC Unit of Anciently 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.
- Some visual impact throughout the operational phase would occur, affecting the integrity of this area as medieval farmland, in particular through the introduction of highly visible modern features into this landscape.
- There having been few significant changes to this area since the mid 19th century, with the exception of the construction of a number of modern farm buildings, as at Polshea Farm.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the wind turbine 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 move the turbines to less archaeologically sensitive locations within the general 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 such work 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.

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 (for instance for the foundations for the turbine masts or during cable trenching), in areas where significant results had been identified through aerial photographs or 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

Martyn's 1748 Map of Cornwall

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

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 St. Tudy* (digital copy available from CRO)

14.2 Publications

English Heritage 2005, *Wind energy and the Historic Environment*

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 **PR146152**

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.M-P\Polshea wind turbine assessment 2012
3. English Heritage/ADS OASIS online reference: cornwall2-127948
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites P \Polshea Farm wind turbines assessment 2012\Polshea Farm wind turbine assessment.doc

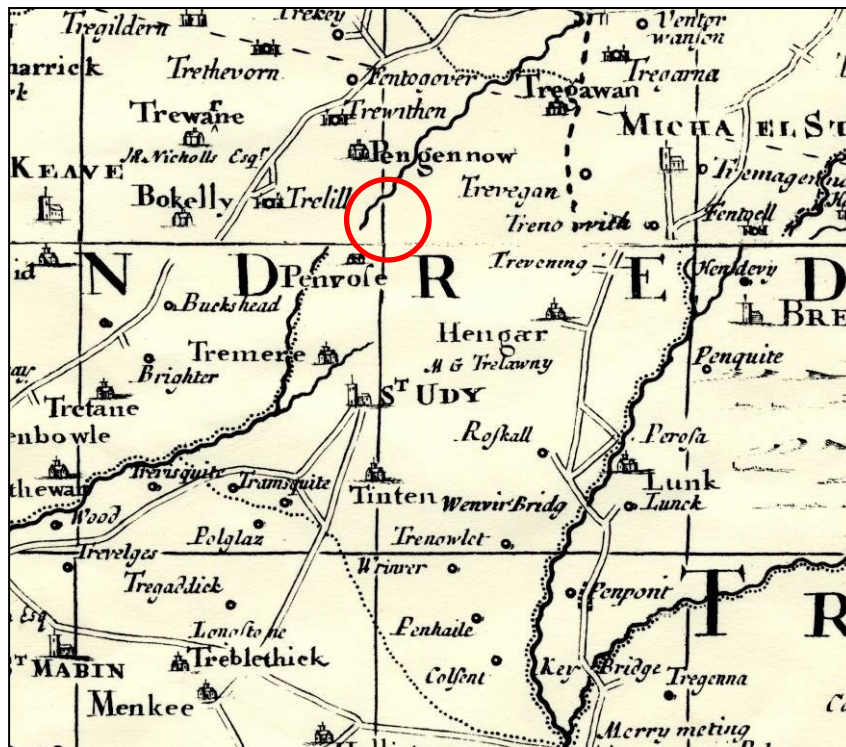


Fig 3. The project area and its surroundings, shown on Joel Gascoyne's 1699 Map of Cornwall. The project area is circled in red.



Fig 4. The proposed turbine sites and their surroundings, as shown on John Norden's 1724 Map of Cornwall. The project area is circled in red.

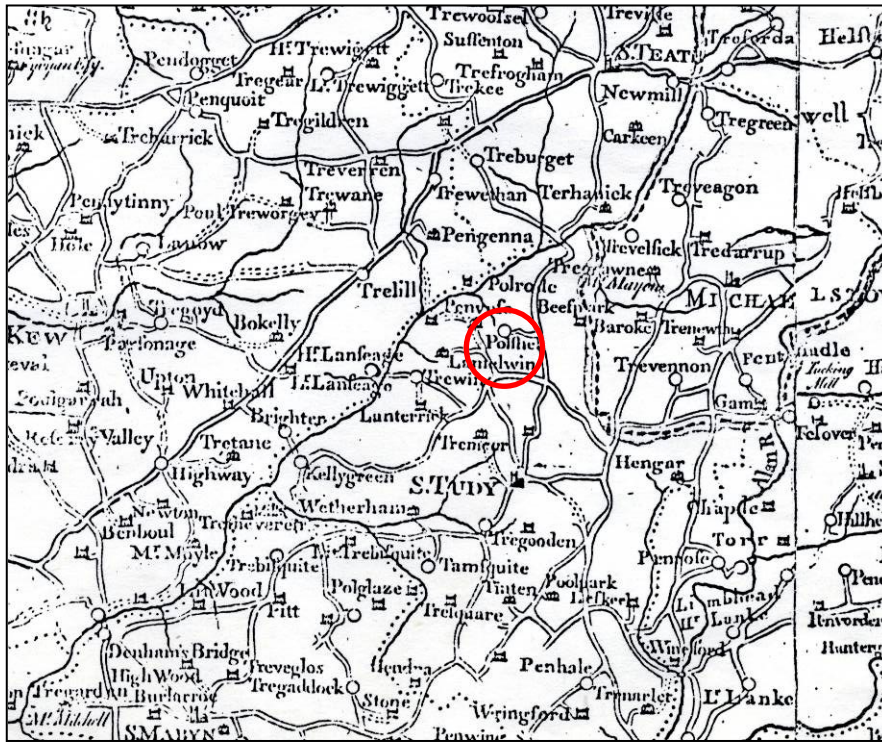


Fig 5. The proposed turbine sites and their surroundings, as shown on Martyn's 1748 Map of Cornwall. The project area is circled in red.



Fig 6. The project area and its surroundings as shown on the circa 1809 1st Edition OS mapping. The turbine locations (black dots) are slightly offset because of the differing projections used by the 19th century OS surveyors and modern mapping.

