



Bodulgate, Trewalder, Delabole, Cornwall

Geophysical survey and further archaeological assessment of proposed wind turbine (revised location)



Historic Environment Projects

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

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

Freedom of Information Act

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Cover illustration

*Looking south from the site of the proposed wind turbine towards the skylining
Helsbury Castle.*

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Abbreviations

EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
NGR	National Grid Reference
OS	Ordnance Survey

1 Summary

Historic Environment Projects, Cornwall Council, was commissioned by Mark Dyson of Mark Dyson Surveyors Ltd on 1 October 2012 to produce a desk-based archaeological assessment of the site of a proposed wind turbine at Bodulgate Farm, Trewalder, Delabole, as part of a proposed planning application (Kirkham 2012). The proposed location for the wind turbine lies close to that of a site identified from air photographs as a potential enclosure of the later prehistoric or Roman period, of a type known in Cornwall as a round. It also falls within a former open field of the medieval farm of Bodulgate adjacent to the medieval deer park of Lanteglos.

The proposal is for a 500Kw wind turbine with maximum blade tip height of 77m, to be sited at Bodulgate Farm, in Camelford civil parish, at NGR SX 08143 81990. The site chosen for the wind turbine lies on a south-facing slope approximately 3 km south west of Camelford.

In response to a requirement by the Historic Environment Planning Advice Officer, viewshed analysis out to 10Km from the turbine location, analysis of a geophysical survey of the site and a walkover survey were undertaken as a subsequent project. A report summarising the results of this further assessment and its conclusions was prepared for the client.

A number of monuments and structures with historic environment designations lie within the wider environs of the proposed site, and given the open, elevated nature of the location chosen for the wind turbine with its wide ranging views across the surrounding landscape, setting impacts were identified at a number of designated sites, in particular the nearby Scheduled earthwork of Castle Goff. Potential impacts on the HLC of the landscape surrounding the proposed wind turbine were also noted.

Possible means of obtaining additional information and mitigating potential impacts on heritage assets within the project area were included within the report.

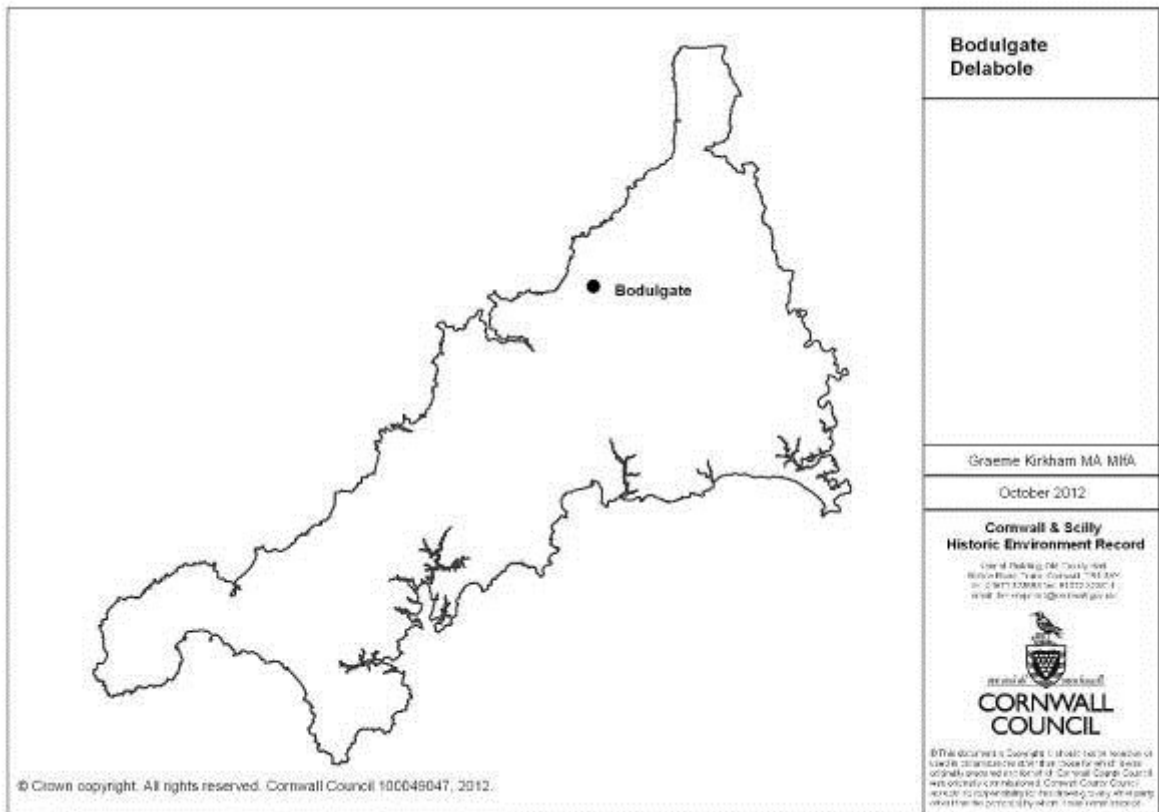


Fig 1. The location of Bodulgate, Delabole.

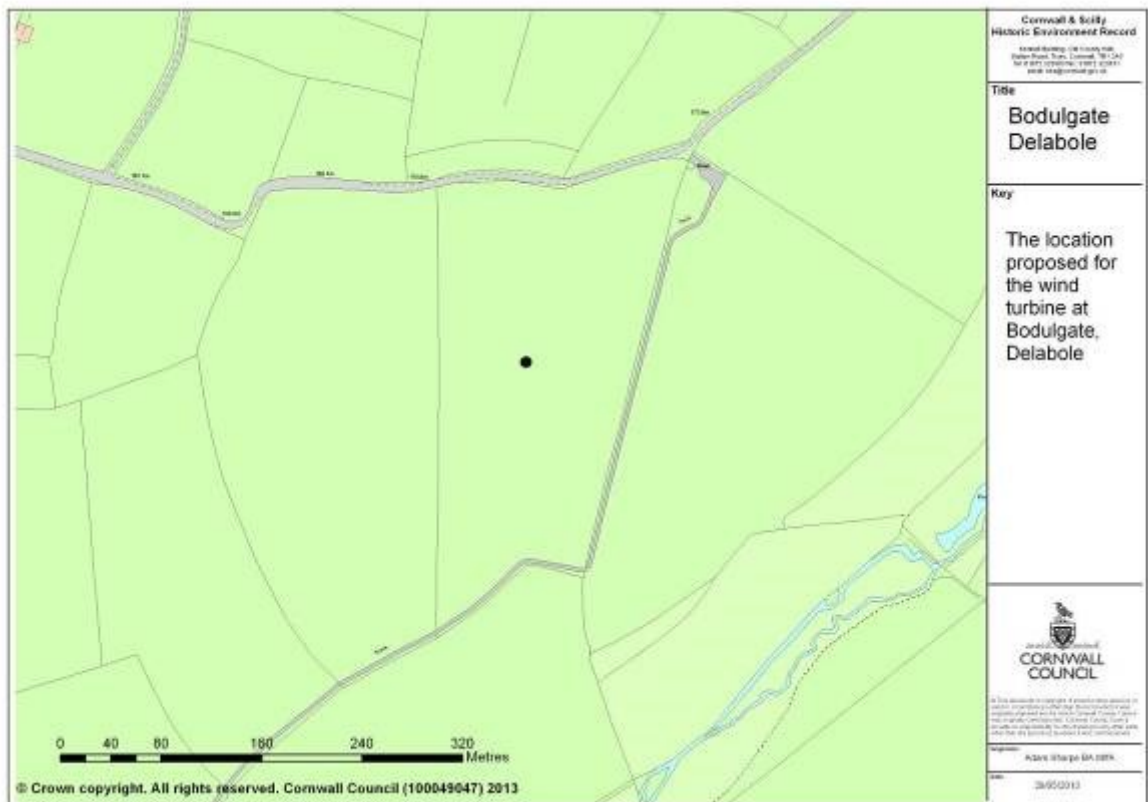


Fig 2. The location proposed for the wind turbine at Bodulgate.

2 Introduction

2.1 Project background

Historic Environment Projects, Cornwall Council, was commissioned by Mark Dyson of Mark Dyson Surveyors Ltd on 1 October 2012 to produce a desk-based archaeological assessment of the site of a proposed wind turbine at Bodulgate Farm, Trewalder, Delabole, as part of a proposed planning application. The proposal is for a 500Kw wind turbine with a maximum blade tip height of 77m, to be sited on farmland at Bodulgate, Delabole, at NGR SX 08143 81990 (Figs 1, 2 and 13).

This initial desk-based assessment was undertaken and reported on in October 2012 (Kirkham 2012). Subsequent to this, and in response to a requirement by the Historic Environment Planning Advice Officer, viewshed analysis out to 10Km from the turbine location, analysis of a geophysical survey of the site and a walkover survey were undertaken.

A brief prepared by Mr Phil Copleston, Historic Environment Planning Advice Officer, Cornwall Council, was used to guide this archaeological assessment, in conjunction with the advice on assessing the impacts of such developments on the settings of designated sites provided by English Heritage in 2012 and specific advice on ZTV radii in an email from English Heritage dated 20 September 2012.

The geophysical survey was undertaken on 31 May 2013. The walkover survey was undertaken on 03 June 2013.

2.2 Aims and objectives

The principal aim of the study is to gain a better understanding of the impacts which would result from the construction of a wind turbine on land at Bodulgate, Trewalder, Delabole.

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 (see desktop assessment, Kirkham 2012).
- Review and analyse historic map evidence for the site (this element was undertaken as part of the preliminary desktop assessment).
- 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 on the proposal site.

The site specific project aims are to:

- Produce a report summarising the results of the desk based assessment (Kirkham 2012);
- Undertake analysis of ZTV mapping to determine potential impacts on both designated and undesignated heritage sites out to radii specified by the HEPAO and English Heritage;
- Produce photomontages demonstrating the visual impact of the proposed wind turbine from a number of key locations;
- Report on a magnetometer survey of the site and its cable connection corridor;
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains or other mitigation is recommended.

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

2.3 Methods

2.3.1 Desk-based assessment

A previous report on the site (Kirkham 2012) was based solely on a 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
 - Norden's Map of Cornwall (printed in 1728 but mapped *circa* 1600)
 - Joel Gascoyne's map of Cornwall (1699)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (*circa* 1810)
 - Lanteglos-by-Camelford tithe map (c 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.

2.3.2 Viewshed analysis

An assessment of the impacts of the proposals was made within 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 turbine 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 Terrain Model (DTM), which ignores potentially temporary surface features such as buildings, woodland, vegetation, etc. to provide a surface model of potential intervisibility between the proposed wind turbine and key heritage assets within the surrounding landscape. A viewshed was generated for an 'observer point' based on the location of the proposed wind turbine.

When performing a viewshed analysis, several variables are used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for each observer point. For the proposed wind turbine at Bodulgate, 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 additional offsets of 50m and 77m to represent the height of the hub of the proposed wind turbine and that of its turbine blades. This viewshed was checked on the ground, given that vegetation and other factors may substantially block views to and from key sites, whilst significant heritage assets within the theoretical viewshed were visited (where access was possible) and the landscape

within which they sit was considered to determine intervisibility with the proposed development site and the natures of their settings, both locally and at a distance. This informed the likely scales and types of any visual impacts which might affect their settings, as required by English Heritage (2011). Viewshed radii of 10km and 5km were used to determine potential impacts on designated heritage assets (as appropriate) and a radius of 1Km for undesignated heritage assets (see Figures 4 to 12). High level designated heritage sites within the 10km to 15km radius zone of the ZTV were identified but not assessed for impact.

Sites identified through intersection of the ZTV modelling with GIS layers containing designated and undesignated heritage assets produced data sub-sets which were further filtered according to their intersection with ZTV zones representing 1Km, 5Km 10Km and 15Km radii from the site, as required by the brief prepared by the HEPAO and English Heritage guidance.

The site types within these data sets were then analysed to determine their likely sensitivity to impacts on settings. Those site types which had no setting (documented sites and the majority of cropmark sites) were excluded from further analysis, as were those which by their natures have very localised settings (for example, milestones, wayside crosses, grave markers and fingerposts), and those with limited settings (domestic and agricultural buildings, together with most public architecture) except where in very close proximity to the application site. The resultant site lists were further filtered by close examination of the ZTV data and a 2005 vertical aerial photograph GIS layer to remove from the lists those sites where mature vegetation or proximal buildings would almost certainly block intervisibility and where intrusion into key views was unlikely. Designated sites with limited settings (most Grade II Listed Buildings) and those with local settings such as associated urban development which were more than 2Km from the application site tended to be excluded from assessment at this stage unless specific reasons such as wholly unimpeded intervisibility or designed views were identified for their retention.

The resultant site list consisted of a mixture of designated landscapes with substantial intervisibility with the proposal site, Scheduled Monuments whose original settings were intended to include large areas of the surrounding landscape (for example, prominent hilltop barrows, hillforts, standing stones and stone rows), or which were designed to function as part of intervisible elements of larger groups with landscape settings (for instance barrow cemeteries), other high grade designated historic structures which were intended when built to be highly prominent within the landscape (predominantly church towers and spires), and upstanding undesignated sites or landscapes in close proximity to the development site. This filtered group of sites was assessed to determine impact (see below).

2.3.3 Fieldwork

In order to check the validity of the Zone of Theoretical Visibility (ZTV) indicated by the viewshed analysis, and the potential setting impacts on key heritage assets within the ZTV, site visits were made to both the site proposed for the wind turbine, and to the selected key locations within the surrounding landscape from which these assets could be seen. 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 and whose settings were assessed as vulnerable to impacts from the development where public access was available. Where this was not the case, the nearest possible vantage point from which views including both the heritage asset and the development proposal site was utilised, preferably one in which the proposed development site formed the backdrop to a view of the designated heritage site or was within the same view.

A walkover survey of the site proposed for the wind turbine and for its 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. A list of sites visited is contained within Section 10 of this report.

2.3.4 Photomontages

See Figures 39 to 50.

Six photomontages showing views incorporating sensitive heritage receptors falling within the ZTV with a scaled image of the proposed wind turbine were commissioned from CEC Ltd.

The visualisations were produced in line with the LI guidance Landscape Institute Advice Note 01/11 Photomontages Landscape Institute 2011. WindFarm software was used to generate outputs, which were based on CEC photography using a levelled tripod and panoramic head, camera at 1.5m above ground, the tripod position being recorded using a GPS unit, whilst viewpoint data included locator data, camera, lens length, &c. For each location specified the outputs included:

- A panorama of the existing view.
- A wireframe panorama including the proposed wind turbine.
- A panoramic photomontage incorporating a scaled image of the proposed wind turbine.

2.3.5 Geophysical survey

See Figures 50-51.

A magnetometer survey of a 1Ha area centred on the site proposed for the wind turbine and on a 30m corridor along its cabling route was undertaken by Archaeophisica Ltd. A Geometrics MagMapper G858 caesium vapour magnetometer was used to carry out the magnetometry survey, utilising a data logger. The paired sensors were set 0.3m above the ground surface to maximise sensitivity whilst decreasing the effects of surface anomalies. Line separation was 1.0m to achieve a compromise between speed of coverage and lateral resolution, whilst the along-line interval was 0.25m in line with English Heritage guidance. Real-time tracking was provided by a GNSS receiver, obviating the need to set out temporary grids. Information was tracked in real time, allowing the monitoring of data quality, positional accuracy and survey resolution.

Caesium vapour magnetic data collected in this fashion usually requires very little levelling to achieve a seamless sheet of data, and elementary corrections are usually limited to heading reduction and a little light smoothing. The sheet or mosaic was then subjected to normal potential field processing techniques including reduction of the background regional field and splitting of the resultant residual field into different depth models through analysis in the frequency domain. This yields the shallow data set, a model of anomalies within the upper 3m of ground and also a pseudo-gradient data set which models the response of a 1m vertical gradiometer, which can sometimes better reveal the edges of weakly magnetic structures.

