



Velensaga Barton, St. Buryan, Cornwall

Archaeological assessment of proposed wind turbine



Historic Environment Projects

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The viewshed mapping was carried out by Krystyna Truscot and Megan Val Baker.

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

Freedom of Information Act

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



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Cover illustration

Looking north west from the Merry Maidens towards Velensaga Barton and Chapel Carn Brea.

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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

Historic Environment Projects, Cornwall Council, was approached by Marc Over of EcoChilla on 04 September 2012 with a request to provide costs for the provision of an archaeological assessment of the potential impacts of a proposal to erect a wind turbine at Velensaga, St. Buryan on the setting of the scheduled Merry Maidens stone circle, in line with a request from English Heritage. A cost schedule for this work was approved on 08 September 2012.

The proposal is for one 50Kw wind turbine with a maximum blade tip height of 34.6m to be sited on farmland at Velensaga Barton near St. Buryan at SW 42418 25432. The site chosen for the wind turbine lies on the a ridge trending south eastward from St. Buryan, its east side being defined by the Lamorna Valley, and it is to be sited in an area of farmland which has been in continuous use since at least the medieval period, and probably long before. The Merry Maidens prehistoric ceremonial complex lies a short distance to the south east of the proposed turbine site.

The assessment consisted of a brief desk-based assessment, viewshed analysis out to 10Km from the site, and a walkover survey.

Given the open nature and orientation of the surrounding landscape, the proposed wind turbine will be clearly visible from many elements of the Merry Maidens ceremonial complex. Whilst views including both the Merry Maidens and the wind turbine are unlikely, the location of the turbine within a key view out from the site towards Chapel Carn Brea will inevitably result in impacts on the setting of the stone circle and allied monuments.

Impacts on the HLC of the landscape surrounding the proposed wind turbine can also be expected given the general absence of highly-visible modern features within the landscape of the southern part of West Penwith at present.

A report summarising the results of the assessment and its conclusions was prepared for the client, together with recommendations which might assist in mitigating the impacts of the development on the Merry Maidens and on historic landscape character.

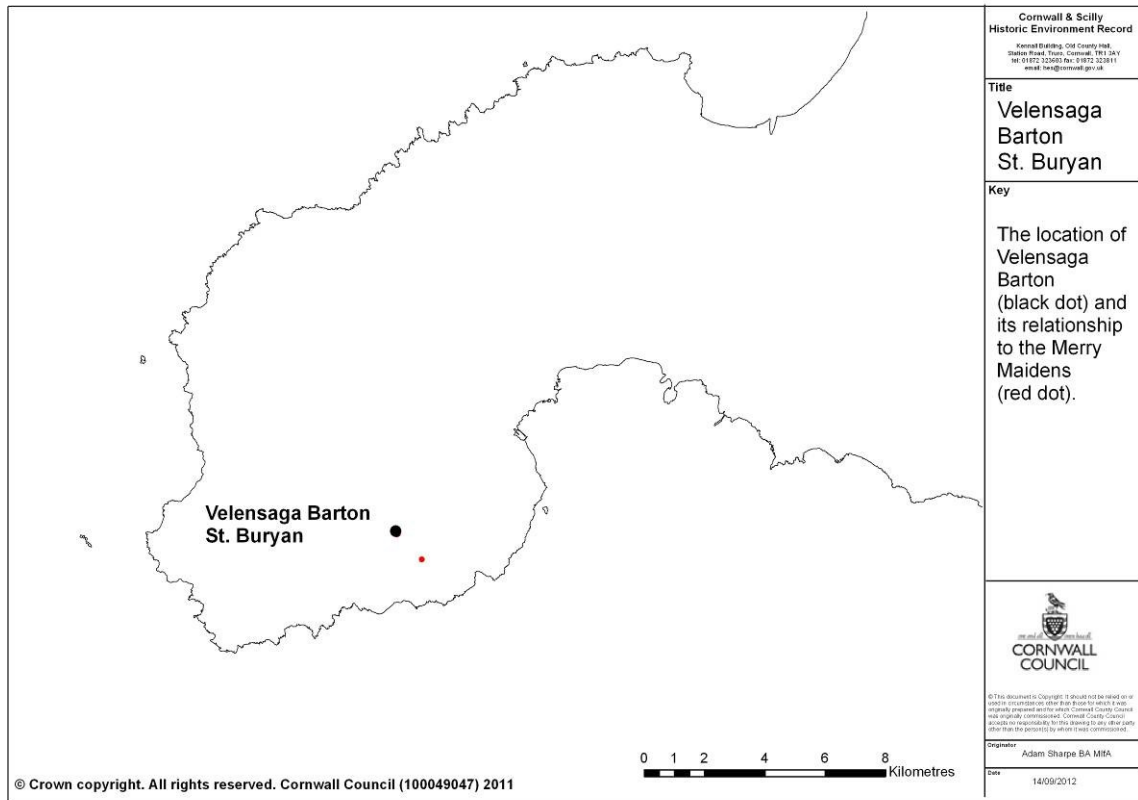


Fig 1. The location of Velensaga Barton.



Fig 2. The location proposed for the wind turbine at Velensaga Barton.

2 Introduction

2.1 Project background

EIA screening option PA12/04578 (Application no PA12/04088) was undertaken for a 50Kw three blade wind turbine with a hub height of 24.761m and a blade tip height of 34.6m at approximately SW 4242 2543 and at a height of 94m OD, to the south east of Tregawith Farm near St. Buryan.

The site proposed for the turbine lies within an area of Anciently Enclosed Land (Farmland Medieval) on a south-south-east trending spur of land with open views over the southern part of West Penwith. The enclosure within which the turbine is proposed has a name which suggests that it may have sited an Early Bronze Age standing stone or menhir, one such being located near the farm. Anciently Enclosed Land has been shown to have a high potential for the survival of buried archaeological remains, and the surrounding landscape is rich in upstanding archaeological features, a large number of which are nationally designated as Scheduled Monuments.

A brief issued by Phil Markham (Historic Environment Planning Advice Officer – West Cornwall) and dated 21st May 2012 indicated the archaeological potential of this landscape and that the development should be subject to an archaeological assessment whose scope is set out below.

An initial archaeological assessment of the proposal was carried out by Kristina Kueng (Anient) on the 27th May 2012, but this was considered inadequate by English Heritage to determine impacts on the settings of designated heritage sites within the surrounding landscape (email dated 13th July 2012).

A request for an archaeological assessment of the potential impacts of the proposed development was received from Kristina Kueng of Anient by Historic Environment Projects on the 16th July 2012. This request included a summary of guidance to the developer provided by Mr. Nick Russell, Assistant Inspector of Monuments, English Heritage (dated 16th July 2012), in which English Heritage's requirements for the scope of an assessment of impacts on the settings on designated heritage sites within the landscape surrounding the proposed development site were set out. This guidance included the nationally recommended radii for viewshed mapping for a range of designated monument types, these being determined in relation to the proposed turbine height.

A subsequent assessment of the impacts of the proposed development was undertaken by the developer, Mr. Marc Over (for EcoChilla), and an environmental impact assessment was prepared by Mr. Roy Curnow but these were considered inadequate by English Heritage to determine the impacts of the proposed development on designated archaeological assets within its vicinity, in particular, the setting of the Merry Maidens stone circle.

As a result of a site visit undertaken by Mr. Nick Russell, Assistant Inspector of Monuments, English Heritage and Mr. Over on the 31st August, it was agreed that Mr. Over would relocate the turbine by a small distance to assist in its screening from key heritage assets, would reduce its height by one metre and would undertake to have the turbine mast painted green to reduce its visual impact.

