



# **Callywith Quarry, Bodmin, Cornwall**

## **Archaeological assessment of proposed wind turbine**



**Historic Environment Projects**

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<b>Client</b>	<b>Capture Energy Ltd.</b>
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The viewshed mapping was carried out by Krysia Truscoe.

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**

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## **Abbreviations**

EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
LVIA	Landscape Visual Impact Assessment
NGR	National Grid Reference
OS	Ordnance Survey



## **1 Summary**

Historic Environment Projects, Cornwall Council, was approached by Nicola Davies of Capture Energy Ltd in November 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine at Callywith Quarry, near Bodmin, as part of a proposed planning application.

The proposal is for a 100kw wind turbine with a hub height of 35.7m and a maximum blade tip height of 48.5m to be sited within a former quarry at Callywith in the southern part of the civil parish of Helland, near Bodmin at SX 07733 68434. The site chosen for the wind turbine is currently a partially operational stone working quarry on a north facing valley slope between the medieval farmsteads of Penquite and Penbugle, to the north of Bodmin. The predominant historic landscape character of the surrounding farmland suggests a farming landscape laid out during the medieval period.

The assessment consisted of a desk-based assessment, viewshed analysis out to 10km from the turbine location and a walkover survey.

Given the nature of the location chosen for the wind turbine, it was anticipated that there was some potential for negative impacts on the settings of a number of important Scheduled Monuments within a 10km radius; principally the Iron Age hillforts of Castle Canyke, Dunmere Camp, Killibury Castle, Innis Downs and Helman Tor, situated within an arc northwest to southwest of the proposed development site, and the Roman fort at Nanstallon, around 4.5km to the west. The site also lies close to a substantial number of Listed Buildings, most particularly at Lancarffe and Holton, to the northeast, one of these being Grade II\* Listed. The Grade I Listed churches of St Clement, Withiel, St Mabyna, St Maby, and St Brueredus, St Breward, were also anticipated to be wholly or partially intervisible with the proposed wind turbine, with some potential for negative impact on their settings. Two Registered Parks and Gardens, at Pencarrow and Lanhydrock intersect with the 10km radius viewshed, though the potential for any intervisibility with the proposed turbine was considered to be limited and unlikely to affect any designed views within these. The Conservation Areas at Bodmin and Berry Tower, Bodmin, lie within 1-2km to the southwest and were considered likely to be partially intervisible with the proposed turbine at certain points. Some impacts on the Historic Landscape Character of the landscape surrounding the proposed wind turbine were also anticipated.

Following the results of the viewshed analysis and a walkover survey, setting impacts resulting from the development were considered likely to be predominantly **neutral**, with some potential for **negative/minor** and **negative/moderate** impacts in select circumstances.

A report summarising the results of the assessment and its conclusions was prepared for the client.

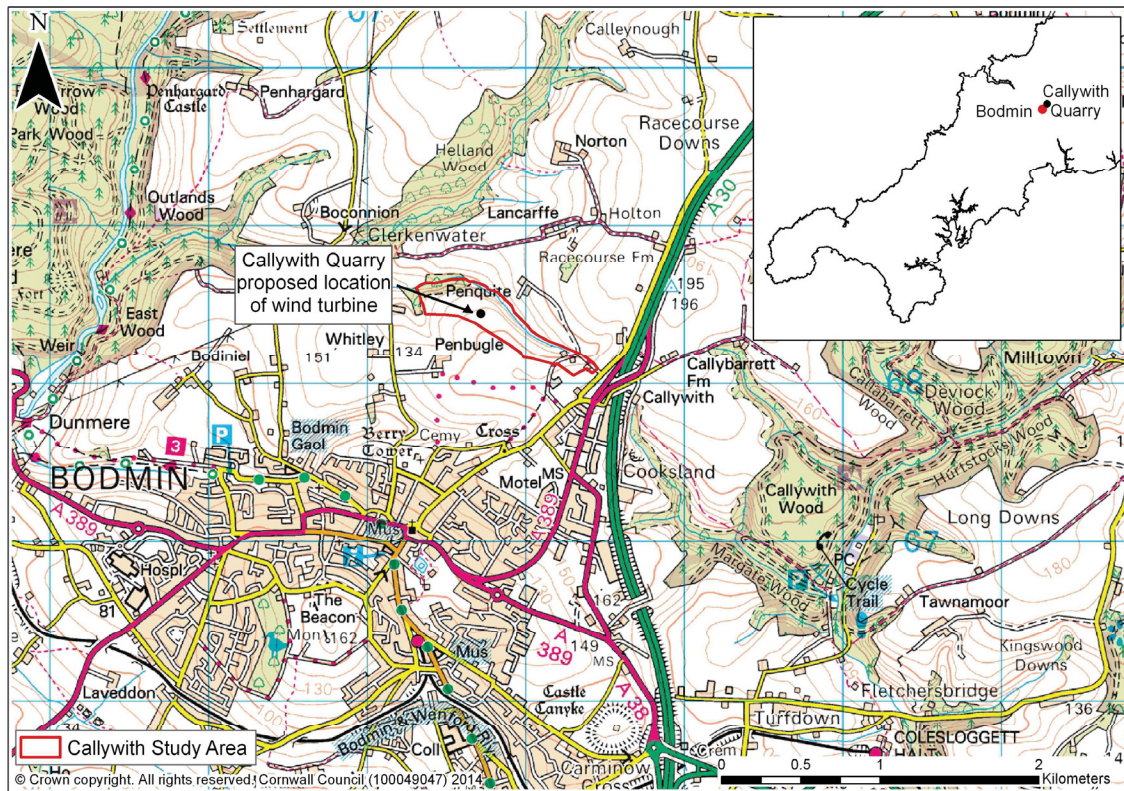


Fig 1 The location of Callywith Quarry and the site of the proposed wind turbine.

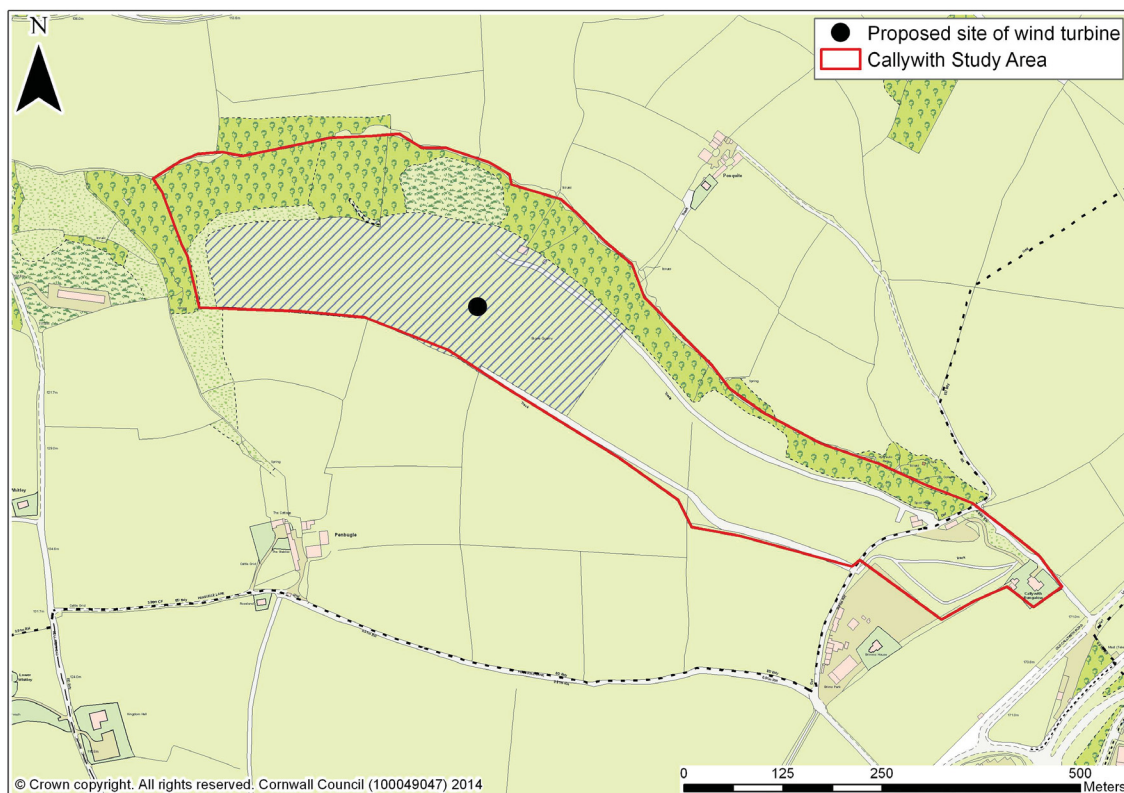


Fig 2 The location proposed for the wind turbine at Callywith Quarry.

## 2 Introduction

### 2.1 Project background

Historic Environment Projects, Cornwall Council, were approached by Nicola Davies of Capture Energy Ltd in November 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine at Callywith Quarry, near Bodmin, as part of a proposed planning application.

The proposal is for a 100kW wind turbine with a hub height of 35.7m and a maximum blade tip height of 48.5m to be sited at Callywith Quarry in the southern part of the civil parish of Helland, near Bodmin, at SX 07733 68434. The site chosen for the wind turbine is currently a partially operational stone working quarry on a north facing valley slope between the medieval farmsteads of Penquite and Penbugle, to the north of Bodmin. The predominant historic landscape character of the surrounding farmland suggests a farming landscape laid out during the medieval period.

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

Given the nature of the location chosen for the wind turbine, it was anticipated that there was some potential for negative impacts on the settings of a number of important Scheduled Monuments within a 10km radius; principally the early prehistoric Castilly Henge, at Innis Downs, the late prehistoric enclosure and settlement on Helman Tor, the late prehistoric hillforts of Castle Canyke, Dunmere Camp and Killibury Castle, which lie in an arc northwest to southwest, and the Roman fort at Nanstallon, around 4.5km to the west. Also within the 10km radius are a significant number of Listed Buildings, which were anticipated as having at least partial intervisibility with the proposed development site from certain points, with some potential for negative impact on their settings. Particularly close to the site are the Grade II and Grade II\* Listed Buildings at Holton and Lancarffe, with the Grade I Listed churches of St Clement, Withiel, St Mabyna, St Mabyrn, St Brueredus, St Breward, situated between 1km to 10km distant; the Grade I Listed church of St Petroc, Bodmin, falls within the 3km radius, but does not intersect with the ZTV. Additional Listed Buildings are incorporated within the Conservation Areas at Bodmin and Berry Tower, which lie around 1-2km to the southwest. Two Registered Parks and Gardens at Pencarrow and Lanhydrock intersect the 10km radius viewshed, though the orientation of any designed landscapes within these, and the distance away from the proposed development site will most likely reduce any negative impacts on their settings. Some impacts on the Historic Landscape Character of the landscape surrounding the proposed wind turbine were also anticipated. Generally, the visible impact of the proposed wind turbine was considered to be greatest within a 1km radius and towards the southwest out to between 5km and 10km. The nature of the local topography, however, significantly constrains the limit of potential vistas, with large areas within the 10km radius excluded from the ZTV in all directions. Additional factors, such as vegetation cover and buildings presence, will most likely restrict potential views further still in some instances.

An initial planning assessment (number PA13/04492) for the 100kw turbine and associated infrastructure was made on 17/05/2013, this determining that the application was considered not to be an EIA Development within the meaning of the EIA Regulations.

The potential for cumulative impacts was considered and the following judgement made in the assessment:

*A 30 metre turbine was granted at Steppes Farm, Callywith, around 1.3km to the southeast of Callywith Quarry, in 2007, under decision notice number E1/2007/01580, and is currently operational. A 50 metre turbine was granted under appeal at Callywith Farm, around 1.2km east of Callywith Quarry, in 2013, under decision notice number EN11/03080, and is currently operational. Two smaller turbine, at Deviock Farm, Cardinham (18 metres), around 3km to the northeast, and Tawnamoor (15m), around 3km to the southeast of Callywith Quarry, were granted in 2008 and 2011 under decision*



*notice numbers E1/2008/01574 and PA11/0611, respectively, and are currently operational. Two turbines, one at 36.5 metres and one at 30 metres, were granted at Newtons Margate Farm, Bodmin, around 1.8km southeast of Callywith Quarry, in 2013, under decision notice numbers PA11/04276 and PA11/04485, although these are not yet operational. Two applications, PA12/049040 and PA11/09819, for a 50 metre and a 29 metre turbine are currently pending at Higher Whitley, around 1km to the southwest. An application, PA13/13639, for a 30 metre turbine at Callybarrett Farm, around 2km to the east of Callywith Quarry is also pending. A 50 metre turbine was previously refused at Callywith Farm in 2010, under decision notice number PA10/05370. A 50 metre turbine was previously refused at Higher Whitley Farm in 2012, under decision notice number PA12/04443. A 24.8 metre turbine was refused at Calleyknough Farm, Helland, around 2.4km to the north of Callywith Quarry, in 2012, under decision notice number PA12/02973. A prior application, PA13/09134, for two 50 metre turbines at Callywith Quarry was withdrawn in 2013. It is therefore considered that there is currently the potential for some significant or adverse culmination with other development in this particular location, pending the outcome of current applications, both already approved and in process.*

A model brief prepared by Mr Phil Copleston, Historic Environment Planning Advice Officer (East), 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 (2011).

## **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 within the quarry site at Callywith in the civil parish of Helland, near Bodmin.

The overall project aims are to:

- Draw together historical and archaeological information about the development site and its surroundings, including relevant information held within the Cornwall Historic Environment Record.
- Review and analyse historic map evidence for the site.
- Follow the approach outlined in Section 3 of the English Heritage guidance on setting.
- Identify the construction, use and 'end of life' impacts of the current proposals on the significance of the setting of these assets and on the proposal site.

The site specific project aims are to:

- Produce a report containing the desk based assessment and survey in interpreted form.
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains or other mitigation is recommended.

The objective of the project is to produce a report setting out the likely range of impacts (both direct and on settings) of the development on heritage assets within the site or the surrounding locality, as defined above. A further objective is to create an entry for the OASIS/Online database.

## **2.3 Methods**

### **2.3.1 Desk-based assessment**

As part of the desk-based assessment (DBA), historical databases and archives were consulted in order to obtain information about the history of the site and its surroundings, and the structures and features recorded within the site boundaries. The main sources consulted were as follows:

- Published sources available in the Cornwall and Scilly HER.
- Historic maps including
  - 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)
  - Helland and Bodmin Tithe Maps (*circa* 1840),
  - 1<sup>st</sup> and 2<sup>nd</sup> 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 from the surrounding area using the guidelines and methodological approaches set out in English Heritage's recent consultation draft guidance on the setting of heritage assets. This was based on GIS-based viewshed mapping produced using a model of theoretical inter-visibility between the wind 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 viewshed analyses, 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 Callywith Quarry, the viewsheds were based on 'overall observer elevation values' made up of the 'elevation values' or heights above sea level of the ground at the observer viewpoints, with added to this additional offsets of 35.7m to represent the height of the turbine hub and 48.5m to represent that of its blades.

These viewsheds were 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 viewsheds were visited (where access was possible) and the landscape within which they sit 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 either 10Km or 3Km were used to determine potential impacts on designated heritage assets (as appropriate) and a radius of 1Km for undesignated heritage assets (see Figures 17 to 41).

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, 3km and 10km from the site, as required by the HEPAO brief 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) were excluded from further analysis, as were those which by their nature have very localised settings (for example, milestones, wayside crosses and fingerposts) 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 were identified for their retention. The assessment process was assisted by photomontages of some key locations that were made available by the client; these were examined to further evaluate potential intervisibility with the proposed development site.

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 upstanding undesignated sites 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 thus the potential 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. 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 its cabling was also undertaken; the site was not examined for upstanding archaeology in this instance, nothing would be expected to survive the quarrying activity, but the natures of the boundary types which might be impacted upon during the development were recorded. A list of sites visited is contained within Section 9 of this report.

### **2.3.4 Post-fieldwork**

On completion of the project and following review with the HE Project Manager the results of the study were collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006*. The site archive will initially be stored at ReStore, with the eventual aim of deposition at Cornwall Record Office.

An archive report (this report) has been produced and supplied to the Client. This report will be lodged with the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation once a planning application for the site has been made. A copy of the report will be supplied to the National Record of the Historic Environment (NRHE) 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 within a partially operational stone working quarry at SX 07733 68434. The site is located in a rural area not far to the north of Bodmin, on a north facing valley slope, within a landscape dissected by streams feeding the Clerkenwell Leat to the north (Figures 1, 2 and 12), the proposed wind turbine being sited at 140m OD. The site has relatively closed-in views to the southwest, sitting just below the crest of a hilltop plateau. To the east the views are also relatively closed in as the sites face slightly upslope to where the field is bordered by mature hedgerows and trees. To the west and northwest, views are partially open across rolling terrain to Dunmere Wood and towards Wadebridge, with more far reaching views towards Killibury Castle, to the west. To the north and northeast, the views are relatively open to around 2km, with vistas across rolling hillsides towards Penquite, Lancarffe, Holton, and round to Helland Wood.

Although the development area is currently a partially operational quarry, the resurfacing of backfilled areas has been sensitive to the pre-existing landscape character. The surrounding farmland is predominantly characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Anciently Enclosed Land (Farmland Medieval)': that is land whose boundary arrangements were reorganised to a substantial degree during the medieval period. It is likely, however, that this land has been farmed continuously since late prehistory; there are a substantial number of late prehistoric defended settlements and strongholds that occupy hilltop positions within the surrounding landscape, suggesting that this was part of Cornwall's agricultural heartland during the later part of the prehistoric period as well.

Within the surrounding area, the National Mapping Programme has recorded some evidence for surviving sub-surface archaeology showing as cropmarks or soil marks, including ploughed-out field boundaries and early settlement-related features. The remains of relict field systems associated with the medieval settlements of Penquite and Penbugle are suggested within and around the quarry margins (Fig 13). The Domesday settlement of Lancarffe lies around 700m to the northeast; the house and stables date to around the 17<sup>th</sup> century and are both Grade II\* Listed, while a medieval cross and inscribed stone at Lancarffe are Scheduled Monuments (DCO8137 and DCO10).

There are numerous Scheduled Monuments within 10km of the proposal site, these including several Bronze Age ceremonial and burial monuments, late prehistoric hillforts and rounds, and a large number of medieval crosses. The proposal site lies around 1.4km to the north of the historic core of Bodmin, which includes a substantial number of Listed Buildings, and which has been designated as a Conservation Area. The Roman fort at Nanstallon is around 4.5km to the west. The Registered Park and Garden at Lanhydrock, together with Lanhydrock House, lies around 4.8km to the southeast, with the Registered Park and Garden at Pencarrow around 4.6km to the northwest.

The parent bedrock underlying the application site consists of Mid Devonian mud, silt and sandstones, whilst the soils are recorded as Denbigh 2 well drained fine loams over shale. No superficial (drift) deposits are recorded by the British Geological Survey. The agricultural classification of this land is Grade 3.



## **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 sites in line with paragraph 129 of the 2012 National Planning Policy Framework (NPPF), 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.
- Scheduled Monuments, Grade I and Grade II\* Listed Buildings – 10km radius.
- Grade II Listed Buildings – 5km radius.
- Conservation Areas – 3km radius.
- Registered Parks and Gardens – 10km radius.

## **5 Designations**

### **5.1 International**

None apply to the site.

### **5.2 National**

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

The 10km radius viewshed zone includes 34 potentially intervisible Scheduled Monuments (Fig 33. See also Figs 17, 21 and 27).

The 10km radius viewshed intersects two Registered Parks and Gardens (Figure 30. See also Figs 31 and 32).

The 10km radius viewshed includes 3 Grade I Listed Building and 5 Grade II\* Listed Buildings (Fig 38. See also Figs 18, 23 and 29).

The 3km radius viewshed mapping intersects two Conservation Areas (Figs 25 and 26).

Within the 3km radius viewshed, the wind turbine would be theoretically intervisible to some degree with a number of Grade II Listed Buildings or groups of Grade II Listed Buildings, including those at Lencarffe and Holton and at Bodmin, where many of these fall within the Conservation Area (see Figs 23 and 25).

### **5.3 Regional/county**

The site proposed for the wind turbine is designated as an Area of Great Landscape Value (AGLV); the coverage of the AGLV extends to the majority of the 10km radius, which also incorporates a significant number of Areas of Great Historic Value (AGHV), Areas of Great Scientific Value (AGSV) and Cornwall Wildlife Trust Sites. The Area of Outstanding Natural Beauty (AONB) for Bodmin Moor extends into the northeastern area of the 10km radius around Callywith Quarry.

### **5.4 Local**

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

## **5.5 Rights of Way**

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

## **6 Results of desk-based assessment**

The site proposed for the wind turbine lies within a partially operational stone working quarry, situated on the northern edge of a plateau within a farming landscape dissected by streams feeding the Clerkenwell Leat to the north (Figs 1, 2 and 12). The surrounding area is characterised by field patterns of evolved medieval form set around farms, many of which are documented by the 12<sup>th</sup> to 13<sup>th</sup> centuries, although their origins may well be far older. The nature of the surrounding landscape and the varied topography has clearly influenced the names of the developing farming hamlets; the 'pen' prefix, meaning 'head' or 'promontory', is commonly found, at settlements such as Penquite ('pen' and 'coes' - head of the wood'), Penbugle ('pen' and 'bugel' - head and shepherd), Penhargard ('pen' and 'hyr-yarth' - head of the long ridge) and Pencarrow ('pen' and 'carrow' - head and stag). The place-name element 'Cally', prefixing the farms of Callywith, Calleyough and Callybarrett, comes from 'kelli', meaning 'grove' or 'copse'. The Domesday settlement at Lancarffe, about 700m to the north of Callywith Quarry, contains the place-name element 'Nans' (valley), with an unknown suffix. An early medieval inscribed stone at Lancarffe has the inscription 'DUNOCAT- HIC IACIT FILI MERCAGNI', which translated means "(the body of) Dunocatus lies here, the son of Mercagnus". Holton, which neighbours Lancarffe, contains the place-name elements 'hol' and 'ton' - settlement in the hollow. The 'bos' or 'bod' place-name element is also common to this area (Bocconion, Bodinial and Bodmin, itself, for example), indicating smaller farms of equivalent date. Clearly, this rural area to the north of Bodmin has long been an agricultural heartland, with a long time-depth of farming settlement.