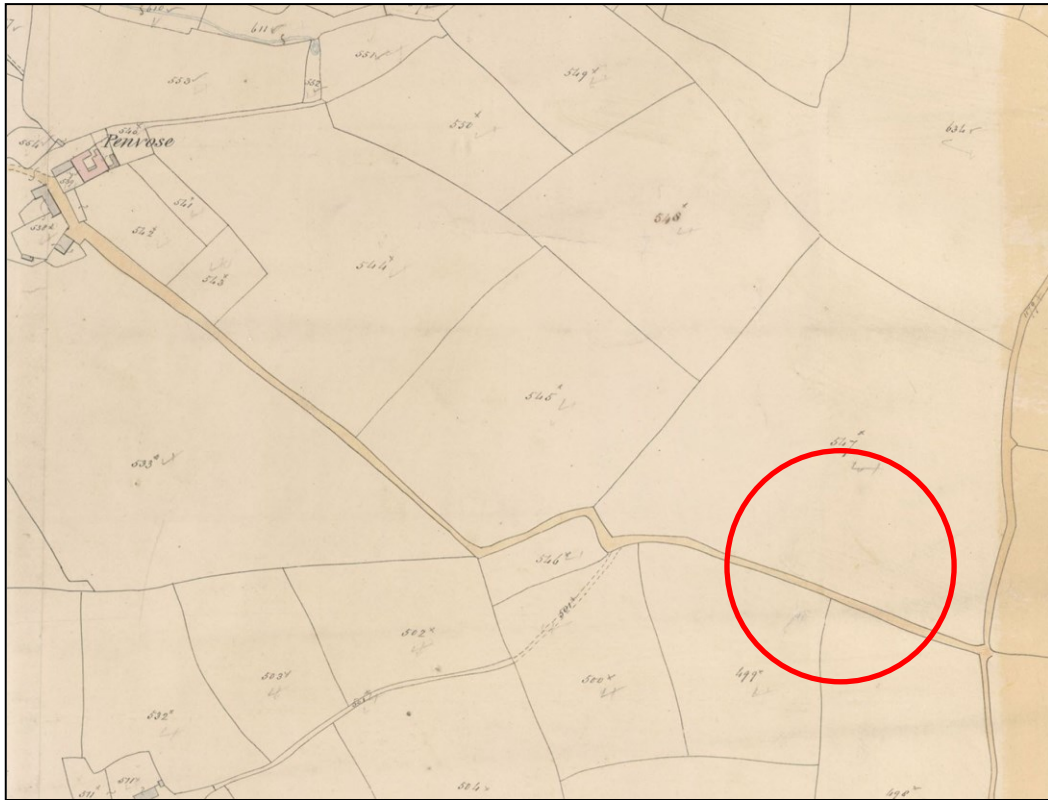


Fig 7. The project area as shown on the circa 1840 St. Tudy Tithe Map. The two turbines are proposed for field 547 (area circled).

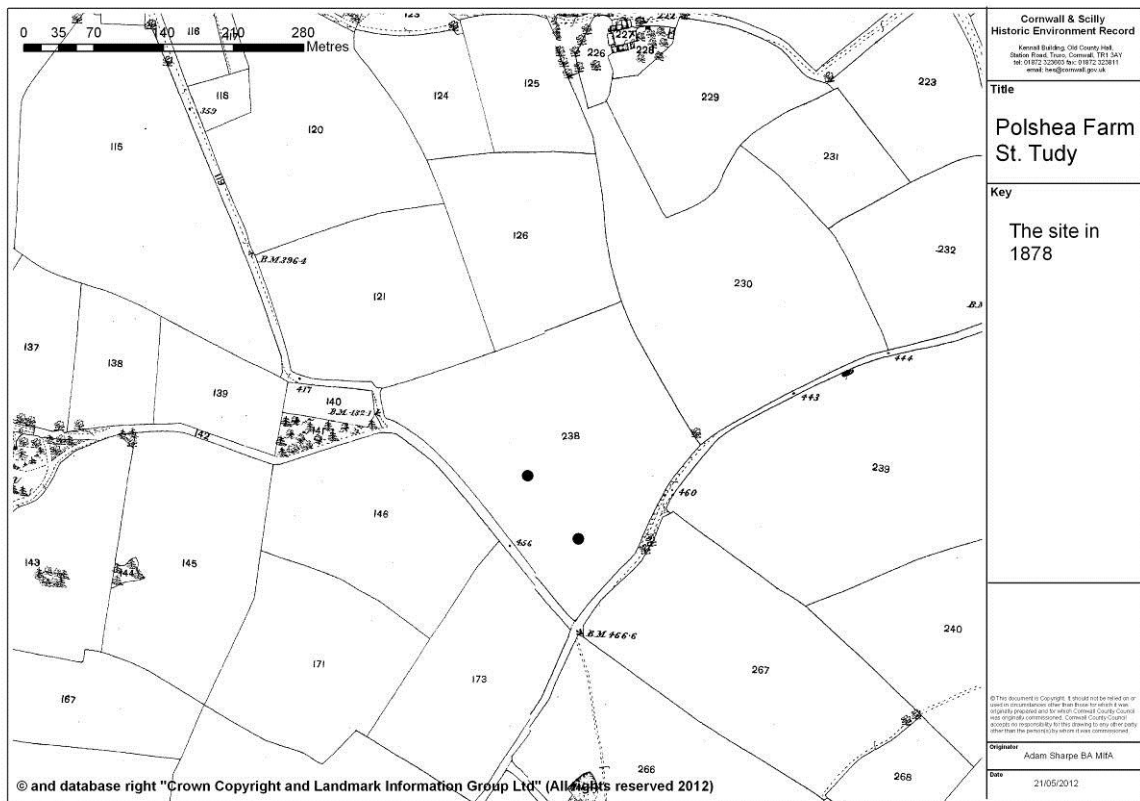


Fig 8. The project area as shown on the circa 1877 1st Edition OS 25" to the mile mapping.