It was further agreed that Historic Environment Projects would discuss with Mr. Russell the requirements for an assessment examining the potential impacts of the development on the setting of the Merry Maidens. This discussion, which took place by phone on the 4th September, established that this assessment should be based on Digital Terrain Model-based viewshed mapping with a minimum radius of 2Km to determine potential intervisibility between the amended proposed wind turbine location and (in particular) the scheduled Merry Maidens stone circle. As well as the degree of intervisibility between the proposed development and the scheduled monument, Mr. Russell also required that the assessment should consider the implications of any

intervisibility and the degree to which key views from and of the Merry Maidens and its surrounding landscape might be negatively impacted upon, should the development proceed. It was further suggested by Mr. Russell that Mr. Phil Markham should be asked to comment on the proposed methodology in order that any additional information requirements he might have should be incorporated into it. Mr Markham indicated that he had no additional requirements at this assessment stage.

The Written Scheme of Investigation (WSI) set out the methodology to be used to achieve the objectives set out in the original brief supplied by Mr. Markham, the supplementary guidance provided by Mr. Russell, the approach being taken being in line with PPS5 Planning for the Historic Environment (DCLG 2010) Policy HE6, which states that *'Local planning authorities should require an applicant to provide a description of the significance of the heritage assets affected and the contribution of their setting to that significance.'* Policy HE10 goes on to state that LPAs should *'treat favourably applications that preserve ... or better reveal the significance of the asset [and] identify opportunities for changes in the setting to enhance or better reveal the significance of a heritage asset'*.

The Brief and WSI also follow the requirements of National Planning Policy Framework paragraph 128:

'In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.'

The final version of the WSI also takes into account comments on its original draft provided by Mr. Russell and Mr. Markham.

As set out in the original brief, an archaeological assessment of the proposal would need to a) assemble an evidence base to identify those historic assets which may be impacted by the proposed development and b) evaluate the significance of the assets affected and the significance of their settings and identify potential impacts on that significance either direct or indirect. Some aspects of these requirements were achieved by the assessment undertaken by Kristina Keung of Anient and by that undertaken by Mr. Marc Over on his own behalf.

As a result of the conversation between Historic Environment Projects, Cornwall Council and Mr. Nick Russell, English Heritage on 4th September 2012, it was determined that the element of the assessment which still required to be undertaken was to undertake viewshed analysis to a radius of at least 2m from the proposal site to establish the Zone of Theoretical Visibility (ZTV) of the development and to determine the extent and nature of any impacts on the setting of the Scheduled Merry Maidens stone circle. The ZTV allows for a full assessment of views of the Merry Maidens as well as from them.

A small number of site visits were undertaken to determine the validity of the ZTV mapping. These were undertaken from a number of sites within a 2.5Km radius of the proposed wind turbine site at Velensaga Barton; they include the Merry Maidens stone circle site and a number of key locations within the surrounding landscape with potential views of the Merry Maidens and the proposed wind turbine site.

This approach is in line with that recommended in the recently-issued English Heritage guidance *'The setting of heritage assets'* and *'History in the view'*, in particular Step 2:

'Assessing the contribution setting makes to significance' and Step 3: 'Assessing the effects of the proposed development' in the first of these.

The viewshed check was undertaken on the 13th September 2012, whilst the walkover survey was undertaken on 14 September 2012.

2.2 Aims and objectives

As directed by Mr. Russell, Assistant Inspector, English Heritage, the site specific aims are to:

- Establish viewsheds of the proposed wind turbine to a minimum 2Km radius.
- Determine the extent and quality of intervisibility between the proposal site and the Scheduled Merry Maidens stone circle.
- Assess the degree to which views of the Merry Maidens would also include the wind turbine.
- Determine the scale and nature of any impacts on the setting of the Scheduled Monument in line with recent English Heritage guidance.
- Produce a report containing the assessment conclusions.

2.3 Methods

All recording work was undertaken according to the Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff followed the IfA *Code of Conduct* and *Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Institute for Archaeologists is the professional body for archaeologists working in the UK.

2.3.1 Desk-based assessment

As part of a brief 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)
 - Ludgvan and St. Erth Tithe Maps (*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 as part of 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 turbine, particularly those making up the prehistoric ceremonial complex focussed on the Merry Maidens.

2.3.2 Assessment of impacts on setting of heritage assets

Heritage assets and key viewing points intervisible with the site of the proposed turbine were identified through the creation of a viewshed using GIS software. The methodology employs a 'Bare Earth' or Digital Terrain Model (DTM), which ignores potentially temporary surface features such as buildings, woodland, vegetation, etc, which are incorporated into a Digital Surface Model (DSM). Two viewsheds were generated for 'observer points' based on the location of the proposed turbine, the first based on the turbine hub height, the second on the tips of its blades.

When performing the viewshed analysis, several variables were used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for the observer point. The viewsheds were based on an '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 additional offsets of either 24.76m or 34m to represent the turbine hub height and that of the tips of its blades.

The viewshed mapping was examined to determine the extent of intervisibility between the proposed turbine mast and blades and the Scheduled Merry Maidens stone circle.

2.3.3 Fieldwork

A walk-over survey of the site proposed for the wind turbine was undertaken to determine the direct physical impacts of the construction of the proposed development, including the turbine base, trenching for cabling and any requirements for contractors' access. Areas of archaeological sensitivity were identified during the walk over survey. Digital photographs were taken for illustrative purposes. The potential for negative impacts on the archaeological resource formed by the Merry Maidens stone circle and its setting was considered from a series of locations within this landscape.

2.3.4 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 site proposed for the wind turbine is at SW 42418 25432 just to the south west of Velensaga Barton in the parish of St. Buryan. The turbine is proposed to be sited on the upper slope of a south east trending ridge at a height of approximately 95m OD (Figs 2 and 15). Views from the site tend to be constrained by the orientation of the ridge on which the turbine is to be sited and its neighbours, and are most open down to the south south east towards the coast.

The development area is characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Anciently Enclosed Land – farmland medieval', that is land which has been continuously farmed since at least the medieval period, if not longer (Fig 11).

The parent bedrock underlying the application site consists of the Lands End Granite, whilst the soils are recorded as granite-derived Moretonhamstead loams. No superficial (drift) deposits are recorded by the British Geological Survey.

4 Project extent

As determined by the brief, this archaeological assessment is focussed solely a determination of the potential impacts on the setting of the Scheduled Merry Maidens stone circle which might occur as a result of the erection of a wind turbine at Velensaga Barton 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). However, the site walk-over allowed some consideration of the potential direct impacts which might result from the creation of the turbine base slab and associated cable trenching, siting of temporary compounds, cranes or other equipment and any associated semi-permanent infrastructure. Further sites within the vicinity of the development proposal were visited to determine the extent and quality of intervisibility between the wind turbine and the Merry Maidens and the potential for the inclusion of the turbine within views of the stone circle.

5 Designations

5.1 International

No designations apply.

5.2 National

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

5.3 Regional/county

The site lies within an area designated as an Area of Great Historic Value.

5.4 Local

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

5.5 Rights of Way

No rights of way traverse the site proposed for the wind turbine, nor the remainder of the area across 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 site occupies a ridge-top position on an area of the dissected plateau of the southern part of West Penwith, this location being flanked by the streams meeting the sea at St. Loy to the south west and Lamorna to the south east. To the north west, the ground rises to St. Buryan, beyond which is the prominent knoll of Chapel Carn Brea.

To the south east of the application site, centred on the Merry Maidens stone circle is a extraordinarily rich relict prehistoric ceremonial and ritual landscape. This includes the Merry Maidens stone circle and others documented at Boscawen Ros and Tregurnow, standing stones at Gun Rith, the Pipers, Tregurnow, Velensaga and Boscawen Ros,

barrows at Boscawen Ros, Rosemodress and Tregiffian, a cist grave at Tregiffian, holed stones at Rosemodress, a cup-marked stone at Tregiffian and a Neolithic entrance Grave at Tregiffian (Fig 17). There are also lithic scatters dating to the Mesolithic, Neolithic and Bronze Age periods. This concentration of early prehistoric monuments is unrivalled anywhere else in West Penwith, and clearly indicates a location of very great significance to the occupants of the area during this period.