Although the direct evidence for a farming landscape back into prehistory is less clear, it can be inferred from the many prominent hill fort enclosures that dominate the ridges and promontories in the local area and which would have been the focus of social infrastructure during the Iron Age and into the Roman period. These are particularly noticeable within a northwest to southwest arc around Callywith Quarry, and within the potentially most visible area of the 10km ZTV: at sites such as Castle Canyke, Dunmere Camp and Killibury Castle, for example. Two further examples, Pencarrow Rounds and Penhargard Castle, lie within the 10km ZTV but do not intersect with it. Hillforts are thought to have been significant places within Iron Age communities, possibly used as the focus for a variety of activities such as feasting and ritual celebration, but also likely to represent centres of commerce and trade, hierarchical display and social organisation, as well providing a possible respite in times of trouble. They were designed to be visible in the wider landscape, both as a focus for the local communities they served and as a demonstration of the status, power and wealth of local ruling elites to others.

The Roman period itself remains poorly understood in Cornwall, but past and recent evidence is demonstrating that the valleys and headlands bordering the Rivers Camel and Fowey were clearly areas of significant Roman military presence. The Roman fort at Nanstallon, around 4.5km to the west of Callywith Quarry, sits on a low headland above the River Camel, while the more recently discovered fort at Restormel is situated around 7.5km to the east, on a headland above the River Fowey, and opposite the later 12<sup>th</sup> to 13<sup>th</sup> century castle. Following the end of the Roman period, a small religious centre dedicated to St Petroc developed at Bodmin by the 6<sup>th</sup> century, probably close to the site of the present Church of St Petroc, around 1.4km to the south of Callywith Quarry. From here the medieval town and historic core of Bodmin continued to develop, documented as having 68 dwellings and a market by 1086 and with charters documented as early as the 13<sup>th</sup> century.

Strong hints as to even earlier settlement within the area are to be found in the early prehistoric Castilly Henge, on Innis Downs and the late prehistoric enclosure and settlement on Helman Tor. Many Bronze Age barrow cemeteries are also to be found on the higher ground, both local to Callywith Quarry and on the surrounding ridge tops and northwards towards the edges of Bodmin Moor. A possible barrow site is documented by the field-name 'barrow-field' at Lancarffe, although nothing is visible on the ground. Barrow cemeteries at West Taphouse, Hustyn Downs, Gwennymoor and Grey Mare Lodge are among several included within the 10km ZTV for Callywith Quarry, although the majority of these lie towards this furthest distance from the site. Two barrows are also recorded on the summit of the Beacon, above Bodmin town.

The first mapping depicting this area is John Norden's map, drawn up at the end of the 17<sup>th</sup> century, though not published until 1728 (Fig 3). The map depicting the Hundred of 'Trigg' showed churches, settlements and principal houses around Bodmin, although only Penhargard, to the northwest of the proposed development site, is named. This is in contrast to Joel Gascoyne's more detailed map of Cornwall in 1699 (Fig 4), which names Lancarffe and Callywith, as well as a number of neighbouring farmsteads, such as Holton, Boconnion and Bodinnial. Thomas Martyn's map (Fig 5), drawn up a few decades later, shows a rather more detailed landscape again, although the named farmsteads differ slightly from Gascoyne's map; Lancarffe is named, and Norton and Penbugle, but not Holton or Callywith.

The 1<sup>st</sup> Edition of the Ordnance Survey 1" to a mile mapping (Fig 6), dating to the first decade of the 19<sup>th</sup> century, is more topographical than the earlier examples, with a semblance of terrain and areas of woodland, in addition to the network of settlement and roads. Lancarffe is shown as Lancarse; the 'carse' suffix may suggest a corruption of 'coes' (wood), with the settlement name meaning 'valley in the wood', although this is purely conjectural. The settlements of Callywith and Penbugle are named, and Penquite is shown, although not named. This map, however, shows the settlements currently named as Holton and Norton as Norton and Higher Norton, respectively (Fig 6).

The site proposed for the wind turbine lies within the ecclesiastical parish of Bodmin, the current quarry site traversing several relatively large agricultural enclosures at the time of the *circa* 1840 Tithe Map (Fig 7), which appear distinct from the smaller, more irregular fields belonging to the farmsteads at Penbugle and Penquite, to either side. The morphology of these large enclosures, and their English field names, as recorded in the tithe apportionment, suggests these may well reflect relatively late enclosure, which may have involved some woodland clearance and some possible intake of poorer quality land on the fringes of the Penquite and Penbugle holdings, but which also appears to have obscured some earlier medieval field boundaries at Penbugle and Penquite, as suggested by the relict cropmarks observed by the National Mapping Programme (Fig 13).

The fields incorporated by the Callywith quarry site fall within the tenement of Penbugle and are recorded as fields 2380 to 2384, 2388 to 2391, and 2403 to 2406, in the *circa* 1840 tithe apportionment for Bodmin. The landowner at the time was John Glencross and Penbugle was leased and occupied by John Trevethan, as follows:

•	2380	Waste		0 acres, 0 pole, 8 perches
•	2381	Field	Arable	1 acres, 0 pole, 6 perches
•	2382	Plot	Arable	0 acres, 1 poles, 15 perches
•	2383	Lower Clanpit	Arable	8 acres, 3 poles, 0 perches
•	2384	Waste in ditto	Arable	0 acres, 1 poles, 17 perches
•	2388	Great Field	Arable	21 acres, 0 poles, 19 perches
•	2389	Furze Brake	Arable	2 acre, 3 poles, 35 perches
•	2390	Coppice	Coppice	0 acres, 2 pole, 24 perches
•	2391	Outer New Park	Arable	10 acre, 2 poles, 4 perches

- 2403 Quarry Park Arable 17 acres, 3 poles, 0 perches
- 2404 Quarry Arable 0 acres, 0 poles, 26 perches
- 2405 Waste in Quarry Park Arable 1 acre, 2 poles, 4 perches
- 2406 Waste in Quarry park Arable 0 acres, 3 perches, 32 poles

The boundaries of these thirteen fields remained relatively unchanged during the late 19<sup>th</sup> century (Fig 8), as also in the first decade of the 20<sup>th</sup> century, although with some expansion of woodland cover in field 2403 (Fig 9 and see Fig 7). The site proposed for the wind turbine lies towards the eastern boundary of field 2391, as recorded in the *circa* 1840 tithe apportionment (Fig 7).

Current OS mapping (Figs 11 to 13) and the 2005 Cornwall Council aerial photograph (Fig 10) show that, where quarrying has not affected them, the essential morphology of field boundaries within the extent of Callywith Quarry continue to reflect the earlier 19<sup>th</sup> and 20<sup>th</sup> century pattern of enclosure.

## 7 Results of site walkover

See Figures 42 to 54.

A site walkover was undertaken on 2 September 2013. The weather was bright and breezy, with rather cloudy skies in the morning, clearing during the afternoon. The visibility was generally very good, although the morning light was more overcast.

The proposed turbine site lies within a currently operational area of the quarry. The ground surface slopes away downhill to the north, towards the stream in the valley bottom, and is largely characterised by disturbed ground and patches of scrubby grass (Figs 42 and 43). Where visible, mainly to the north and west, the hedge boundaries are a mixture of mature hedgerow and trees, typical of the high Cornish hedges within the wider landscape. The vegetation assists the lay of the land in blocking views upslope to the south and east. In the north, along the valley bottom, a particularly dense tract of mature trees borders the stream, but does not obscure views out in this direction. The boundary to the west and upslope to the south, bordering an unmade road through the quarry, is formed by modern wire fencing. Generally, the view from the proposed turbine site is relatively local, with views to around 2-3km distant to the north and northeast. There are more partially open views to the west and northwest, across rolling terrain and woodland, towards the north coast. In the south, the views are particularly closed in due to the lay of the land. No archaeological survey was conducted during the walkover, due to it being a quarried land surface.

There were no impediments to survey, and during the site walkover good visibility was possible in all directions. To the south, from ground level, the skyline was formed by the crest of slope towards the upper edge of the fields. To the east, mature hedgerows and an uphill slope blocked local views, though the operational turbine at Callywith Farm was clearly visible above the hedgeline to the east from the turbine site. To the southwest there were partially open views to Dunmere Wood, on the skyline, with more open views to the west, across rolling terrain and tree lines, towards Killibury Castle and the north coast. To the north the views were also relatively open across to Helland Wood, with more localised views to around 2km, north northeast across the valley towards Lincarffe and Holton, and overlooking Penquite. The skyline in this direction was formed by the low valley slope and the mature tree line behind Penquite, with similarly rolling terrain further round to the northeast.

## 8 Results of viewshed analysis

See Figures 17 to 42.

Given the topography of the site and its surroundings and the moderate height of the turbine tower, the viewshed analysis suggests that it is likely to be visible over a fairly



large proportion of the surrounding countryside, although its Zone of Theoretical Visibility (ZTV) may be constrained in some directions, particularly to the east and northeast. In line with the requirements of English Heritage guidance, the ZTV has been mapped to a distance of 10km 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).

### **8.1 1 km radius ZTV**

See Figures 17 to 20.

Given the nature of the local topography and the moderate elevation of the proposed wind turbine, the ZTV suggests that the turbine mast or blades will potentially be visible from approximately 95% of this zone, the exception being a section of lower valley slope to the northwest, along the Clerkenwell Leat, and a section of lower valley slope to the southwest, situated to the north of Berry Tower, Bodmin. The zone extends to the northwestern edge of Helland Wood in the northwest, the northeastern edge of Holton in the northeast, to the western edge of Callywith Farm in the east, and to the northern edges of Bodmin, and incorporating Berry Tower, in the southwest. The 1km radius ZTV contains three Scheduled Monuments, the medieval crosses at Lancarffe and Castle Hill and the medieval inscribed stone at Lancarffe, two Grade II\* Listed Buildings at Lancarffe, and one Grade II Listed Building at Holton.

### **8.2 1km to 3km radius ZTV**

See Figures 21 to 26.

The wind turbine will potentially be visible from around 35% of the 1km to 3km radius zone, its visibility being notably limited by local topography, particularly within the steeper valleys and hillsides facing away from the site. This zone extends beyond Helland to the north, to Deviock Wood to the east, beyond Bodmin to Halgavor Moor to the south, and to Dunmere, Pencarrow and Colquite Woods to the west.

To the southwest it seems likely that the wind turbine may theoretically be intervisible with a large section of Bodmin, incorporating much of the Conservation Area and incorporating the north eastern slopes of The Beacon (Fig 24) and the north western slopes of Castle Canyke (Fig 22). The Conservation Area of Berry Tower may also be intervisible within the 1km to 3km radius in this direction. To the west the ZTV for this zone appears to extend only as far as the upper slopes of the Camel River Valley, while in the north and northeast it also appears patchy and confined to the upper slopes and hilltops around Helland Wood. To the east the ZTV barely extends beyond the 1km radius, save for some limited potential intervisibility in the area of Callywith Farm (see Figs 21 and 23).

The 1km to 3km radius ZTV contains two Scheduled Monuments, Dunmere Camp and Castle Canyke, though Dunmere Camp lies within woodland, which is likely to significantly constrain any impacts on its setting (Fig 21).

The zone contains no Registered Parks and Gardens. The two Conservation Areas at Bodmin and Berry Tower fall within the 1km to 3km radius ZTV and are likely to be partially intervisible with the proposed turbine from certain points (Figs 25 and 26). The zone also includes a small number of High Grade Listed Buildings and numerous Grade II Listed Buildings, the majority of these lying within the Bodmin Conservation Area; there is also the Grade II Listed Gilbert Monument on top of The Beacon (see Fig 24). Several Grade II\* Listed buildings also lie within the Conservation Area, while the Grade I Listed Church of St Petroc lies within the Conservation Area but does not intersect with the ZTV.

### **8.3 3km to 5km radius ZTV**

See Figures 27 to 32

The proposed wind turbine will potentially only be intervisible with around 30% of the 3km to 5km zone, with large areas excluded from potential intervisibility by the nature of the surrounding topography (Fig 27). This zone extends to the edges of Blisland in the northwest, to the far side of Cardinham in the east, to Lanhydrock in the south, Lanivet in the southwest, and Pencarrow in the northwest.

The greatest extent of potential intervisibility with the proposed wind turbine within the 3km to 5km radius is suggested from the south round to the west; the Scheduled Monument of Nanstallon Roman Fort (Fig 28) and a small number of Grade II Listed Buildings (Fig 29) fall within the ZTV to the southwest. There are two lesser areas of potential intervisibility to the southeast and northwest, though neither of these contains any significant Scheduled Monuments that intersect with the ZTV (Fig 28). The northwesterly area contains only one Grade II Listed milestone within the ZTV - its limited setting is unlikely to be at all impacted by any potential intervisibility (Fig 29).

The zone contains no Conservation Areas. Two Registered Parks and Gardens, Lanhydrock and Pencarrow, fall wholly or partly within this zone, though there is only minimal intersection with the ZTV along some of their edges (Figs 30 to 32). Any potential intervisibility with the proposed turbine is unlikely to impact on their settings or any designed aspects of their integral landscapes.

### **8.4 5km to 10km radius ZTV**

See Figures 33 to 41.

The proposed wind turbine will potentially only be visible with around 25% to 30% of the 5km to 10km zone; as before, there are large areas excluded from the ZTV by the nature of the surrounding topography. The greatest potential intervisibility with the proposed wind turbine is likely to be in the southwest and the northeast, though generally the ZTV coverage within this zone is patchy and limited in extent (Figs 33 and 38). In addition, although there will be some degree of intervisibility with the wind turbine, a pronounced fall-off in its visual prominence will occur.

Whilst this zone contains a substantial number of Scheduled Monuments (Fig 33) and a scatter of Listed Buildings, (Fig 38), not all of these fall within, or intersect with, the ZTV. The Scheduled Monuments that will potentially be intervisible with the proposed wind turbine include a number of barrow cemeteries towards the furthest extent of the 10km radius: at Higher Tregolls and Hustyn Downs, in the west, and Greenbarrow Downs, to the northeast. Although intended to have relatively wide landscape settings, however, any impact on these is likely to be nullified by their distance from the proposed development site at Callywith Quarry. Nearer to this within the 5km to 10km zone, however, is the early prehistoric Castilly Henge, at Innis Downs (Fig 34), the late prehistoric enclosure and settlement at Helman Tor (Fig 35), and two late prehistoric hillforts, at Killibury Castle (Fig 36) and Bury Castle (Fig 37). These sites would also have been intended to have a wide visual impact and extensive landscape setting, and their settings may be impacted upon to some degree by their potential intervisibility with the proposed wind turbine sites as a result. In addition, the function of Neolithic henge sites potentially incorporated controlled views within and from these monuments (Nowakowski pers comm). The visual intrusion into the setting of Castilly Henge could, therefore, be considered more impactful in the light of this. As above, however, the relative distance of all these sites from Callywith Quarry is likely to reduce any significant impact on their settings to a substantial degree.

A small number of High Grade Listed Buildings fall within the 5km to 10km radius, although potential intervisibility with the proposed turbine is only likely for the Grade I Listed churches of St Clement, Withiel, to the southwest (Fig 39), St Mabyna, St Mabyn, to the northwest (Fig 40) and St Brueredus, St Breward, to the northeast (Fig 41).

The zone contains two Registered Parks and Gardens, at Lanhydrock and Boconnoc. Of these, only Lanhydrock intersects with the 5km to 10km radius ZTV, although potential intervisibility with the proposed turbine is likely to be negligible, as noted above.

## **8.5 Scheduled Monuments within the 10 km radius ZTV**

See Figure 33, as also figures 17, 21 and 27.

There are 34 Scheduled Monuments within 10km of the proposed wind turbine site at Callywith Quarry and falling within its ZTV, as follows:

Note – some of these sites have multiple entries in the Schedule of Monuments.

- 1 Roman fort
- 3 individual barrows
- 8 barrow groups
- 4 hillforts
- 1 Neolithic settlement and hut circles
- 1 early prehistoric henge
- 1 chapel
- 1 early Christian memorial stone
- 13 crosses, cross base or cross heads
- 1 holy well

Some of these potentially intervisible Scheduled Monuments consist of structures such as wayside crosses, churchyard crosses, inscribed stones, chapels and holy wells, whose settings are inherently very 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 and barrows, in contrast, were intended when constructed to have far-ranging settings. Some of the Scheduled Monuments within the 10km viewshed consist of monuments of these types, and assessments of impacts on the settings of a number of these were judged to be required where they lay relatively close to the site proposed for the wind turbine, where substantial intervisibility was likely, where they were judged to have sensitive settings or where impacts on or intrusion into key views of the sites appeared likely to occur.

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. Given the topography of the site selected for the wind turbine at Callywith Quarry, negative impacts on the settings of most Scheduled Monuments are likely to be neutral or minor in extent.

## **8.6 Registered Parks and Gardens and Registered Battlefields within the 10km radius ZTV**

See Figures 30 to 32.

Three Registered Parks and Gardens fall within the 10km radius: Lanhydrock, Pencarrow and Boconnoc, though this latter does not intersect with the 10km radius ZTV. There is only minimal intersection of the Grade II\* Registered Parks and Gardens at Lanhydrock and Pencarrow with the ZTV (Figs 31 and 32). Their distance from the proposed wind turbine site, and their level of tree and vegetation cover, further suggests only limited intervisibility and little likelihood of any intrusion into any aspects of their designed landscapes. No negative impacts on the setting of these designated landscapes are likely to occur, therefore.

There are no Registered Battlefields within 10km of the proposed wind turbine at Callywith Quarry.

### **8.7 Grade I and II\* Listed Buildings within the 10km radius ZTV**

See Figure 38. A significant number of these buildings are within 3km of Callywith Quarry, the majority falling within the Bodmin Conservation Area.

There are 129 Listed Buildings of all grades within 10km of the proposed wind turbine at Callywith Quarry within the ZTV.

The following buildings intersected by the 10km ZTV are Listed at Grade I:

- 1143078 – The Church of St Clement
- 1158842 – The Church of St Brueredus
- 1161735 – The Church of St Mabynus

The following buildings (or groups of buildings) intersected by the 10km ZTV are Listed at Grade II\*:

- 1146396 – Lancarffe House
- 1143120 – Stable about 35m west of Lancarffe
- 1195283 – Former St Lawrence's Hospital
- 1025049 – Shire Hall
- 1195252 – Stone cross at SX 0785 6754 at junction with Old Callywith Road

Designated features such as crosses have relatively local settings and most are at a sufficient distance from the wind turbine for no impacts on their settings to occur.

Three Grade II\* Listed Buildings lie considerably less than 3km away from the proposed wind turbine site and wholly within the 3km ZTV. These were judged to be potentially vulnerable to impacts on their settings, although it is likely that these will be substantially reduced by the local topography, vegetation cover and surrounding buildings presence:

- 1146396 – Lancarffe House
- 1143120 – Stable about 35m west of Lancarffe
- 1195283 – Former St Lawrence's Hospital

In particular regard to the buildings at Lancarffe, any potentially negative impacts would be significantly mitigated by the current level of tree cover surrounding the settlement. If this were to be removed, however, the impact would be anticipated to be far greater.

### **8.8 Conservation Areas within the 3km radius ZTV**

See Figures 25 and 26.

The Conservation Areas of Bodmin and Berry Tower, Bodmin both fall within the 3km radius ZTV. Their relatively extensive settings were judged to be potentially vulnerable to impacts, though the topography of Bodmin town, the blocking effect of the urban landscape, and the level of tree cover within and around the two Conservation Areas, might be expected to reduce these considerably.

### **8.9 Grade II Listed Buildings within the 5km radius ZTV**

See Figure 29 and Figures 18 to 20, 23 and 24.

There are 56 Listed Buildings of all grades within 5km of the proposed wind turbine at Callywith Quarry within the ZTV. Of these, 51 are Grade II Listed, the majority falling within the Conservation Area of Bodmin, as follows:



- 4 farmhouses
- 2 churches
- 1 chapel
- 1 Sunday school
- 2 inns
- 1 cross
- 2 walls and gateposts
- 1 mill
- 1 watermill
- 1 mill cottage
- 1 gaol
- 1 gaol chaplaincy
- 1 museum
- 1 bank
- 1 keep
- 1 free library
- 1 house and Guildhall
- 20 shops or town houses within Bodmin
- 3 buildings within former Bodmin Depot
- 3 milestones
- 1 war memorial
- 1 monument

Impacts on the settings of all of these feature types are very unlikely unless they are in very close proximity to the proposed wind turbine. These include structures like milestones, walls and gateposts, crosses and war memorials. Others such as houses, farmhouses and civic buildings have rather more extensive settings, but the majority of the Grade II Listed features noted above would not be considered vulnerable to impacts on their settings. An arguable exception would be the Grade II Listed Gilbert's Monument on The Beacon. The placing of this monument was clearly designed to be a dominant feature of the surrounding landscape. As a result, views from the summit of The Beacon that include the monument, or views from distant points where The Beacon and Gilbert's Monument are prominent, are potentially impacted upon by intervisibility with the proposed wind turbine. The LVIA's provided for the development site at Callywith Quarry indicate that the major extent of the upper hub and blades may be intervisible with Gilbert's Monument (see Fig 56). The inclusion of wind turbine competing for attention with this deliberately-sited monument is therefore a far more important factor in determining impacts on its setting than the degrees of intervisibility between them. The operational turbine at Callywith Farm is already visibly impacting on the setting of Gilbert's Monument and there is, therefore, a strong argument for cumulative impact should the Callywith Quarry wind turbine be constructed.

Impacts on the remaining potentially sensitive Grade II Listed Buildings have only 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).

- Holton Farmhouse is close to the site proposed for the wind turbine at Callywith Quarry, and falls wholly within the 1km radius ZTV. There is some potential for impact on its setting, although this is likely to be significantly reduced by the local topography and level of surrounding tree cover.

Given their distances from the site of the proposed wind turbine, the local topography and vegetation and the site types (and hence their sensitivities), no impacts on the settings of the remaining sites are likely.

## **8.10 Undesignated sites within the 1km ZTV**

See Figure 14.