The data was presented as a series of greyscale images overlaid onto map data georeferenced to the OS grid. A separate catalogue map graphically highlights the most significant anomalies regardless of their origin and also provides the numerical key to a detailed anomaly catalogue included within report text.

Alongside the catalogue the geophysical report text includes a detailed methodological description and justification and analysis of the geophysical environment and its impact upon or presence within the data. Significant aspects of the results were discussed within the report.

2.3.6 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 NGR SX 08143 81990, approximately 3km south west of Camelford. It lies at 166m OD on a south- and south-east facing slope at the southern end of a ridge which projects south from high ground to the north of Delabole (Fig 13). The ridge is defined by the valleys of two south-flowing streams which combine to form the River Allen about 1250m south west of the site.

The field defined as the project area covers 4.97 ha and lies between approximately 172m and 142m OD (see Fig 13). It falls within an area characterised in the Cornwall and Scilly Historic Environment Record (HER) as Farmland: Medieval; that is, land which has been enclosed and cultivated since at least the seventeenth century and potentially from the prehistoric period (Cornwall County Council 1996). Land characterised in this way has been a focus for human activity over a long period and its archaeological potential is therefore regarded as high. A former medieval deerpark lies immediately to the east of the location proposed for the wind turbine.

The parent bedrock underlying the application site consist of undifferentiated Middle Devonian mudstones, siltstones and sandstones, with soils characterised as Denbigh 2 loams over slate and slate rubble (British Geological Survey 2008; National Soil Resources Institute Soil Systems Group 2004). The agricultural classification of most of the project area is Grade 3 with a small area at the southern tip of the field mapped as Grade 4 (GIS dataset held by Cornwall Council).

4 Project extent

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

The assessment also 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 paragraph 129 of the 2012 National Planning Framework, 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.
- Grade II Listed Buildings, World Heritage Site Areas and Conservation Areas – 5Km radius.

- Scheduled Monuments, Grade I and II* Listed Buildings, Registered Battlefields and Registered Parks and Gardens – 10Km radius (these also being noted out to 15Km).

5 Designations

5.1 International

None apply within the 5km zone.

5.2 National

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

The 15km radius viewshed zone includes 68 potentially intervisible Scheduled Monuments (Figure 9).

The 15 km radius viewshed includes 194 Listed Buildings of all grades (Figure 10).

The 15 km radius viewshed includes 1 Registered Park and Gardens (Fig 11).

The 10Km radius viewshed zone includes 51 potentially intervisible Scheduled Monuments (Figures 7 to 9).

The 10Km radius viewshed intersects no Registered Parks and Gardens or Registered Battlefields (Figure 11).

The 10Km radius viewshed includes 3 Grade I Listed Buildings and 1 Grade II* Listed Building (Figures 5 and 10).

The 5Km radius viewshed mapping indicates that there could be intervisibility between the proposed wind turbine and one Conservation Area (Figure 12).

Within the 5Km radius viewshed, the wind turbine would be theoretically intervisible to some degree with a number of individual or groups of Grade II Listed Buildings (see Figure 6).

5.3 Regional/county

The site falls within the Camel and Allen Valleys area of locally important landscape identified as an Area of Great Landscape Value in the North Cornwall Local Plan, section 5.28 (North Cornwall District Council 1999).

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 sites 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 Summary of results of desk-based assessment

The project area is characterised by Cornwall's Historic Landscape Characterisation (Cornwall County Council 1996) as Farmland: Medieval, also described as Anciently Enclosed Land. This is defined as land enclosed and cultivated since at least the seventeenth century and in many areas from later prehistory, which forms Cornwall's long-established agricultural heartland. Because it has been a focus for human activity over a long period the archaeological potential of such land is regarded as high.

6.1 Prehistoric

The Cornwall and Scilly Historic Environment Record (HER) holds a record for a substantial cropmark enclosure (measuring 86m x 60m) in the field immediately to the west of the project area (Fig 3). It has been plotted by the National Mapping Programme from aerial photographs, and takes the form of a round – a settlement enclosed by a substantial bank and ditch which was constructed and occupied during the Iron Age and Romano-British period. These tended to have been enclosed farm settlements or estate centres of the Iron Age to Romano-British period, although some have been shown to have had specialist functions including metalworking. Some lie within adjacent field systems, whilst some examples are associated with nearby unenclosed settlements. This site type is regarded as being of national importance.

The wider area around Bodulgate contains several other examples of rounds including Castle Goff, 750m to the north east, The Rounds (also known as Newberry or Newberry Round), 1 km to the north and Helstone Round, approximately 1.65 km to the south east; several more are found within a 5 km radius. Nearby Iron Age hillforts include Helsbury, 2.5 km to the south and Tregeare Rounds, 5 km to the south west. Collectively these sites indicate that this was a relatively intensively utilised landscape in the later prehistoric and Roman periods. The distribution of early medieval place-names, particularly those incorporating *tre* and *bod* elements, and the distribution of churches and churchtowns in the wider region testify to its continuing importance in the post-Roman to early medieval era.

6.2 Early medieval to modern

The name Bodulgate was first documented in 1286 but is of early medieval origin (that is, pre 1066 AD) and derives from the Cornish elements *bod*, a dwelling (the usual interpretation is a minor settlement or farm holding), and *huel gos*, meaning 'high wood' (Padel 1985, 23-6, 135). It was the centre of a significant landholding in the medieval period, owned by a sequence of regionally important Cornish families (Maclean 1876, II, 340-6). From at least the 1470s it was regarded as the chief place of a manor of Bodulgate (*ibid*, 342-5).

Map regression undertaken for the desk based assessment from sources dating to around 1600 (Norden), 1699 (Gascoyne), 1748 (Martyn), 1809 (Ordnance Survey 1st Edition 1" to a mile mapping), 1841 (the Lanteglos-by-Camelford Tithe Map), circa 1877 and 1907 (the 1st and 2nd Editions of the OS 25" County Series mapping respectively) allowed the interpretation of the development of the landscape at Bodulgate from a single large enclosure which Kirkham (2012) considers likely to have been a surviving medieval open field adjoining the medieval royal deer park of Lanteglos through its subdivision during the 19th century. Some of these boundaries have now been removed.

7 Results of geophysical survey

See Figures 51-52.

A magnetometer survey was undertaken on 16 May 2013, this covering a 1Ha area around the site originally proposed for the wind turbine and a 30m wide corridor centred on the proposed cable connection route. Further geophysical survey was carried out on 31 May to cover the revised site for the wind turbine.

The results of the surveys are summarised as follows. A number of previously unrecorded ditches on at least two alignments belonging to an arrangement of agricultural enclosures predating the modern field system were detected. These have the appearance of boundaries relating to medieval field systems, though some elements could be prehistoric in date.

8 Results of site walkover

A site walkover was undertaken on 03 June 2013. The weather was warm and dry, slowly-moving cloud covering 80% of the sky. The weather proved no barrier to survey, though did result in some degree of degradation of the record photography.

The site proposed for this wind turbine was in a short grass crop which had recently been cut and manured at the time of survey (Fig 15). This area of countryside is used for a variety of farming practices, including grass crops (for silage), grazing (by both cattle and sheep) and some arable crops. The ground was dry, the field being level in its southern quarter, the remainder to the north sloping down towards a valley.

Good visibility was possible in all directions from the site. To the north the limit of visibility was created by the ridge along which the B3314 runs from St. Endellion to Delabole (Figs 19 and 24); to the north east, the ground level viewshed terminated on rising ground just to the east of Camelford; to the east, glimpses of Roughtor, Brown Willy, Louden and Garrow Tors were visible above the ridge of ground 3km to away from the site (Fig 17); to the south the viewshed terminated on the ridge topped by Helsbury Castle (Fig 22); to the south west, Hensbarrow formed a distant backdrop over a succession of hilltops, whilst to the west the ridge of ground carrying the B3314 2km away again closed out views.

Cornwall Council planning application mapping for renewables indicate a substantial number of proposals for wind turbines to the north, east and west of the site at Bodulgate and within 2km of it, some of these already being operational. The majority of these wind turbines are relatively small, though an application for a turbine at Vell Lane not far to the west north west of Castle Goff is for a 77m to blade tip machine. Further wind turbines have been applied for within 5km of the site at Bodulgate; it was noted that some of the larger wind turbines close to designated sites within this zone have been refused planning permission. At present the landscape is relatively free of wind turbines, with the exception of the Delabole wind farm to the north east, one medium-sized example not far to the east and a small example to the north-west. Several high voltage pylon runs cross this landscape to the north of the application site (for example Figs 16 and 20).

Views of the landscape around the application site were generally open, some of the local church towers and associated settlements (such as that at St. Teath) being clearly visible from the adjacent field to the west (Fig 23). Incisions in the landscape created by stream and river valleys and their associated woodland hid other settlements with the exception of Helstone to the south (Fig 21).

A previous site walkover confirmed the presence of the earthwork features plotted by the NMP team in them adjacent field to the west (Fig 15). The smaller of these consisted of a low and very amorphous feature in the north-eastern corner of the field adjacent to the field entrance. The identity of this feature could not be ascertained, though it is possible that it represents a ploughed down barrow. The western central part of the field contained earthworks up to 0.8m high whose arrangement reflected those plotted from aerial photographs. No differential growth was seen which might reflect the locations of ploughed down ramparts or infilled ditches, though the crop in the field may well not have been stressed enough to indicate this, given the recent weather conditions. The identification of this feature as a probable late Iron Age/Romano-British round seems likely.

The site walkover showed the field proposed for the wind turbine not to contain any upstanding earthwork archaeological features. The boundaries enclosing the field were 1.8m high Cornish Hedges with well-trimmed thorn hedge growth.

9 Results of viewshed analysis

See Figures 4 to 12.

Given the location of the site and the significant height of the proposed turbine tower and its blade tips, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be fairly far-reaching. In line with the requirements of English Heritage guidance, the ZTV has been mapped to a maximum distance of 15Km from the site. The visibility of the turbine will diminish with distance, and will, at many local sites, 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).

9.1 1km radius ZTV

See Figure 4.

Given the nature of the local topography and the elevation of the proposed wind turbine, the ZTV suggests that the turbine mast and blades will be visible from approximately 90% of this zone, which extends to the scheduled Delinuth Round to the north, the Grade I Listed Church of St. Julitta at Lanteglos-by-Camelford to the north east, the settlement of Helstone to the south east, Bodulgate to the south west and Trewalder to the west. A scatter of Listed Buildings fall within this zone at Trewalder, Treveans, Newhall Manor and at Lanteglos-by-Camelford, whilst those at Helstone are on the periphery of this zone.

9.2 1km to 2km radius ZTV

The wind turbine will be visible from around 70% of the 1Km to 2Km radius zone, which extends Delabole Quarry to the north, Valley Truckle to the north east, the upper north western slopes of the Camel Valley to the south east, and to the outskirts of St. Teath and Trewennan to the south west.

This zone includes a further Scheduled Monument at Helstone Round, and Listed Buildings at Pengelly, Helstone, Tramagenna, Knightmill and Tregreenwell, whilst those at St. Teath and its Conservation Area are on the periphery of this zone.

9.3 2Km to 5Km radius ZTV

See Figures 6 and 12.

There is a noted fall-off in the ZTV within this zone, from within which the wind turbine will potentially be visible from around 30% of the land area, most particularly to the north west of the site, though there will be some patchy intervisibility on the fringes of north western Bodmin Moor. The zone extends to the line of the B3314 to the north west, to high ground to the north east of Camelford, and to high ground to the south west of Michaelstow.

Within this zone, although there will be some degree of intervisibility with the wind turbine, a pronounced fall-off in visual prominence will occur.

The zone contains additional Scheduled monuments at Helsbury Castle to the south and on Harpur's Downs on north east Bodmin Moor, (Fig 8), as well as a scatter of potentially intervisible Listed Buildings (Fig 6). This zone includes no Registered Parks and Gardens.

9.4 5km to 10km radius ZTV

See Figures 9 to 11.

Within this zone, further fall-off in the extent of the ZTV occurs and the wind turbine will theoretically be visible within only relatively limited areas, these being between Camelford and Trewassa along the line of the A39 to the north east, to the south of St.

Tudy and St. Kew Highway to the south west and on the flanks of Roughtor, Showery Tor and Brown Willy to the south east.

Scheduled Monuments within this zone include groups of round barrows near Starapark to the north east, and prehistoric and medieval sites around Garrow Tor, Showery Tor and Roughtor to the south east. The Listed Church of St. Mabe at St. Mabyn theoretically falls within the viewshed. No Registered Parks and Gardens fall within this zone of the ZTV.

9.5 10km to 15km radius ZTV

See Figures 9 to 11.

In accordance with English Heritage requirements, the ZTV was mapped out to 15Km from the site. High level designated sites within the 10km to 15Km zone of the ZTV have been noted in this report, though do not need to be assessed.

The ZTV mapping suggests that only very limited additional areas of the landscape are likely to fall within this zone of the viewshed, these being on the high ground to the north west of Wadebridge and to its south east around Washaway and Helland. Pencarrow Rings Scheduled Monument is 12.77km from the proposed turbine site at Bodulgate and falls within the ZTV, whilst a small part of Pencarrow Registered Park and Garden may be intervisible with the wind turbine. A small number of Grade II Listed Buildings in and around Wadebridge may fall within this zone of the ZTV, but no additional high grade Listed Buildings are likely to be intervisible within it (Grades I and II*).

It seems unlikely that there will more than very limited potential for intervisibility beyond this zone, and where it occurs, very considerable visual attenuation will occur at such distances, and the likelihood of blocking by trees, hedge vegetation and buildings will be very high. Impacts on the settings of designated areas, monuments and buildings at these distances are very unlikely to occur.

9.6 Scheduled Monuments within the 10km and 15 Km radius ZTVs

See Figure 9.

There are 68 Scheduled Monuments within the 15Km ZTV around the proposed wind turbine site at Bodulgate, of which 51 are within the 10km ZTV, as follows:

Note – some of these sites have multiple entries in the Schedule of Monuments or represent groups of features; in some cases they include both prehistoric and medieval features, whilst those on the fringes of Bodmin Moor consist of designated landscapes rather than individual sites. In the following list the first figure indicates the number of features within the 10km ZTV, the second, those within the wider 15km ZTV.

- 10/16 individual barrows or cairns.
- 3/7 barrow groups.
- 2/2 individual stone circles.
- 3/3 standing stones.
- 7/12 prehistoric settlements with associated field systems, ritual and ceremonial features.
- 3/4 individual round houses.
- 2/7 hillforts.
- 0/1 Promontory fort.
- 1/1 complex of standing stone, cross and guidepost.

- 4/4 Rounds.
- 7/7 Medieval crosses.
- 1/1 Medieval field systems.
- 1/1 holy wells.
- 0/1 dovecots.

Some of these potentially intervisible Scheduled Monuments consist of churchyard crosses, the dovecot and the holy well, whose settings are inherently very local. The settings of the hut circle settlements and the embanked avenue are somewhat larger, but remain, nevertheless, relatively local. None are close to the site proposed for the wind turbine, and, in line with English Heritage guidance, no assessment on impacts on their settings therefore needs to be made. Hillforts, barrows or cairns, standing stones and stone circles, in contrast, were intended, when constructed, to have far-ranging settings, and the majority of the Scheduled Monuments within the 10Km viewshed consist of monuments of these types, and assessments of impacts on the settings of many of these were judged to be required.

Although there is likely to be some degree of intervisibility between these sites and the proposed wind turbine, in some cases views of them will tend to be distant, in some partial and in others locally blocked by nearby vegetation or structures. Nevertheless, given the elevated location proposed for the wind turbine and nearby locations of many of the barrow groups and other prehistoric sites on Bodmin Moor and in the landscape surrounding Bodulgate, in particular the hillforts and rounds, negative impacts on the settings of some more closely-set Scheduled Monuments are likely.

9.7 Registered Parks and Gardens and Registered Battlefields within the 10Km radius ZTV

See Figure 11.

No parts of any Registered Parks and Gardens fall within the 10km ZTV around the proposed wind turbine at Bodulgate.