In later prehistory, the sheltered topography, south-facing aspect and moderately deep, rich soils led to this area being noted for its concentration of defended farmsteads, including nearby examples at Boskenna, Boleigh, Tregiffian, Borah, Boskenna and Chyoone. Boleigh Round incorporates a rare surviving fogou – an underground passageway representing a site type whose function remains a mystery, but which appears to be associated with the culture of the late Iron Age and Romano-British periods. It is clear that all of the suitable surrounding landscape would have been farmed in late prehistory, the valleys providing sources of timber for building and fuel, the nearby sea providing rich fishing grounds, whilst the moors to the north would have provided extensive areas of rough summer grazing and sources of gorse for fuel and bracken for animal bedding, as well as the sites for further ceremonial and funerary monuments.

These late prehistoric settlements would, in turn, have been succeeded by early medieval farmsteads such as Trewoofe, Tregagwith, Choone, Boskenna, Boskennal, Bojewans or Trevargus.

The Domesday Book (1086) does not mention Velensaga Barton. This part of the Cornish landscape, part of the 'Lands of St. Michael's' would have been part of the holding of St. Buryan, held by the Canons of St. Buryan, and being free land before 1066.

The first mapping depicting this area dates to the 17th century, when Joel Gascoyne produced his map of Cornwall (Fig 3). Gascoyne depicted the surrounding landscape around St. Buryan churchtown as containing a large number of farmsteads. Tracks and roadways traversed this landscape, linking these farms with market centres and churchtowns, as well as with each other. 'Villan serge' was depicted and named on this map.

John Norden's map dating to 1728 (Fig 4) depicting the Hundred of 'Penwith', showed churches, settlements and principal houses within West Penwith, but did not mark Velensaga Barton.

Thomas Martyn's map (Fig 5) drawn up a few decades later showed rather more detail of this landscape, and also depicted 'Vellenserga'.

The 1st Edition of the Ordnance Survey 1" to a mile mapping (Fig 6), dating to the first decade of the 19th century, showed a relatively dense network of roads and lanes linking local farms, including 'Vellanserga' within what is clearly a mature and long-settled farming landscape.

The field proposed for the wind turbine lies within the ecclesiastical parish of St. Buryan, these two enclosures at the time of the circa 1840 Tithe Map (Fig 7) being part of Tregagwith Farm, owned by the Reverend Uriah Tonkin and farmed by James Permewan. The fields were known as Lower and Middle Vera, both being recorded as in arable use at this date.

No changes were recorded to these fields during the late 19th century (Fig 8) or in the first decade of the 20th century (Fig 9). The boundary dividing these two fields is shown as having been removed during the 20th century on the 2005 Cornwall County Council aerial photograph (Fig 10) when the combined field was in pasture.

7 Results of site walkover

A site walkover was undertaken on 14th August 2012. The weather was warm and clear at the time of the visit with only very limited cloud cover, and visibility was good out to the edges of the area of landscape visible from ground level at the site (between 1.5m and 3.5Km away).

The field proposed for the wind turbine is relatively level, had been cropped earlier in the year and was predominantly bare soil. Some exposed worked flint fragments were noted during the walk over, but no extant earthworks. Mr. Over proffered the information that this and some other fields on the farm had relatively recently been subjected to extensive boulder removal using a mechanical excavator. The survival of intact below ground archaeological deposits within the field proposed for the wind turbine is, therefore, unlikely.

Open views were available to the south east towards the Merry Maidens, though the stone circle itself could not be made out, as a view of them was obscured by the northern hedge of the field in which it is sited (Fig 24).

8 Results of viewshed analysis

See Figs 15 to 17.

Given the locations of the site and the height of the turbine mast, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be fairly far-reaching. In line with the requirements of specific English Heritage guidance for this site, the ZTV has been mapped to a distance of 10Km from the site (Fig 15). The viewshed for the hub covers most of the immediate area, almost reaching St. Buryan to the north west, Crows an Wra and Chapel Carn Brea further away in this direction. To the north east it covers most of the ground to Drift and to the north to Sancreed. Out towards the edge of the 10km zone, the ZTV extends to the high ground above Ludgvan and New Mill to the north east, to Lanyon Quoit, Watch Croft and Madron to the north, and to Chapel Carn Brea to the north west. To the east it reaches Drift and to the south east extends down the eastern slopes of the Lamorna Valley. The blade tip viewshed extends this coverage a little beyond the area within which the hub would be visible (by an average of 15m down intervisible hillslopes), but to the west and south west the viewshed indicates that the blade tips will be visible out to a line between Sennen and Treen, extending almost to Lands End.

Inevitably, the visibility of the turbine will diminish with distance, and will, at many sites in the surrounding locality, be blocked by intervening buildings within settlements or farmsteads or by mature groups of trees (albeit on a temporary basis, should such trees subsequently be felled).

8.1 Viewshed checking

The viewshed was ground checked from a number of locations, these including the summit of Chapel Carn Brea, St. Buryan Churchtown, Boskennal, sites near Trevervan and Boskennal, just to the west of the Merry Maidens, at Trewoofe, Boleigh, Castallack and Catchall. As a 'bare earth' model had been used to create the ZTV, it was expected that features like tree clumps, hedge vegetation and areas of woodland would inevitably form barriers to intervisibility from ground level from some viewpoints where intervisibility had been suggested by the ZTV; in addition, in the absence of the wind turbine, it was not possible to say with any confidence that this would or would not occur at any specific location. Nevertheless, where views back towards Velensaga Barton were generally open (particularly from the south south east), the general character and extent of the intervisibility indicated by the ZTV mapping could be recorded. In practice, hedgelines and tree plantings screened most of the views of the wind turbine site and that of the Merry Maidens from ground level at the selected

viewpoints. From the hill above Castallack, views back to the edge of the ceremonial complex 2Km away were clear and unconstrained, some of the outlying standing stones being readily visible, but the stone circle was found to lie just over the hillcrest forming the near skyline on the western side of the Lamorna Valley (Fig 23) and would not be co-visible with the proposed wind turbine from this viewpoint.

8.2 Intervisibility with the Merry Maidens

See Figs 20 and 23.

The Merry Maidens and its immediately adjacent ceremonial monument cluster are sited within a gently dipping bowl within the landscape to the east, west and south – indeed this may have been one of the primary reasons for the selection of this location for their sites, as the monuments only come into view from close by. It is probable, as with other similar monuments of this period, that access routes to them were laid out to achieve this effect. Prior to the creation of modern field boundaries within the landscape, initial views of the ceremonial complex from these entry points would have been striking and dramatic, especially as Borlase noted the existence of two additional stone circles and a number of now-lost standing stones as further examples of the ceremonial complex. These 'special' views have, to a large extent, now been lost for most modern visitors to the site, who approach it by road confined between high hedges, but one example still exists on the western approach to the site, where it comes into view framed between two gently-rising areas of ground (Fig 19), suggesting that the present road may, at this point, occupy a part of the former ceremonial access route to the site. It is likely that similar routes formerly existed from the east and possibly also from the south, but these have been lost through agricultural enclosure. To the north north west, the ground slopes down along a small valley formed by the headwaters of a stream, and views include the prominent summit of Chapel Carn Brea on the skyline (figs 20 and 21), the view being channelled by the topography. Again, the presence of this view towards the hill from the stone circle is unlikely to be fortuitous, and the precise siting of the Merry Maidens is likely to have been chosen to ensure this was the case, Chapel Carn Brea being a significant topographical location during prehistory, and a hill which sites a number of early prehistoric monuments on its summit and slopes. Velensaga Barton lies along this sight line, and is clearly visible from the stone circle, as would be the proposed wind turbine.