The ZTV mapping suggests that around 95% of the landscape within a 1km radius of the Callywith Quarry 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 32 intervisible sites, as follows:

### Prehistoric

- MCO2993 – Lancarffe - Bronze Age barrow (documented site)

### Medieval

- MCO22999 – Lancarffe - early medieval pound (documented site)
- MCO41456 – Penquite – medieval ridge and furrow (extant)
- MCO41452 – Penbugle – medieval field system (extant)
- MCO41451 – Bodiniel – medieval field system (extant)
- MCO41455– Penquite – medieval field system (extant)
- MCO46521 – Lancarffe – medieval cross (extant)
- MCO5422 – Lancarffe – medieval cross base (extant)
- MCO5109 – Bodmin – medieval cross (extant)
- MCO5110 – Castle Hill – medieval cross (demolished)
- MCO7149 – Lancarffe – early medieval inscribed stone (extant)
- MCO15022 – Holton – medieval settlement
- MCO16212 – Penquite – medieval settlement
- MCO16051 – Penbugle – medieval settlement
- MCO11208 – Lancarffe – early medieval/ medieval settlement, medieval manor
- MCO18341 – Whitley – medieval settlement

### Post-medieval/modern

- MCO12381 – Penbugle and Lancarffe Consols – post medieval mine (extant)
- MCO29371 – Clerkenwater - post medieval woollen mill (documented site)
- MCO29372 – Clerkenwater - post medieval tannery (documented site)
- MCO41439 – Bodmin – post medieval quarry (extant)
- MCO41440 – Bodmin – post medieval quarry (extant)
- MCO41467 – Callywith – post medieval quarry (extant)
- MCO41438 – Bodmin – post medieval field boundary (cropmark)
- MCO41442 – Bodmin – post medieval quarry (extant)
- MCO41443 – Callywith – post medieval quarry (extant)

- MCO41444 – Callywith – post medieval quarry (extant)
- MCO41445 – Callywith – post medieval quarry (extant)
- MCO41453 – Penbugle – post medieval extractive pit (extant)
- MCO41454 – Penbugle – post medieval extractive pit (extant)
- MCO53397 – Clerkenwater – post medieval milestone (extant)
- MCO52590 – Callywith – post medieval toll house (extant)
- MCO10848 – Lancarffe – post medieval house (extant)

Given the nature of these sites, the proposal for a wind turbine at Callywith Quarry would have no significant impact on the majority of their settings.

## **9 Field verification of ZTV**

See Figures 43 to 54.

The viewshed mapping and potential impacts were, wherever possible (given constraints on public access) ground checked from a number of locations, including sites at, adjacent to or overlooking Lancarffe, Holton, St Breward and Bodmin, and adjacent monuments, near Killibury Castle, Nanstallon Roman Fort, The Beacon, Castle Canyke, Helman Tor and Castilly Henge.

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.

Where possible, photographs were taken from key locations within the surrounding landscape and from the locations at Callywith Quarry back to these sites. Whilst views from the surrounding ground allowed the location of the proposed wind turbine to be determined within the landscape, 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 DTM viewshed mapping was confirmed; from ground level some areas of suggested intervisibility were inevitably closed off by woods and other tree plantings.

Field verification tended to confirm the viewshed mapping; from ground level the areas of intervisibility seem likely to terminate just over 1km to the east of the site, except for some limited areas of intervisibility towards the 5km to 10km radius; to the southeast, there may be increased intervisibility out towards the 3km radius, although the topography and tree cover in this direction may mean only the upper parts of the turbine hub or blades will be visible from certain points. To the south and southwest, the viewshed mapping suggests intervisibility with the wind turbine up to around 5 to 8 km away around Lanivet. From ground level, this visibility was reduced by the crest of the hill to the southwest, suggesting that only the upper parts of the turbine hub or blades may be visible from certain points in this direction. To the west and northwest, views were generally more open to the 5km to 10km radius, though the rolling terrain and levels of tree cover obscured many lower lying areas from view at ground level. To the north there were relatively open views out to around 2 to 3km, across to Helland Wood and the settlements of Penquite, Holton and Lancarffe. Penquite was clearly visible on the south-facing valley slope, surrounded by fields sloping uphill to the north, where mature trees along the hillcrest formed the skyline. Holton and Lancarffe, to the northwest of Penquite, were not visible from the proposed turbine site at ground level, being obscured by the rise in land above Penquite and the level of surrounding tree cover.

Generally, there were no far reaching and completely unimpeded vistas in any direction from ground level, although some glimpses across towards the 10km radius could be achieved; towards Killibury Castle, in the northwest for example, and towards St Breward in the northeast. Where far reaching views may be achieved from the proposed turbine site at Callywith Quarry, these are predominantly across intervening hilltops and ridges. As a result, setting impacts beyond 2km from the proposed site were considered unlikely or minimal in most directions.

## **10 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.

The EIA screening option for this site has indicated some potential for cumulative impacts (see above), and there are currently a number of both small and large-scale wind turbine operational or at application or pre-application stages within a 3km radius of the Callywith Quarry site: at Callywith Farm (75.75m to tip, operational), Steppes Farm (34.45m to tip, operational), Deviock Farm (21.1m to tip, operational), Tawnamoor (17.75m to tip, operational), Newtons Margate Farm (39.6m to tip and 46m to tip, approved), Higher Whitley Farm (73.5m and 39m to tip, pending), Callybarrett Farm (47m to tip, pending). A 75.75m to tip wind turbine was previously refused permission at Callywith Farm in 2010, a 77m to tip wind turbine at Higher Whitley was refused permission in 2012 and a 34.6m to tip wind turbine at Calleyknough Farm was also refused permission in 2012. A prior application for two wind turbines (48.5m to tip) at Callywith Quarry has recently been withdrawn (October 2013).

There are, therefore, some areas within this general locality where wind turbines of a variety of tower heights are prominent within local views; the sizeable wind turbine (75.75m) at Callywith Farm, and the smaller turbine (34.45m) at Steppes Farm, are particularly visible within many of the views from and towards the proposed wind turbine site at Callywith Quarry.

## **11 Synthesis**

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

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of a wind turbine on land at Callywith Quarry will vary with their distance from the turbine site, their state of preservation, their nature, and the effects of reduced or blocked intervisibility due to local topography, vegetation (including hedge plantings) or the presence of other buildings. In the case of some designated assets around the application site, even where intervisibility will be present, the distance from Callywith Quarry will significantly reduce any impacts.

There is the potential for minor negative impact on the settings of sensitive receptors within the immediately local landscape out to two kilometres from the site, principally the High Grade Listed Buildings at Lancarffe and Holton. Beyond this zone, any impacts are likely to be minor or neutral in character. An arguable exception to this would be the Grade II Listed Gilbert's Monument, Bodmin; the intention was for this to be a dominant and unique marker in the landscape and views outwards from it, towards it and incorporated within local panoramas. There is the potential, therefore, for its setting to be moderately impacted by the proposed turbine site at Callywith Quarry, as has already occurred as a result of the construction of those within other parts of the landscape surrounding the monument.

Although there are already precedents at nearby Callywith Farm and Steppes Farm, it is considered that there will be some impacts on the Historic Landscape Character of the surrounding landscape. Whilst the quarry site itself has substantially altered the



underlying fields, the site borders a relatively closed in agricultural landscape whose character reflects its medieval origins, and the re-landscaping of disused sections of the quarry has been carried out sensitively.

## **12 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.

### **12.1 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.*

## **12.2 Former North Cornwall Local Plan 2004**

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 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.*

### **12.3 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.

## **13 Likely impacts of the proposed development**

### **13.1 Types and scale of impact**

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

#### **13.1.1 Types of impact, construction phase**

Construction of wind turbines, generally, could have direct, physical impacts on the buried archaeology of development sites 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. In the case of Callywith Quarry, the survival of any underlying archaeology on site would not be anticipated. However, in the event of any such impacts occurring, these would be **permanent** and **irreversible**.

#### **13.1.2 Types of impact, operational phase**

The proposed wind turbine at Callywith Quarry might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during the operational phase, given its height (48.5m to tip), the topography of the site and the 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.

#### **13.1.3 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.

#### **13.1.4 Potential and residual impacts**

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 13.2, 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 14.

### **13.2 Assessment of impact**

Overall, the impacts of the proposed wind turbine on the archaeological resource are assessed as having a potential scored as **negative/minor**, principally dependant on proximity to the proposed turbine site and intervisibility with it. The impact of the current proposal is assessed as **negative/minor** on the Grade II\* Listed Buildings at Lancarffe and potentially the Grade II Listed Holton Farmhouse, on parts of the Conservation Areas of Bodmin and Berry Tower and the Scheduled Monument of Castle Canyke, but potentially **negative/moderate** on the Grade II Listed Gilbert's Monument.

Impacts on the settings of designated heritage sites between 3km and 10km from the proposed turbine site have been assessed as **neutral** overall.

There is unlikely to be any impacts on sub-surface archaeology within the development site, as the land surface is already disturbed as a result of quarrying.

The assessments supporting this general statement are outlined in the following sub-sections. To comply with current policies and guidance (Section 12) 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.

#### **13.2.1 Impacts on archaeological sites within the development area**

It is unlikely that ground disturbance associated with the installation of foundations for the wind turbine, cabling or ancillary works during the construction phase would result in permanent, irreversible loss of below ground remains of archaeological sites within the development area, or of elements of these, given that the ground will already be disturbed to well below ground level as a result of quarrying.

#### **13.2.2 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/minor**, in particular in relation to the more closely-set Listed Buildings within the 3km zone and to a degree on the setting of some parts of the Conservation Areas of Bodmin and Berry Tower, though not necessarily to all of their individual components. Equally, the settings of the Scheduled Monument of Castle Canyke, and more particularly the Grade II Listed Gilbert's Monument, also within the 3km radius, may be impacted by the proposed wind turbine to some extent.

Such impacts will be **temporary/reversible** overall should the wind turbine be dismantled in the future and not be replaced:

- There are a number of Scheduled sites located within 5km of the site proposed for the wind turbine which would have been intended, when constructed, to be important focal points within the local landscape. These include the late prehistoric hillfort enclosures of Dunmere Camp, Pencarrow Rings and Castle Canyke. Whilst there may not be substantial intervisibility between some of these sites and the proposed wind turbine, they will occupy the same general area of



the local landscape, and the construction of the wind turbine may alter visitors' perceptions of the area.

- These impacts are likely to be mitigated at most of these sites by current levels of vegetation cover and buildings presence. This is certainly the case for Dunmere Camp, which is completely shrouded by woodland. Pencarrow Rings lies outside the 5km ZTV and therefore suggests no intervisibility with the proposed wind turbine. Castle Canyke would potentially be at greatest risk of impact on its setting, given its function and intended visibility within the landscape. That risk is substantially downgraded, however, due to the proximity of the modern industrial estates and major roads that now skirt the site and already compromise its setting in most directions.
- There are a small number of clearly visible individual wind turbines or wind farms within the surrounding landscape, and as a result, the long-standing agricultural character of the area has already been impacted to some extent. It could, therefore, be argued that there will be less subsequent impact on the settings of some Scheduled Monuments and Listed Buildings in the immediate locality as a result. The proposed turbine site is also within a currently operational stone working quarry, which has already impacted the immediate character of its landscape setting. Nonetheless, the sensitive restoration of the backfilled area of the quarry means that much of the integrity of its ancient agricultural landscape character is being respected where possible. As noted above, the proposed site does lie within an Area of Great Landscape Value, which also merits sensitive development within its confines. The cumulative effect of wind turbine development in the area local to Callywith Quarry and around Bodmin is therefore an issue for consideration.
- Other Scheduled Monuments within the 3km to 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 to any great extent.
- During the operational phase the wind turbine is likely to impact to some degree on the settings of the Listed Buildings within their viewsheds and within about 1km of it. However, intervisibility at these sites may well be constrained by trees and by modern farm buildings. No access was available to Lancarffe during the site visit, but the settlement there appears well surrounded by mature trees. It is possible that there may be some intervisibility with the proposed turbine, given its proximity to Lancarffe, but where this occurs it may well be intermittent through the tree cover, or limited to the upper parts of the hub and blade tips. If, however, there was any significant removal of the surrounding tree cover, the impact might be greater than presently assessed, particularly as the approach to Lancarffe would potentially incorporate marginal views towards the proposed turbine site. At Holton, the views towards Callywith Quarry from ground level in front of the farmhouse appear closed in by partial tree cover and the rise of the land to the south. Although the principal elevation of the farmhouse faces towards the proposed wind turbine, it seems likely that any potential intervisibility would be confined to the upper hub or blade tips. Views of Holton Farmhouse would be away from the direction in which the proposed wind turbine would be sited, although views incorporating Holton Farmhouse from some aspects may include partial sightings of the proposed turbine within them.
- During the operational phase the wind turbine is likely to impact to some degree on the settings of the Grade II Listed Gilbert's Monument, which lies within the 3km viewshed. The monument was clearly intended to be a dominant feature in the landscape, commanding both views from and towards the summit of The Beacon and its setting could, therefore, be argued to be fairly extensive. When first erected, the monument would have been a unique vertical marker within both local and more distant views (see Figs 50 and 56). The wider experience of

the monument that was originally intended would, therefore, be moderately impacted by the proposed turbine at Callywith Quarry.

- There are no Registered Battlefields within the 10km radius viewshed of the proposed wind turbine.
- There would potentially be neutral to minor impacts on the settings of the Conservation Areas at Bodmin and Berry Tower, due to their proximity to the proposed turbine site. It is likely, however, that only the upper parts of the hub and blades would be visible from the majority of viewpoints within the town. The impact would potentially be further mitigated by the typically east-west direction of many of the views across Bodmin, as well as the obscuring of many potentially intervisible viewpoints by the presence of surrounding buildings. Nonetheless, there may be some points within, or of, the historic town where views of the proposed wind turbine would have greater impact on the settings of the Conservation Area, or individual buildings within it, though this is not anticipated to be extensive. The Conservation Area of Berry Tower is well surrounded by tree and vegetation cover. Only from the rear graveyard is there some potential for intermittent intervisibility with the proposed wind turbine through the current vegetation cover (see Fig 49), though, again, this would possibly only be with the upper hub or blades. Views towards the Conservation Area from within Bodmin are also unlikely to be impinged upon by the proposed wind turbine given the lay of the land and current levels of vegetation cover around Berry Tower and its associated churchyard. This might possibly change if this cover was reduced in the future through dieback or vegetation clearance.
- Any impacts on heritage assets within the landscape surrounding the proposed wind turbine would be temporary and reversible should they be dismantled in the future.

### 13.2.3 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 Figure 33.

Identifier	Site	Impact
1006660	Castle Canyke	Neutral- Negative/minor
1007273	Roman Fort at Nanstallon	Neutral
1010439	Killibury Castle	Neutral
1007306	Neolithic settlement/hut circle on Helman Tor	Neutral
1006684	Castilly Henge, Innis Downs	Neutral
1004457	Bury Castle	Neutral
1004232	Tregawne Barrow, E of Gwennymoor	Neutral
1005458	Barrow Group on Greenbarrow Downs	Neutral
1004233	Barrow Group on Hustyn Downs	Neutral
1004436	Barrow Group at Penadlake	Neutral
1003080	Barrow Group N of Grey Mare Lodge	Neutral
1004617	Barrow Group W of Taphouse	Neutral
1003273	Two Round Barrows SE of Higher Tregolls	Neutral

The distance of the majority of these sites from Callywith Quarry, combined with the intervening topography and vegetation cover, suggests that the impact on most of their settings will be **neutral**. The proximity of Castle Canyke to the proposed turbine site and the level of potential intervisibility with it, would suggest a **negative/minor** impact on its setting. Given the degraded nature of the surroundings of the site, however, due to the proximity of modern industrial estates and major roads, the impact may potentially be downgraded to **neutral**.

Grade I Listed Buildings - see Figures 38 to 41.

Identifier	Site	Impact
1158842	Church of St Brueredus	Neutral
1143078	Church of St Clement	Neutral
1161735	Church of St Mabena	Neutral

Although all three of the above Grade I Listed churches fall within the 10km ZTV, their relative distance from the proposed wind turbine site, and the level of intervening blocking through topography, vegetation cover, and additional buildings presence, suggests a neutral impact on their settings, overall.

Grade II\* Listed Buildings - see Figure 38, and Figures 18 and 19

Identifier	Site	Impact
1146396	Lancarffe	Negative/minor
1143120	Stable about 35m west of Lancarffe	Negative/minor
1025049	Shire Hall, Bodmin	Neutral to Negative/minor
1195283	Former St Lawrence's Hospital	Neutral

In the case of Shire Hall, Bodmin, it is possible that the upper parts of the proposed wind turbine may be visible from the street in front of the building (see Fig 48). The building façade faces east, however, and views from or towards this are unlikely to be greatly impacted, unless the movement of the turbine blades distract or draw focus to some degree. This could not be effectively assessed from ground level, though if this was the case the setting impact on Shire Hall would rise to **negative/minor**. This may need to be tested utilising photomontages. The orientation of the former St Lawrence's Hospital, its distance from the proposed development site, and the intervening topography of urban Bodmin suggest the turbine would have a **neutral** impact upon its setting. In the case of Lancarffe, the level of surrounding tree cover and the rise of the land behind the settlement to the southwest are likely to diminish potential setting impacts; the site could not be accessed during the site visit, but the settlement appears to be well surrounded by mature trees, which would considerably reduce any potential intervisibility. The topography of the site also suggests that only the upper parts of the turbine hub or blades might be visible from Lancarffe. However, should the trees die or be felled, setting impacts would potentially rise to **negative/moderate**.

**13.2.4 Designated heritage assets within the 3km radius viewshed.**Grade II Listed Buildings - see Figure 25.

Identifier	Site	Impact
1143119	Holton Farmhouse	Neutral
1143121	Penhargard Farmhouse	Neutral
1298241	Bodmin Gaol	Neutral
1298239	Gilbert's Monument	Negative/moderate

In addition to those listed above, there are a number of Grade II Listed Buildings that fall within the Conservation Area of Bodmin and the 3km ZTV. These would largely be anticipated to have a **neutral** impact on their settings from the proposed wind turbine. There may, however, be selected buildings where the urban topography or vegetation cover does not sufficiently mitigate any views towards the wind turbine. Although the LVIA's prepared for the proposed application suggest that only the upper parts of the turbine hub or blades might be visible from these points, a **negative/minor** impact would possibly be more appropriate. In the case of Penhargard Farmhouse and Bodmin Gaol, only a small section of the main buildings intersect the 3km ZTV, and the impact on their settings is likely to be **neutral** as a result. In the case of Holton Farmhouse, the tree cover and lay of the land southwest of the farmhouse frontage are likely to block views towards the proposed turbine site, with only the upper parts of the hub or blades likely to be visible over the hillslope. As noted above, the greatest potential impact is on

the setting of Gilbert's Monument, on The Beacon, as this would originally have been erected to command a dominating position within views of the surrounding landscape. The impact on its settings has, therefore, been assessed as **negative/moderate**.

#### Conservation Areas

See Figures 25 and 26.

Identifier	Site	Impact
DCO119	Bodmin	Neutral to Negative/minor
DCO121	Berry Tower	Neutral to Negative/minor

The LVIA's prepared for the proposed development at Callywith Quarry suggest that only the upper hub and blades are likely to be visible from the major extent of the Conservation Areas at Bodmin and Berry Tower. The orientation of the predominant views across Bodmin, combined with the nature of the urban topography, further suggests that the impact on its Conservation Area's setting will be predominantly **neutral**. The level of surrounding vegetation and tree cover at Berry Tower will also block or reduce any intervisibility with the proposed turbine, suggesting the impact on its setting will also be **neutral**. There may, however, be some points within both Conservation Areas, or in the landscape surrounding them where views of them include the wind turbine at Callywith Quarry, where the impact might become **negative/minor**: where views are less restricted by building's presence or vegetation cover, or if buildings are demolished, trees felled or vegetation cleared.

#### **13.2.5 Undesignated heritage assets within the 1km radius viewshed**

See Figure 14.

None likely to be affected given that the majority are either cropmarks, crosses, mining-related features or documented sites/place names.

#### **13.2.6 Impacts on Historic Landscape Character**

The installation of a wind turbine at Callywith Quarry can be predicted to have some degree of negative impact on the historic character of the immediate surrounding landscape. The expected effect on HLC has been assessed as **negative/minor**. Factors contributing to this assessment are as follows:

- Some significant visual impact throughout the operational phase would occur, affecting the integrity of the immediate surrounding area as former medieval farmland through the introduction of a pair of highly visible modern features into this landscape, even though their visibility within the landscape would be limited in extent and that there was already some precedent for this within the locality.
- The land-take for the proposed development is within already disturbed and altered ground, being an operational quarry site; there would, therefore, 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.

## **14 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.

## **14.1 Site redesign**

Mitigating any potential impacts on the setting of designated sites within the locality of Callywith Quarry might be possible through a degree of relocation of the wind turbine to remove it from key views of such monuments. English Heritage may require the production of photomontages demonstrating that any submitted proposal could achieve this aim.

## **14.2 Archaeological recording**

Given the nature of the site proposed for the Callywith Quarry wind turbine, no requirement for archaeological recording has been identified.

# **15 References**

## **15.1 Primary sources**

Cornwall County Council 2005 aerial mapping of Cornwall.

Joel Gascoyne's 1699 Map of Cornwall

Martyn's 1748 Map of Cornwall

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

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

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

Ordnance Survey, 2007. *Mastermap Digital Mapping*

Tithe Map and Apportionment, c1840. *Parish of Helland* (digital copy available from CRO)

Tithe Map and Apportionment, c1840. *Parish of Bodmin* (digital copy available from CRO)

## **15.2 Publications**

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

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

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

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

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

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

## **15.3 Websites**

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

# **16 Project archive**

The HE project number is **146333**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Fal Building, New County Hall, 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\ Sites C/Callywith Quarry Site Visit 146284
3. English Heritage/ADS OASIS online reference: cornwall2-168624
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites C\Callywith WT amended site 2013\Report\2014004 Callywith Quarry Wind Turbine Assessment Report.doc



Fig 3 The project area and its surroundings, as shown on John Norden's Map of Cornwall. The project area is circled in red.



Fig 4 The project area and its surroundings, shown on Joel Gascoyne's 1699 Map of Cornwall. The project area is circled in red.