There are no Registered Battlefields within 10Km of the site proposed for the wind turbine at Bodulgate.

9.8 Grade I and II* Listed Buildings within the 10km radius ZTV

See Figure 10.

Within 15km of the site, there are 194 Listed Buildings of all grades of which 168 fall within the 10km zone. These include three buildings Listed at Grade I and one building Listed at Grade II*:

Grade I

- 1321828 – Church of St. Adwen
- 1327212 – Church of St. Tetha
- 1142729 – Church of St. Julitta

Grade II*

- 1158789 – Community centre to the north west of the Church of St. Tetha.

9.9 Grade I and II* Listed Buildings within the 5km radius ZTV

See Figures 5, 25, 27 to 29.

Within 5km of the site, there are 130 Listed Buildings of all grades. These include the three buildings Listed at Grade I and one Grade II* Listed Buildings noted above:

Grade I

- 1321828 – Church of St. Adwen
- 1327212 – Church of St. Tetha
- 1142729 – Church of St. Julitta

Grade II*

See Figure 29.

- 1158789 – Community centre to the north west of the Church of St. Tetha.

9.10 Conservation Areas within the 5Km radius ZTV

See Figure 12.

The Conservation Area covering St. Teath falls within the 5Km radius ZTV of the site at Bodulgate proposed for the wind turbine, this being at 2km from the site to the south west. The ZTV mapping suggests that the majority of the settlement will fall within the ZTV, though in practice buildings within the settlement will block intervisibility with all but those elements of it which lie on its north western edges. It is likely that substantial intervisibility with the wind turbine from within the core of the settlement will not occur.

9.11 Grade II Listed Buildings within the 5Km radius ZTV

See Figure 6.

Within the 5Km zone there are 130 Listed Buildings of all grades. Of these, the following are Listed Grade II, as follows:

- Farmhouse or farm building – 18
- Manor house – 3
- Cottage or house – 26
- Smithy – 1
- Chapel – 5
- School – 3
- Post office – 1
- Well/well house – 4
- Mill – 1
- Church – 1
- Clock tower – 1
- Cross – 1
- Boundary stone – 3
- Milestone – 4
- Guidepost – 1
- Ledger stone or tomb stone – 49
- No site type - 3

Note – some Listed Buildings have multiple entries in the GIS to distinguish separate elements, though have single List numbers.

Impacts on the settings of many of these feature types are very unlikely unless they are in very close proximity to the proposed wind turbine. These include guideposts, milestones, stiles, churchyard walls, lych gates, etc., headstones or chest tombs,

crosses, bridges and village halls. Others such as houses, farmhouses and manors may have rather larger settings, but none of the Grade II Listed features noted above have extensive settings.

As a result, impacts on potentially sensitive Grade II Listed Buildings have been evaluated within an area extending out to approximately 2Km from the proposal site (though this has been varied according to local topography, taking in the openness and general orientation of views).

Twenty eight Listed Buildings fall within this zone, these being:

- Well house to east of Helland Barton – 1327690
- Vicarage farmhouse – 1158501
- Newhall Manor farmhouse – 1143542
- Newhall Mill – 1158406
- Trebellan and ruins to north and west – 1143543
- The Cottage – 1143549
- Milestone – 1137792
- Crosswaters – 1137765
- Tregreenwell farmhouse – 1327688
- The Old Post Office – 1142727
- St. Julitta's Well – 1312148
- Jetwells – 1328093
- Milestone – 1143559
- Barn south west of Tremagenna – 1327662
- Wellhouse at Tremagenna – 1311784
- Boundary stone – 1328106
- Berry House – 1328096
- Helstone Methodist chapel
- House to south west of Antoine House - 1143557
- House next door but one to south west of Antoine House – 1311849
- Clifton House – 1328095
- Trewalder Methodist chapel – 1146507
- Farm building at Trewalder – 1146530
- Trewalder farm house – 1327663
- Treveans disused farm house – 1158477
- Leger stone at St. Julitta's Church – 1138119
- Glen Mead – 1138029
- Church of St. Julitta (Grade I) – 1142729

In addition, 42 Listed Buildings within St. Teath are sited immediately outside the 2km zone, as follows:

- St. Teath primary school – 1143508

- House to the north west of the White Hart Inn – 1327711
- St. Teath Methodist church – 1143477
- Clock tower – 1143525
- Church cross – 1143521
- Community centre (Grade II*) – 1158789
- 1, 2 and 3 Teague Terrace – 1143526
- The Vicarage – 1158779
- Headstone – 1311351
- Headstone – 1143520
- Headstone – 1311348
- Headstone – 1143518
- The Stables – 1327681
- Honeysuckle Cottage – 1143523
- Primrose Cottage – 1143524
- Bakers Park – 1158761
- 1, 2 and 3 Tower Terrace – 1226985
- Poplars – 1143522
- Grey Stones – 1158517
- Church View and Treveans – 1158740
- Forge Cottage – 1311327
- Tomb chest – 1327716
- Churchyard entrance – 1311395
- Tomb chest – 1143512
- Headstone – 1327713
- Headstone – 1143511
- Tomb chest – 1143510
- Two headstones – 1143513
- Leger stone – 1327714
- Headstone – 1143514
- Headstone – 1158674
- Headstone – 1158684
- Headstone – 1143517
- Headstone – 1158708
- Headstone – 1311381
- Headstone – 1143515
- Headstone – 1327715
- Headstone – 1311383
- Headstone 1143519

- Headstone – 1311347
- Headstone – 1327718
- Church of St. Tetha (Grade I) - 1327712

Note: the 23 headstones, tomb chests and ledger stones are considered to have very local settings only, these being confined to the enclosing churchyard.

There are 31 Listed Buildings within 1Km of the proposed wind turbine site. Nineteen of these are tombstones and ledger stones in St. Julitta's churchyard. The remainder are made up of local farmhouses, cottages, village houses, and former schoolrooms.

9.12 Undesignated sites within the 1Km ZTV

See Figure 4.

The ZTV mapping suggests that 90% of the landscape within a 1km radius of the Bodulgate site will be intervisible with all or part of the proposed wind turbine. Within this zone, the Cornwall and Scilly Historic Environment Record (HER) records 24 sites, and of these, the ZTV mapping indicates that all but five undesignated sites will be intervisible with the wind turbine to some degree or other, as follows:

Prehistoric

- MCO38336 Trewalder cropmark prehistoric enclosure

Undated

- MCO21540 Delinuth enclosure (probable late prehistoric round)

Medieval

- MCO5449 Lanteglos cross
- MCO7151 Lanteglos inscribed stone
- MCO24744 Lanteglos deer park
- MCO3833 Helstone early medieval path
- MCO38334 Trewalder medieval field boundary
- MCO5351 Helstone documented cross site
- MCO17178 Treforda medieval settlement
- MCO13452 Bodulgate medieval settlement
- MCO38337 Bodulgate medieval field boundary
- MCO38338 Trewalder medieval field boundary
- MCO17985 Trewalder medieval settlement
- MCO6166 Trewalder cross site
- MCO38345 Newall Green medieval field boundary
- MCO17850 Treveans medieval settlement

Post-medieval/modern

- MCO52602 Trewalder non-conformist chapel
- MCO54175 Helstone milestone site
- MCO12713 Trewalder Mine

Given the natures of the undesignated sites, the proposal for a wind turbine at Bodulgate would have no significant impact on the majority of their settings, with the

exception of the medieval Lanteglos deer park immediately adjacent to the site proposed for the wind turbine.

9.13 Designated sites within the 10Km to 15Km zone

See Figures 9 to 11.

Current English Heritage guidance states that high grade designated structures, sites and areas within this zone should be listed in this report, but do not need to be assessed for impact at this stage.

Registered Parks and Gardens

- None.

Registered Battlefields

- None.

Scheduled Monuments

As noted above, the following are in the 10km to 15km zone, though intervisibility with the proposed wind turbine is likely to be very slight, and is most likely to be blocked by hedge and other vegetation, trees and buildings:

- Dunmere Camp – 1004424
- Pencarrow Rings – 1004488
- Trevanion Dovecot – 1004487
- Barrow Group on Greenbarrow Downs - 1005458

Grade I Listed Buildings

None

Grade II* Listed Buildings

None

10 Field verification of ZTV

The viewshed mapping and potential impacts were, wherever possible (given constraints on public access) ground checked from a number of locations, including sites at, within, adjacent to or overlooking St. Teath, Helstone, Castle Goff, Delinuth Round, Valley Truckle, Helstone Round, Helsbury Castle and near Harpur's Downs.

At each accessible designated heritage site the potential visibility (and proportional visibility) of the proposed wind turbine was considered. Views out from the site towards key heritage assets were checked from the application site itself. Though true levels of intervisibility were impossible to determine from ground level given that the turbine has not yet been constructed and views were only available from ground level, the general degree of openness of the views out from the site could be assessed. Existing wind turbines close to the Bodulgate site assisted in gauging the likely impacts of the proposed turbine on the settings of key heritage sites.

Where possible, photographs were taken from key locations within the surrounding landscape and from the locations at Bodulgate back to these sites. Whilst views from the surrounding ground allowed the location of the proposed wind turbine to be readily determined within the landscape, even from considerable distances away, in the lower lying ground field hedges, woods and other tree plantings blocked views back towards the site; within settlements, groups of buildings and mature trees and shrubs also blocked many views back to the site. The visibility cut-off imposed by the local topography suggested by the viewshed mapping was confirmed.

Field verification tended to confirm the viewshed mapping, from ground level the viewshed terminating along the north western edge of Bodmin Moor (Fig 17), the line of the B3314 to the east and west of Delabole (Figs 19 and 24), the roadline between Valley Truckle and Michaelstow and that heading north from Valley Truckle. The views were open and more or less uninterrupted to the north west and south east, extending to the south east as far as the western edge of Bodmin Moor (Fig 17) and to Hensbarrow to the south west (Fig 15). Most heritage assets within these views would therefore theoretically be intervisible with the wind turbine proposed on the high ground at Bodulgate, though setting impacts would inevitably decrease with distance, and with the proximity of other intrusive features such as high voltage electricity pylons (Figs 16 and 20).

11 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 a number of existing small and medium scale wind turbines within the landscape immediately surrounding the site at Bodulgate, but very few applications for large-scale turbines have been proposed or consented at present.

However, there are few areas within this general locality where wind turbines are not already parts of local views, though these turbines tend to be relatively distant from the site proposed at Bodulgate; a more visible landscape feature is the re-powered Delabole wind farm (4 x 69m to hub, 99.5m to tip), centred 3km to the north (Fig 20); an application is under consideration for a further wind farm at Davidstow (20 x 80m to hub, 126.5m to tip) 6.5km to the east north east. The wind farm at St Breock Downs is 17.5km away to the south west and that at Bears Downs is 5km further away again in this direction.

12 Synthesis

The desk-based assessment identified the presence of a cropmark enclosure of probable late prehistoric date immediately to the west of the site proposed for the wind turbine at Bodulgate; the walkover survey indicated that this survives as a low but extensive earthwork close to the site proposed for the wind turbine. There is the potential for archaeological features associated with this site to be directly impacted upon by the construction of the wind turbine and its cabling, or by temporary works associated with the construction work.

The geophysical survey (Figs 51 – 52) revealed evidence for a series of sub-parallel ditched features on at least two alignments within the survey area indicative of field patterns predating the modern layout, which is considered likely to be derived from a post-medieval field system.

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of a wind turbine on land at Bodulgate will vary with their distance from the turbine sites, 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. In the case of some designated assets relatively distant from the application site, even where intervisibility will be present, distance from the site and the resultant large areas of landscape and the features it contains within the arc of view will significantly reduce its impact, in particular where key views include parts or all of the existing wind farm at Delabole.

There is the potential for moderate negative impact on the settings of sensitive receptors within the immediately local landscape out to two kilometres from the site, especially at Castle Goff and Delinuth Round to the north of the site, St. Teath and Lanteglos-by-Camelford to its west and east, and Helsbury Castle to its south. There is also some limited potential for negative impact on the settings of designated sites out to five kilometres from the site. There will be some impacts on the Historic Landscape Character of this former medieval farmland within the area surrounding that in which the turbine is proposed to be sited and on the neighbouring former royal deer park.

13 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.

13.1 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.*

13.2 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.

13.2.1 Policy 1

'Development should be compatible with:

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

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

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

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

13.2.2 Policy 2

'Throughout Cornwall, development must respect local character and:

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

13.3 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.

13.4 Hedgerow Regulations

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

14 Likely impacts of the proposed development

14.1 Types and scale of impact

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

14.1.1 Types of impact, construction phase

Construction of the wind turbine 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**.

14.1.2 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 their viewshed during the operational phase, given its height (76 metres), the topography of the site 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** should the turbine subsequently be dismantled and not re-powered or replaced.

14.1.3 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.

14.1.4 Potential and residual impacts

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 14.2, 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 15.

14.2 Assessment of impact

Overall, the impacts of the proposed wind turbine on the archaeological resource are assessed as having a potential scored overall as **negative/minor** to **negative/moderate**, principally dependant on proximity to the proposed turbine sites and intervisibility with them. In the case of Castle Goff, the impact of the current proposal is assessed as **negative/substantial** (see Figure 2) given the proximity of

this site to Bodulgate, the open nature of local views and the visual prominence which the wind turbine will exhibit within views of this Scheduled Monument. In the case of high grade Listed Buildings at St. Teath and Lanteglos-by-Camelford (Figure 5) the impacts are judged likely to be **negative/minor** to **negative/moderate**.

Impacts on the settings of designated heritage sites within 2km of the proposed turbine site have been assessed as **negative/minor** in the case of Listed Buildings and **negative/minor** to **negative/moderate** in the case of Scheduled Monuments, with the exception of Castle Goff, where the potential setting impact is felt likely to be rather more significant.

Impacts on the settings of designated heritage sites within 10Km of the proposed turbine site have been assessed as **neutral** to **negative/minor** overall.

There may be some potential for impacts on sub-surface archaeology within the development site, given the evidence from the geophysical survey, though this is likely to be minor in scope given the character of the feature types which showed up in the data.

The assessments supporting this general statement are outlined in the following sub-sections. To comply with current policies and guidance (Section 13) 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.

14.2.1 Impacts on archaeological sites within the development area

Ground disturbance associated with the installation of foundations for the wind turbine, cable trenching 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 ground 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. The presence of a possible late prehistoric defended enclosure immediately to the west of the site proposed for the wind turbine at Bodulgate raises the potential for impacts on potentially significant sub-surface archaeology taking place considerably. The geophysical survey undertaken by Archaeophysica suggests that this **may** require further determination at the discretion of the HEPAO.

14.2.2 Impacts on the settings of surrounding key heritage assets

The proposed wind turbine is considered likely to have an impact on the setting of key surrounding heritage assets, this being summarised as **negative/moderate** overall within the immediate vicinity of the proposed wind turbine and **negative/substantial** in relation to Castle Goff. Such impacts will be temporary/reversible overall should the wind turbine be dismantled in the future and not be replaced:

- Some of the Scheduled sites located within 5Km of the site proposed for the wind turbine would have been intended, when constructed, to be highly visible focal points within the local landscape. These include hillforts, some rounds and barrows or cairns. There will be substantial intervisibility between some of these sites and the proposed wind turbine, and in some cases, as at Castle Goff, the wind turbine will intrude significantly into some views of these designated sites (see Fig 48).
- However, there is a prominent wind farm within the local landscape at Delabole a few kilometres away from Bodulgate (Fig 20), whilst a further wind farm is under consideration at Davidstow Moor which, if constructed, will also have a substantial landscape presence.