8.3 Inclusion of the proposed wind turbine within views of and from the Merry Maidens

See Figures 20 and 21, 23.

A number of local viewpoints were selected to determine the likelihood of the proposed wind turbine at Velensaga Barton being included within key views of the Merry Maidens (see above).

As mentioned, from almost all intervisible hilltops and ridgetops within the surrounding 3Km, post-prehistoric hedgelines and tree plantings block views from ground level of the Merry Maidens or Velensaga Barton. Glimpses of the turbine mast and blades would be available through a number of farm gateways and entrances, however, but these would be fleeting and partial. The turbine would also be visible (or partially visible) as a skyline feature from ridgetops from the east and north east within the local landscape, and as a less prominent feature from ridgetops further towards the coast from the west and south west. From the south, the wind turbine would tend to be backgrounded to some extent (in some cases wholly) by the rising ground occupied by the road from Catchall to St. Buryan, by the arc of hilltops extending eastwards from Chapel Carn Brea through Bartinney and Caer Bran to Sancreed Beacon behind this again to the north, and by Busvargus and Tregeseal Common and Bosvenning and Roskennals Common yet further away in this direction. The wind turbine will be visible to some degree from all of these elevated locations and from the designated sites which occupy them, though as a distant feature.

To the south of the ceremonial complex, the ground falls gently to the south east and views of both the Merry Maidens and the proposed wind turbine will quickly be lost.

A combination of the local topography, the site chosen for the wind turbine at Velensaga and the site long ago selected for the Merry Maidens ceremonial complex therefore almost wholly limits any likelihood of the inclusion of the proposed wind turbine within views of the Merry Maidens.

The stone circle site is entered from the west via a stile and gate adjacent to a lay-by, and most visitors' attention will be focussed on the stone circle ahead of them, it being sited on ground which gently rises to the east and south. Hedges close off views to the east and south, and from this entry point to the field, the Velensaga wind turbine will be some distance away to the north west, and is unlikely to be noticed. However, once visitors enter the field, views to the north west open up and the landscape which lies in this direction becomes part of the experience of visiting the site. This landscape stretching past St. Buryan to Chapel Carn Brea effectively forms the backdrop to the site – its experiential setting – when exploring the stone circle and when leaving it to return to the lay-by.

At present, views from the site in this direction are of an almost wholly agricultural landscape, within which the only significant sky-lining feature is St. Buryan church tower. There is a microwave tower (sited to the north of St. Buryan) within the view, though its distance from the Merry Maidens, its lattice construction and its grey colouration significantly reduce its visibility, and the eye is not drawn to it (Fig 22). A small-scale wind turbine to the west of the site is relatively inconspicuous. The house, barns and polytunnels at Velensaga Barton are visible within the mid-distance (Fig 21), as, to a lesser extent, are other agricultural structures just to the east of St. Buryan.

This is an essentially static viewscape into which the moving blades of a wind turbine at Velensaga would introduce a dynamic and potentially visually distracting element. Furthermore, a wind turbine at Velensaga would lie directly between the Merry Maidens and Chapel Carn Brea, a key element in views from the stone circle both today and in the past, and quite possibly one which helped to determine its site. However, the visibility impacts of the wind turbine in this view are likely to be lessened to some degree by the fact that the prevailing winds in west Cornwall are predominantly from the south west, meaning that the turbine blades are likely to be aligned along the sightline between the Merry Maidens and Chapel Carn Brea, rather than at right angles to it, making them significantly less visible from the stone circle and adjoining ceremonial complex.

9 Cumulative impacts

Recent English Heritage guidance requires assessments of renewables applications to take account of cumulative impacts, as well as those relating to specific proposals.

There are, at present, very few existing medium-sized wind turbines in West Penwith and no large scale ones. In the southern part of West Penwith there are presently two medium-sized wind turbines, these visually-prominent features being sited between Chapel Carn Brea and Crean (this pair being around 36m to hub in height).

There are also a number of existing, smaller, farm-scale, wind turbines within this landscape, though their scales and slim, grey-painted masts tend to make them relatively low visual impact features. Further away, a single medium-sized turbine (40m to tip) has been constructed near Penwith College at Heamoor on the northern outskirts of Penzance and is a locally highly-visible landscape feature, as are another example just outside St. Just at Bostraze Pit and a recently-constructed example at Curcurrian between Castle Gate and Tren crom Hill. A small, recently-erected pair just to the west of Morvah are visible only in their immediate vicinity as are other small scale farm wind turbines scattered through this landscape. In the far distance, the six large (107m to tip) turbines at Goonhilly Downs cap the distant skyline to the south east, though these

are barely visible without binoculars from most of West Penwith. Some other wind turbines are currently under consideration for the southern part of West Penwith, as indicated by the Cornwall Council screening proposals mapping.

There are very few high voltage power lines, mobile phone masts, television repeater masts within the local landscape, though there are a microwave tower (Fig 22) and an agricultural silo near St. Buryan, together with some large-scale modern agricultural sheds. St. Buryan church tower remains the most dominant vertical component of most views within this landscape (Fig 23), as the open construction of the microwave mast tends to help it to blend into the landscape from a distance.

10 Synthesis

Neither the desk-based assessment nor the walkover survey indicated the presence of any significant upstanding or buried archaeology which might be directly impacted upon by the proposed wind turbine and cabling at Velensaga Barton.

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of a wind turbine on land at Velensaga Barton 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), the presence of other buildings or the proximity of already-existing wind turbines or other visually dominant modern structures or features. The wind turbine will skyline from many parts of the immediate locality around St. Buryan, but is unlikely to intrude into views of designated sites, the exception being St. Buryan church tower.

In the wider landscape, although the wind turbine is to be sited on a ridgetop site with potentially relatively far-ranging views across southern part of the West Penwith landscape, it is unlikely to be particularly visually intrusive, or to have impacts on the settings of the majority of designated sites, the exception being the extended landscape setting of the Merry Maidens towards Chapel Carn Brea to the north west. There will also be some impacts on the Historic Landscape Character of this landscape, which has, to date, by and large not been modified by highly visible modern features and within which medieval church towers are the dominant vertical components and the major landmarks.

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 National Planning Policy Framework 2012

The following paragraphs within the above document frame planning policy relating to the Historic Environment and are germane to this assessment:

128 *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

129. *Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.*

132. *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.*

133. *Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*

- *the nature of the heritage asset prevents all reasonable uses of the site; and*
- *no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
- *conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and*
- *the harm or loss is outweighed by the benefit of bringing the site back into use.*

134. *Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*

135. *The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

139. *Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.*

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 current guidance on PPS5 (and its successor the NPPF) and its application.

This refers to the need, for decision-making in response to an application for change that affects the historic environment, of providing and assessing, at a level appropriate to the relative importance of the asset affected, information on the asset and its extent, on its setting, and on the significance of both of these aspects. Section 5, 54 states that '*Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset and the contribution of its setting is very important...*'

Section 5 on Policies HE6 to HE 12, 58, notes among appropriate actions (in point 5) *'Seek[ing] advice on the best means of assessing the nature and extent of any archaeological interest e.g. geophysical survey, physical appraisal of visible structures and/or trial trenching for buried remains.'*

The section on Policy HE10 defines setting as follows:

'113. Setting is the surroundings in which an asset is experienced. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.'

'114. The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration; by spatial associations; and, by our understanding of the historic relationship between places. For example, buildings that are in close proximity but not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each. They would be considered to be within one another's setting.'

11.3 Former Cornwall Structure Plan

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

11.3.1 Policy 1

'Development should be compatible with:

The conservation and enhancement of Cornwall's character and distinctiveness;

The prudent use of resources and the conservation of natural and historic assets;

A reduction in the need to travel, whilst optimising the choice of modes, particularly opportunities for walking, cycling and the use of public transport;

Through developing the principles of Policy 1 it is intended to integrate environmental values with land use and transport policies, achieving patterns of development that reflect strong environmental protection and stewardship of resources.'