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

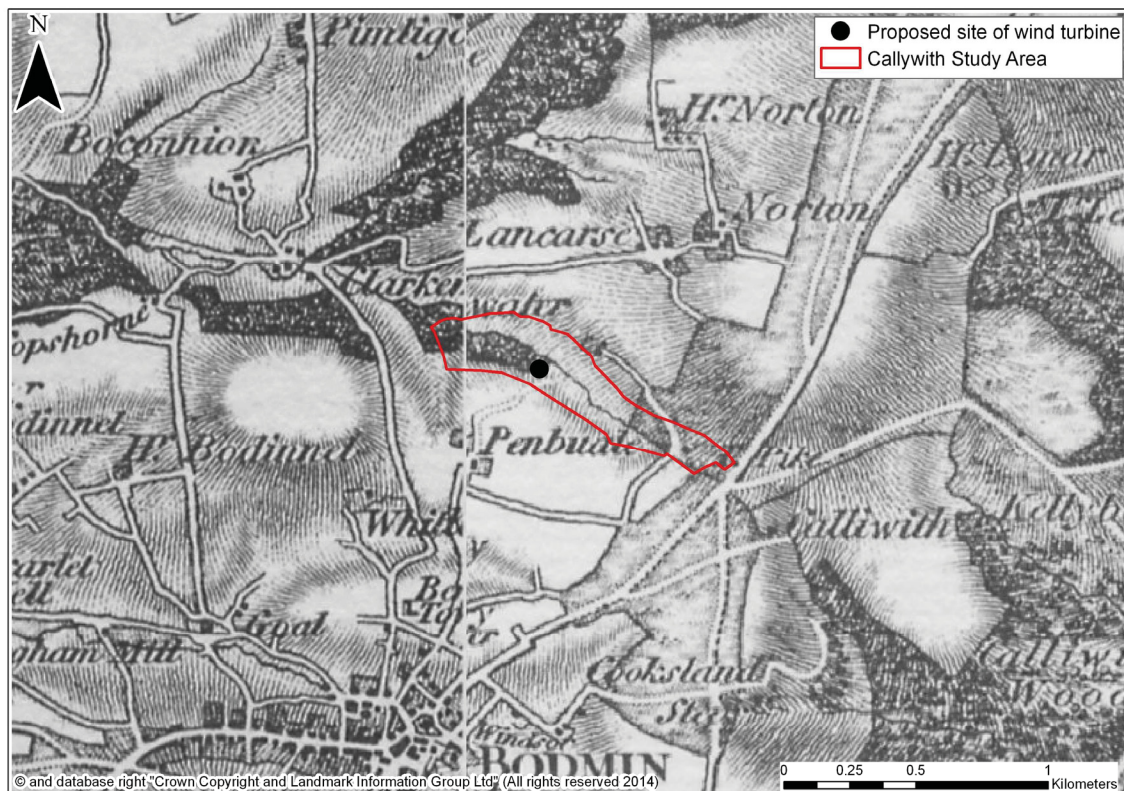


Fig 6 The project area and its surroundings as shown on the around 1807 1<sup>st</sup> Edition OS mapping. The turbine project area is slightly offset because of the differing projections used by the 19<sup>th</sup> century OS surveyors and modern mapping.



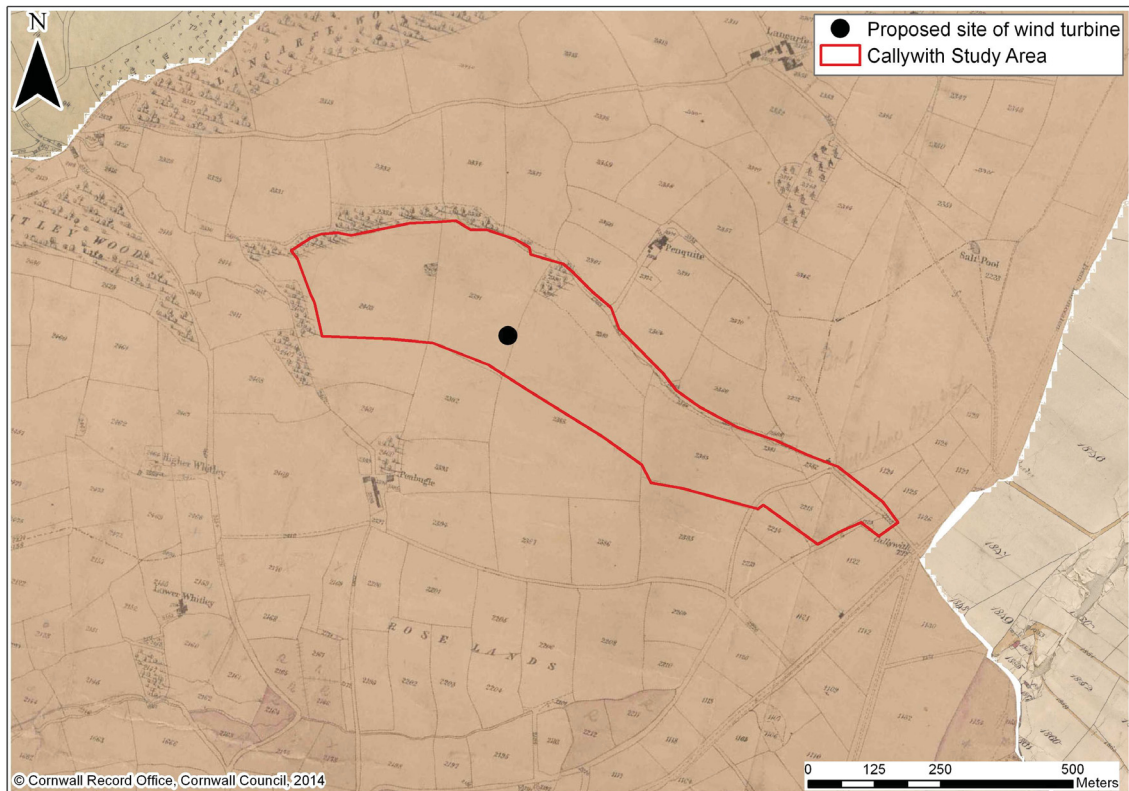


Fig 7 The project area as shown on the around 1840 Helland Tithe Map. The proposed turbine is indicated by a black dot.

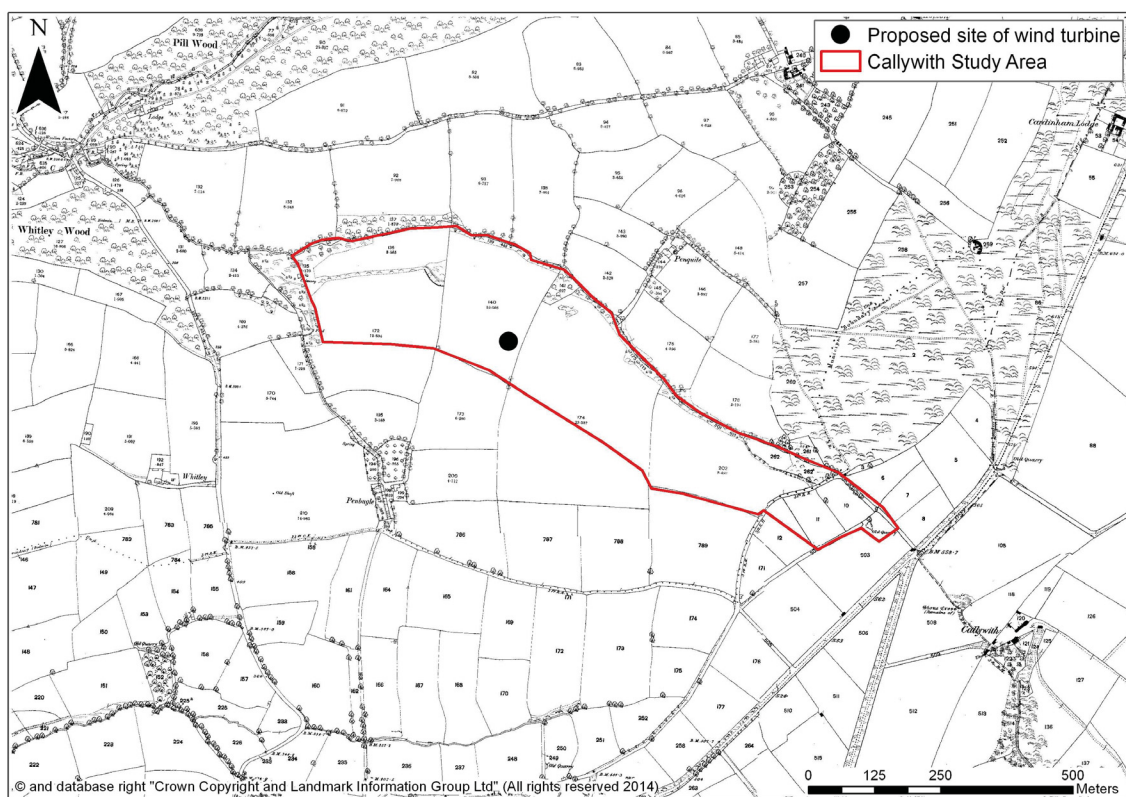


Fig 8 The project area as shown on the around 1877 1st Edition OS 1:2500 mapping. The proposed turbine is indicated by a black dot.



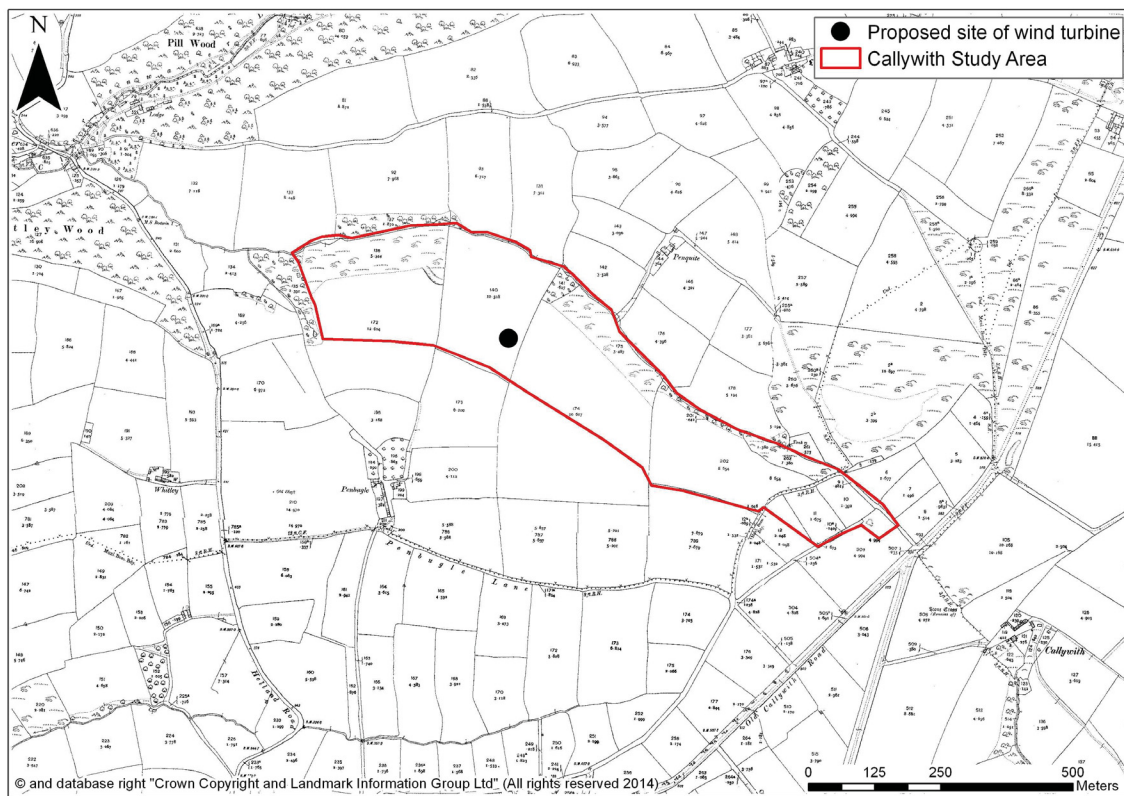


Fig 9 The project area as shown on the around 1908 OS 1:2500 mapping. The proposed turbine is indicated by a black dot.

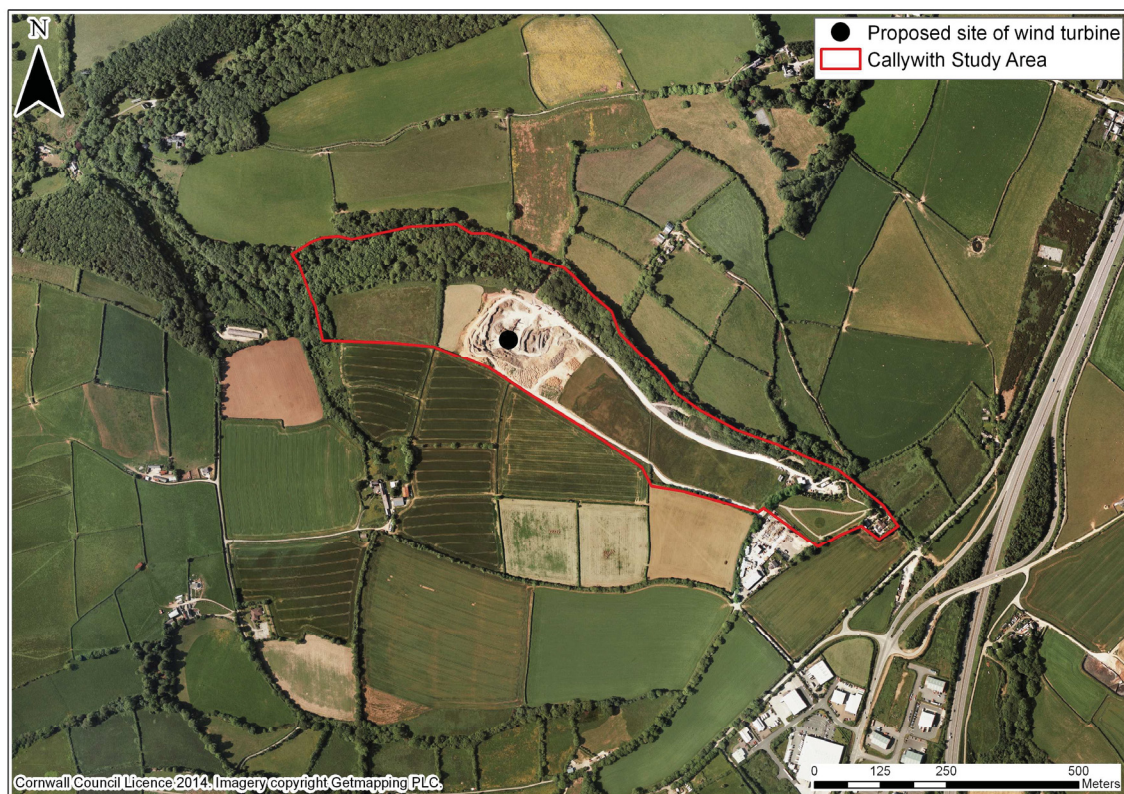


Fig 10 The project area as shown on a 2005 CCC aerial photograph. The proposed turbine is indicated by a black dot.



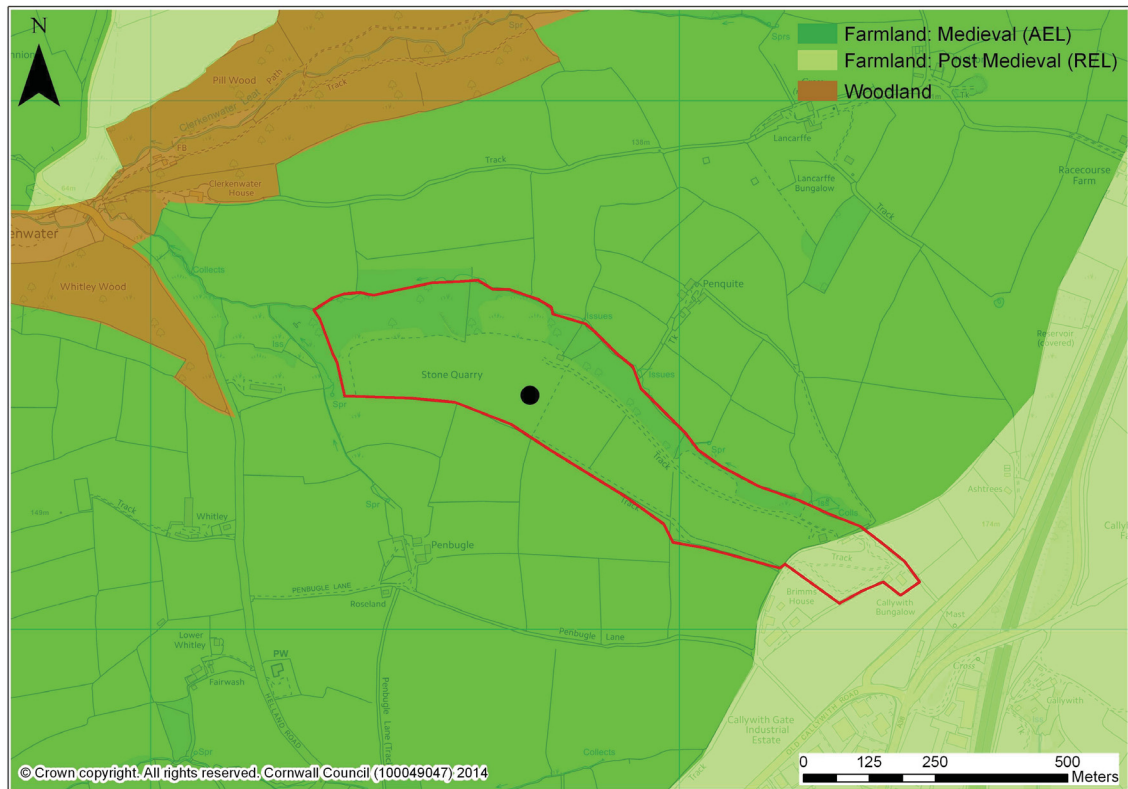


Fig 11 Historic Landscape Character mapping showing how this area of countryside is derived from land enclosed during the medieval period.

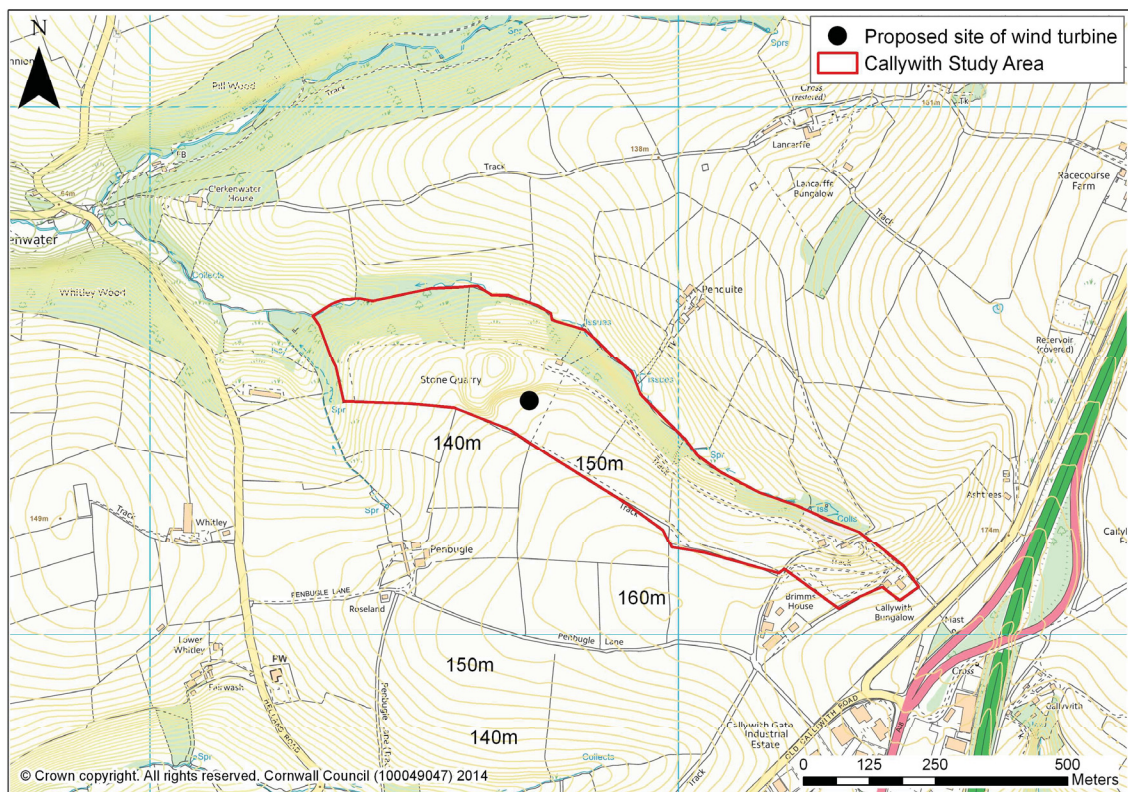


Fig 12 OS contour data for the area immediately surrounding the proposed wind turbine show its location on a north sloping valley side.



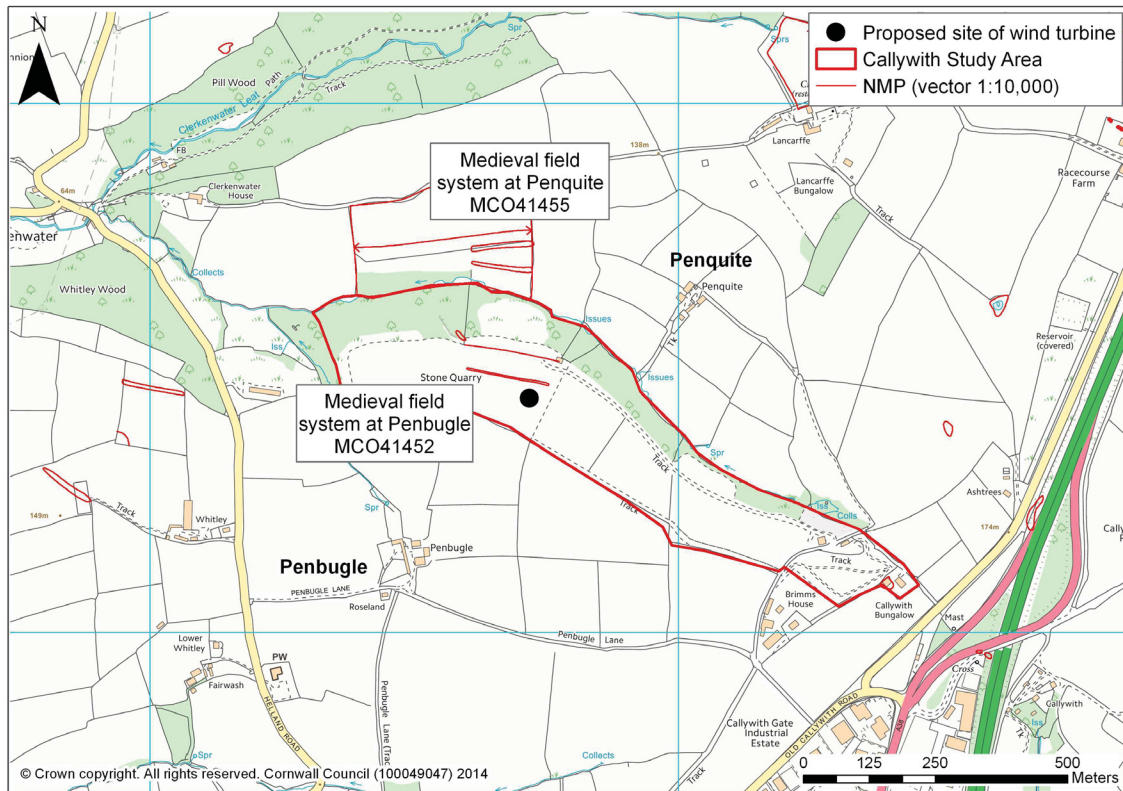


Fig 13 Cropmark archaeological sites within the vicinity of the site at Callywith Quarry recorded by the National Mapping Project.