- Such modern features, together with the National Grid power lines which traverse the local landscape from south west to north east, passing very close to Castle Goff and Delinuth Round (Fig 16), have inevitably affected the landscape character of this area, and have impacted on the settings of some nearby high grade designated heritage assets.
- The construction of a wind turbine at Bodulgate will not, therefore, introduce the first highly-visible modern feature into this landscape. Nevertheless, the photomontage taken of Castle Goff (Fig 48) demonstrates the extent to which the proposed wind turbine will impinge into the setting of this particular Scheduled Monument.
- Many of the Scheduled Monuments within the 10Km viewshed are either types which have only limited settings or are at distances from the proposed wind turbine where their settings are unlikely to be impacted upon.
- Given its location and scale, the proposed wind turbine at Bodulgate is unlikely to form part of a visual cluster with other individual wind turbines within the local landscape with the exception of the landscape to the west, from where the wind turbine will tend to appear as part of a group with the Delabole wind farm, and with the operational wind turbine to the east of the Bodulgate site.
- During the operational phase the wind turbine is unlikely to impact to any significant degree on the settings of the majority of the Listed Buildings within its viewshed, given the relatively large distances between the wind turbine and these designated structures and constraints on intervisibility. However, its proximity to St. Teath and the large number of Listed Buildings within this settlement including its Grade I church is likely to impinge on their settings (Fig 23); the relative proximity of the site to the Grade I Listed Church at Lanteglos-by-Camelford will have similar though reduced impacts (Fig 42). Whilst there may, in practice, be limited intervisibility between these structures and the proposed wind turbine, particularly from ground level, the inclusion of the wind turbine into views of these designated structures will probably impact on their settings.
- There are no Registered Battlefields within the 10Km radius viewshed of the proposed wind turbine.
- There are likely to be some limited impacts on the setting of the Conservation Area at St. Teath, which falls just outside the 2km radius viewshed of the proposed wind turbine (Fig 23).
- Any impacts on heritage assets within the landscape surrounding the proposed wind turbine would be temporary and reversible should the wind turbine be dismantled in the future.

14.2.3 Designated heritage assets within the 10Km radius viewshed

Preliminary filtering of the potential for the likelihood of impacts on these sites is discussed above (Section 8). Only those for which it was considered that some level of impact might occur are listed below and assessments of impact made.

Scheduled Monuments (SM) – see Figures 7 to 9, also Figures 31 to 33, 35 to 38, 45 to 50.

Identifier	Site	Impact
1004273	Delinuth Round	Negative/moderate to negative/minor
1004274	Castle Goff	Negative/substantial
1006707	Helsbury Castle	Negative/moderate
1004419	Helstone Round	Negative/minor to neutral
1004218	Hut circles and other features on Harpur's Downs	Neutral

Identifier	Site	Impact
1011542	Prehistoric landscape around Showery Tor	Neutral
1003085	Longstone south west of Moorgate	Neutral

Whilst Delinuth Round is at no great distance from the proposed wind turbine site, it is traversed by high voltage power lines on a prominent run of pylons (Figs 16, 20 and 31); additionally, it is overlooked by tips from the nearby Delabole Quarry. Castle Goff has been entered into a Stewardship scheme, permissive paths have been created across the farmland, and the round (and the area surrounding it which is open access land) has been cleared of scrub vegetation. Whilst there is a pylon line nearby to the north, views of the round tend to be away from this and in the direction of the proposed wind turbine, which will be very prominent within views of the round to its visitors (Figs 35 to 36 and 47 to 48), and will have a palpable impact on its setting. There is currently no public access to Helsbury Castle, though the site has considerable potential for this; the site has clear views over the wind turbine site to the north, and the wind turbine will be a prominent and distracting addition in views of the otherwise generally rural landscape in this direction (Fig 38). Helstone Round, whilst closer to the proposed turbine site as 1.5km away lies on the fringes of the ZTV, and intervisibility with the turbine is likely to be minimal. Attenuation of impact will increase with distance in relation to these sites, particularly those sited on the fringes of Bodmin Moor. As a result, whilst the turbine will be intervisible to some degree from Harpur's Downs, around Showery Tor (Figs 17, 45 to 46 and 49 to 50) and near Moorgate, in practice sites in these locations will be so distant from the wind turbine that it will not form a significant element in views from or of them, and impacts on their settings are thus assessed as neutral.

Grade 1 Listed Buildings - see Figure 5.

Identifier	Site	Impact
1321828	Church of St. Adwen, Advent	Neutral
1327212	Church of St. Tetha	Negative/minor
1142729	Church of St. Julitta, Lanteglos-by-Camelford	Neutral to negative/minor

There will be some intervisibility between parts of the proposed turbine and the church towers at Advent, St. Teath and Lanteglos-by-Camelford. Whilst little appreciation of this will occur at ground level where there will be blocking of views through intervening buildings and vegetation, the introduction of a prominent vertical feature with dynamic elements (the revolving blades) might detract from the original prominence of these structures as landscape features within the local landscape. Advent and Lanteglos-by-Camelford church towers are not visible from ground level at the turbine site; the latter church is within a wooded valley (Figs 27, 41 to 42), and intervisibility seems very unlikely except during winter months when the leaves are off the trees. Some intervisibility is likely with Advent church (Figs 25 to 26, 43 to 44), though the turbine is likely to be a relatively distant object, set within a landscape which already includes high voltage electricity pylons. St. Teath church tower and parts of the church itself will be in clear view of the wind turbine (Figs 28 and 40), though in practice vegetation around the churchyard will substantially or completely block views of the wind turbine.

Grade II* Listed Buildings - see Figures 5 and 29.

Identifier	Site	Impact
1158789	Community centre to the north west of the Church of St. Tetha	Neutral

This building is within the heart of the village; views of the wind turbine from this designated structure are very unlikely, whilst no views of the Listed Building including the wind turbine are likely.

14.2.4 Designated heritage assets within the 5Km radius viewshed.

Grade II Listed Buildings – see Figure 6.

Identifier	Site	Impact
1327673	Trewalder farmhouse	Neutral
1146530	Trewalder farm building	Neutral
1146507	Trewalder Methodist chapel	Neutral
1158477	Disused farmhouse near Treveans	Neutral
Various (see Section 9.11)	Grade II Listed Buildings within St. Teath	Neutral to negative/minor dependant on location

Helstone, Trewalder, Treveans, Lanteglos-by-Camelford and Newhall Manor are all within 1km of the turbine site proposed for Bodulgate, and Listed Buildings at these locations are likely to have either clear or partial views of the wind turbine, except where there are intervening buildings or tree cover. In the case of Trewalder, Treveans and Newhall Manor, the principal elevations of the designated buildings face away from the site proposed for the wind turbine, other structures are clustered nearby, there is mature vegetation cover in the immediate locality and thus intrusion into their settings is likely to be limited to views of them, rather than views from them. In addition, overhead power lines carried on pylons traverse the landscape between these sites and the proposed wind turbine site at Bodulgate.

At Helstone, again, some blocking or partial blocking of views of the wind turbine is likely given the density of structures within the settlement and the presence of mature trees between the settlement and the site proposed for the wind turbine. However, the turbine will be close to the settlement, and in clear view of it (Fig 21). Near Lanteglos-by-Camelford, the Grade II Listed Buildings consist of structures which have limited or local settings; most are set within wooded settings, and impacts on these are considered unlikely. At Lanteglos-by-Camelford, the churchyard is enclosed by mature trees (Fig 27).

Within the 1km to 2km zone, the Grade II Listed Buildings consist of a mixture of milestones, a boundary stone, wells, a mill and a number of domestic structures, these generally being within settlements. All but the domestic structures have very local settings, whilst the latter are likely to have limited settings. Considerable masking of the wind turbine by other nearby buildings, associated structures or vegetation is likely, though in some cases clear views, and in others partial views, of the wind turbine are likely. It is thought probable that only in those instances where the principal elevations of such designated structures will experience the wind turbine as a substantial element or where the wind turbine will intrude into key views of these buildings will setting impacts occur.

Specifically, for most of the Listed Buildings within St. Teath, there is unlikely to be substantial intervisibility with the proposed wind turbine due to the effects of other buildings blocking views of the wind turbine. Tregreenwell and Trebellan farms are surrounded by groups of mature trees, as are Newhall Manor Farm and Jetwells. Tremagenna farmhouse may have a less interrupted view of the wind turbine, though across its nearby golf course.

Conservation Areas

See Figures 12 and 30.

The only Conservation Area which falls within the 5Km ZTV is that relating to St. Teath. Despite the proximity of the proposed turbine site to the settlement (just over 2km), it is considered unlikely, given the nature of the settlement and the existing presence of high voltage power lines traversing this landscape, that significant setting impacts will occur within St. Teath, and it is unlikely that the wind turbine will be appreciated as a

particularly intrusive presence from within the settlement, except, perhaps, on its north eastern fringes, which lie outside the boundary of the Conservation Area.

14.2.5 Undesignated heritage assets within the 1Km radius viewshed

See Figure 4.

Identifier	Site	Impact
MCO24744	Lanteglos deer park	Negative/minor to negative/moderate

The royal deer park at Lanteglos-by-Camelford was an important and relatively rare site type within Cornwall, and one whose boundary can still be traced on the ground over most of its length (Fig 4). Whilst the proposed Bodulgate wind turbine will not directly impinge physically on this site or on the park pale, it will be located very close to it and will inevitably impact on its setting within the landscape.

14.2.6 Impacts on Historic Landscape Character

A wind turbine installation erected at Bodulgate 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/moderate**. Factors contributing to this assessment are as follows;

- Some significant visual impact throughout the operational phase would occur, affecting the integrity of this area as former medieval farmland adjacent to a medieval Deerpark through the introduction of a highly visible modern feature into this landscape.
- There are presently few highly-visible modern features within the immediate local landscape, which by and large retains its historic landscape character.
- The land-take for the proposed development is small in comparison with the area of the HLC Units of former downland within the surrounding landscape.
- There would be no impacts in terms of physical loss during the construction phase of features 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.

15 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.

15.1 Archaeological works in advance of construction

Given the potential for sub-surface archaeological remains within the area which might be affected by the construction of the wind turbine and associated activities and the ambiguity of the evidence relating to the possible late prehistoric/Romano-British 'round', the HEPAO may consider that, in this instance, some degree of further investigation through evaluation trenching may be required to determine the presence or absence of this feature, and thus the nature of any potential sub-surface archaeological impacts within this part of the field through proposed construction activities before a recommendation for the granting of planning permission could be made.

15.2 Site redesign

Given the nature of the site selected for the proposed wind turbine and the topography of the local landscape, there would seem to be little potential for reducing the potential impacts on the setting of Castle Goff and other relatively closely-set Scheduled Monuments through relocation of the wind turbine to another site within its immediate environs. There appears to be some scope for micro-relocation to mitigate the potential for impacts on the potential sub-surface archaeology of this site, given the proximity of a possible round – a site type which detailed investigation elsewhere in Cornwall has shown to often be associated with extra-mural features such as unenclosed settlement features, field systems, etc.

15.3 Archaeological recording during site works

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

Archaeological recording in the form of the recording of upstanding elements of the site which might be negatively impacted upon by the works, or a watching brief (observation by an archaeologist during mechanical ground reduction activities) can be required either where any significant features or areas of ground are to be disturbed (for instance for the foundations for the turbine or during cable trenching), in areas where significant features had been identified through the site walkover, or where the balance of probability suggested that sub-surface archaeology might survive. This approach provides for preservation by record of upstanding or buried archaeological features or artefacts and reduces any impacts on the archaeology of the sites to **negative/minor**. Any resultant impacts would be reduced to **permanent** and **irreversible**.

In the instance of the site at Bodulgate, given the proximity of a possible cropmark round to the west of the site proposed for the wind turbine, there is some possibility of at-present unrecorded below ground remains being directly impacted upon by the proposal, though no evidence for this feature was detected through geophysical survey. The Historic Environment Planning Advice Officer may require an evaluation of the site proposed for the turbine through evaluation trenching to determine the likely impacts and significance of any below ground remains before a recommendation for the granting of planning permission could be made.

16 References

16.1 Primary sources

Gascoyne, J, 1991 [1699]. *A map of the county of Cornwall newly surveyed*, Devon and Cornwall Record Society, new series, **34**, Exeter

Martyn, T, 1748. *New and accurate map of the county of Cornwall, from actual survey*, London (paper copy held by HE)

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Tithe map and apportionment, 1839. Parish of Lanteglos-by-Camelford (digital copy from Cornwall Record Office)

Cornwall County Council 2005 aerial mapping of Cornwall.

Ordnance Survey, c 1813, 1st edition 1in: 1 mile map (licensed digital copy at HE)

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Ordnance Survey, c 1907. 2nd edition 25in: 1 mile map (licensed digital copy at HE)

Ordnance Survey, 2007. Mastermap digital mapping

16.2 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

Kirkham, G. 2011, *Bodulgate, Trewalder, Camelford, Cornwall: archaeological assessment of proposed wind turbine site*, HEP report 2012R072

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

16.3 Websites

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

17 Project archive

The HE project number is **PR146243**

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.A-D\Bodulgate wind turbine assessment
3. English Heritage/ADS OASIS online reference: cornwall2-151988

This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites B\Bodulgate geophysics and additional assessment 2013\Report\Bodulgate Delabole wind turbine geophysics and assessment.doc



Fig 3. Cropmark archaeology plotted from aerial photographs in the enclosure at Bodulgate.

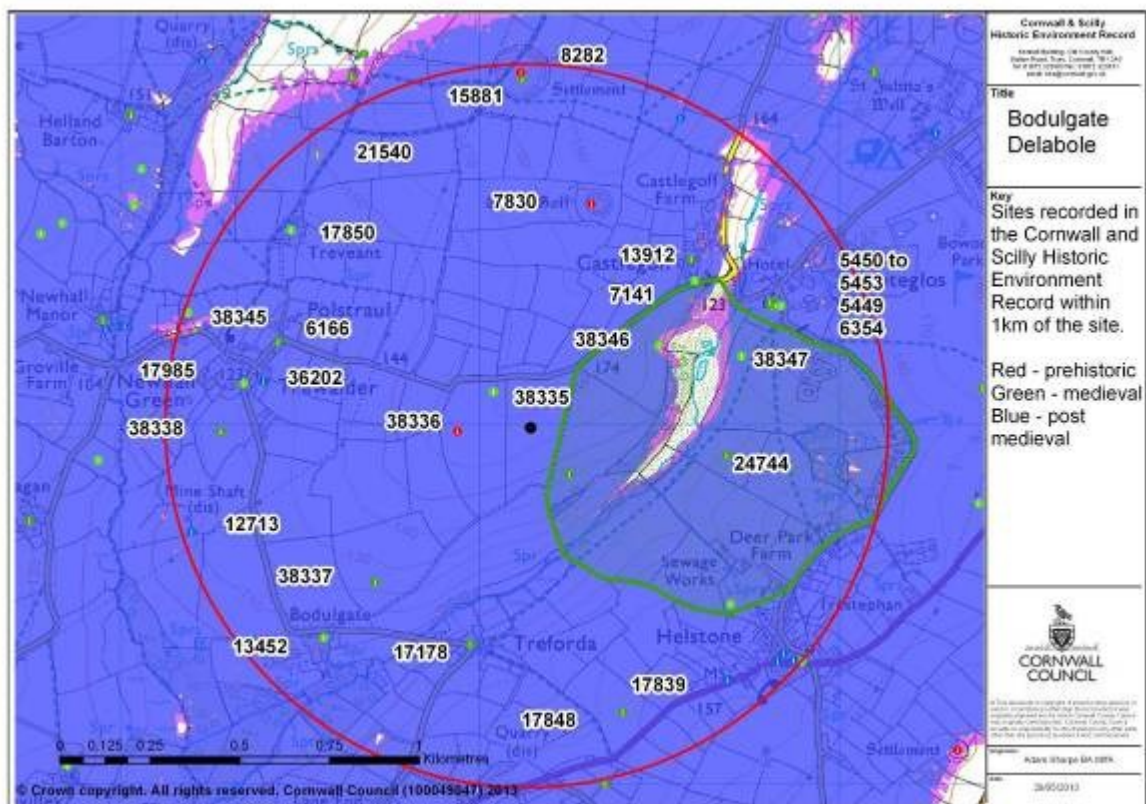


Fig 4. Sites recorded in the Cornwall and Scilly Historic Environment Record in the 1km radius ZTV around the site proposed for the wind turbine. Red - prehistoric, green - medieval, blue - post-medieval.