11.3.2 Policy 2

'Throughout Cornwall, development must respect local character and:

- Retain important elements of the local landscape, including natural and semi-natural habitats, hedges, trees, and other natural and historic features that add to its distinctiveness;*
- Contribute to the regeneration, restoration, enhancement or conservation of the area;*
- Positively relate to townscape and landscape character through siting, design, use of local materials and landscaping.*
- The conservation and enhancement of sites, areas, or interests, of recognised international or national importance for their landscape, nature conservation, archaeological or historic importance, including the proposed World Heritage Site, should be given priority in the consideration of development proposals.'*

11.4 Former Penwith Local Plan

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

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

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

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 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-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

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

Policy TV-6: *Proposals for development which would affect a Conservation Area must not conflict with the objective to preserve or enhance the character or appearance of the area in terms of scale, siting, design and materials. Developments which would have an adverse effect on the character, appearance or architectural and historic importance of a Conservation Area will not be permitted.*

11.5 Hedgerow Regulations

Under the current, 1997 Hedgerow Regulations, owners wishing to remove all or part of a hedgerow considered to be historically important must notify the Local Planning Authority (LPA). Criteria determining importance include whether the hedge marks a pre-1850 boundary, and whether it incorporates an archaeological feature. The LPA may issue a hedgerow retention notice prohibiting removal.

12 Likely impacts of the proposed development

12.1 Types and scale of impact

Two general types of archaeological impact associated with wind turbine developments have been identified as follows.

12.1.1 Types of impact, construction phase

The construction of wind turbines can have direct, physical impacts on the buried archaeology of sites through excavation for turbine foundations, through the undergrounding of cables, and as a result of the creation of works compounds, together with any permanent or temporary vehicle access ways into and within sites. Such impacts are **permanent** and **irreversible**. Such impacts are unlikely at Velensaga Barton.

12.1.2 Types of impact, operational phase

This wind turbine might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during its operational phase, given its height (34.6 metres to blade tip), the topography of the site and its nature of the local landscape. Such factors also make it likely that the development would have an impact on Historic Landscape Character. Such impacts would be **temporary** and **reversible** should the turbine subsequently be dismantled and not re-powered or replaced.

12.1.3 Scale and duration of impact

The impacts of the wind turbine 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. Currently proposed mitigation approaches are outlined below in Section 13.

12.2 Assessment of impact

Overall, the impacts of the proposed wind turbine on the archaeological resource represented by the Scheduled stone circle at the Merry Maidens and the context formed by its surrounding ceremonial complex are assessed as having a potential scored as **negative/moderate**, principally based on the intrusion of the wind turbine into a key view from the site towards Chapel Carn Brea, the introduction of a dynamic and clearly visible modern vertical feature within the principal open view from this site and the impact on historic landscape character.

There is also an unquantifiable potential for impacts on sub-surface archaeology within the development site, given the current absence of information concerning its sub-surface archaeology. Although this site lies within an area known for the discovery of a

particularly large number of archaeological sites in the past, recent agricultural operations (boulder removal) have however, probably destroyed any surviving buried archaeological sites or features within this field.

The assessments supporting this 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 foundations for wind turbines, cabling or ancillary works during their construction phase have the potential to cause permanent, irreversible loss of below ground remains of archaeological sites within development areas. Such works, if deeper than current ground levels, may affect undetected buried cut features. The resultant scales of impact will vary with the degree of significance of individual sites, and with the proportion of any site so affected.

In the case of the field at Velensaga Barton, information supplied by Mr. Over suggests that there is little potential for surviving archaeological sites within the application field.

12.2.2 Impacts on the setting of the Merry Maidens Scheduled stone circle

The proposed wind turbine is considered likely to have an impact on the setting of the Merry Maidens, this being assessed as **negative/moderate**, and **temporary/reversible** overall should the wind turbine be dismantled in the future and not be replaced:

12.2.3 Impacts on Historic Landscape Character

A wind turbine erected at Velensaga Barton can be predicted to have some degree of negative impact on the historic character of the landscape. The expected effect on HLC has been assessed as **negative/minor**. Factors contributing to this assessment are as follows;

- Some visual impact throughout the operational phase would occur, affecting the integrity of this area as former farmland of medieval origin through the introduction of a locally highly visible modern feature into this agricultural landscape.
- The land-take for the proposed development is small in comparison with the area of the HLC Units of medieval farmland within the surrounding landscape.
- There would be no impacts during the construction phase in terms of the physical loss of features such as boundaries which form the visible components of this type of HLC.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the wind turbine be dismantled in the future.

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 Archaeological recording

In cases where finalised site designs would seem likely to result in unavoidable or potentially significant but unquantifiable impacts on below-ground or above ground

features, a brief for work to mitigate potential impacts would be prepared by the relevant 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.

Such work can include requirements for geophysical survey, evaluation trenching or archaeological watching briefs. Such approaches reduce the impacts on affected below-ground archaeology to **negative/minor**. These impacts would as a result be **permanent** and **irreversible**.

In the instance of the site at Velensaga Barton, it seems unlikely that unrecorded below ground remains will survive within the application field and such approaches would probably not be required.

During recent discussions with English Heritage, the applicant has agreed to relocate the wind turbine to some degree, to reduce its mast height slightly and to undertake to have the mast and blades painted in a neutral colour such as green (rather than the original white). This will significantly lessen its visual impact, particularly at a distance, especially as these changes result in the turbine mast being seen against a landscape background, rather than against the sky when seen from the Merry Maidens'.

14 References

14.1 Primary sources

Cornwall County Council 2005 aerial mapping of Cornwall.

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. Buryan* (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

Padel, O.J. 1988, *Cornish place-names*, Penzance

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 **PR146188**

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.U-Z\Velensaga Barton wind turbine assessment
3. English Heritage/ADS OASIS online reference: cornwall2-133929
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites V\Velensaga wind turbine assessment 2012\Report\Velensaga 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 site and its surroundings, as shown on John Norden's 1724 Map of Cornwall. The project area is circled in red.

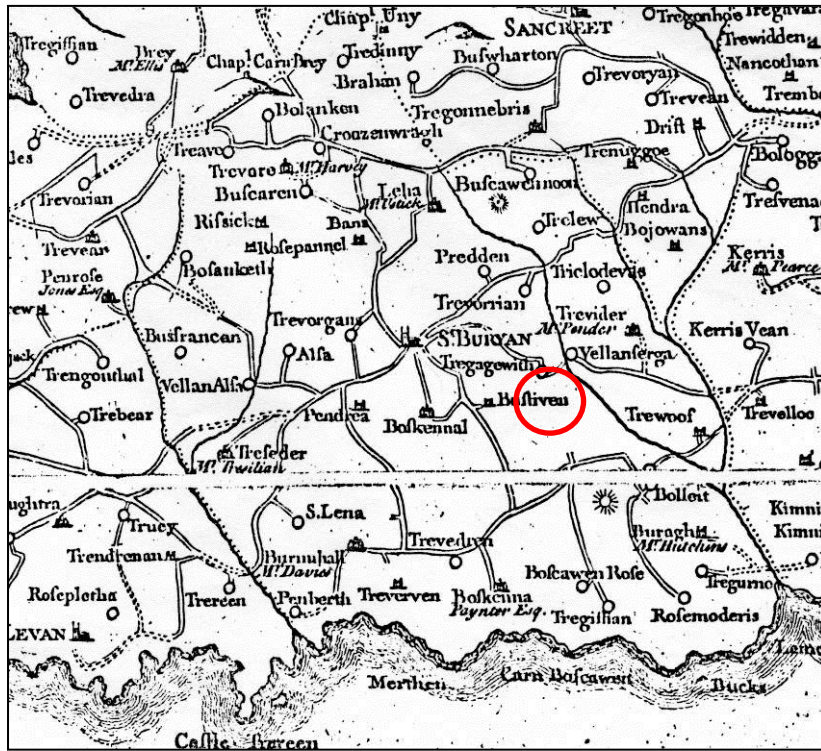


Fig 5. The proposed turbine site and its surroundings, as shown on Martyn's 1748 Map of Cornwall. The project area is circled in red.