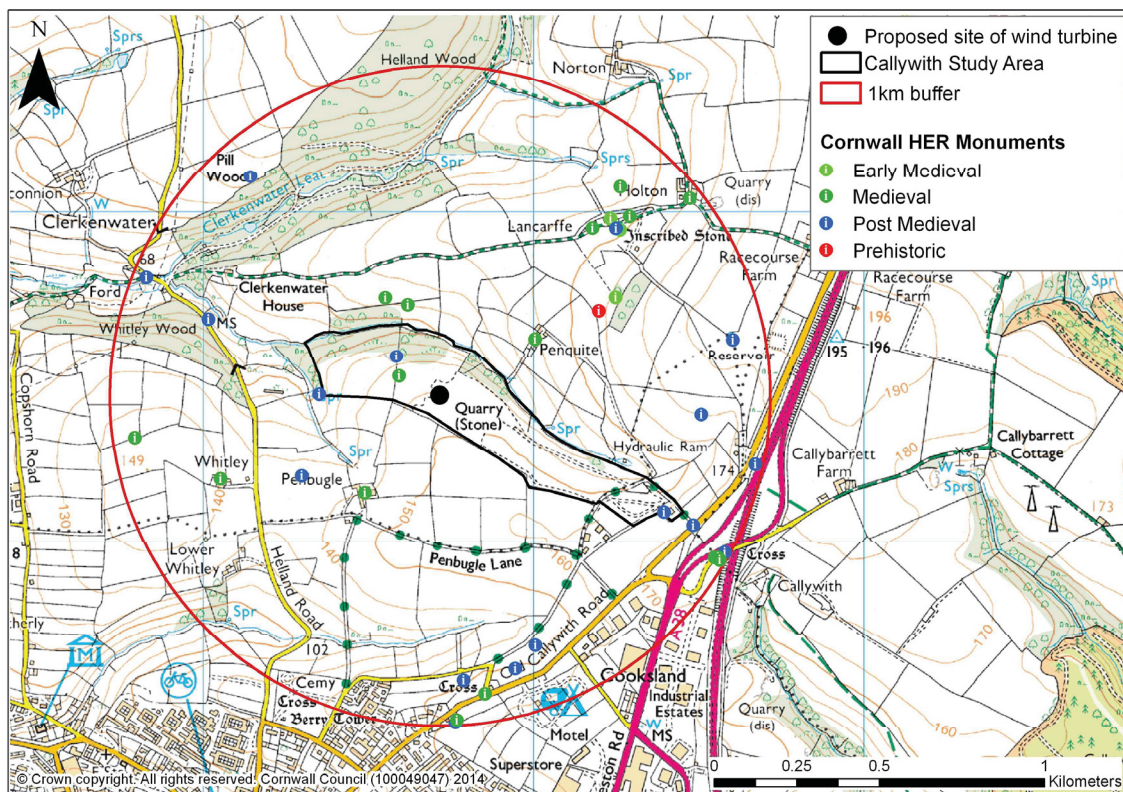


Fig 14 Sites within a 1km radius of Callywith Quarry recorded in the Cornwall and Scilly HER



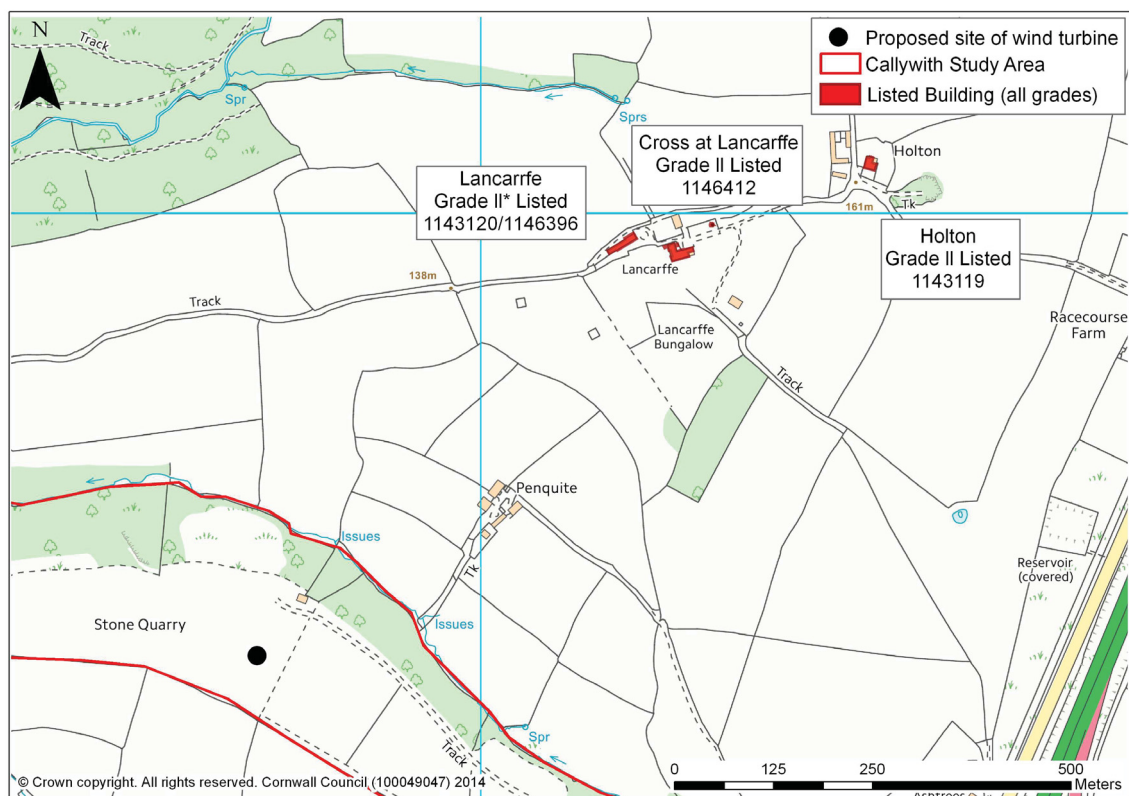


Fig 15 Listed Buildings within the immediate landscape surrounding Callywith Quarry, at Lancarffe and Holton.

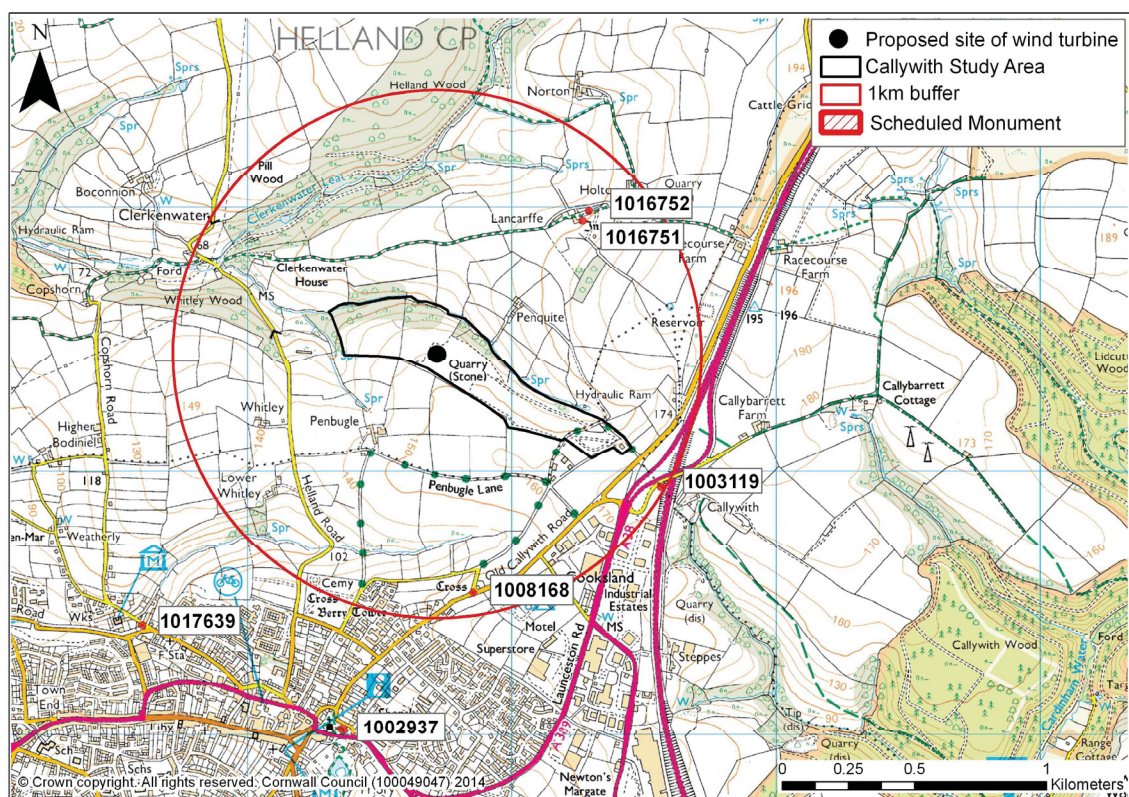


Fig 16 National Monument Numbers for Scheduled Monuments within the immediate landscape surrounding Callywith Quarry.



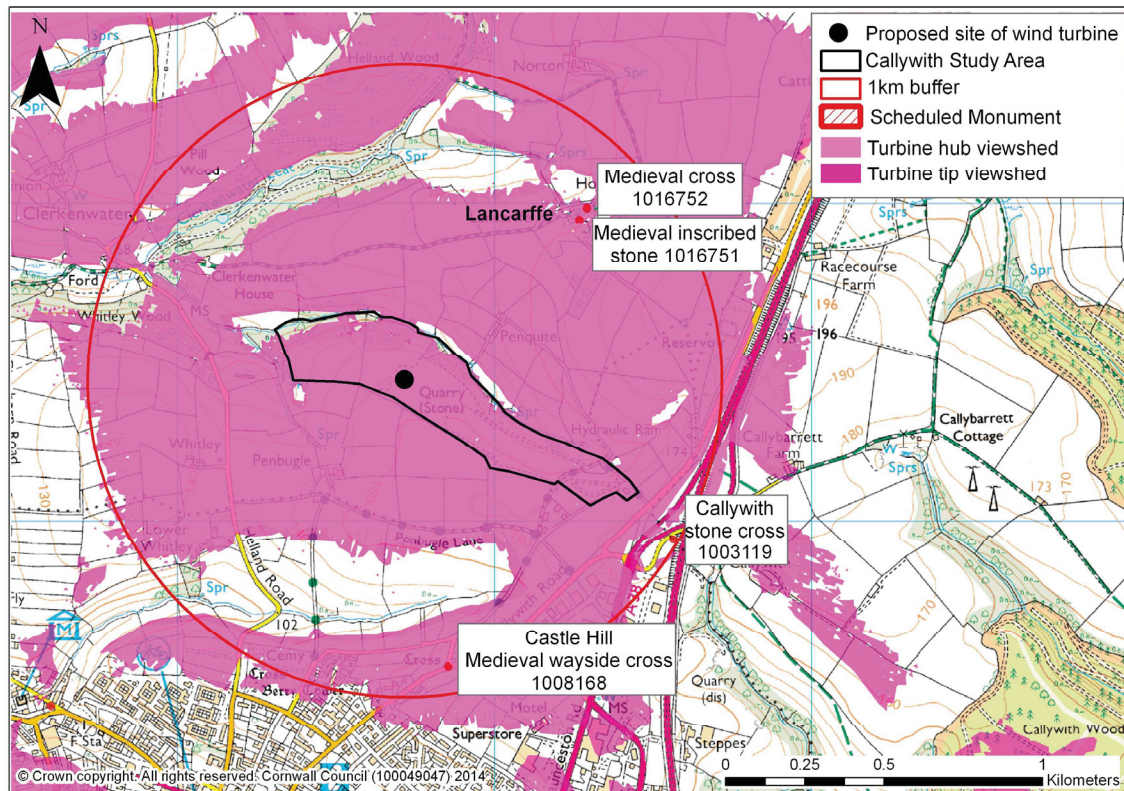


Fig 17 Mapping showing potentially intervisible Scheduled Monuments within the 1Km radius ZTV of the proposed wind turbine site.

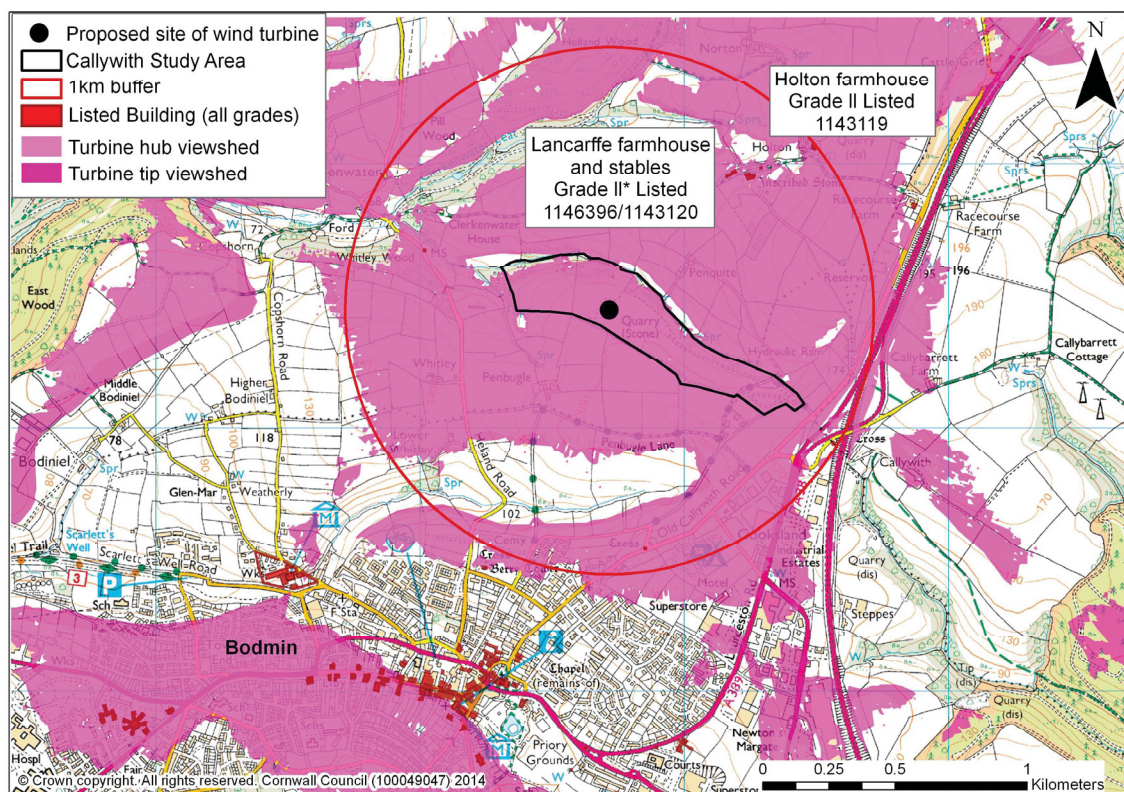


Fig 18 Mapping showing potentially intervisible Listed Buildings within and close to the 1Km radius ZTV of the proposed wind turbine site.

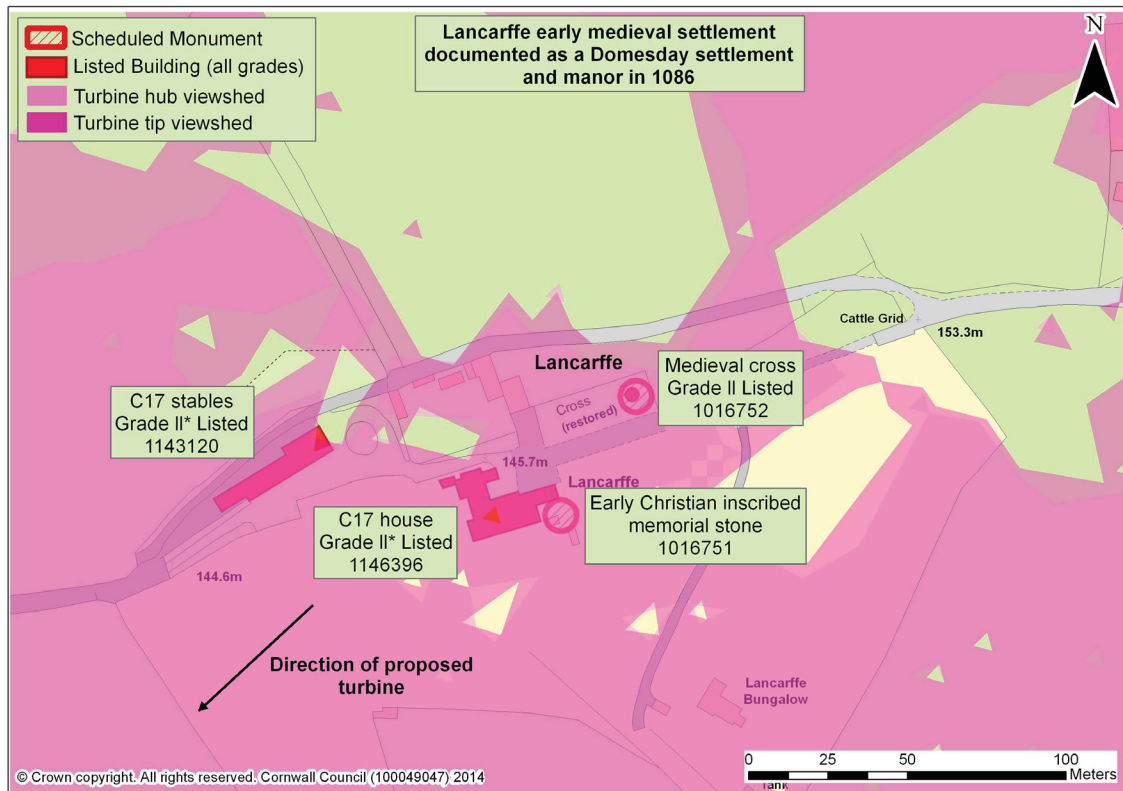


Fig 19 Detail of the ZTV mapping for the Listed Buildings at Lancarffe that theoretically lie within the ZTV at less than 1km distance from the proposed wind turbine at Callywith. The arrow shows the direction in which the proposed turbine would lie.

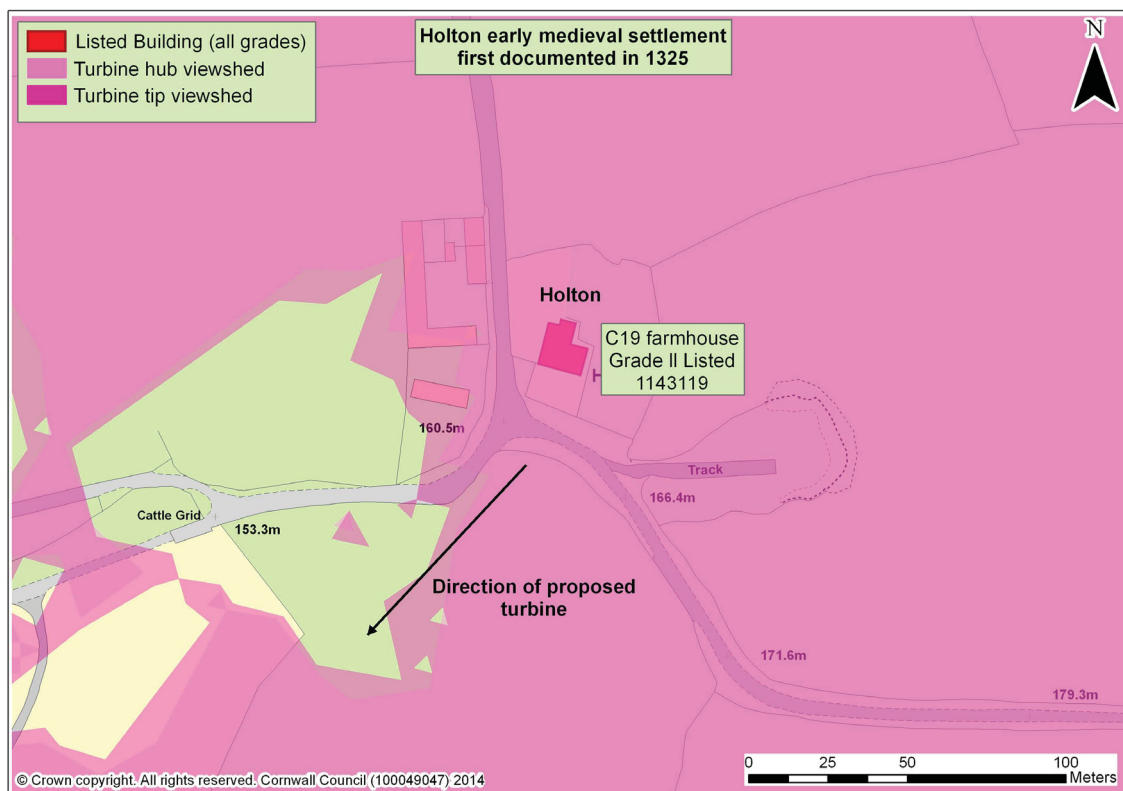


Fig 20 Detail of the ZTV mapping for the Listed Buildings at Holton that theoretically lie within the ZTV at less than 1km distance from the proposed wind turbine at Callywith. The arrow shows the direction in which the proposed turbine would lie.