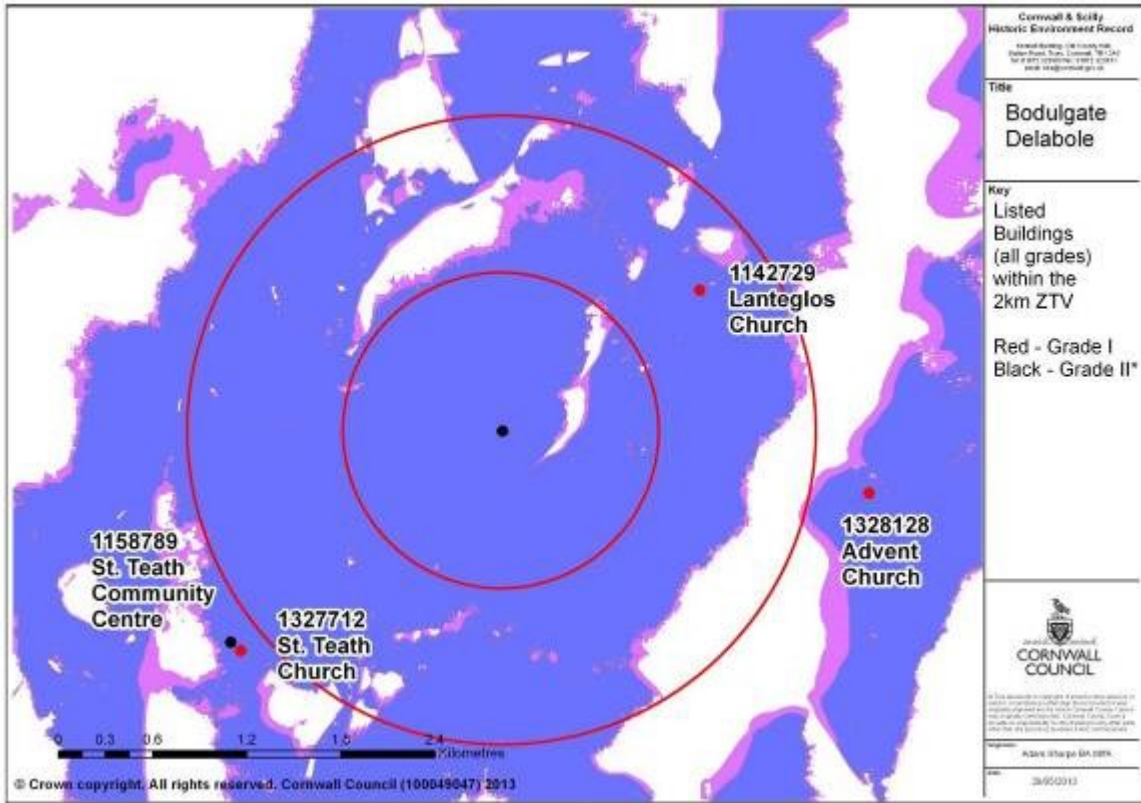


Fig 5. High grade Listed Buildings within the ZTV around the proposed wind turbine. Red – Grade I, Black – Grade II*.

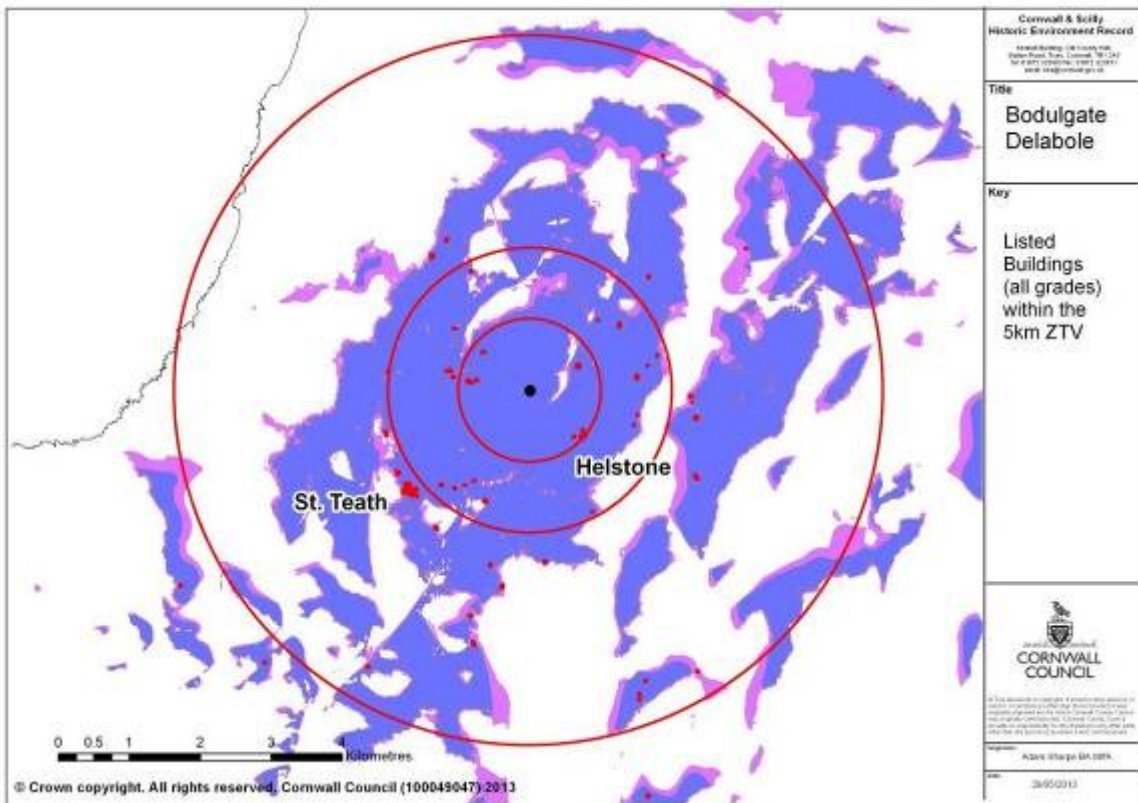


Fig 6. Listed Buildings (all grades) within the ZTV up to 5km out from the proposed wind turbine.

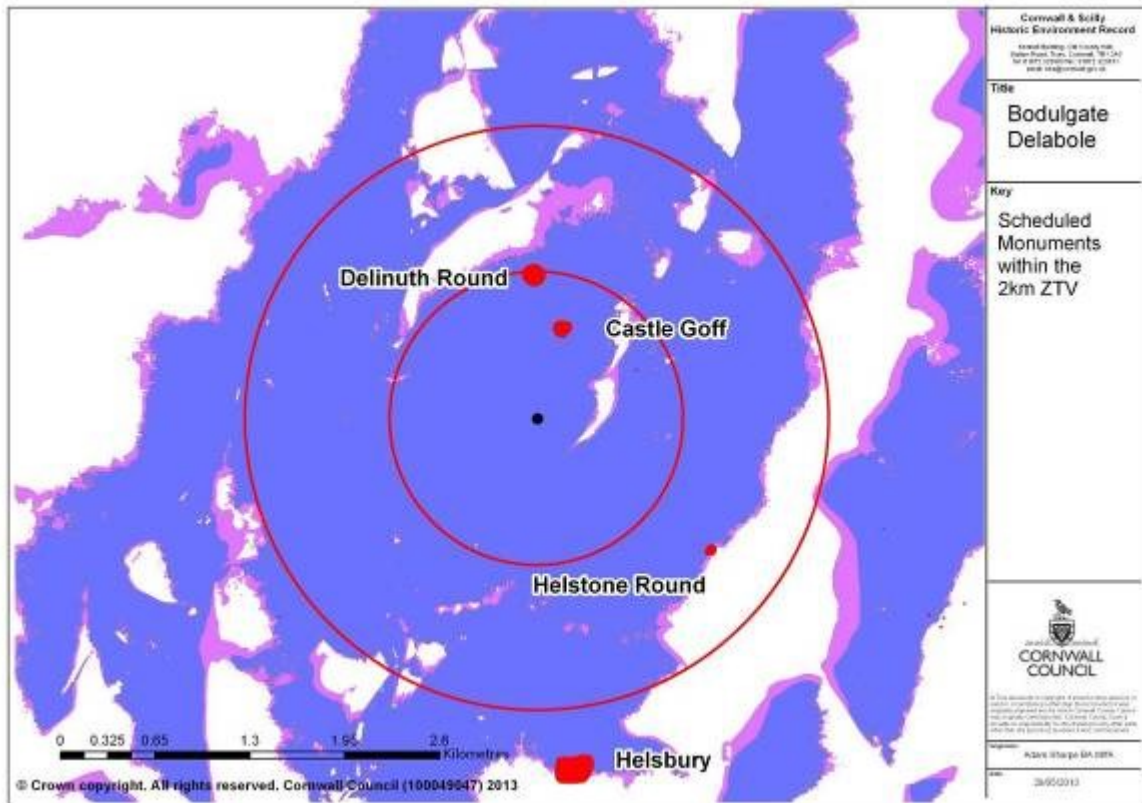


Fig 7. Scheduled Monuments within the ZTV out to 2km from the proposed wind turbine.

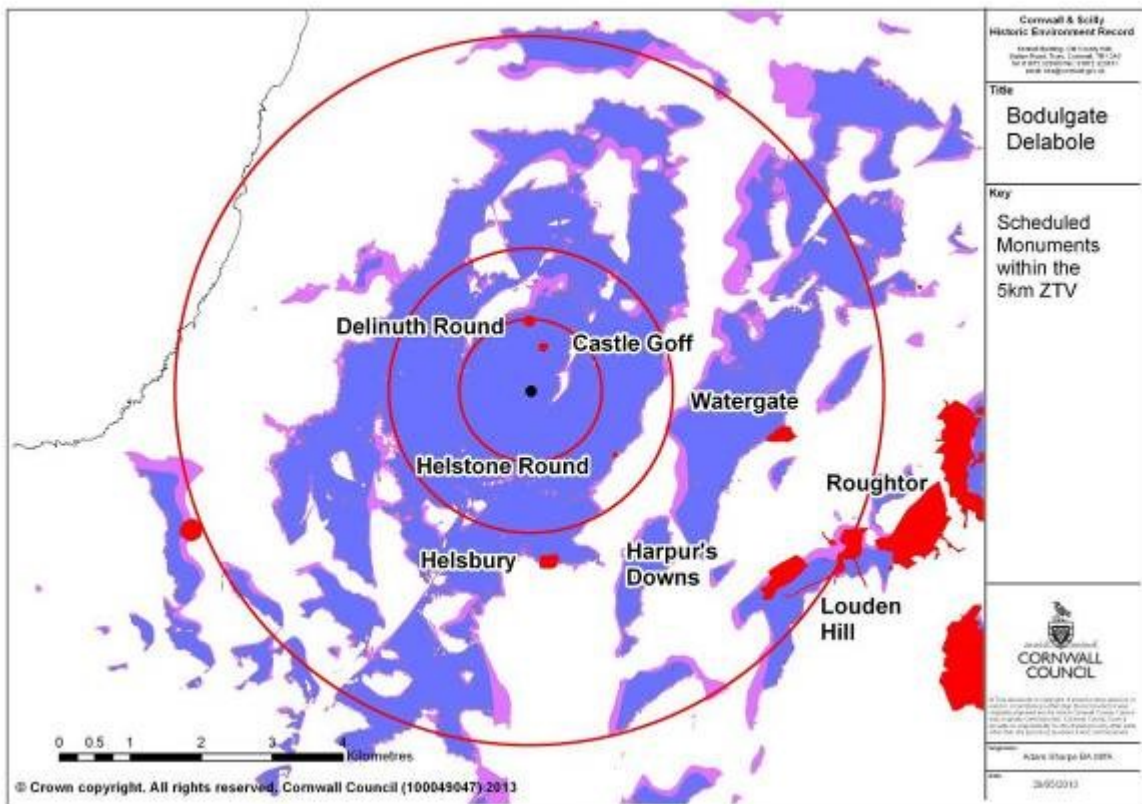


Fig 8. Scheduled Monuments within the ZTV out to 5km from the proposed wind turbine.

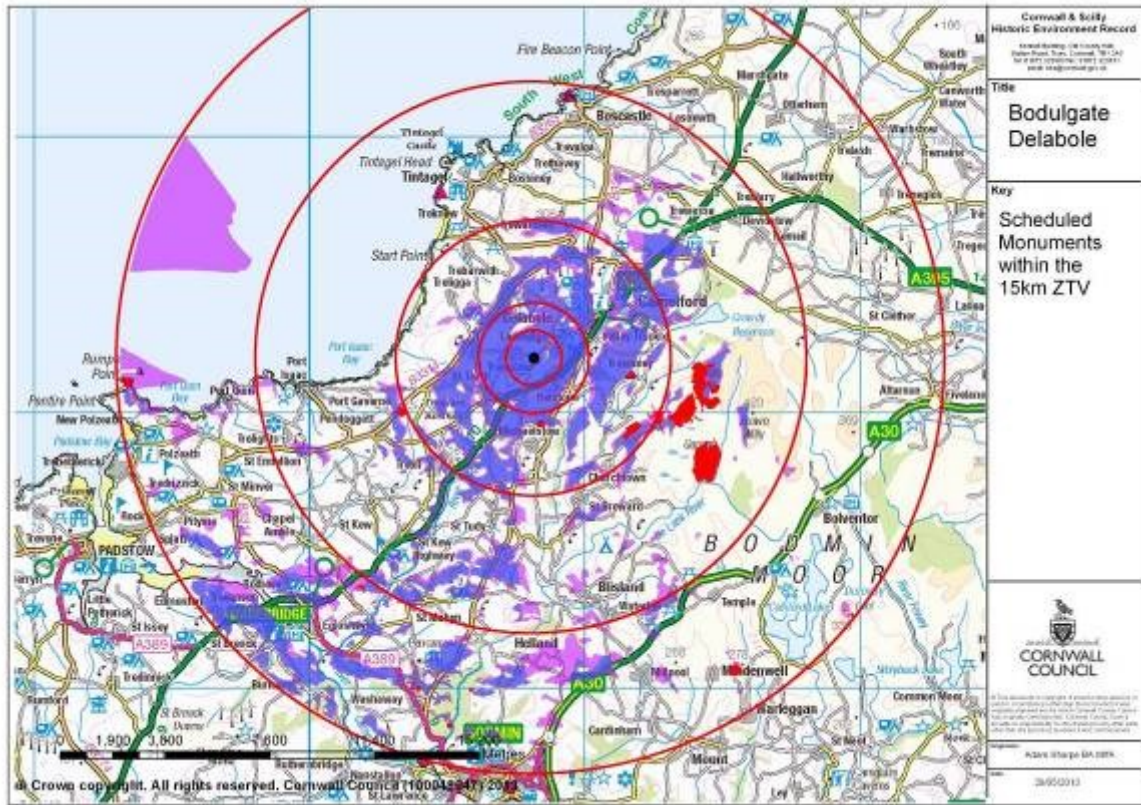


Fig 9. Scheduled Monuments within the ZTV out to 15km from the site proposed for the wind turbine.