Fig 6. The project area and its surroundings as shown on the circa 1809 1st Edition OS mapping.

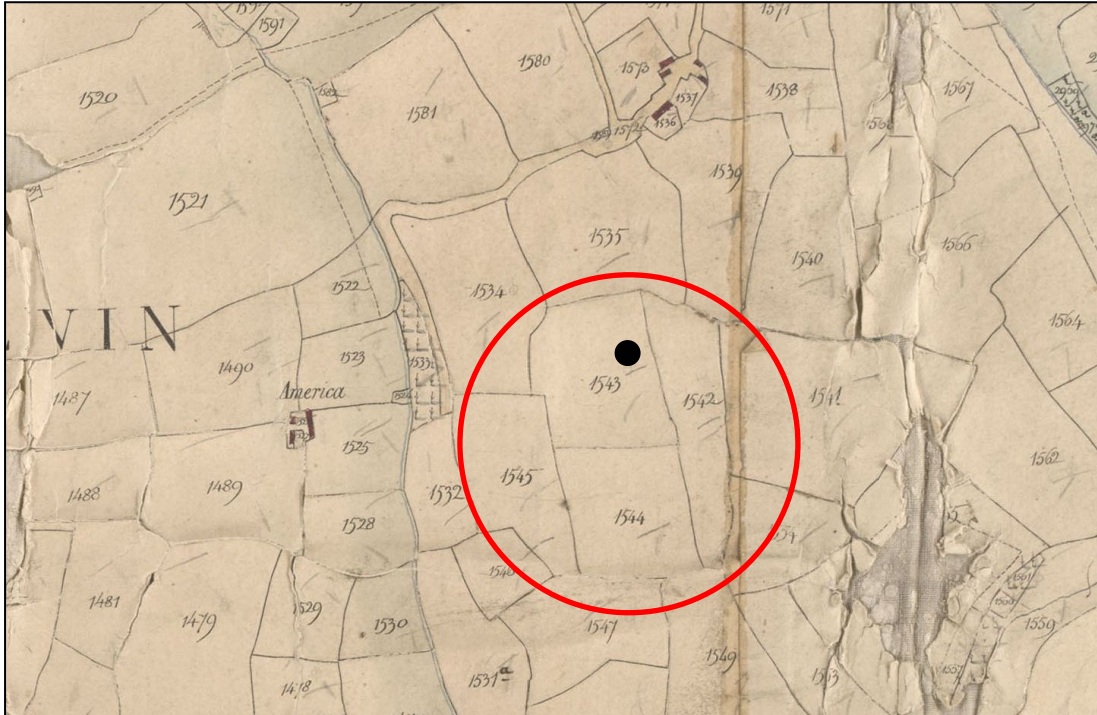


Fig 7. The project areas as shown on the circa 1840 St. Buryan Tithe Map. The proposed turbine site is indicated by a black dot.

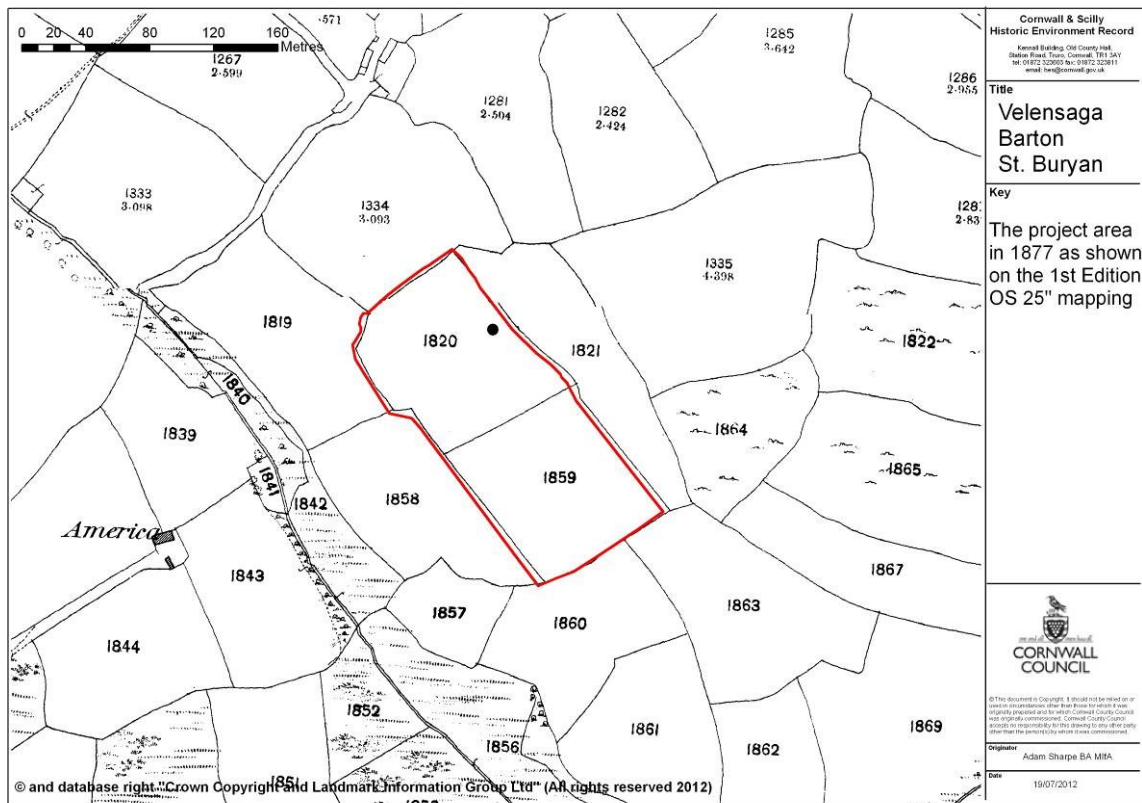


Fig 8. The project areas as shown on the circa 1878 1st Edition OS 25" to the mile mapping.