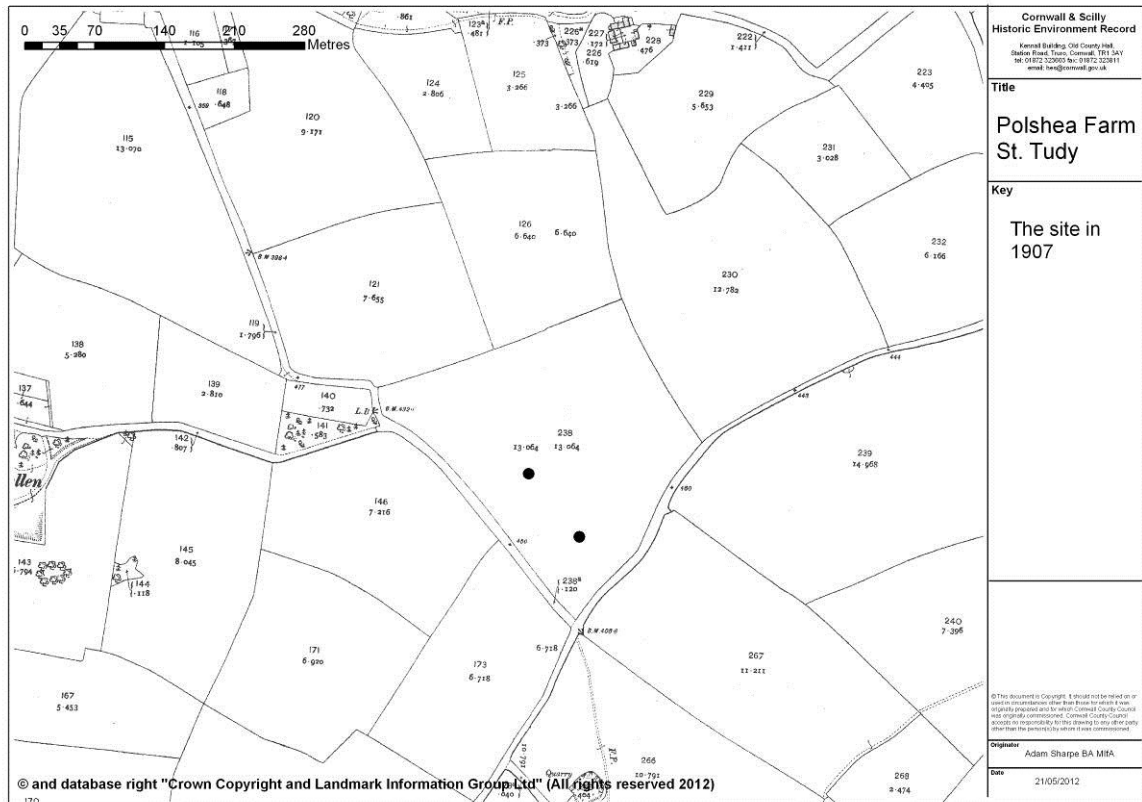


Fig 9. The project area as shown on the circa 1908 OS 25" to the mile mapping.



Fig 10. The project area as shown on a 2005 CCC aerial photograph, showing the partial re-arrangement of field boundaries which took place during the 20th century.

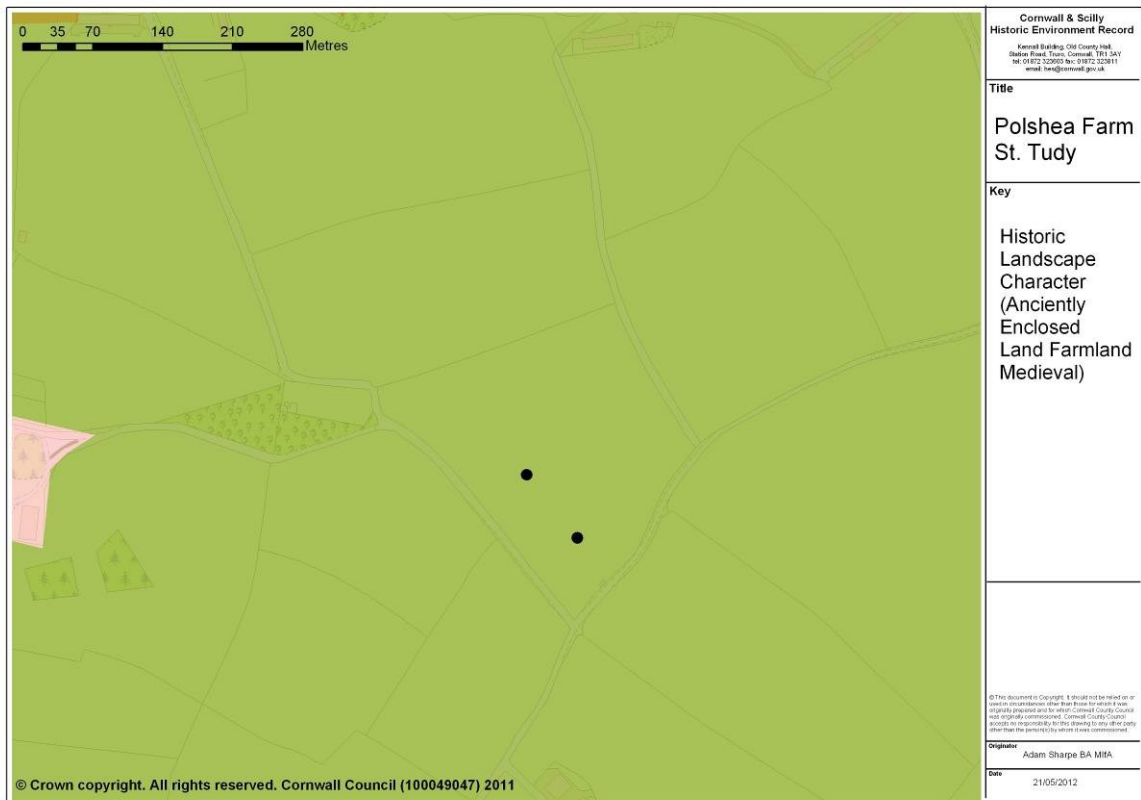


Fig 11. Historic Landscape Character mapping showing the essentially Medieval farmland origins (khaki areas) of this part of the landscape.

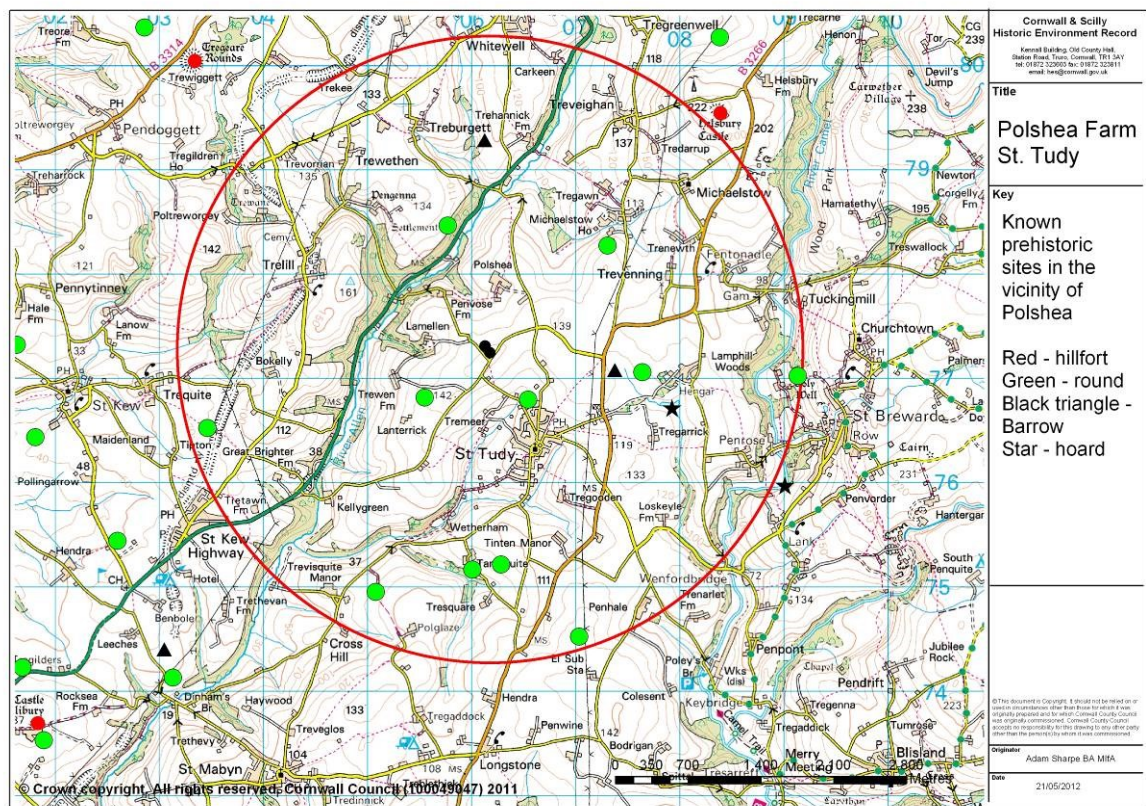


Fig 12. Prehistoric sites recorded in the 3Km radius area around the proposed turbines consist of a large number of Iron Age/Romano-British defended farmsteads, a pair of Bronze Age barrows and two Bronze Age hoard sites.