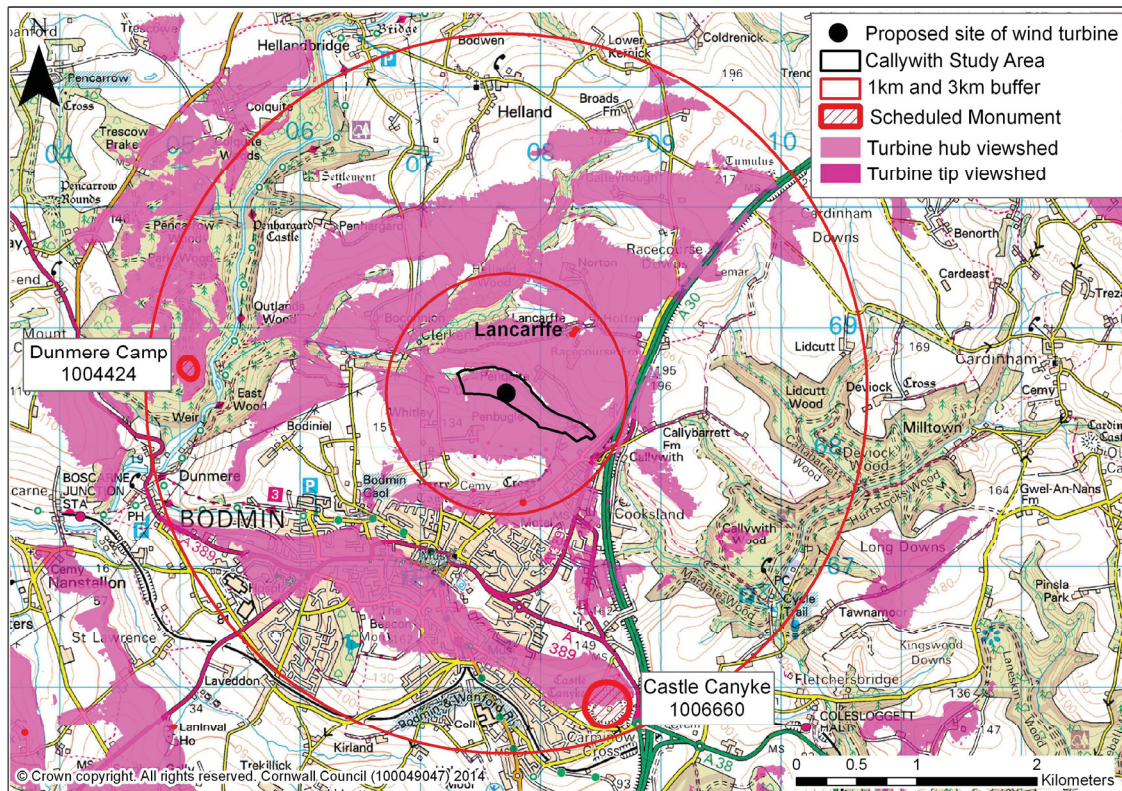


Fig 21 Mapping showing significant and potentially intervisible Scheduled Monuments between 1km and 3km radius ZTV of the proposed wind turbine site.

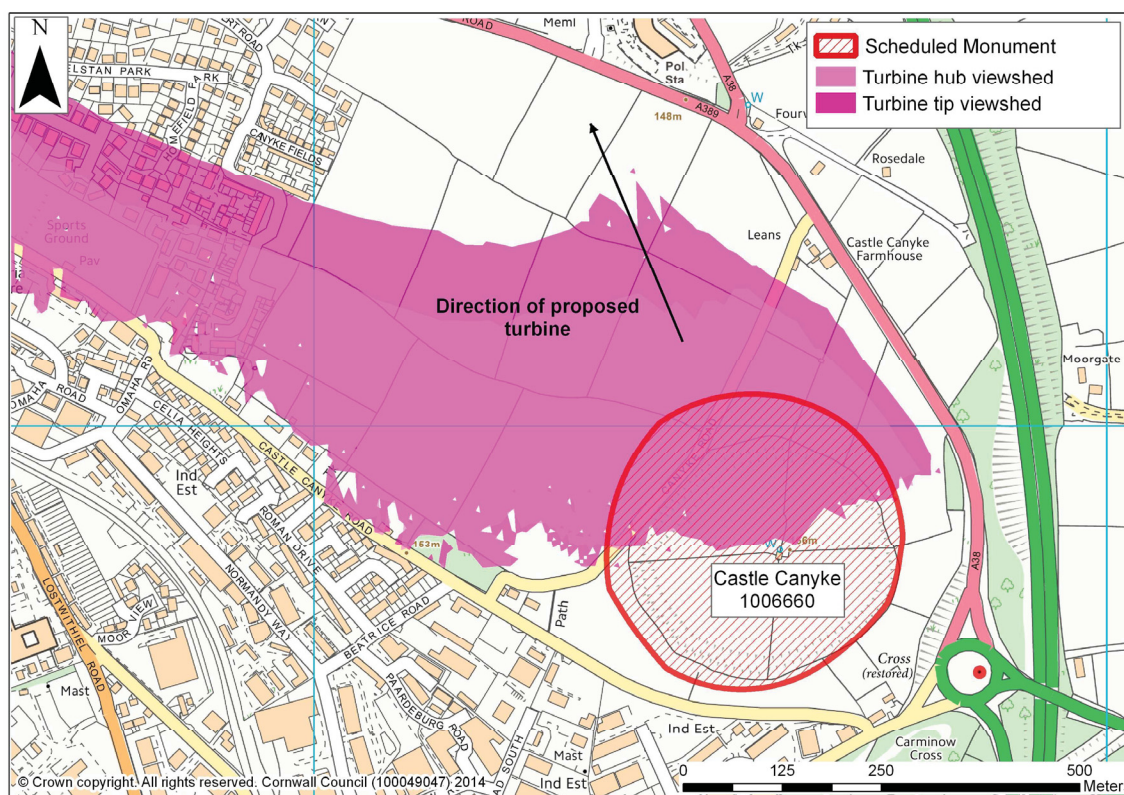


Fig 22 Mapping showing the Scheduled Monument of Castle Canyke, Bodmin, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



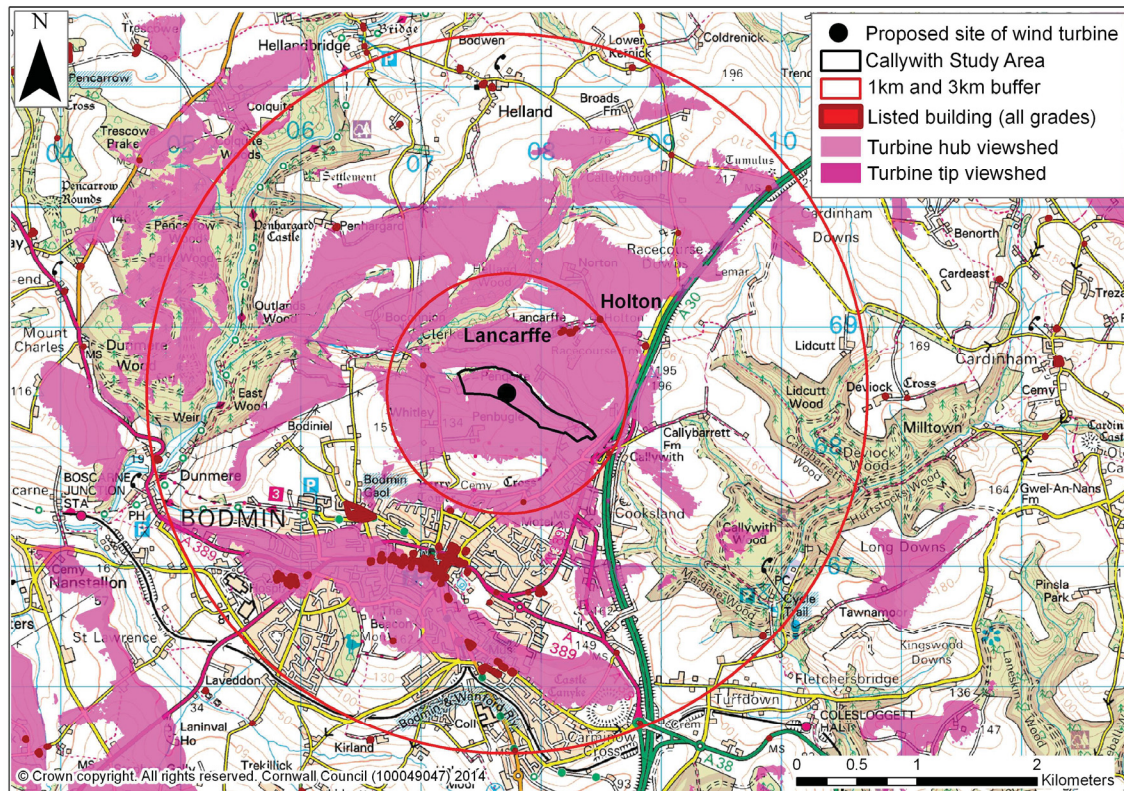


Fig 23 Mapping showing potentially intervisible Listed Buildings within and close to the 3km radius ZTV of the proposed wind turbine site.

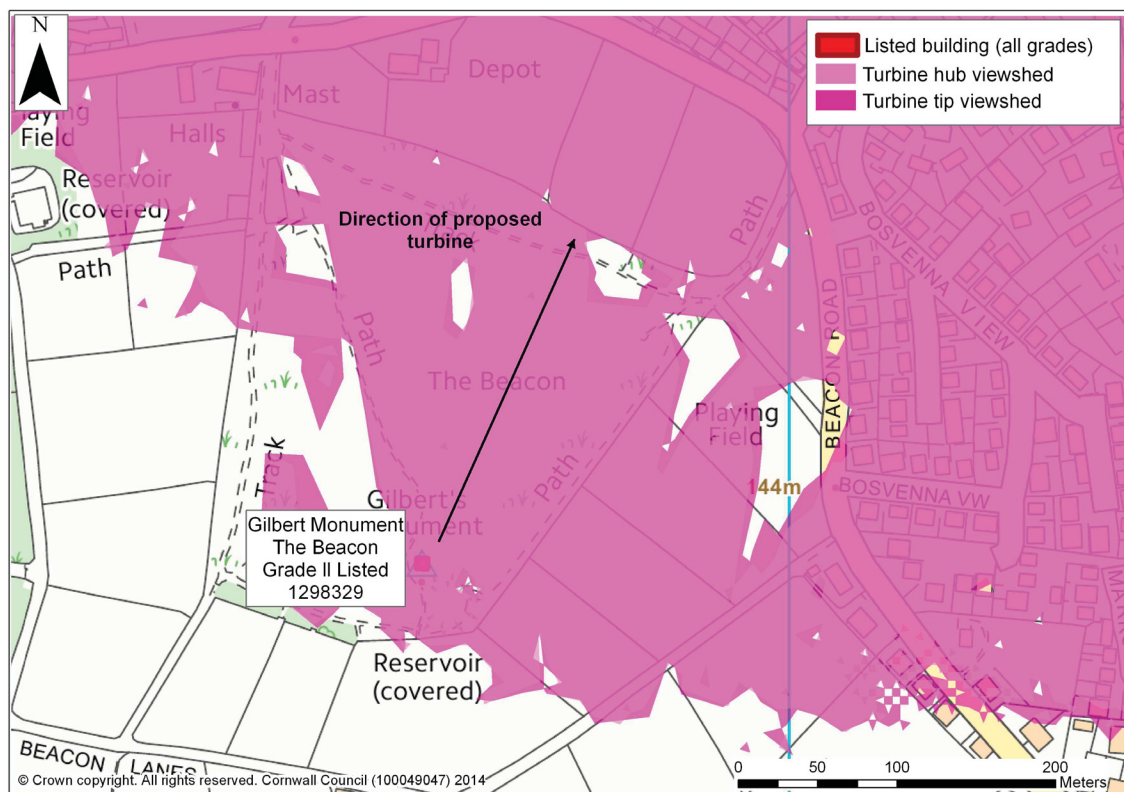


Fig 24 Mapping showing the Grade II Listed Gilbert Monument on The Beacon, Bodmin, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



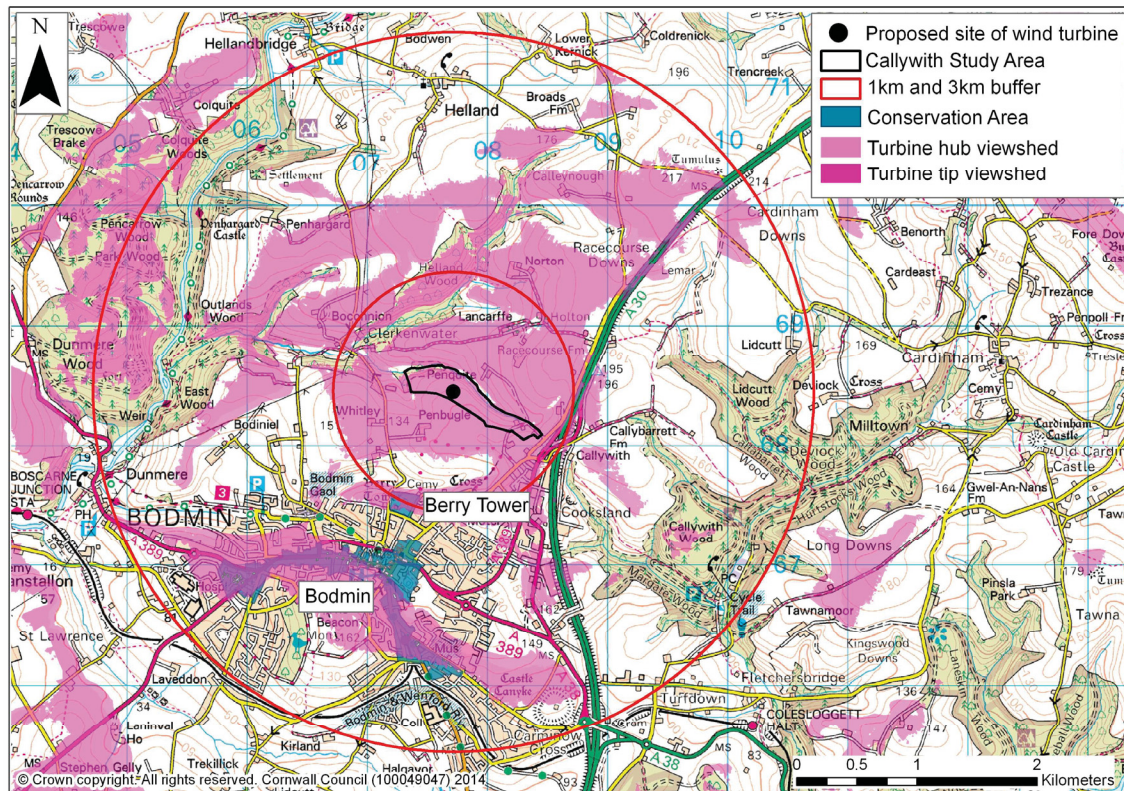


Fig 25 Mapping showing the Conservation Areas within 1 to 3km of the site proposed for the wind turbine and potentially intervisible with it.

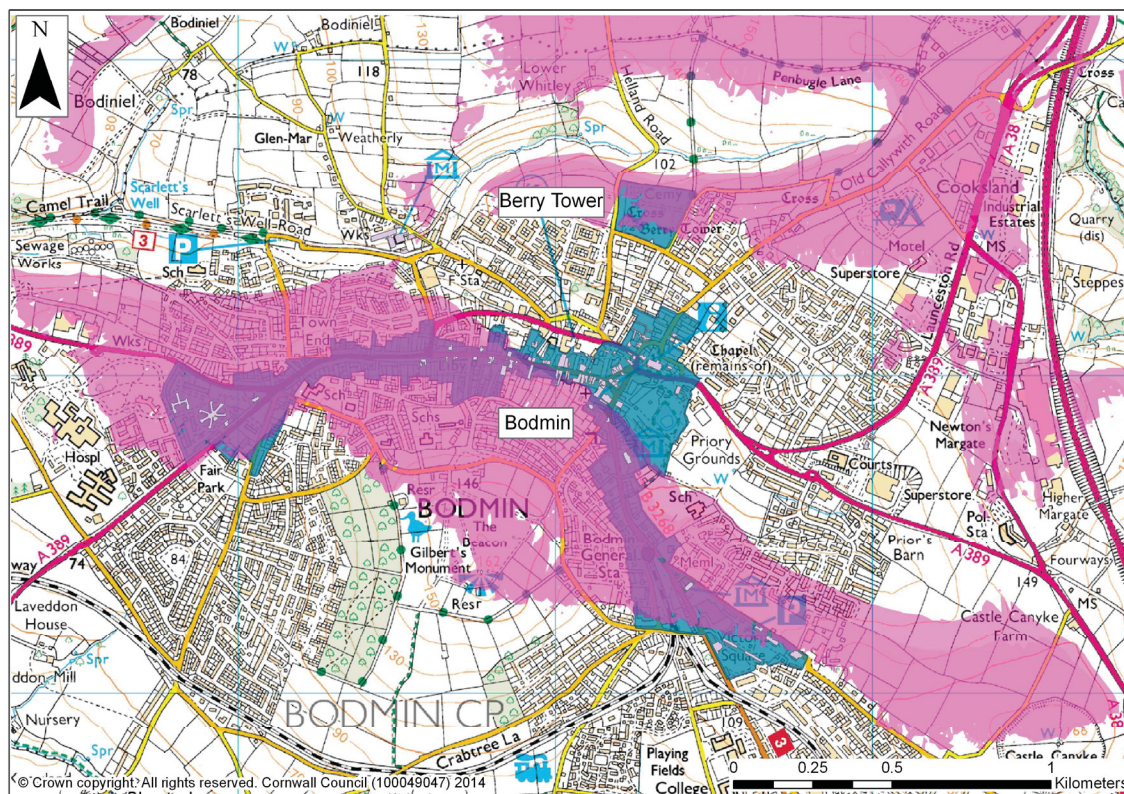


Fig 26 Mapping showing the Conservation Areas of Bodmin and Berry Tower, Bodmin, and the extent of potential intervisibility with the proposed wind turbine site.



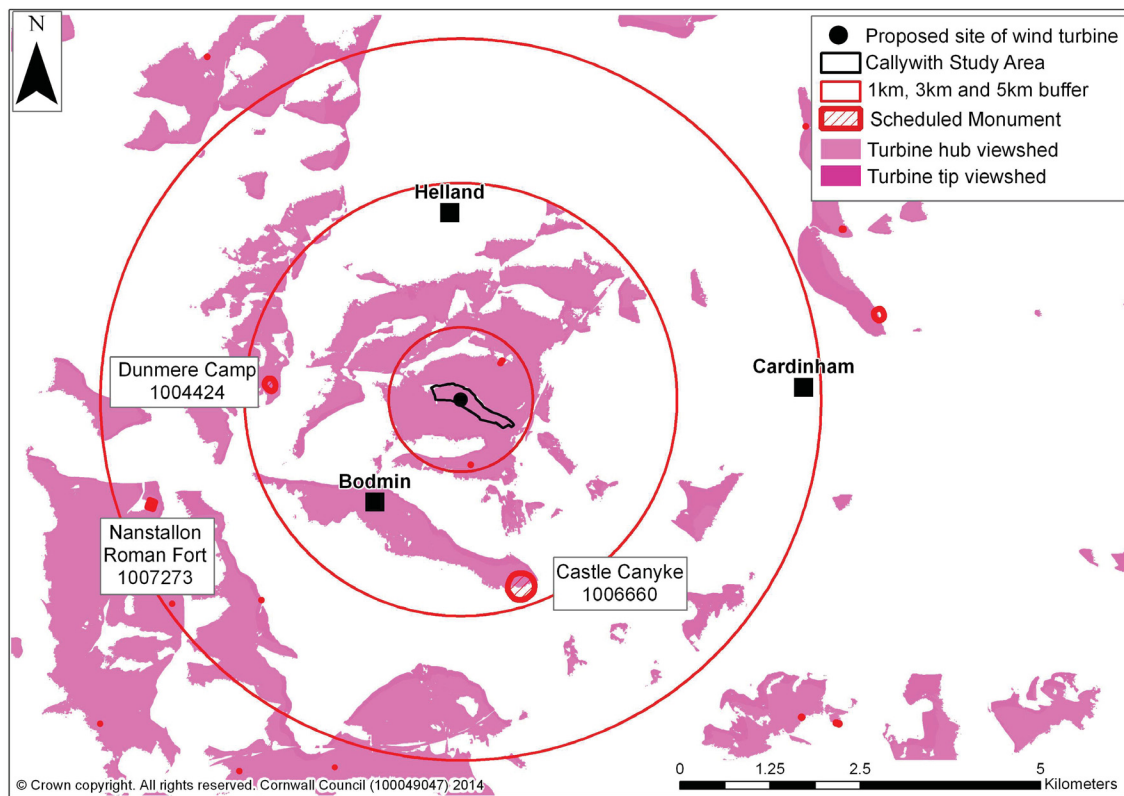


Fig 27 Mapping showing potentially intervisible Scheduled Monuments within and close to the 3km to 5km radius ZTV of the proposed wind turbine site.