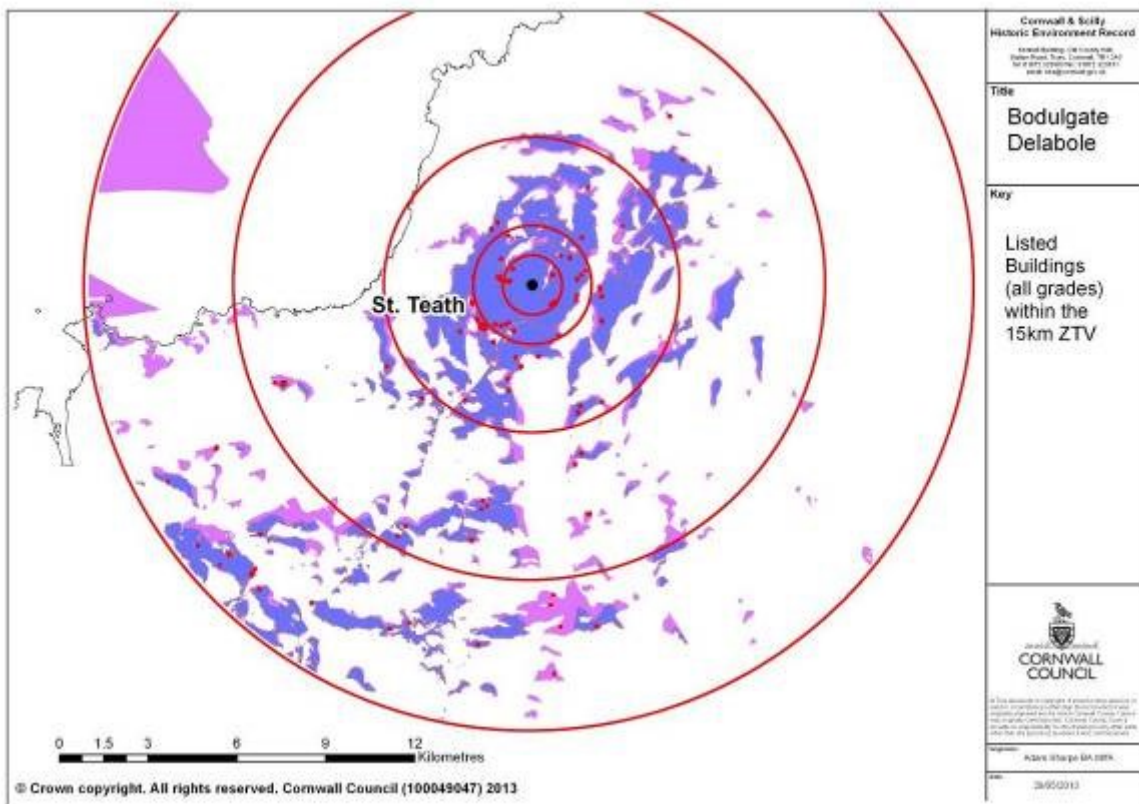


Fig 10. Listed Buildings (all grades) within the ZTV out to 15km from the site proposed for the wind turbine.

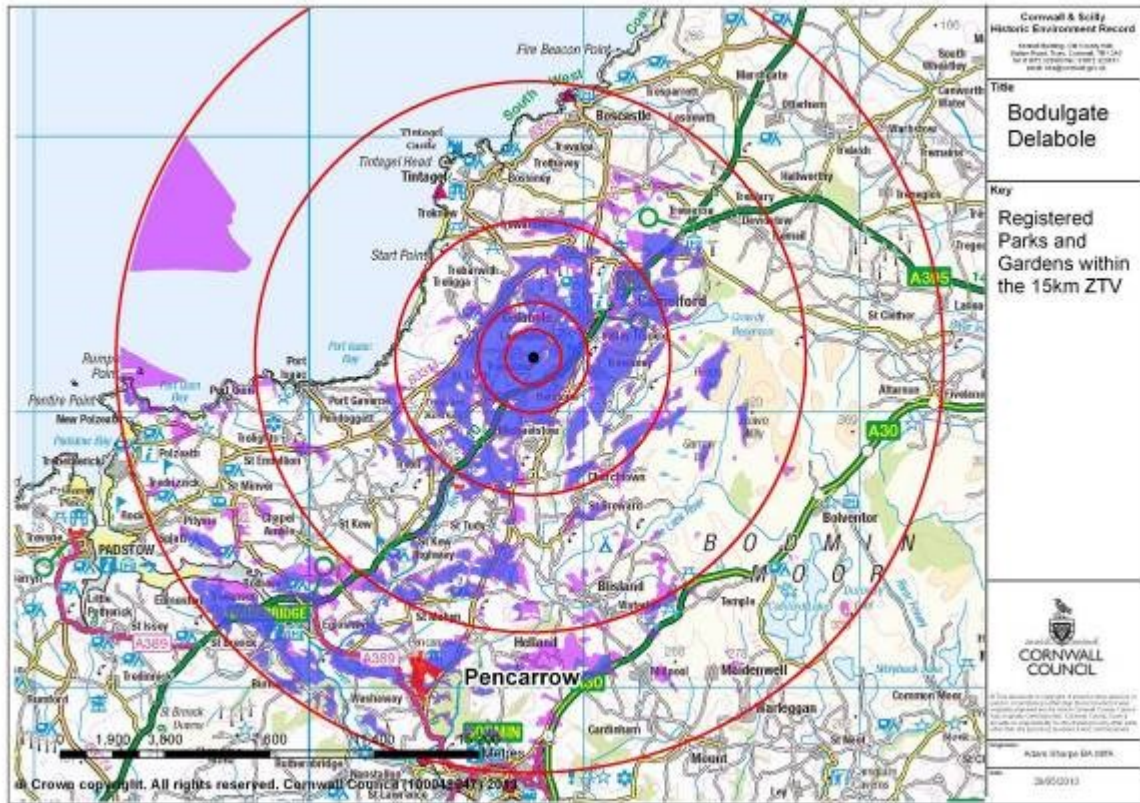


Fig 11. Registered Parks and Gardens falling within the ZTV out to 15km from the site proposed for the wind turbine.

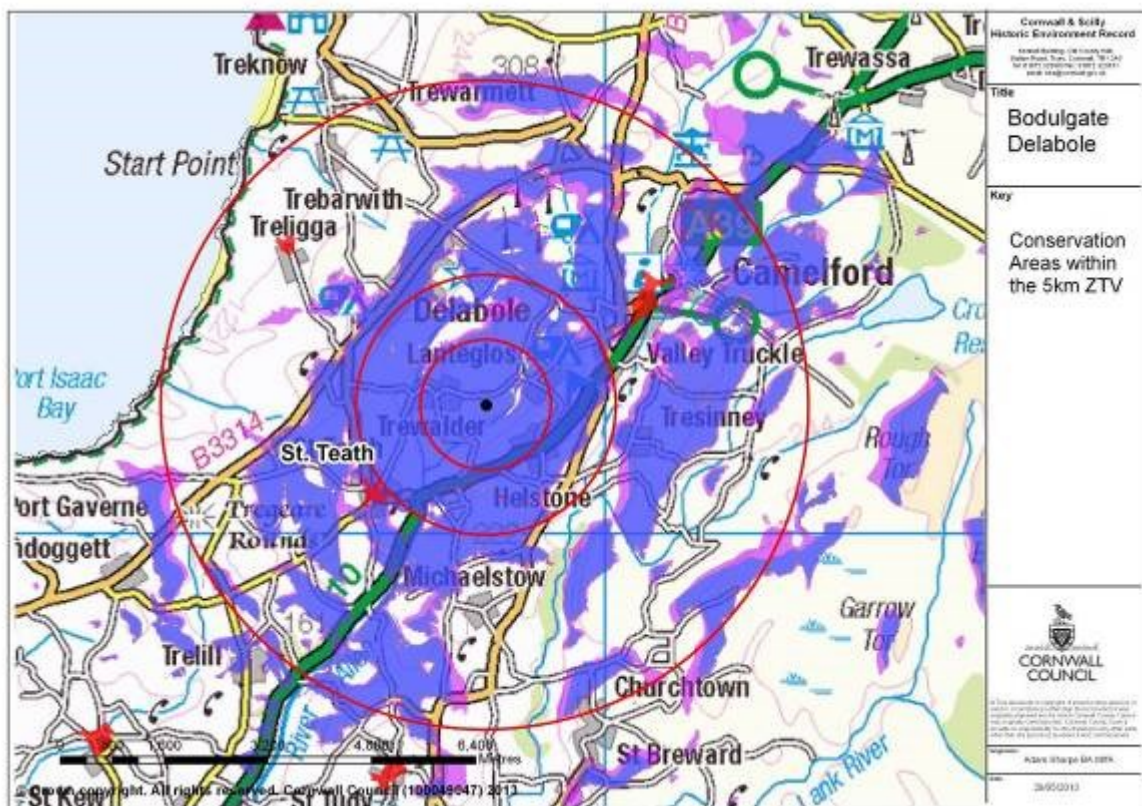


Fig 12. Conservation Areas falling within the ZTV out to 5km from the site proposed for the wind turbine.



Fig 15. The view looking south west from the wind turbine site towards Hensbarrow.



Fig 16. The prominent run of high voltage pylons crossing the landscape to the north and west of the site at Bodulgate.



Fig 17. The view east from the turbine site towards Bodmin Moor, with Showery Tor, Roughtor and Brown Willy prominent on the skyline from left to right.



Fig 18. The holiday park, golf course and wind turbine to the east of the site at Bodulgate.



Fig 19. A telephoto view looking north towards the church at Delabole, seen through a landscape of power lines and quarry tips.



Fig 20. The view north from the proposed turbine site includes the repowered Delabole wind farm and a number of power lines on poles and pylons.



Fig 21. The view from the site south east towards Helstone. Helstone Round lies just over the skyline ridge behind the settlement.



Fig 22. The view south towards the skyline of Helsbury Castle (centre) 2.5km away.



Fig 23. The view from the site looking west towards St. Teath. The clear intervisibility between the church and the wind turbine site is evident.



Fig 24. Pengelly (Delabole) to the north west of the site forms the skyline, the Methodist chapel being far left in this view.



Fig 25. The view west from Advent churchyard. The wind turbine might just be visible in the distance to the right of the tree to the left.



Fig 26. Looking west from the track to Advent church. The wind turbine would appear in this view in the distance beyond the skyline hedge (centre).



Fig 27. Looking across Lanteglos-by-Camelford church in the general direction of the proposed wind turbine, whose upper mast and blade would be visible in this view in the winter when the leaves are off the trees.



Fig 28. Looking east past St. Teath church in the general direction of the proposed wind turbine, whose visibility from this location would be almost entirely blocked by trees and buildings.



Fig 29. The Listed community building adjacent to the churchyard.



Fig 30. St. Teath Methodist chapel. The view demonstrates the typically closed-in nature of the conservation area.



Fig 31. The view north across Delinuth Round, showing the pylon sited within it and the quarry tips beyond.



Fig 32. The view north east across Delinuth Round, showing the visual clutter of pylons and wind turbines which significantly impact on its setting.



Fig 33. Looking towards the proposed wind turbine site (1km to the south) from Delinuth Round.



Fig 34. The view south across Delabole Quarry.



Fig 35. The well-preserved and accessible earthworks at Castle Goff.



Fig 36. Looking across Castle Goff in the direction of the proposed wind turbine, which would be clearly visible in this view.



Fig 37. the western earthworks of Helsbury Castle, with part of the Scheduled landscape on Harpur's Downs in the background.



Fig 38. The view north from Helsbury Castle. The proposed wind turbine would be sited in the field to the right of centre in this view near its centre at the break of slope, and would be wholly intervisible with the Scheduled Monument.

Label	Anomaly Type	Feature Type	Description	Easting	Northing
1	Linear enhanced field	Fill - Ditch	A linear magnetic anomaly generally less than 1.2m wide and likely to mark a narrow ditch fill, something akin to a field boundary but with insufficient visible to support interpretation as such. It appears to cross or be crossed by [2] and hence the two are likely to be of different dates	207978.7	81981.4
2	Linear enhanced field	Fill - Ditch	This is of a similar size to [1] but is slightly less magnetic and hence less clear overall. It curves slightly which is similar to the western field boundary and therefore it is possible that this fill is a former field boundary within a concentric pattern of fields	208008.8	81981.4
3	Area enhanced field	Fill - Ditch?	A diffuse anomaly up to about 1.5m wide that seems to be continued across the site in a slight curve as [4]. It is likely to be a fill, perhaps a band of deeper or more magnetic soil trapped against or within something. This could mark a ditch for example	207967.2	81951.6
4	Area enhanced field	Fill - Ditch?	See [3]	208031.1	81964.7
5	Linear reduced field	Structure? - Drain?	Land drain? Something straight and relatively non-magnetic and at an angle to present field boundaries. If not a drain it would have to be something like a stony or sandy strip of soil	208053.7	81941.7
6	Linear enhanced field	Natural? / fill?	Ambiguous and ill-defined, this seems most likely to be a natural soil structure	208018.4	81995.3
7	Area enhanced field	Natural? / Fill?	A very weak and broad anomaly, visible as slightly elevated magnetic gradient to the south and weakening northwards might possibly indicate a relatively structural variation in the soil or perhaps a slightly deeper soil. It is too weak, variable and diffuse to be diagnostic	207974.1	81927.4
8	Linear enhanced field	Fill - Ditch	A curving fill, probably part of an enclosure extending northwest beyond the survey and not seen in the field to the west	208098.5	82007.2
9	Linear enhanced field	Fill - Ditch?	Probable ditch fill, uncertain function though similarly aligned with [2] to the west	208137.4	81959.6
10	Area enhanced field	Fill? - Ditch?	Similar to [3] and [4] but not obviously connected with these, this hints at a band of deeper soil and has the sinuous form often associated with prehistoric field boundaries	208142.2	81992.9
11	Linear enhanced field	Fill - Ditch	Likely ditch fill, too short a length being visible to associate with anything although likely to be related to one or more of [1], [2] or [9]	208134.6	81908.4
12	Area enhanced field	Fill? - Ditch?	See [10] for a similar example, perhaps also related to this given the apparently similar trend	208133.8	81871.5
13	Linear reduced field	Structure? - Drain?	See [5]; interestingly this (and [14]) cross the present field boundary	208125.5	82006.0
14	Linear reduced field	Structure? - Drain?	See [13]. This example has a similar alignment but is not parallel. Their relative isolation within the landscape might weaken their interpretation as land drains	208142.2	82006.0

Geophysical survey catalogue, to be read in conjunction with Figure 52 below.

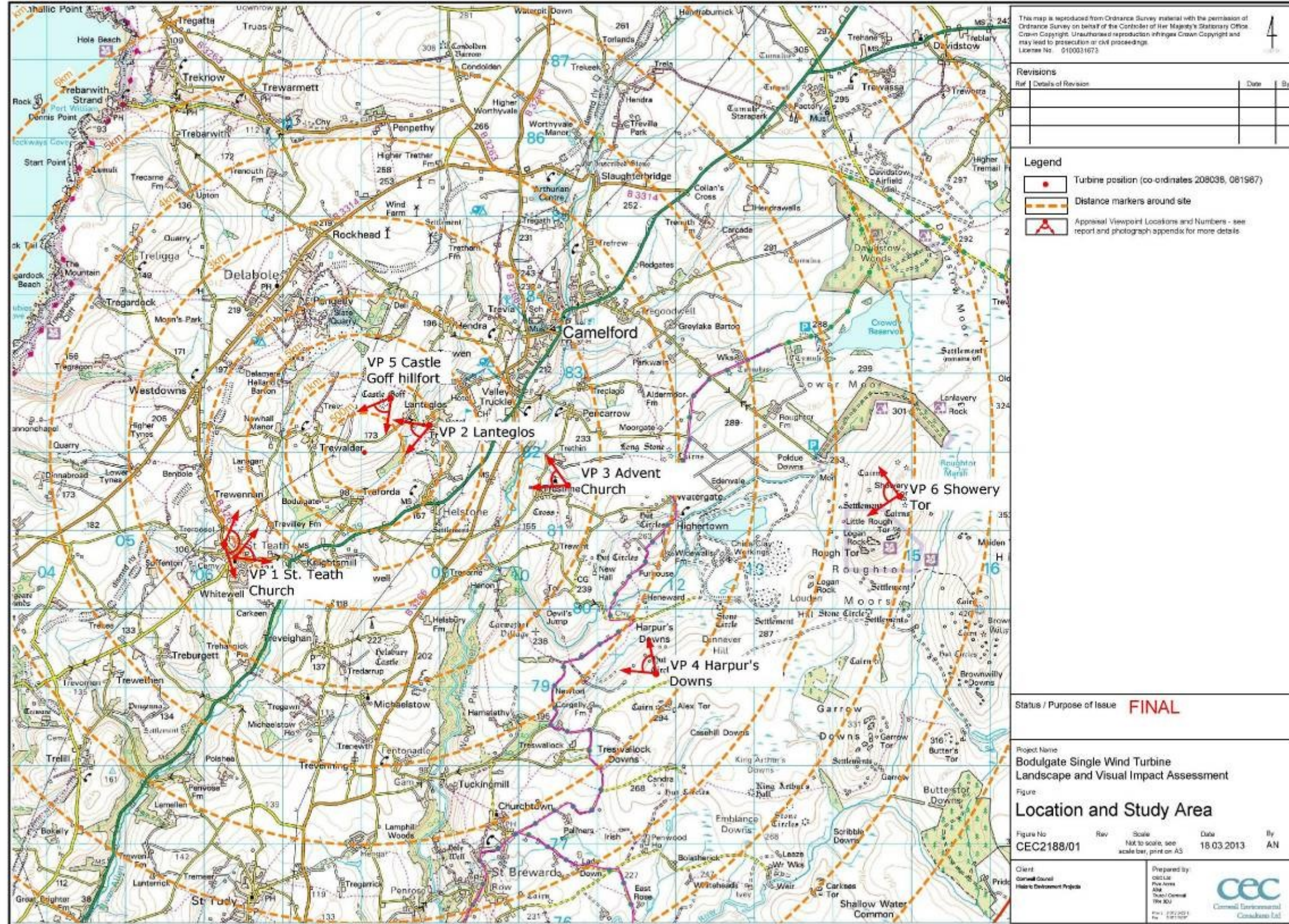


Fig 39. The locations used for the photography from which the following photomontages were created.