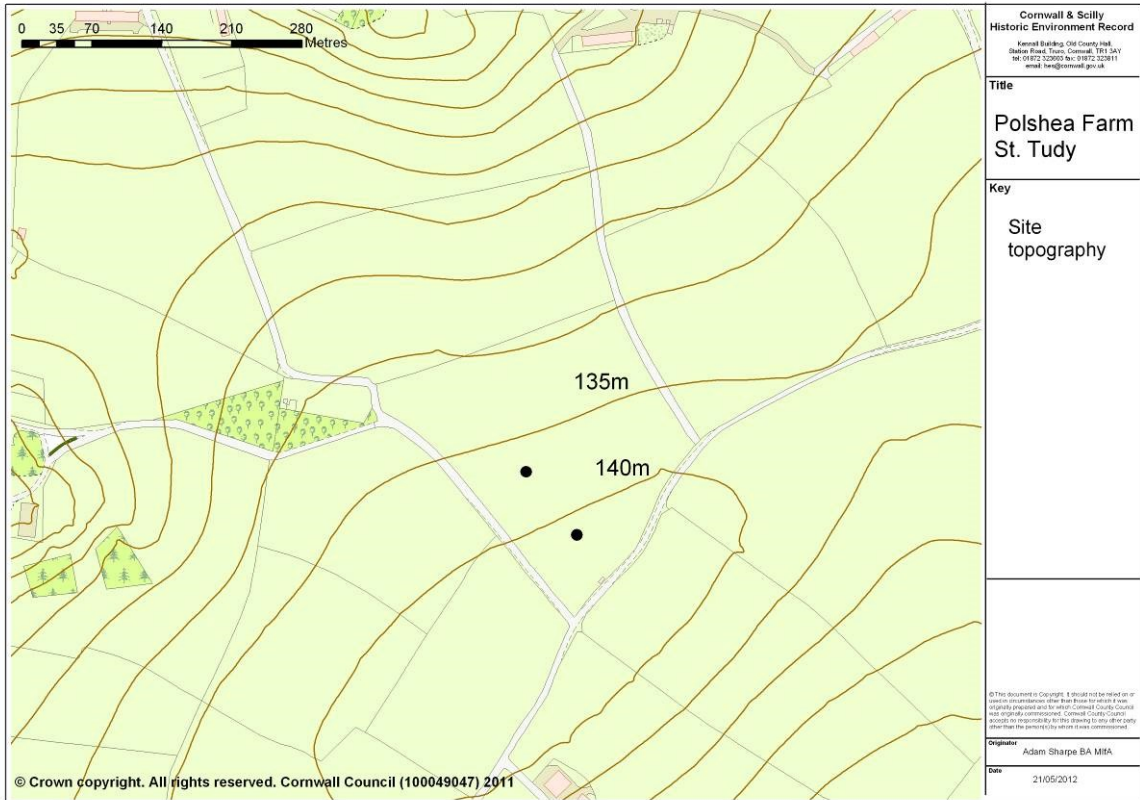


Fig 13. OS contour data for the area immediately surrounding the proposed wind turbine shows the site located near a hilltop on land falling to the north west.

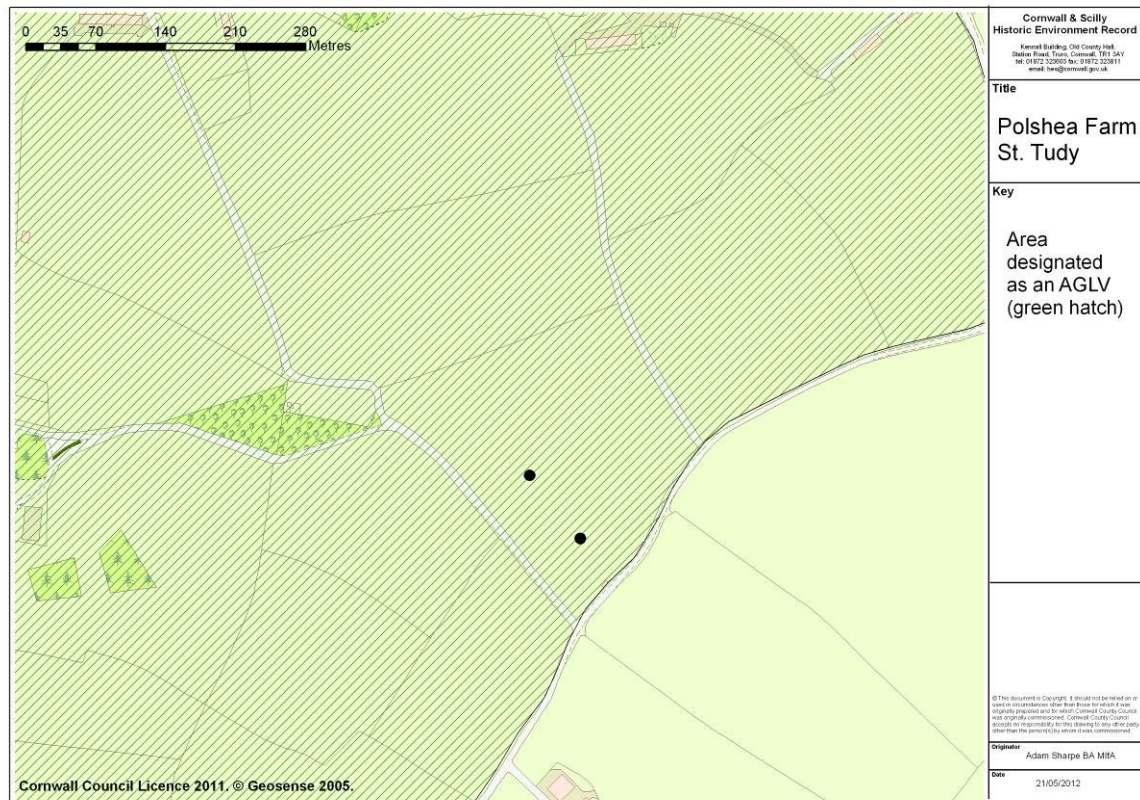


Fig 14. The eastern boundary of the Area of Great Landscape Value applying to the proposed turbine sites.