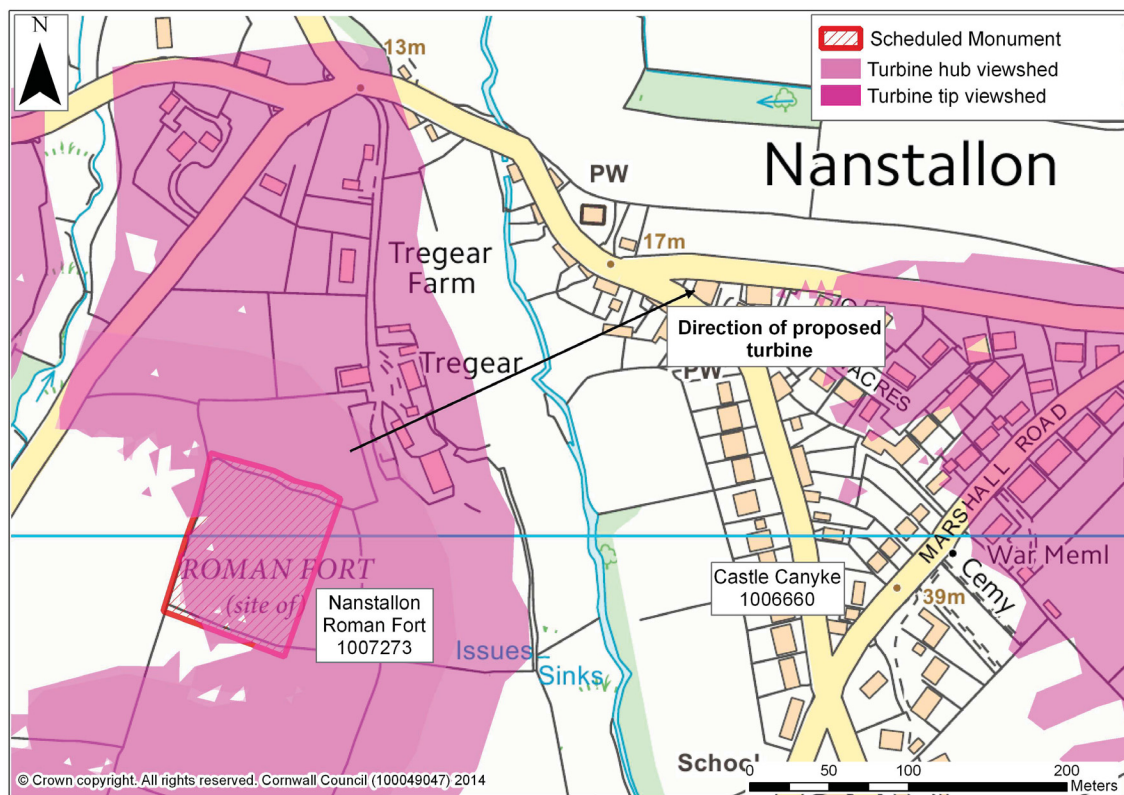


Fig 28 Mapping showing the Scheduled Monument of Nanstallon Roman Fort and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

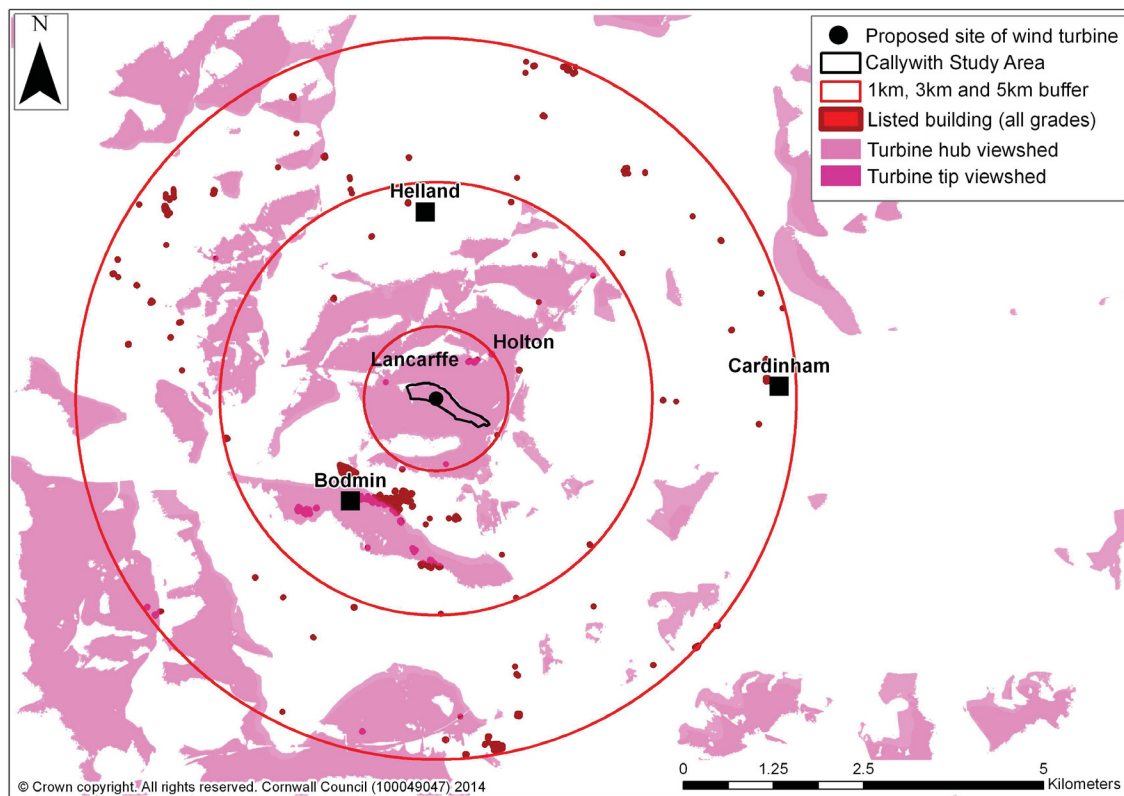


Fig 29 Mapping showing potentially intervisible Listed Buildings within and close to the 5km radius ZTV of the proposed wind turbine site.

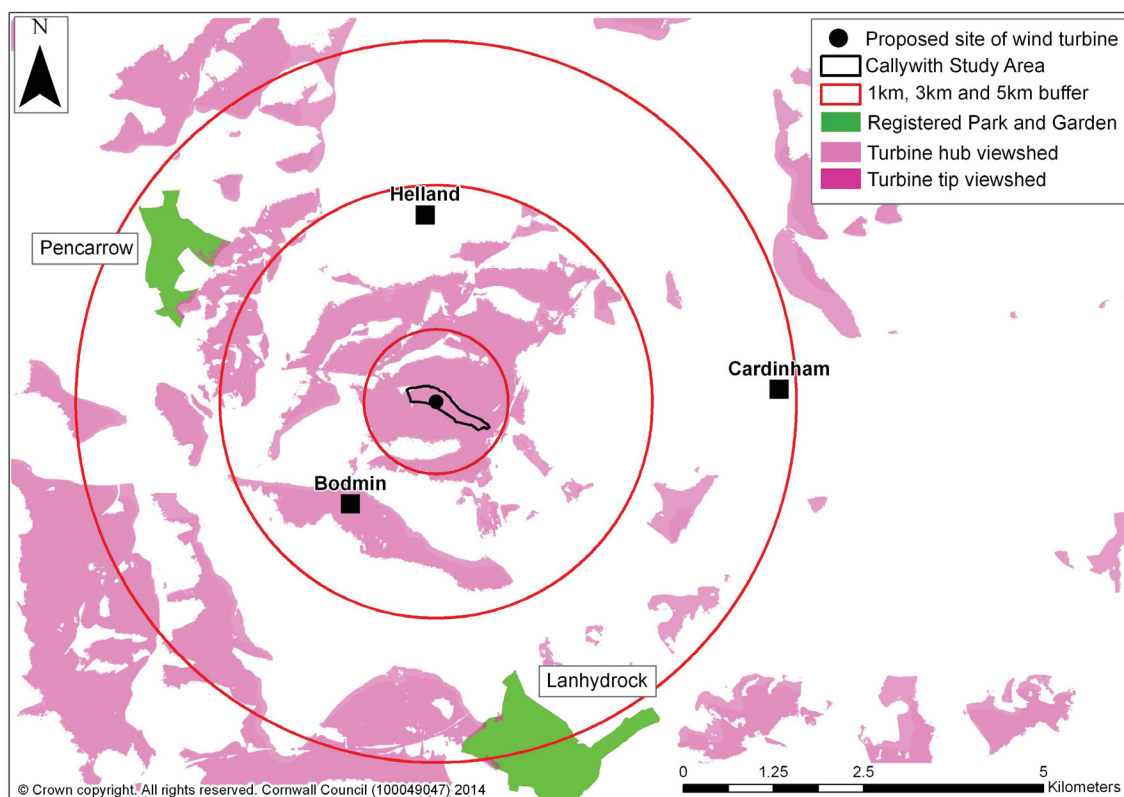


Fig 30 Mapping showing the potentially intervisible Registered Parks and Gardens of Pencarrow and Lanhydrock that lie within and close to the 5km radius ZTV of the proposed wind turbine site.



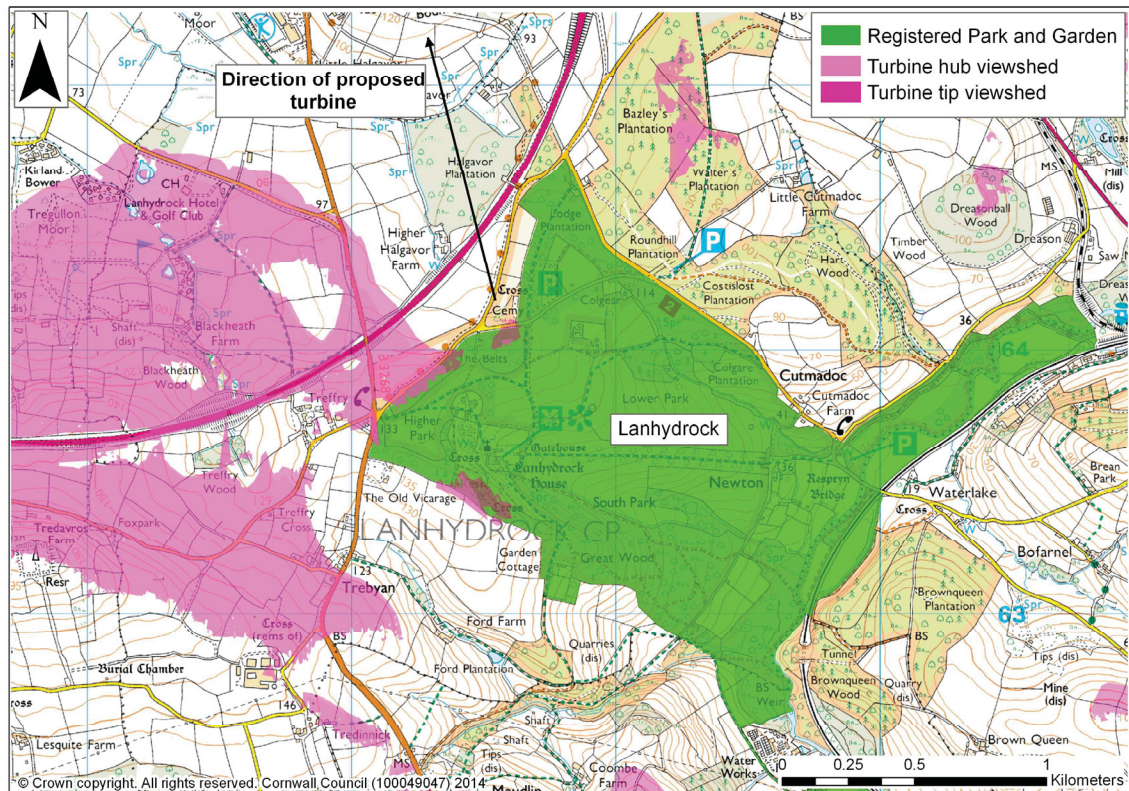


Fig 31 Mapping showing the Registered Park and Garden of Lanhydrock and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

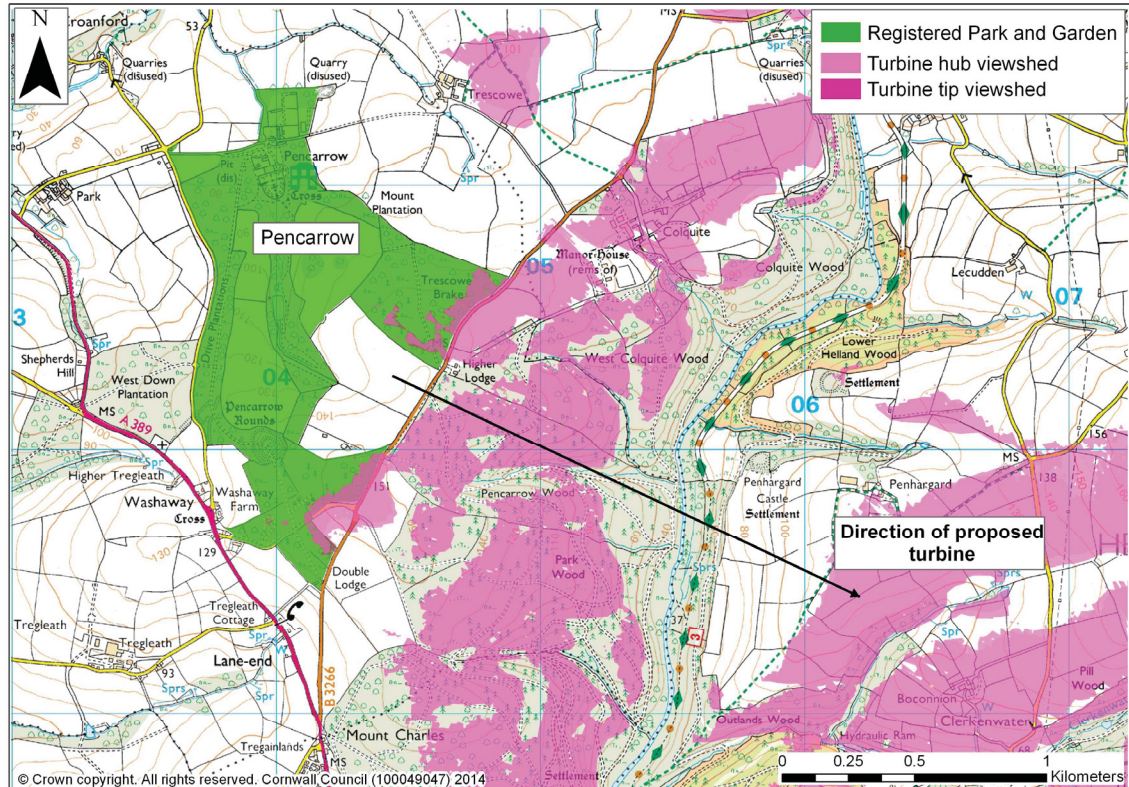


Fig 32 Mapping showing the Registered Park and Garden of Pencarrow and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



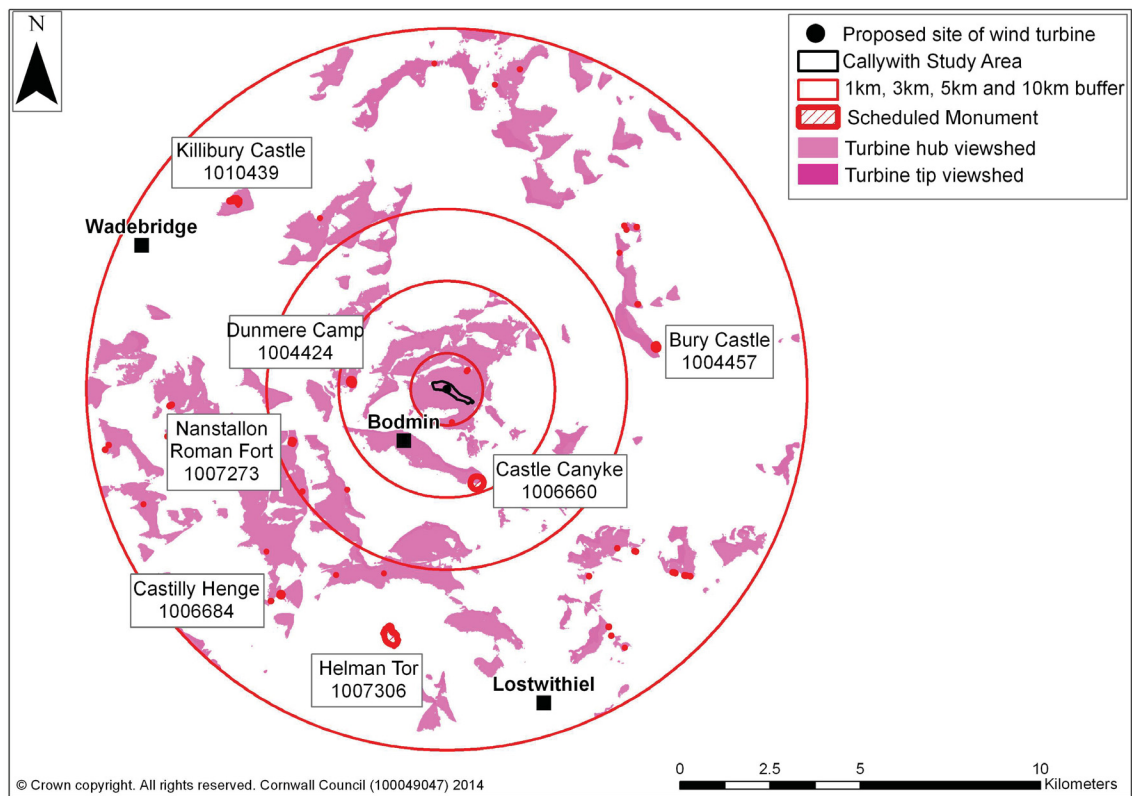


Fig 33 Mapping showing potentially intervisible Scheduled Monuments within and close to the 10km radius ZTV of the proposed wind turbine site.

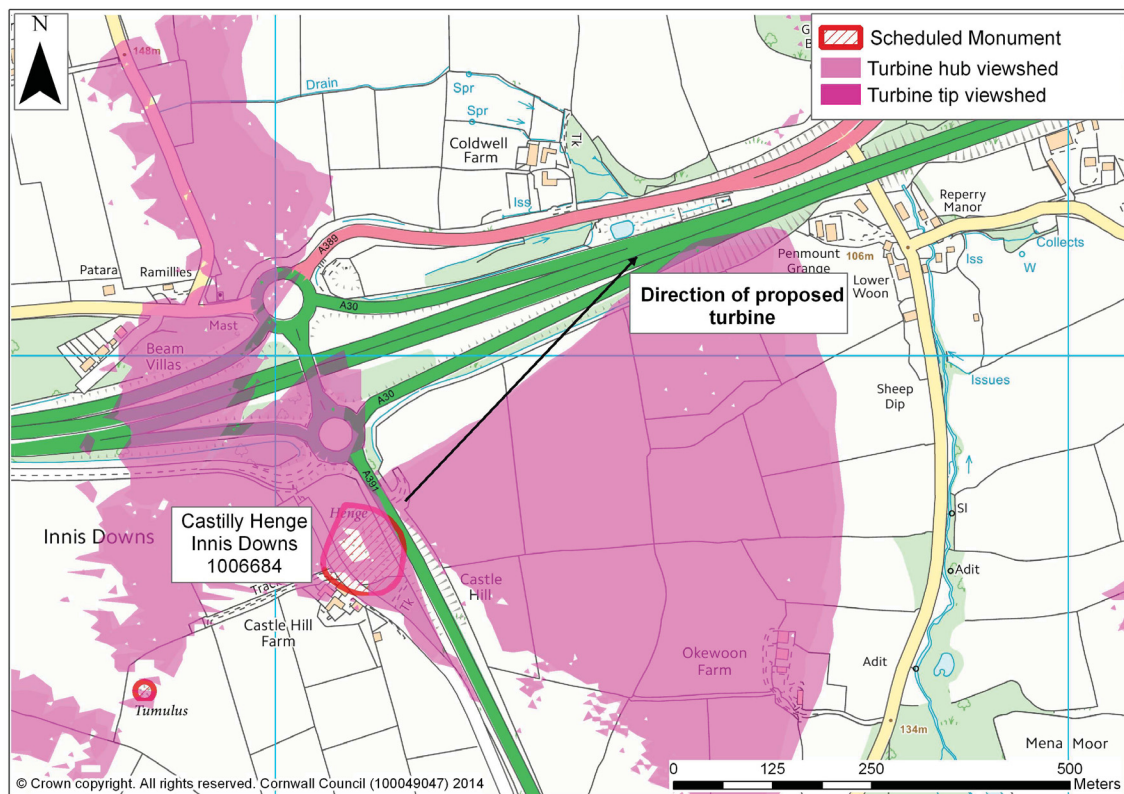


Fig 34 Mapping showing the Scheduled Monument of Castilly Henge, Innis Downs, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

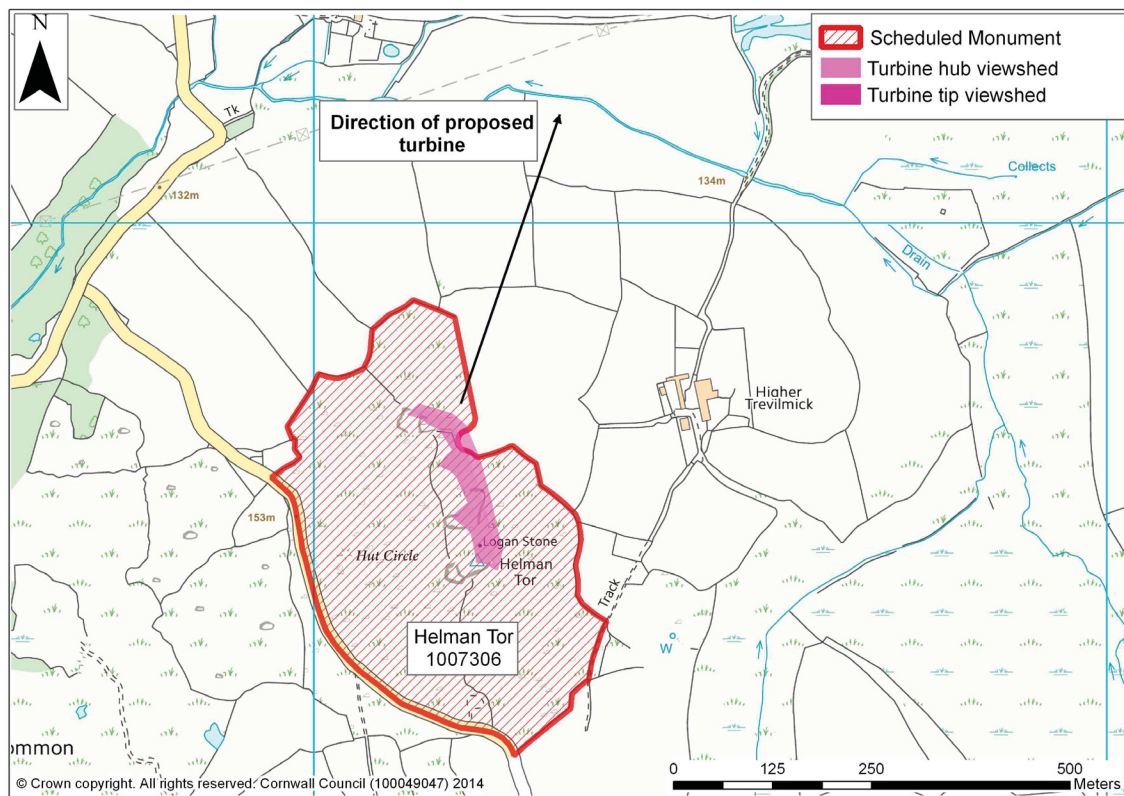


Fig 35 Mapping showing the Scheduled Monument of Helman Tor, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