Contextual panoramic view (Illustrative, viewing distance does not apply)

CEC2188 Bodulgate Camelford Single Wind Turbine LVIA: Viewpoint Photo Record and Visualisations (Existing View)

Viewpoint 2: Lanteglos	Easting: 208859 Northing: 082334 Elevation: 147m AOD	Distance to turbine: 891m Direction of view (centre): 260 Date/Time: 9.16 28/03/2013	Included angle: 60 No of frames (existing view): 3 Viewing distance: 35.7	Camera: Sony A390 DSLR Height: 1.5m levelled tripod Sensor size: 23.5mmx15.7mm Lens: 35mm focal length (equivalent to 50mm lens focal length on full frame sensor camera)	Print on A3. Do not scale.
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Fig 41. Photo record location 2: Lanteglos-by-Camelford.



Fig 42. Photomontage location 2: Lanteglos-by-Camelford.



CEC2188 Bodulgate Camelford Single Wind Turbine LVIA: Viewpoint Photo Record and Visualisations (Existing View)

Viewpoint 3: Advent Church	Easting: 210627 Northing: 081566 Elevation: 217m AOD	Distance to turbine: 2585m Direction of view (centre): 290 WNW Date/Time: 10.05 28/03/2013	Included angle: 99.5 No of frames (existing view): 4 Viewing distance: xx	Camera: Sony A390 DSLR Height: 1.5m levelled tripod Sensor size: 23.5mmx15.7mm Lens: 35mm focal length (equivalent to 50mm lens focal length on full frame sensor camera)	Print on A3. Do not scale.
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Fig 43. Photo record location 3: Advent church.

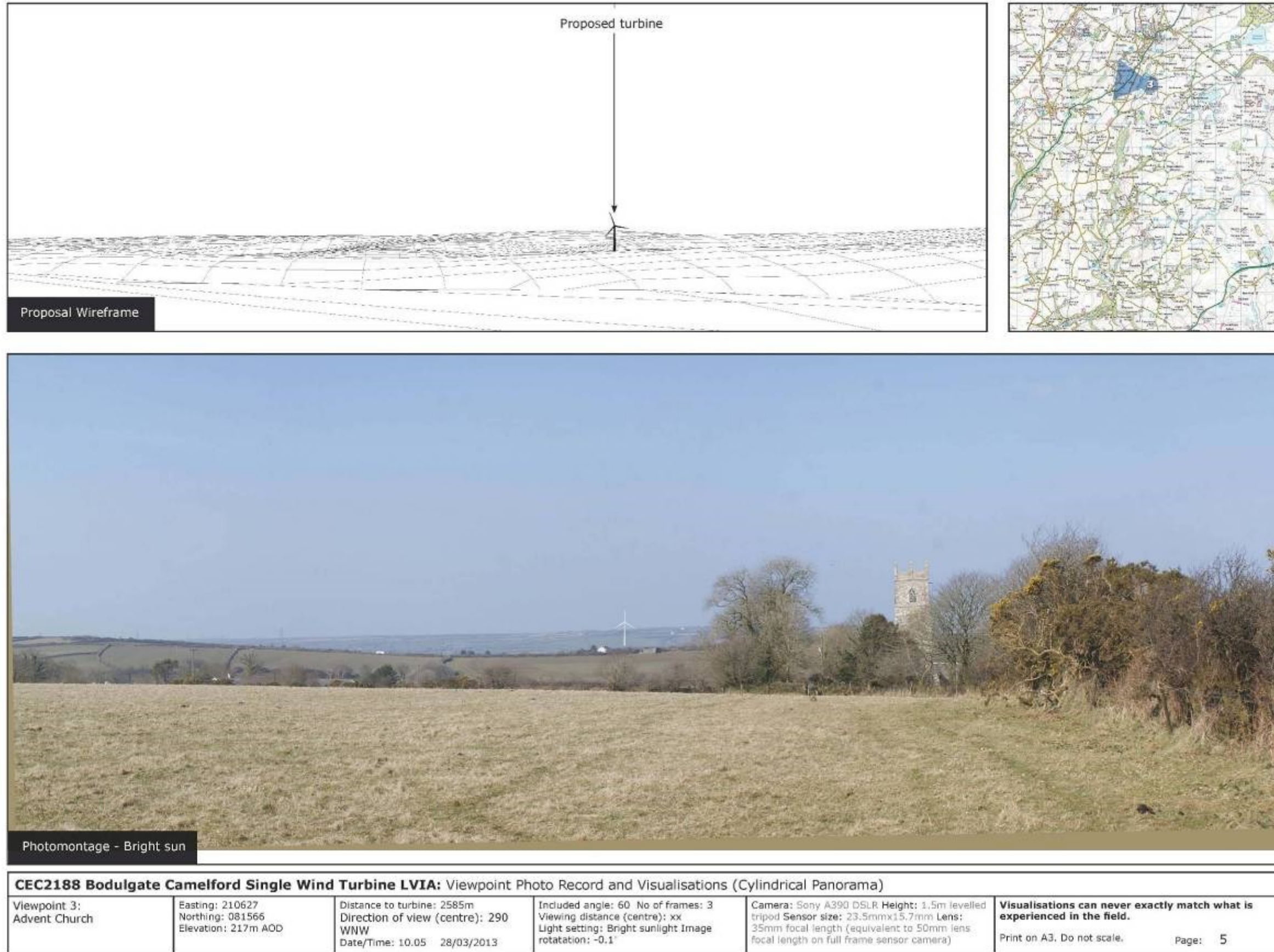


Fig 44. Photomontage location 3: Advent church.

Delabole

Harpur's Down Scheduled Monument, round house and fields

Delabole windfarm

Existing View

Contextual panoramic view (Illustrative, viewing distance does not apply)

CEC2188 Bodulgate Camelford Single Wind Turbine LVIA: Viewpoint Photo Record and Visualisations (Existing View)					
Viewpoint 4: Harpur's Down	Easting: 211746 Northing: 079167 Elevation: 261m AOD	Distance to turbine: 4658m Direction of view (centre): 300 NW Date/Time: 10.52 28/03/2013	Included angle: 60 No of frames (existing view): 3 Viewing distance: 35.7	Camera: Sony A390 DSLR Height: 1.5m levelled tripod Sensor size: 23.5mmx15.7mm Lens: 35mm focal length (equivalent to 50mm lens focal length on full frame sensor camera)	Print on A3. Do not scale.

Page: 6

Fig 45. Photo record location 4: Harpur's Downs.

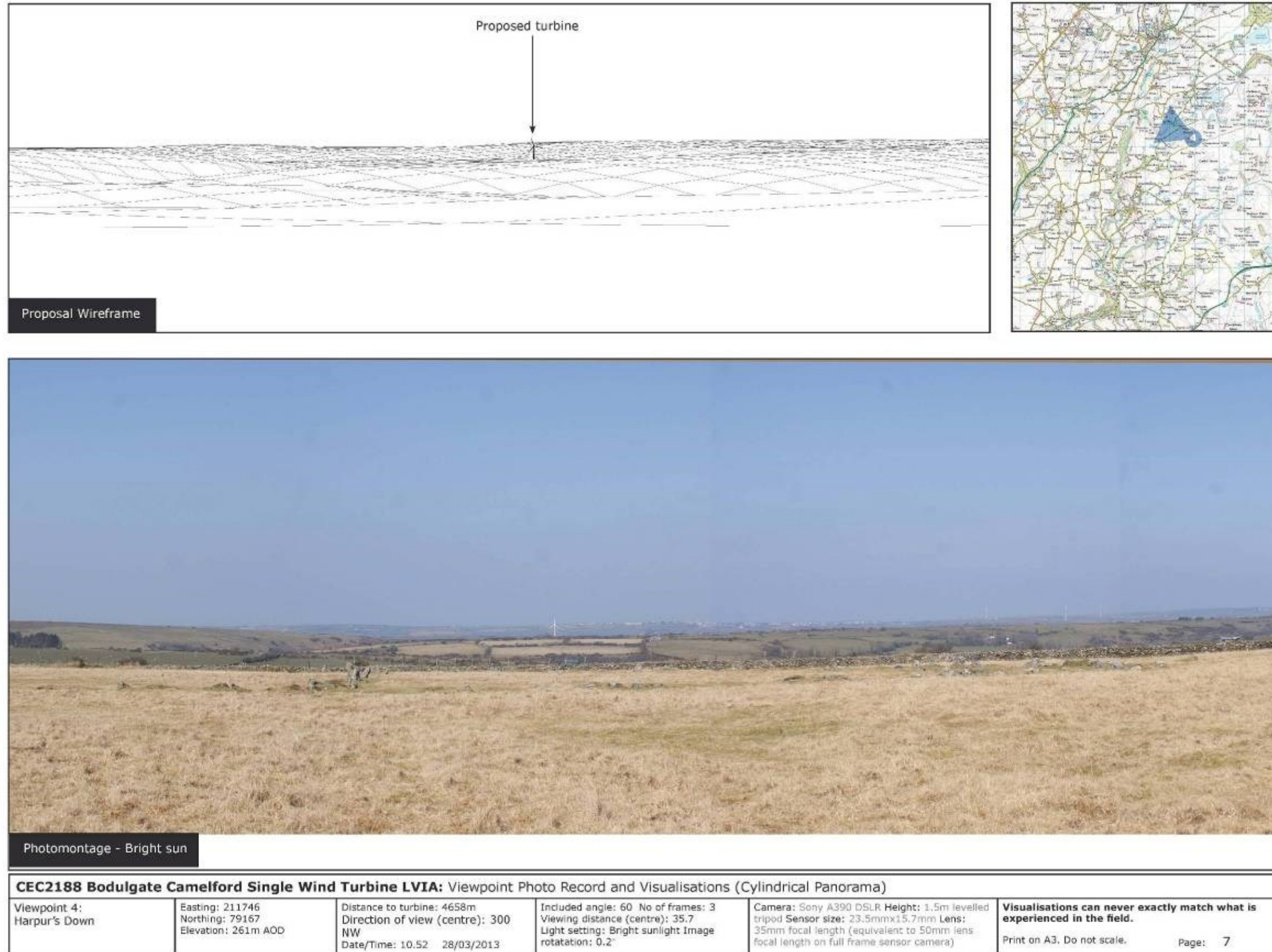
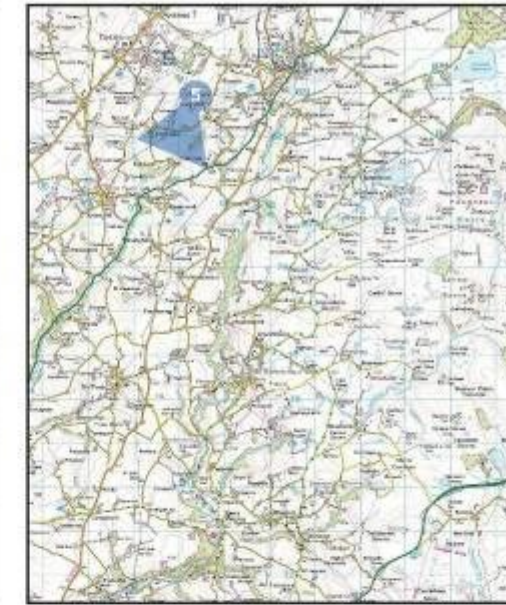
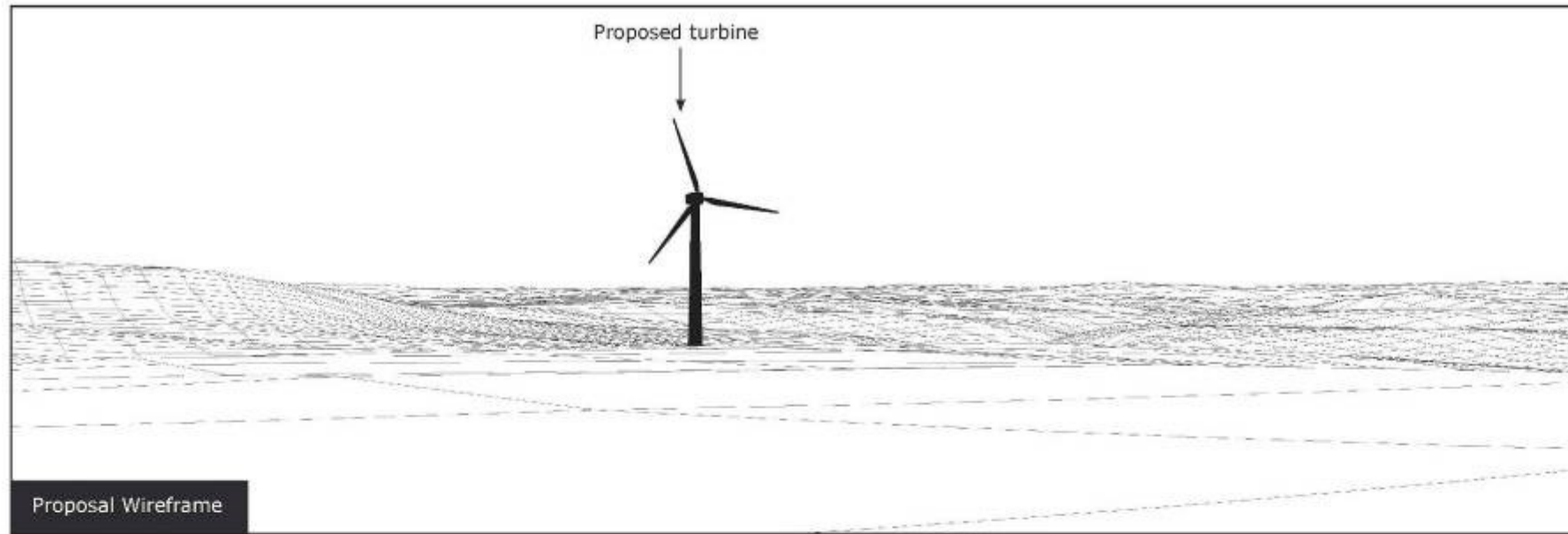


Fig 46. Photomontage location 4: Harpur's Downs.



Fig 47. Photo record location 5: Castle Goff.