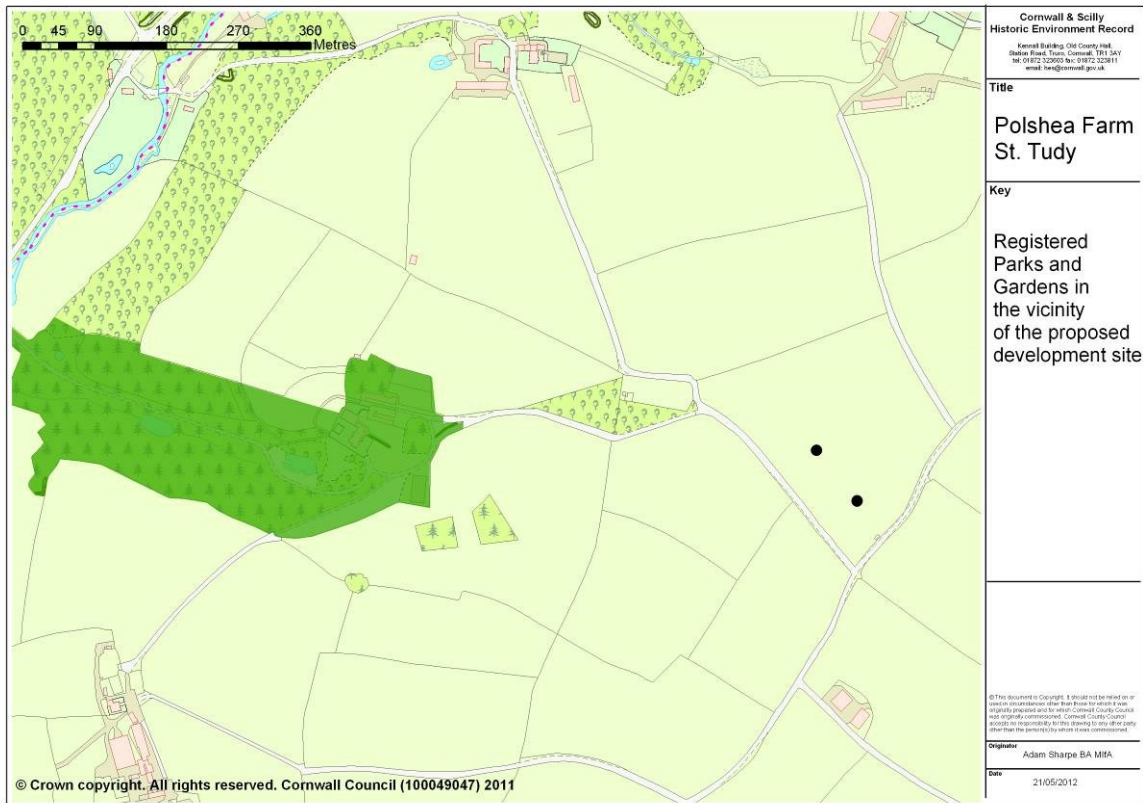


Fig 15. The extent of the Lamellen Registered Park and Garden adjacent to the site proposed for the Polshea Farm wind turbines.

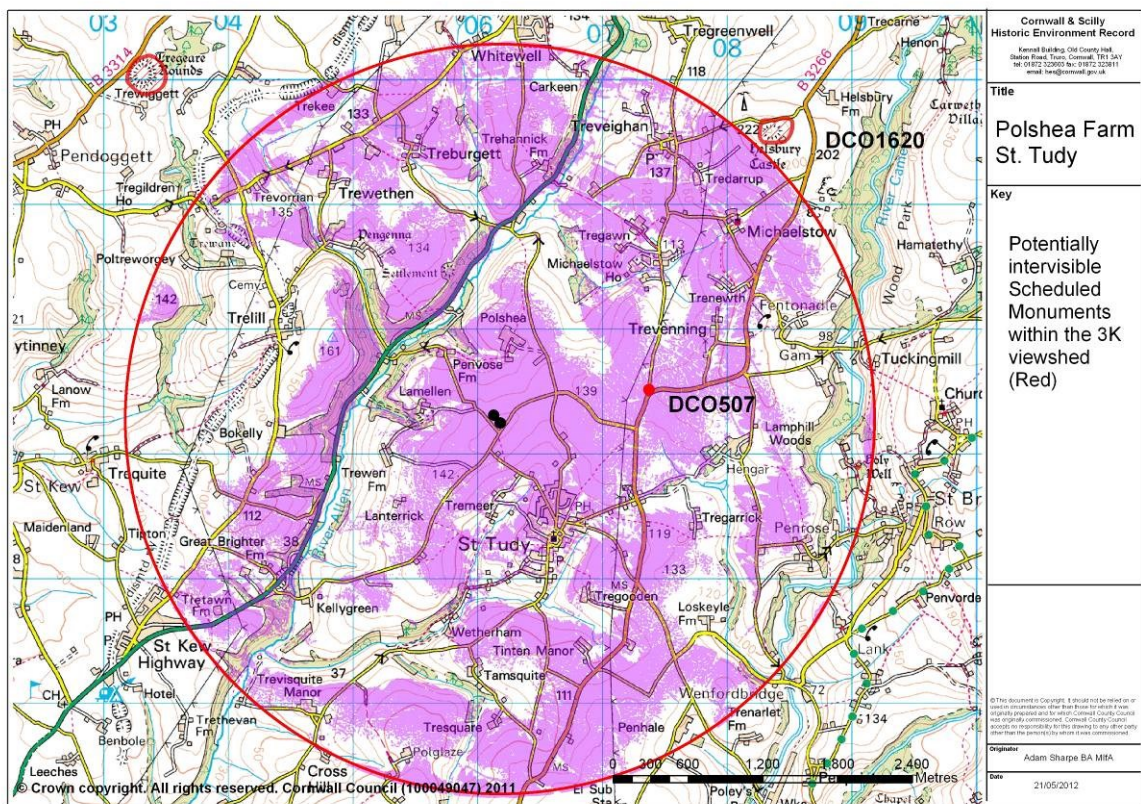


Fig 16. Mapping showing the ZTV within a 3Km radius of the site proposed for the wind turbines, showing potentially intervisible Scheduled Monuments.