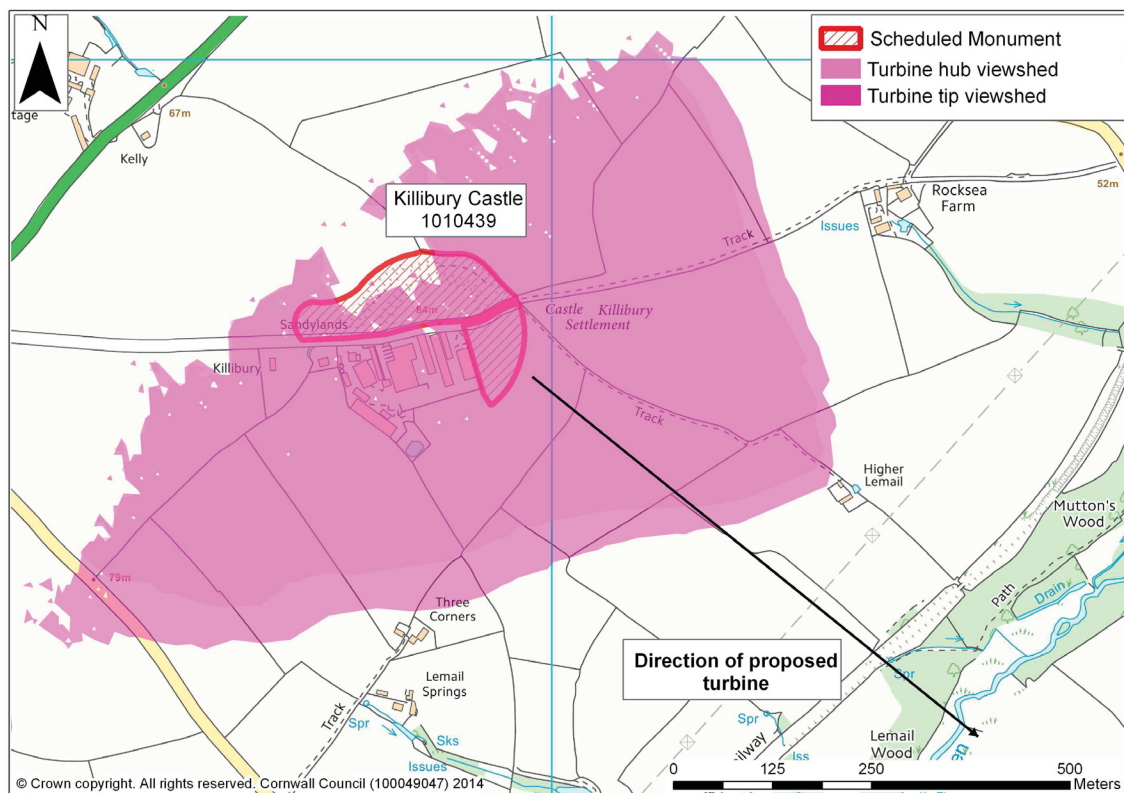


Fig 36 Mapping showing the Scheduled Monument of Killibury Castle, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



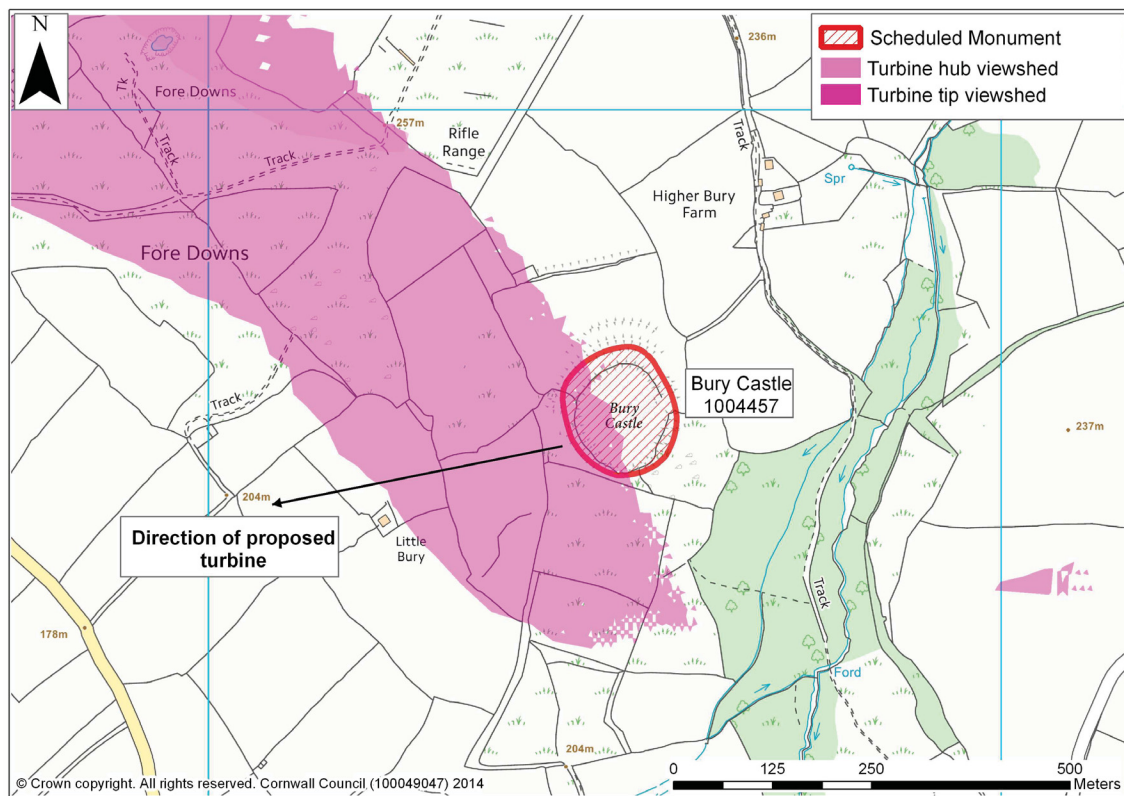


Fig 37 Mapping showing the Scheduled Monument of Bury Castle, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

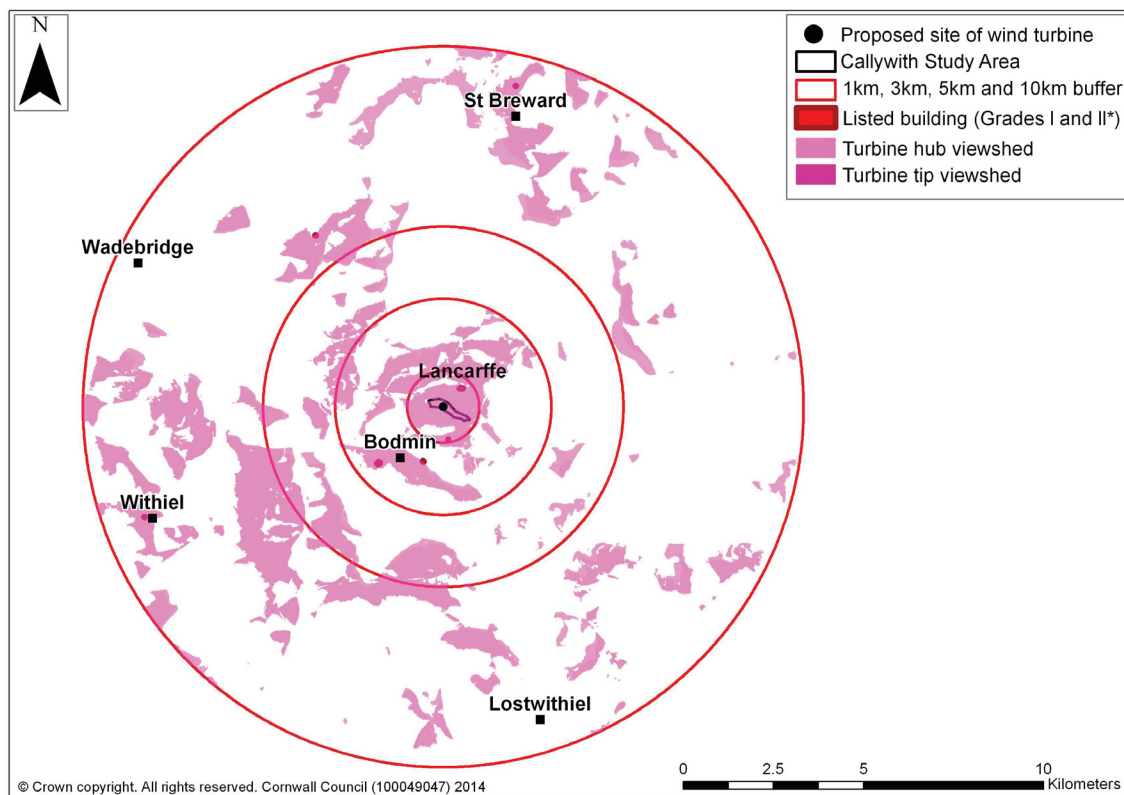


Fig 38 Mapping showing potentially intervisible Grade I and Grade II\* Listed Buildings within and close to the 10km radius ZTV of the proposed wind turbine site.

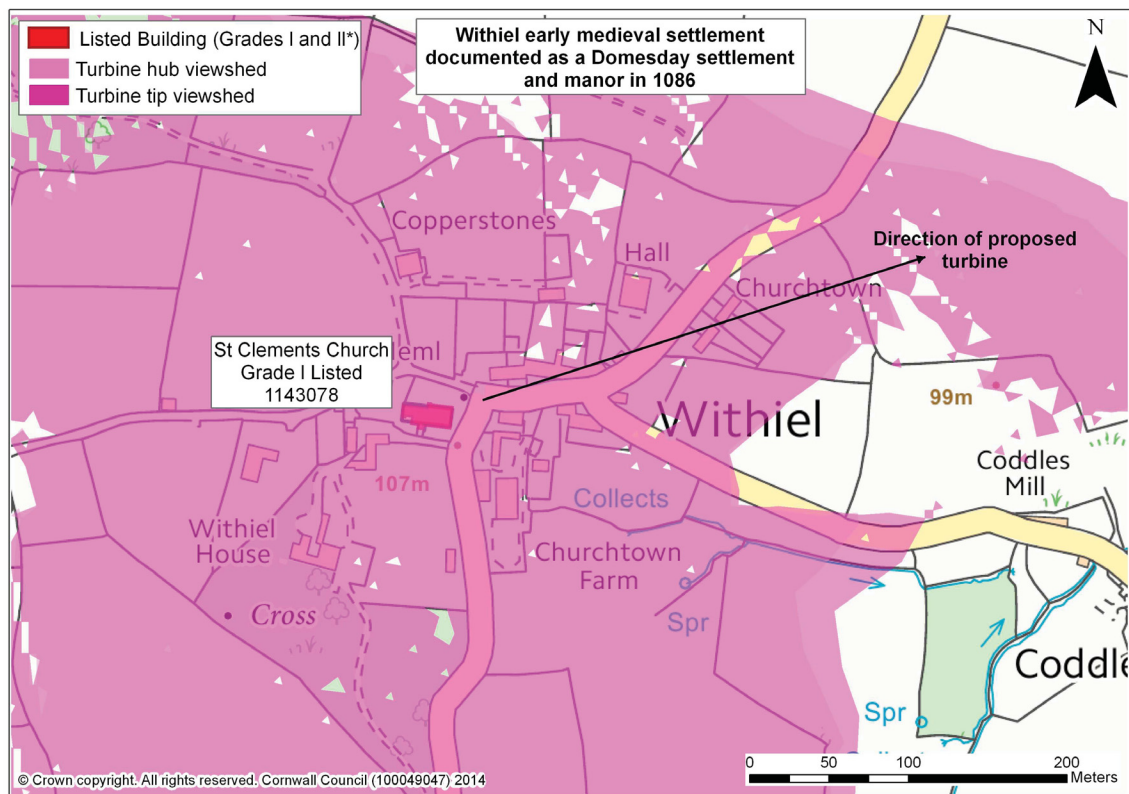


Fig 39 Mapping showing the Grade I Listed St Clement Church, Withiel, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.

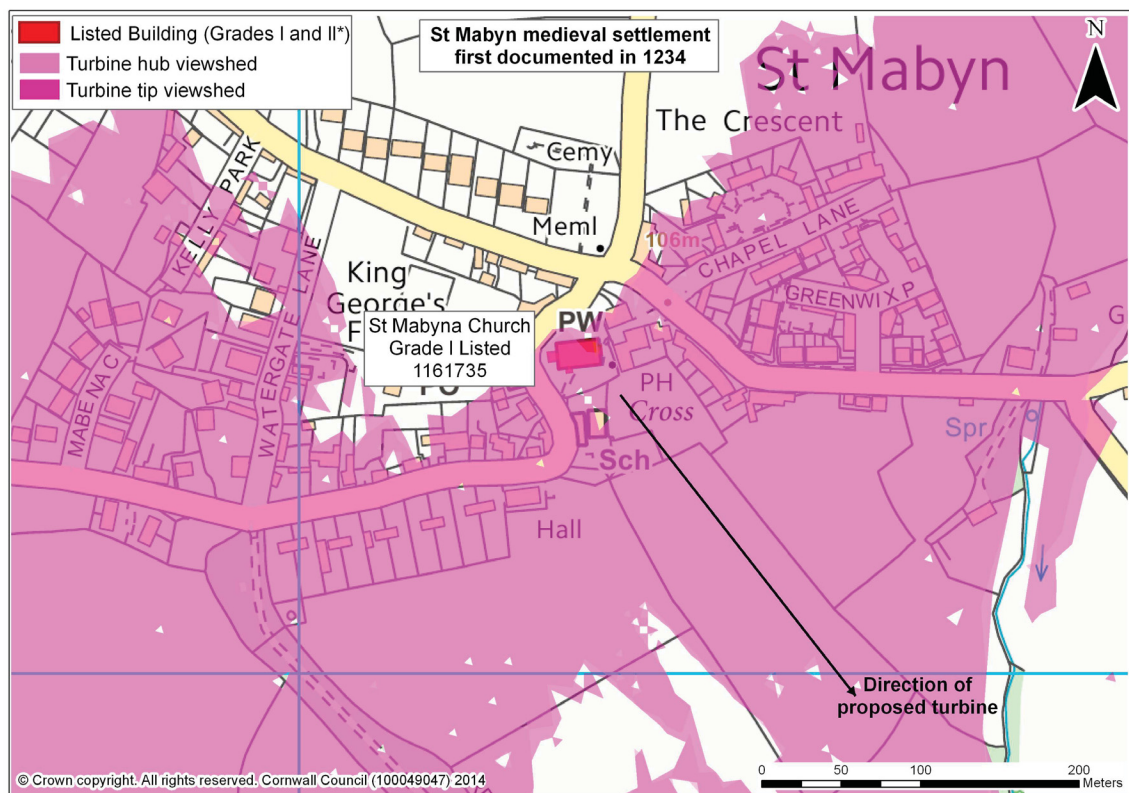


Fig 40 Mapping showing the Grade I Listed St Mabyna Church, St Mabyn, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



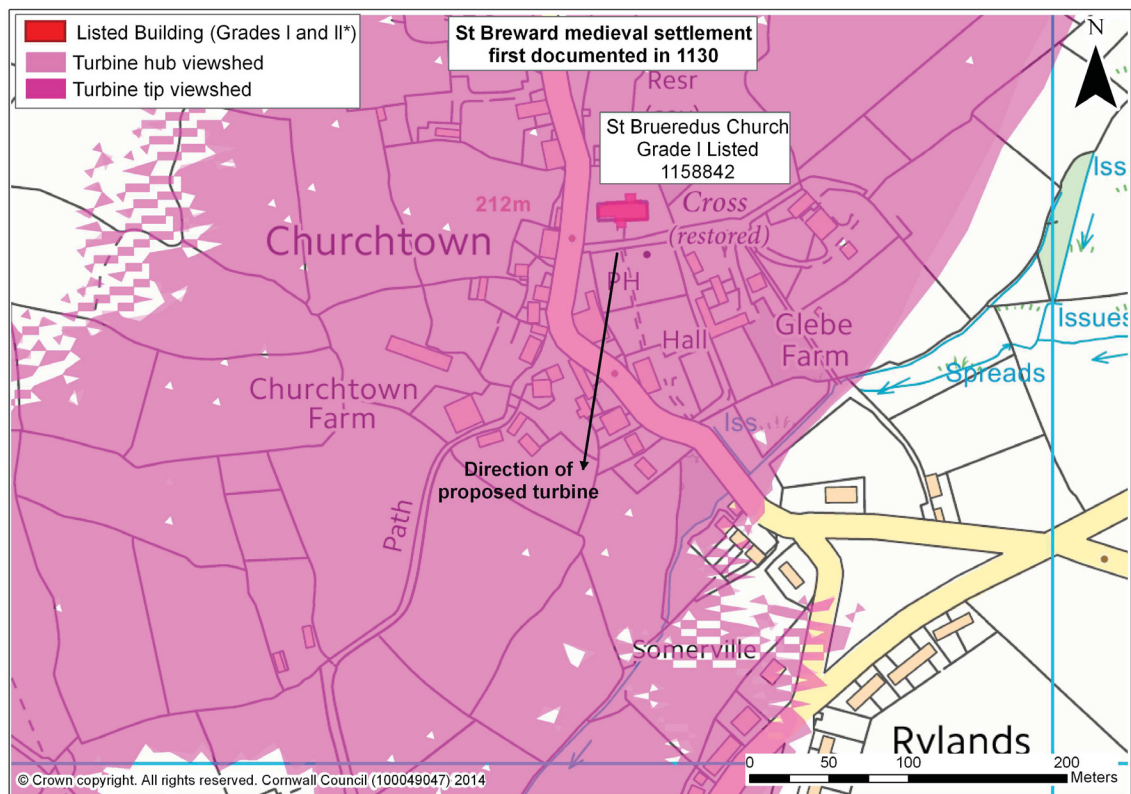


Fig 41 Mapping showing the Grade I Listed St Brueredus Church, St Breward, and the extent of potential intervisibility with the proposed wind turbine site. The arrow shows the direction in which the proposed turbine would lie.



Fig 42 A general view of the proposed wind turbine site, looking west towards the western edge of Dunmere Wood (centre right), with Breock Downs in the distance.



*Fig 43 A general view of the proposed wind turbine site, looking northwest towards Helland, with Helland Wood centre right of shot.*



*Fig 44 A general view of the proposed wind turbine site, looking northeast across the early medieval settlement of Penquite.*





*Fig 45 Looking southwest towards Holton from Racecourse Downs; the proposed turbine site (not visible from ground level) lies over the crest of the hill, approximate direction shown by arrow. The wind turbine at Callywith Farm is visible, centre left of shot.*



*Fig 46 Looking south southwest from the doorway of St Brueredus church, St Breward towards the proposed turbine site (not visible from ground level), approximate direction shown by arrow.*





*Fig 47 Looking southeast Killibury castle towards the proposed turbine site (not visible from ground level), approximate direction shown by arrow. The operational turbine at Callywith Farm is just visible on the skyline to the left of the arrow.*



*Fig 48 Looking northeast towards the proposed turbine site (over the hillcrest) from outside the Town Hall, Bodmin, approximate direction shown by arrow.*





*Fig 49 Looking northeast from the graveyard at the rear of Berry Tower, Bodmin, where there are intermittent views towards the proposed turbine site at Callywith Quarry through the trees, approximate direction shown by arrow.*



*Fig 50 Looking northeast from Gilbert's Monument on The Beacon, towards the proposed turbine site (not visible from ground level), approximate direction shown by arrow. The operational turbine at Callywith Farm is visible centre right of shot.*





*Fig 51 Looking north northeast from Beacon Road towards the proposed turbine site (not visible at ground level), approximate direction shown by arrow. The operational turbine at Callywith Farm is visible on the skyline, right of shot.*



*Fig 52 Looking north northwest from Castle Canyke towards the proposed turbine site (not visible from ground level), approximate direction shown by arrow. The operational turbine at Steppes and Callywith Farms are visible centre right of shot.*





*Fig 53 Looking northeast from the summit of Helman Tor towards the proposed turbine site (not visible from ground level, approximate direction shown by arrow. The operational wind turbine at Callywith Farm is visible, centre right).*



*Fig 54 Looking northeast across the northwest corner of Castilly Henge, Innis Downs, towards the proposed turbine site (not visible at ground level), approximate direction shown by arrow. The turbine at Callywith and Steppes Farms are visible, centre shot.*



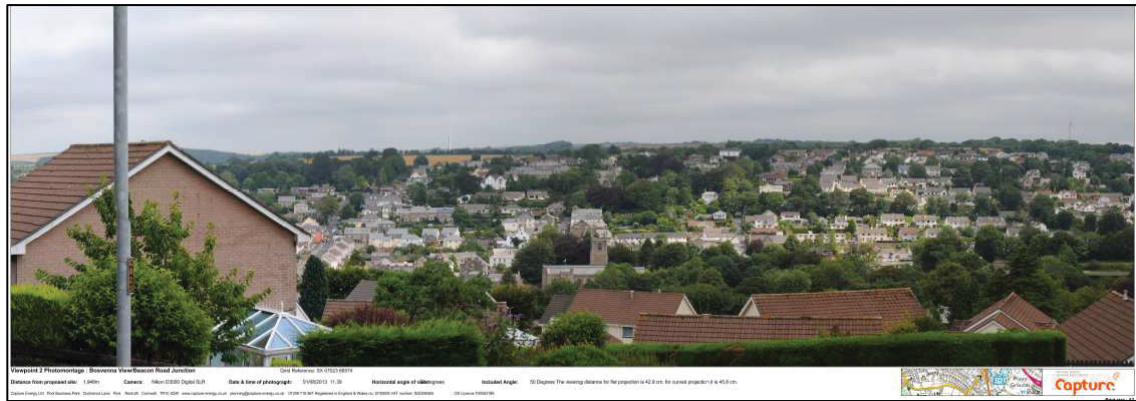


Fig 55 A reduced scale copy of a photomontage provided by Capture-Energy looking northeast from the junction of Bosvenna View and Beacon Road in Bodmin towards the proposed turbine site at Callywith Quarry, about 1.9km distant, centre left of shot. This is included for information only, but indicates that the upper parts of the turbine mast and its blades will be visible from some areas of Bodmin and will impact on views across and from within parts of Bodmin's Conservation Area.



Fig 56 A reduced scale copy of a photomontage provided by Capture-Energy looking northeast from the Gilbert Memorial, The Beacon, towards the proposed turbine site at Callywith Quarry, about 2.2km distant, centre left of shot. This is included for information only, but indicates that the upper parts of the turbine mast and its blades will be substantially visible in the majority of views from The Beacon and in some views towards The Beacon from points within the wider landscape.



Fig 57 A reduced scale copy of a photomontage provided by Capture-Energy looking southwest from Castle Canyke towards the proposed turbine site at Callywith Quarry, about 2.7km distant. This is included for information only, but the attached wireframe indicates that the upper parts of the turbine mast and its blades will be visible above the skyline from Castle Canyke to the southwest and will have minor impact on views from and towards the monument in this direction.