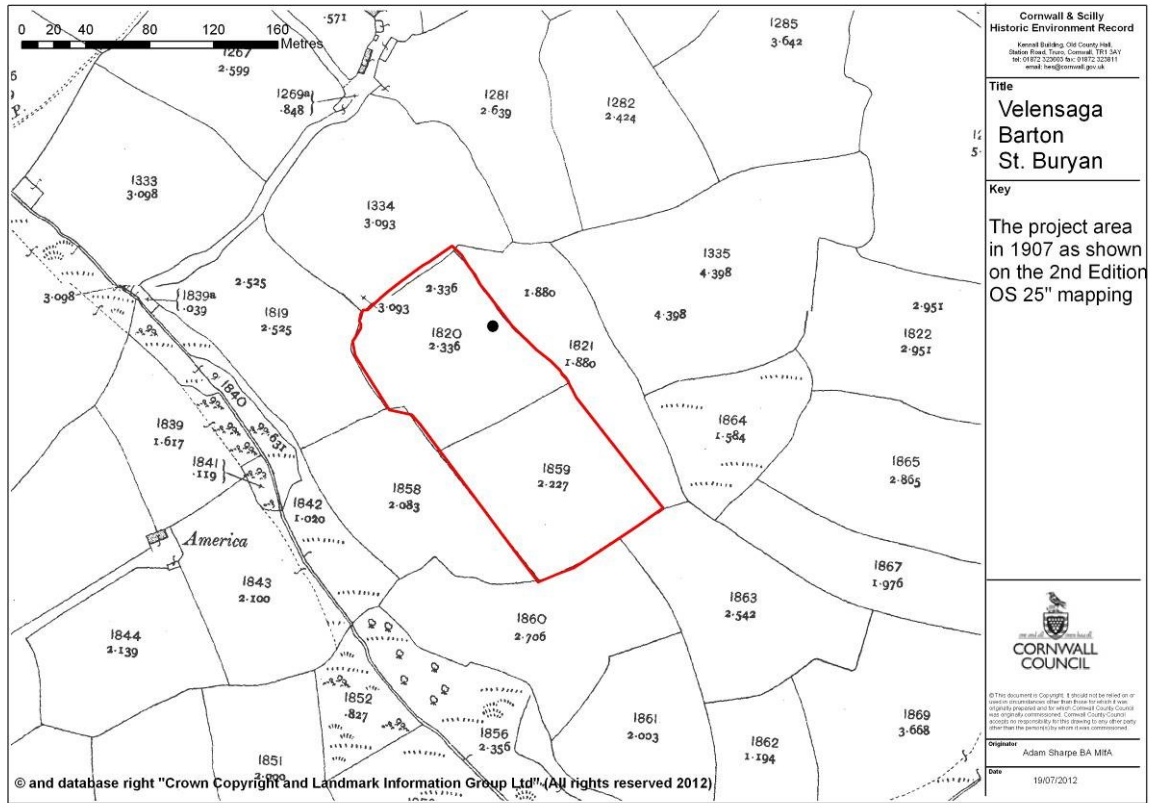


Fig 9. The project area as shown on the circa 1907 2nd Edition OS 25" to the mile mapping.



Fig 10. The project areas as shown on a 2005 CCC aerial photograph.



Fig 11. Historic Landscape Character mapping showing how this area of countryside is entirely derived from medieval farmland (green).

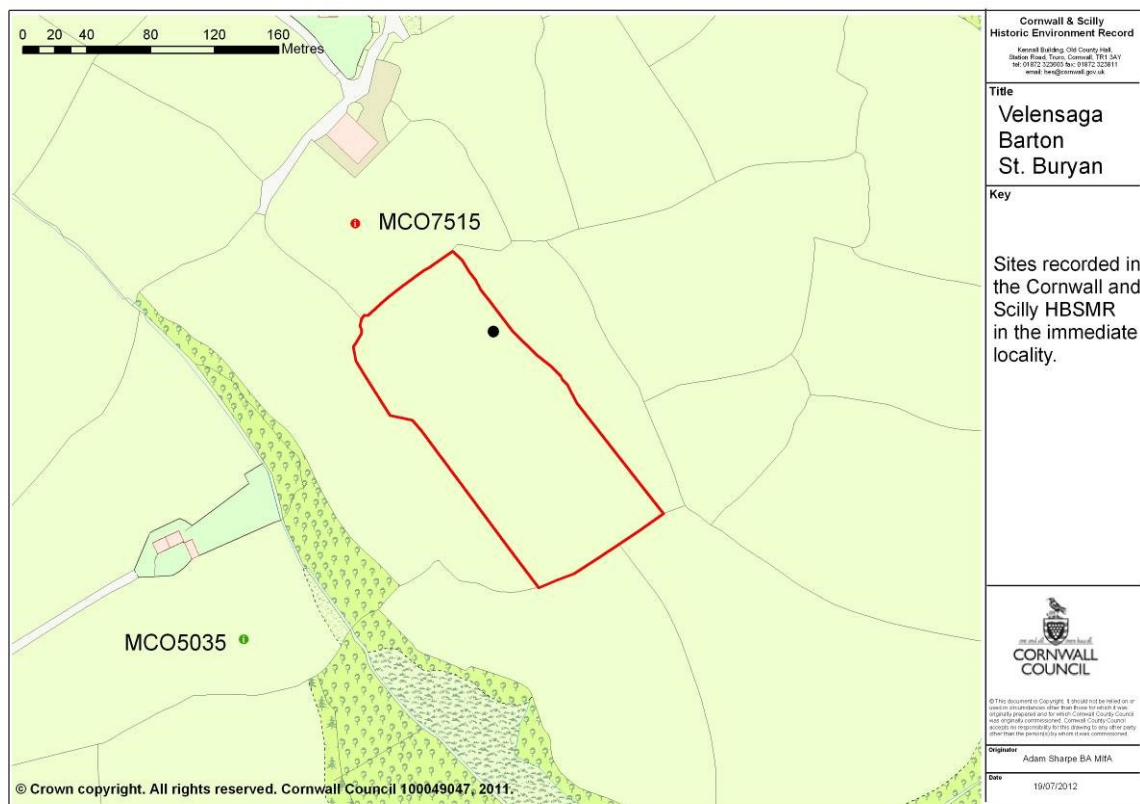


Fig 12. Sites recorded in the Cornwall and Scilly Historic Environment Record in the immediate vicinity of the proposed turbine site. MCO7515 refers to a possible standing stone site (Long Rock).



Fig 13 Archaeological sites recorded from aerial photographs by the NMP team in the immediate vicinity of the proposed wind turbine site at Velensaga Barton.

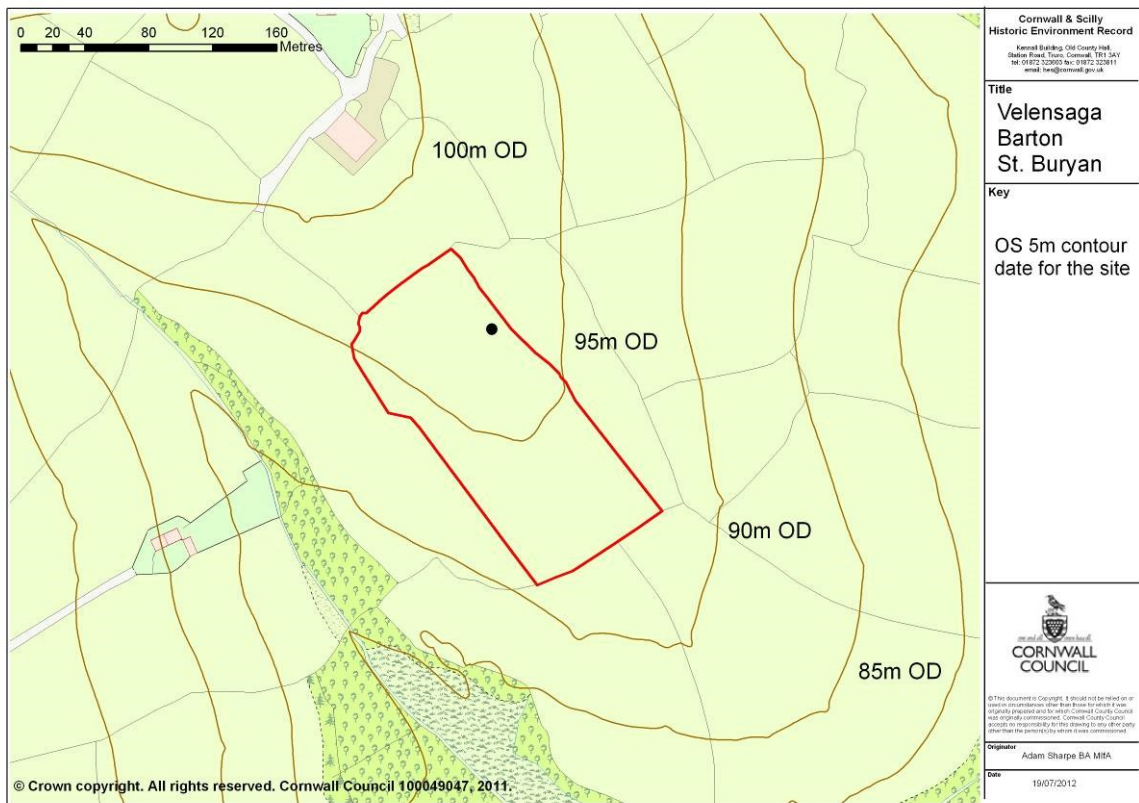


Fig 14. OS contour data for the area immediately surrounding the proposed wind turbine shows its site located on the top of a south east trending ridge.