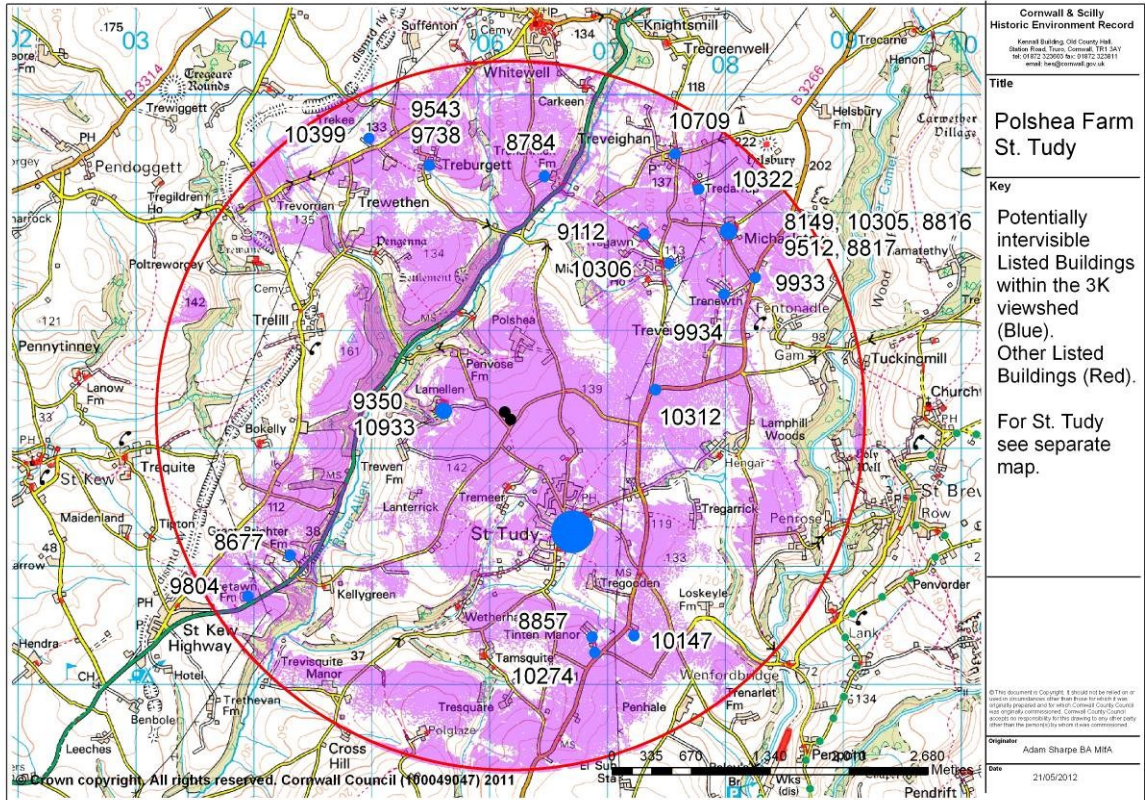


Fig 17. Mapping showing the ZTV within a 3Km radius of the site proposed for the wind turbines, showing potentially intervisible Listed Buildings.

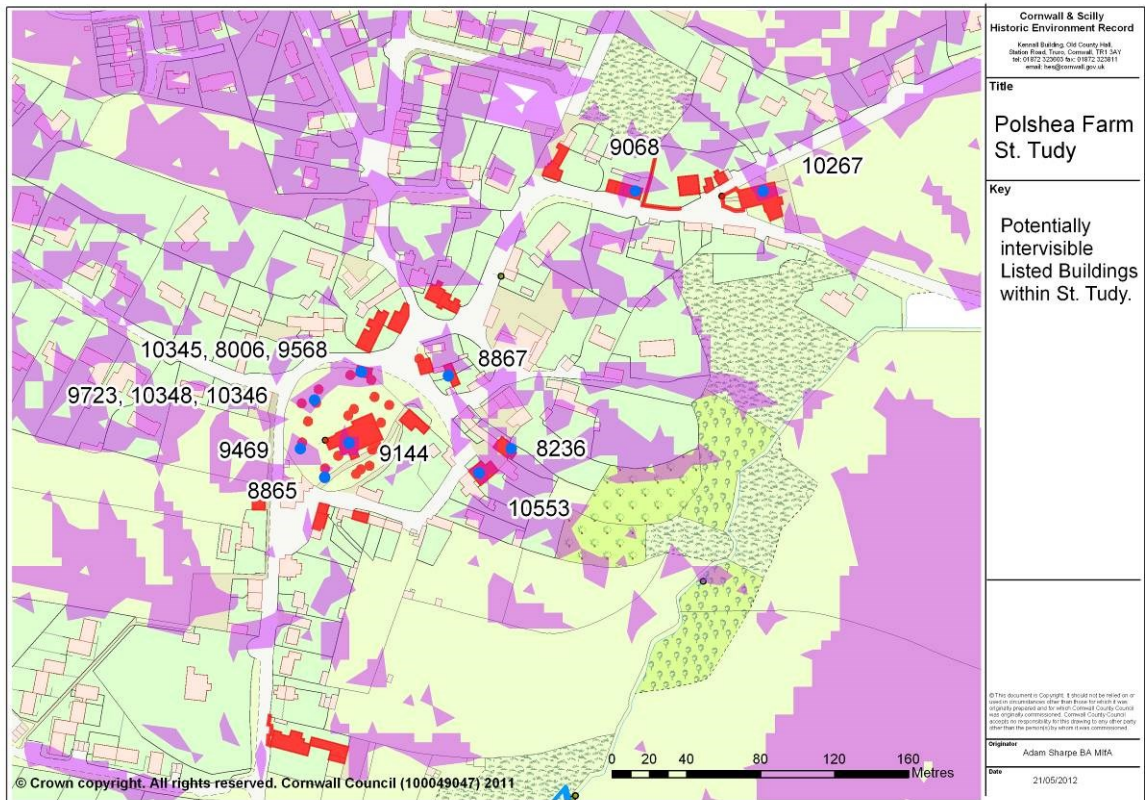


Fig 18. Mapping showing the ZTV for the wind turbines, showing potentially intervisible listed Buildings in St. Tudy.