CEC2188 Bodulgate Camelford Single Wind Turbine LVIA: Viewpoint Photo Record and Visualisations (Cylindrical Panorama)					
Viewpoint 5: Castle Goff hillfort	Easting: 208370 Northing: 82670 Elevation: 191m AOD	Distance to turbine: 994m Direction of view (centre): 210 S Date/Time: 13.05 28/03/2013	Included angle: 60 No of frames: 3 Viewing distance (centre): 35.7 Light setting: Weak sunlight Image rotation: 0°	Camera: Sony A390 DSLR Height: 1.5m levelled tripod Sensor size: 23.5mmx15.7mm Lens: 35mm focal length (equivalent to 50mm lens focal length on full frame sensor camera)	Visualisations can never exactly match what is experienced in the field. Print on A3. Do not scale. Page: 9

Fig 48. Photomontage location 5: Castle Goff.

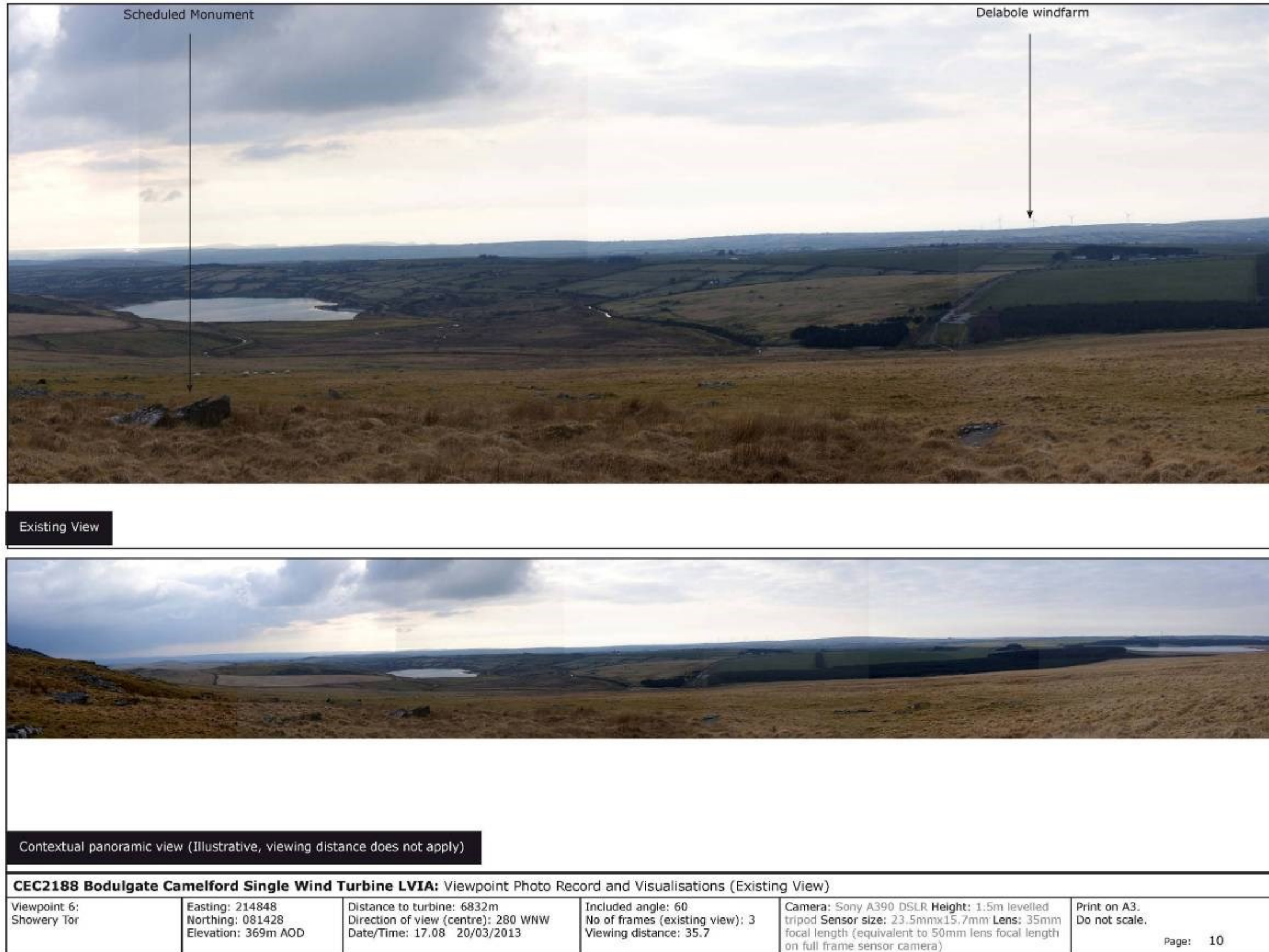


Fig 49. Photo record location 6: Showery Tor.

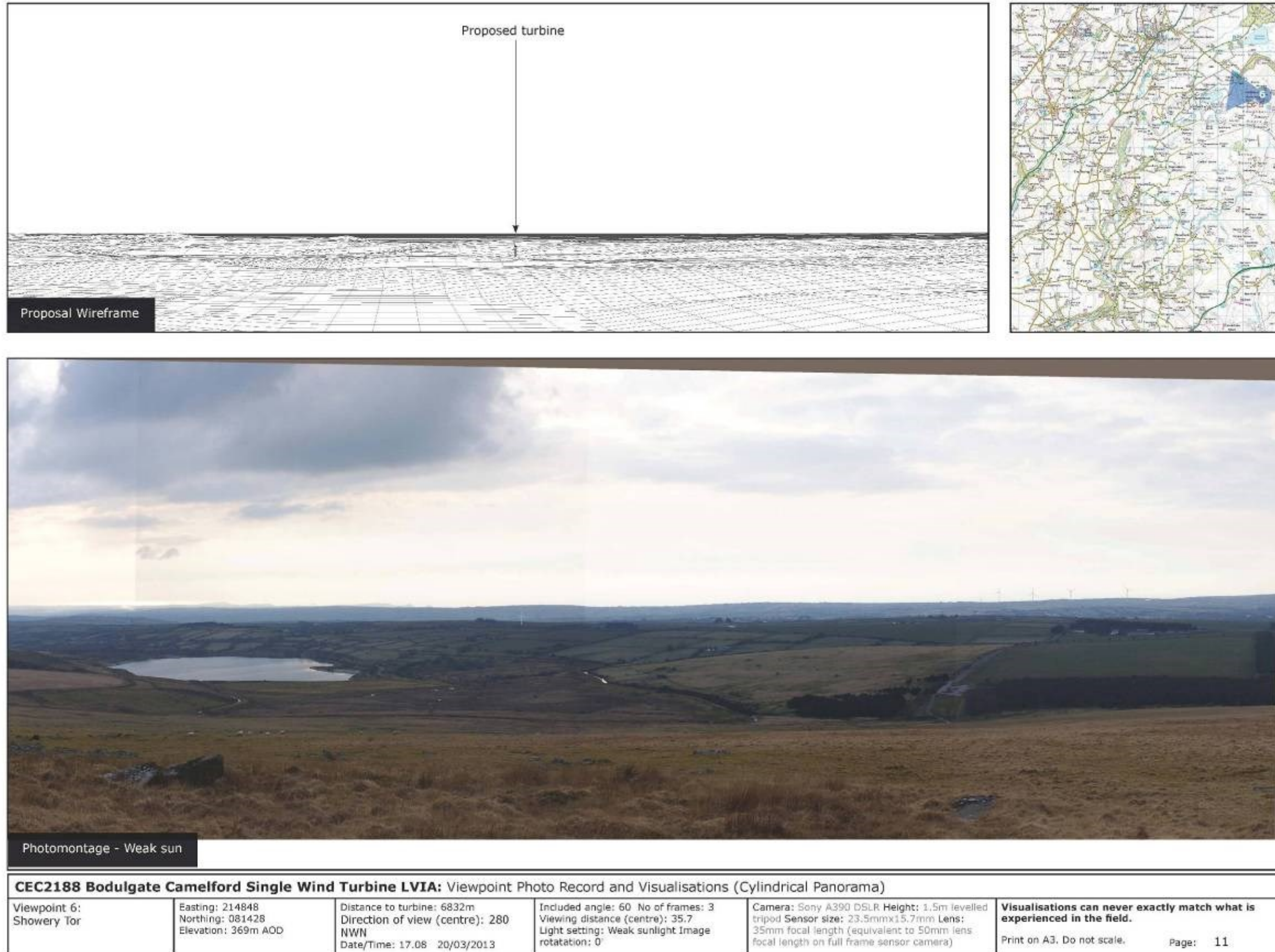


Fig 50. Photomontage location 6: Showery Tor.

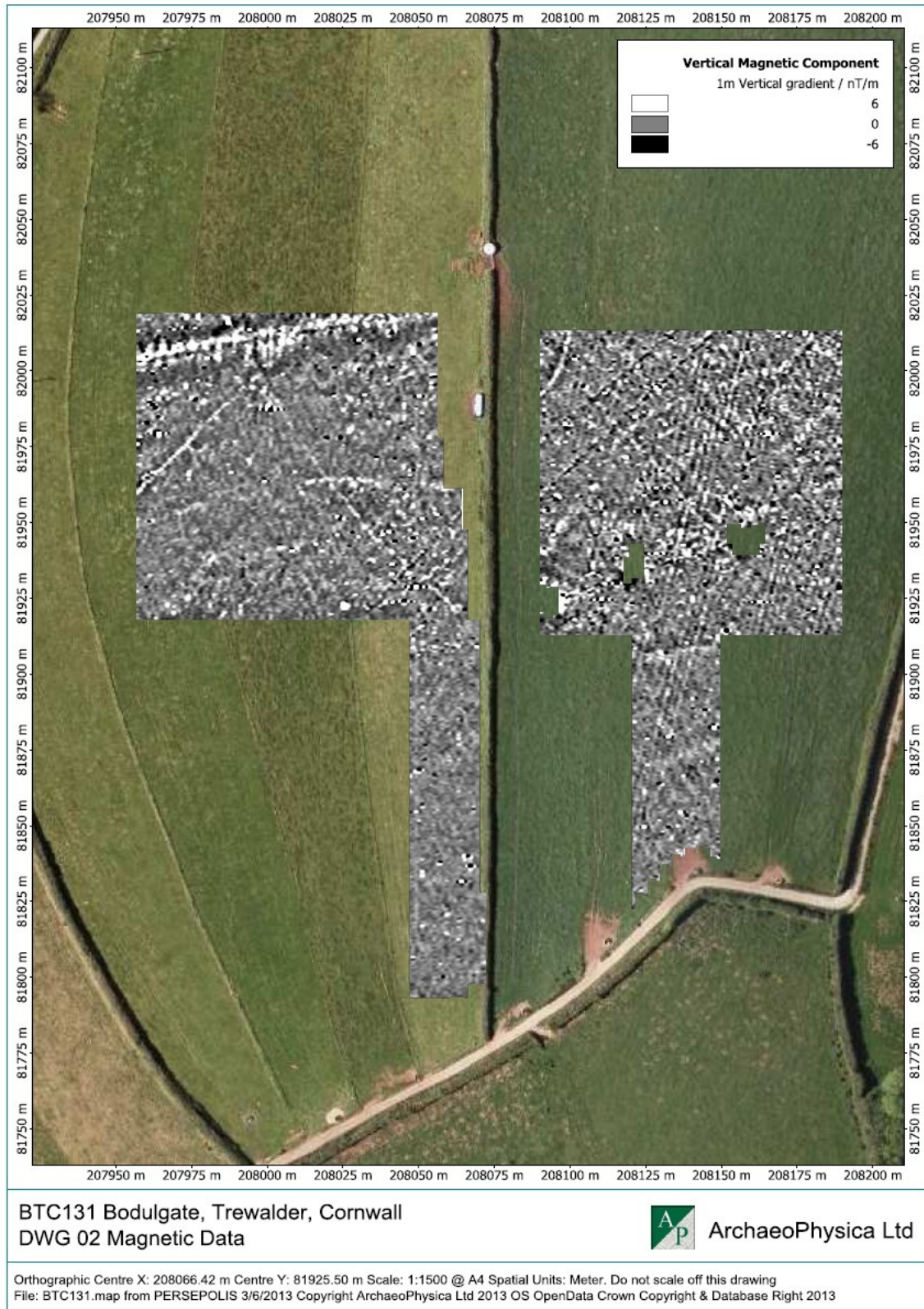


Fig 51. Magnetic data plot for the geophysical survey at Bodulgate.

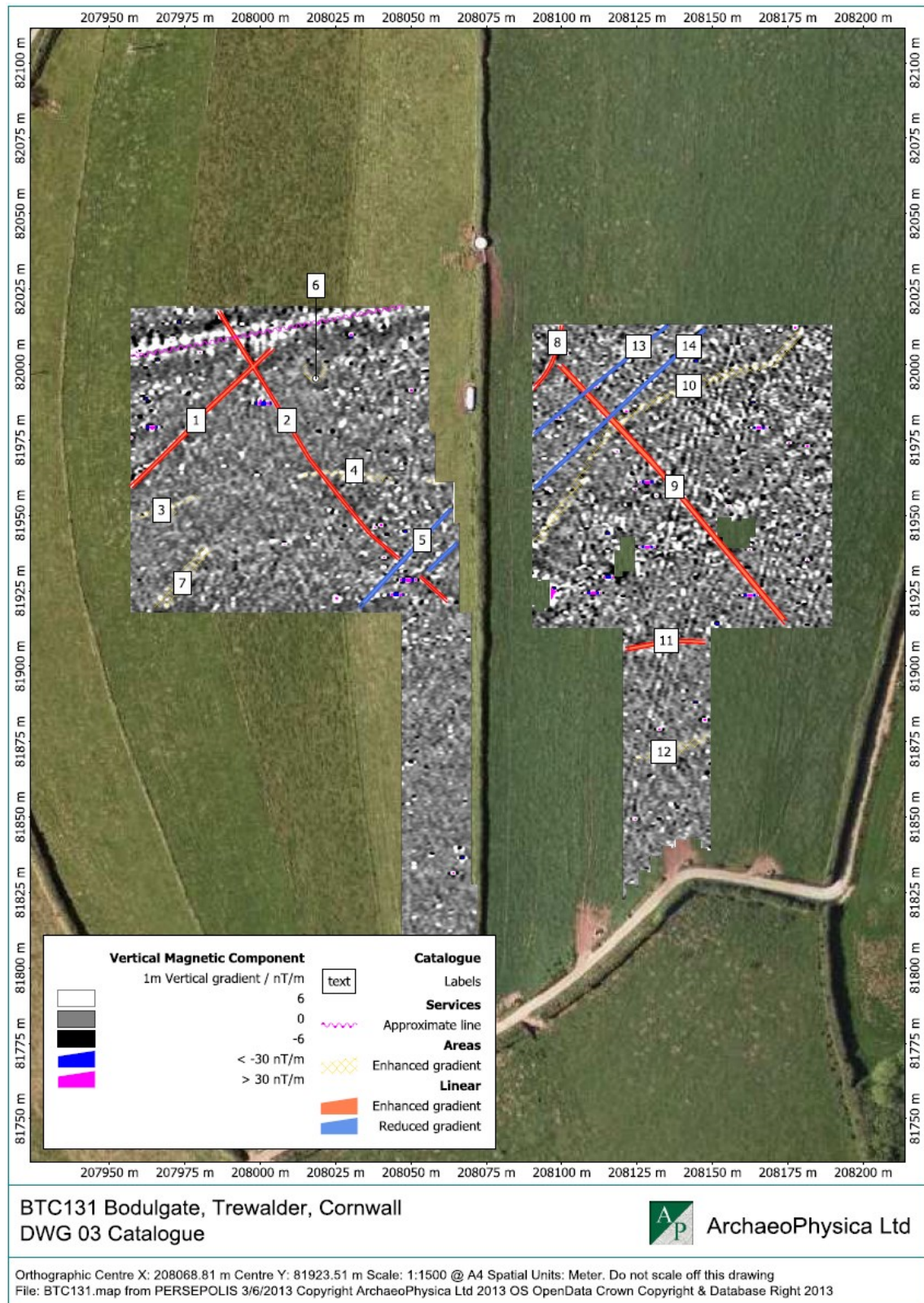


Fig 52. Interpreted data plot for the geophysical survey at Bodulgate.