Fig 15. Mapping showing the ZTV within a 10Km radius of the site proposed for the wind turbine, showing potentially intervisible areas.

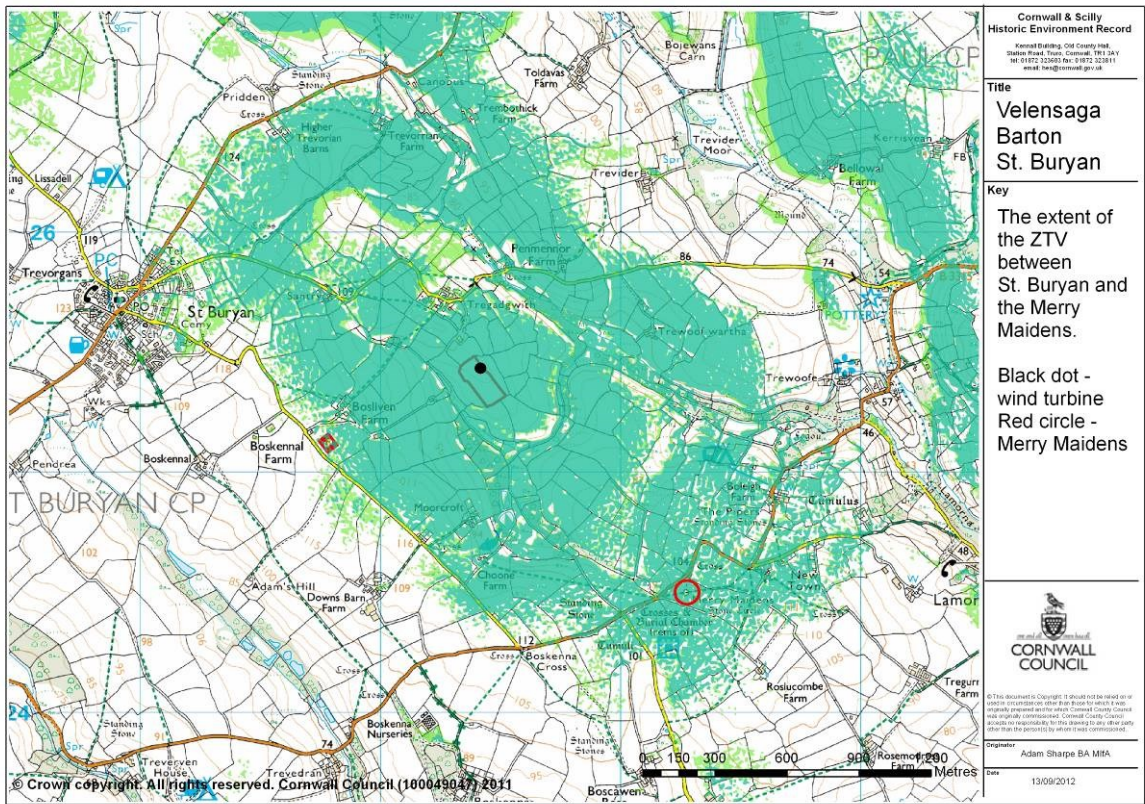


Fig 16. Mapping showing the ZTV between St. Buryan and the Merry Maidens.

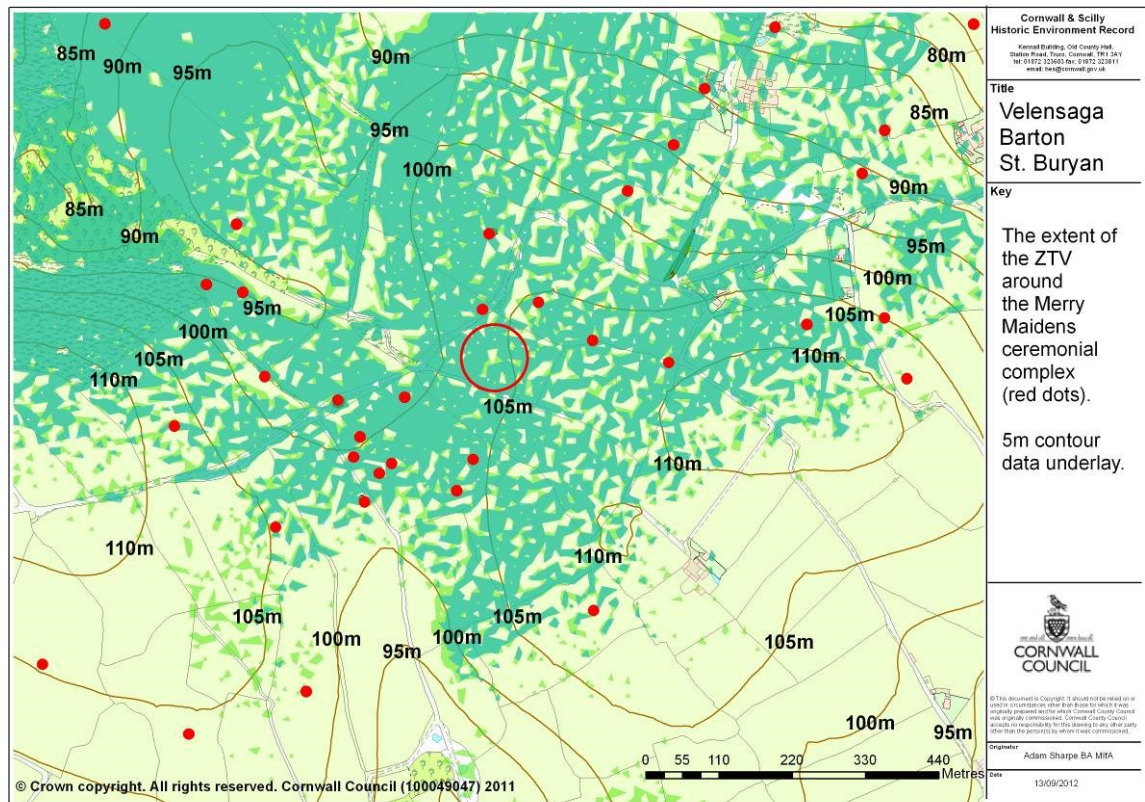


Fig 17. The ZTV mapping for the area immediately around the Merry Maidens ceremonial complex, showing site locations, topography and potential intervisibility.



Fig 18. The landscape around St. Buryan, as seen from the summit of Chapel Carn Brea. The general location of Velensaga Barton is arrowed.



Fig 19. A key view of the Merry Maidens from one of its probable original approach routes, in this case from the west.



Fig 20. The open view north west from the Merry Maidens towards Chapel Carn Brea. Velensaga Barton lies in the mid distance.



Fig 21. A medium telephoto view north west from the Merry Maidens towards Velensaga Barton and Chapel Carn Brea.



Fig 22. A view from the Merry Maidens looking towards Chapel Carn Brea, showing the farm wind turbine and microwave tower in the mid distance.



Fig 23. Looking north west from the top of the Lamorna Valley just to the west of Castallack. St. Buryan church tower form the dominant skyline feature. Velensaga Barton is just below it to the right, whilst the Merry Maidens complex is just over the ridge beyond Boleigh Farm, upper left.



Fig 24. Looking south east from the site proposed for the wind turbine towards the field siting the Merry Maidens (skyline centre).