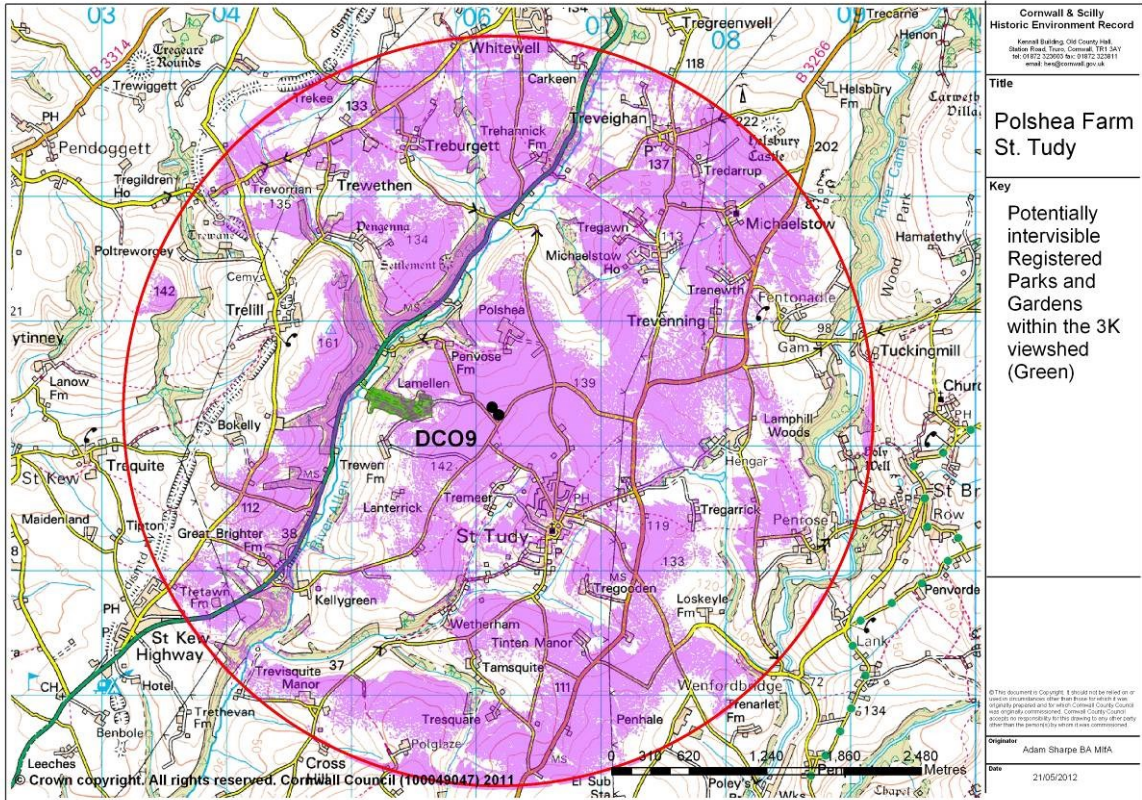


Fig 19. Mapping showing the ZTV within a 3Km radius of the site proposed for the wind turbines, showing potentially intervisible Registered Parks and Gardens.

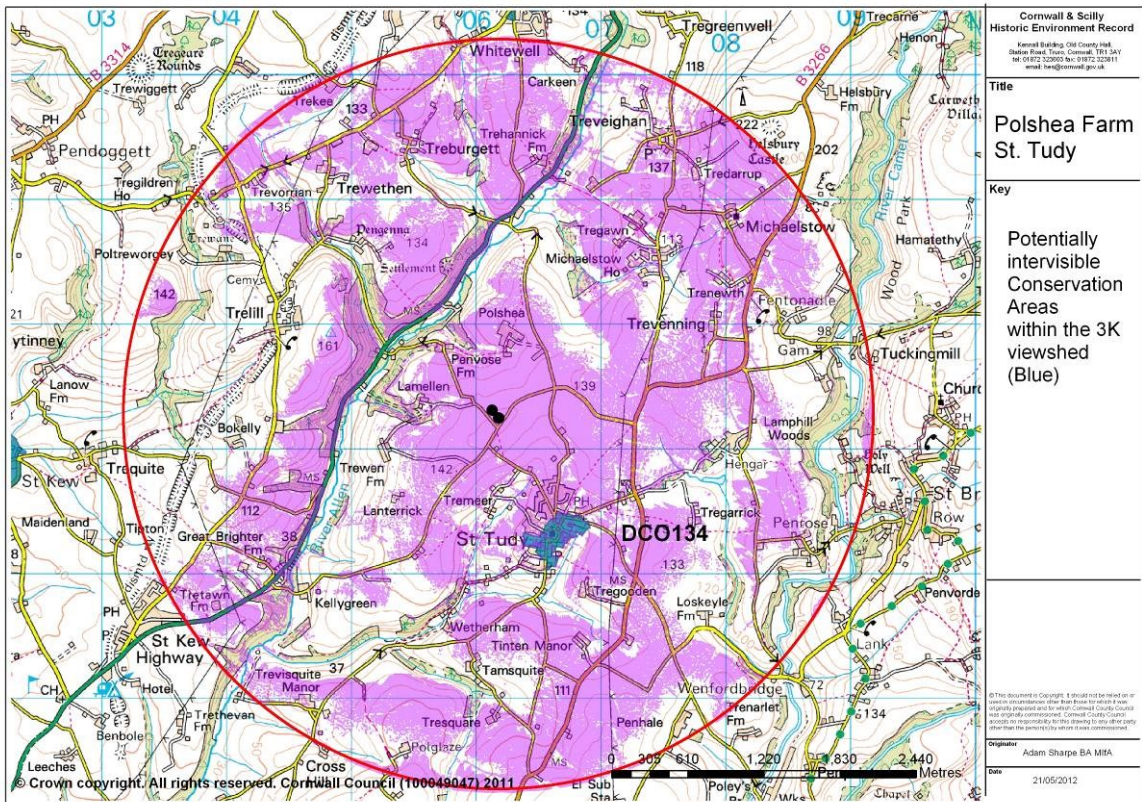


Fig 20. Mapping showing the ZTV within a 3Km radius of the site proposed for the wind turbines, showing potentially intervisible Conservation Areas.

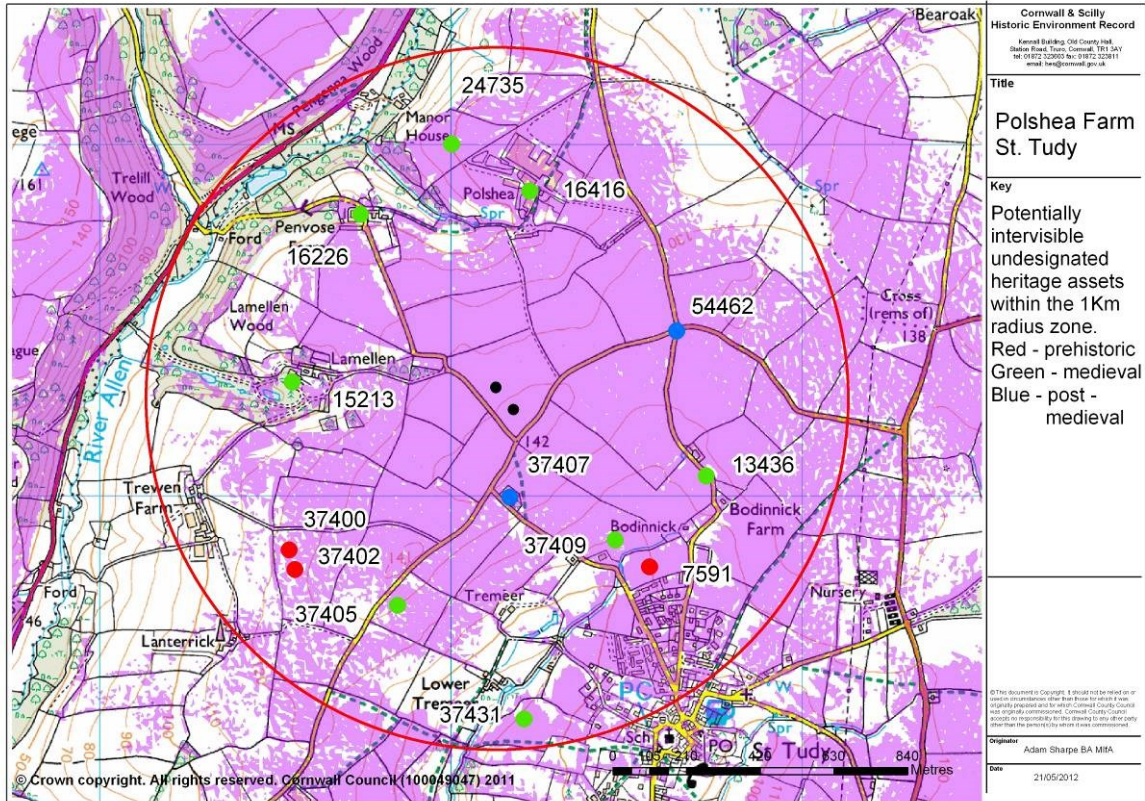


Fig 21. Mapping showing the ZTV within a 1Km radius of the site proposed for the wind turbines, showing potentially intervisible undesignated heritage assets.



Fig 22. Looking north from the site of the proposed eastern turbine towards Helsbury Castle (skyline centre).

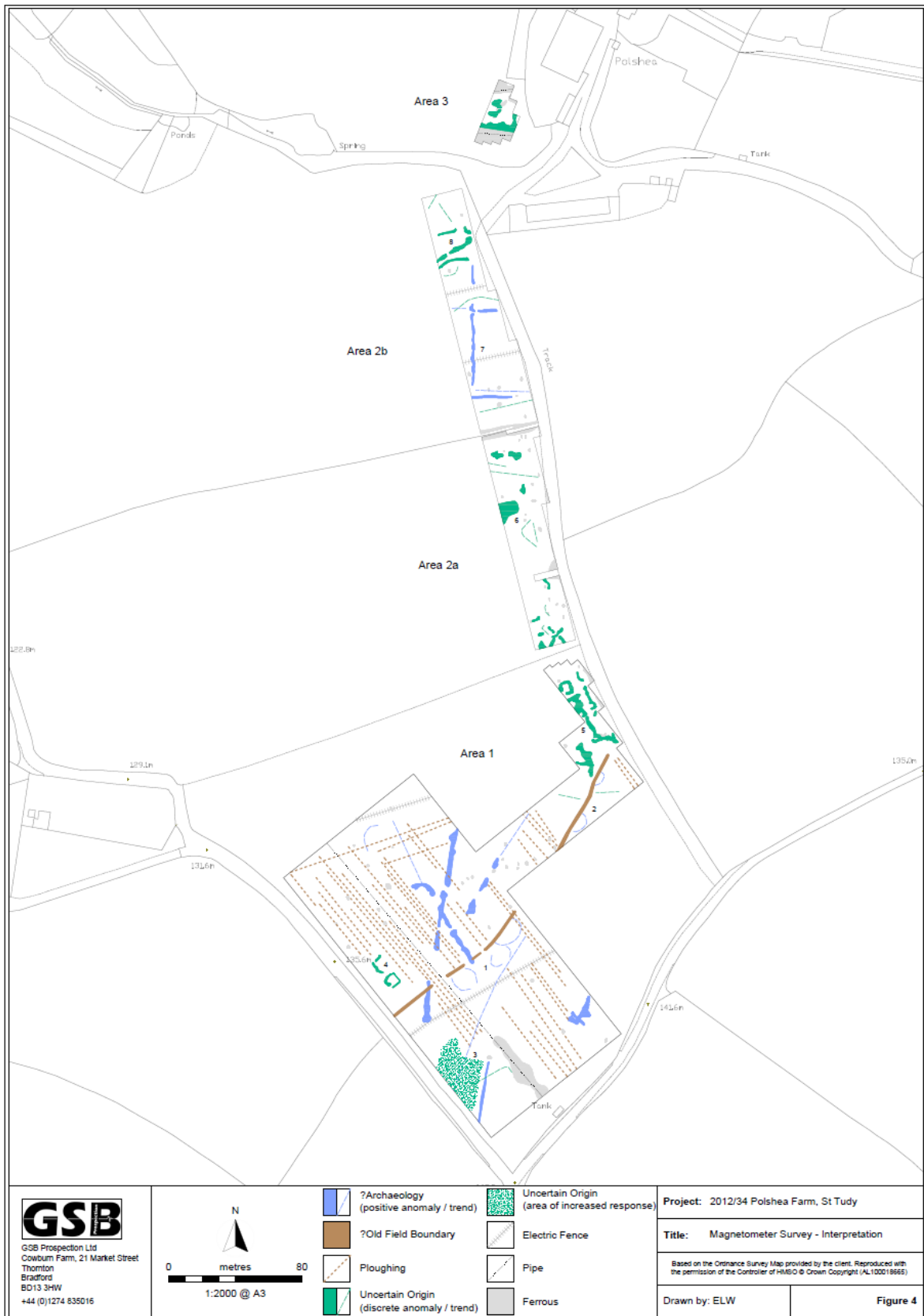


Fig 23. The feature catalogue figure from the GSB geophysical survey report showing (blue linears) probably prehistoric field boundaries, (green) anomalies of uncertain origin, (blue circles) possible prehistoric ring ditches and (brown) probable Medieval field boundary.



Fig 24. Looking west from Tregooden. The proposed turbine masts would be on the skyline from this point.



Fig 25. Looking north along the track which will site the cable route from the proposed wind turbines to Polshea Farm.



Fig 26. Looking south from the site of the proposed wind turbines towards St. Tudy, showing how intervisibility with the site will be blocked by trees.



Fig 27. Looking south south west from the site towards St. Mabyn.



Fig 28. Looking north east from the site towards Michaelstow, showing the substantial blocking of intervisibility resulting from the trees around the church.



Fig 29. Looking east from the site towards St. Breward churchtown (skyline).



Fig 30. Looking north from the site showing how Helsbury Castle is clearly visible from it as a skyline feature just over 3Km away.



Fig 31. Looking west across the field proposed for the wind turbines towards Lamellen House and its Park and Gardens, which are hidden in the valley beyond the clump of trees.



Fig 32. Looking north east from the site across Polyshea Farm towards Delabole Quarry and the nearby wind farm.



Fig 33. Looking in the direction of the proposed wind turbines from Michaelstow churchyard.



Fig 34. Looking north from the centre of St. Tudy in the direction of the proposed wind turbines. Trees and buildings will block views of the site from the Conservation Area and its Listed Buildings.



Fig 35. A mobile phone mast and one of the nearby pylons immediately to the north west of Helsbury Castle.



Fig 36. Looking north east from the site towards Bodmin Moor, with Brown Willy and Roughtor on the skyline.



Fig 37. Looking north across the field proposed for the wind turbines with the Allen Valley in the mid distance.