



## **Bottonnett Farm, Trebulet, Launceston**

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





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<b>Client</b>	<b>Capture Energy Ltd.</b>
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<b>Report author</b>	<b>Fiona Fleming BSc Hons, MA, AIFA</b>
<b>Approved by</b>	<b>Jacky Nowakowski BA FSA MIFA, Archaeologist Team Leader</b>

Historic Environment, Cornwall Council

Fal Building, New County Hall Truro, Cornwall, TR1 3AY

tel (01872) 322057 fax (01872) 323811 E-mail [hes@cornwall.gov.uk](mailto:hes@cornwall.gov.uk)

[www.cornwall.gov.uk](http://www.cornwall.gov.uk)

## **Acknowledgements**

This study was commissioned by Nicola Davies of Capture Energy Ltd. and carried out by Historic Environment Projects, Cornwall Council.

The viewshed mapping was carried out by Francis Shepherd.

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

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## **Cover illustration**

*Looking northeast from the top of Stowe's Hill, on Bodmin Moor, towards Bottonnett Farm. The proposed wind turbine site is situated over the crest of a low hill and is not currently visible at ground level; an operational wind turbine circa 2.7km to the northeast of Bottonnett, at Trevozah Cross, lies just right of centre, below the skyline, barely visible through the heat haze.*

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## **Abbreviations**

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



## **1 Summary**

Historic Environment Projects, Cornwall Council, was approached by Nicola Davies of Capture Energy Ltd in late May 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine at Bottonnett Farm, Trebulet, as part of a proposed planning application. A cost schedule for the work was approved on 9 July 2013.

The proposal is for a 500KW wind turbine with a hub height of 50m and a maximum blade tip height of 77m, to be sited on agricultural land at Bottonnett Farm, Trebulet, south southwest of Launceston, in the parish of Lezant, at SX 31601 79132. The wind turbine is to be sited at a height of approximately 157m OD just to the north of a hilltop within an area of dissected upland. The area immediately surrounding the site proposed for the turbine is recorded as Anciently Enclosed Land (Farmland Medieval), though the site lies on the western edge of an area of former downland, which was enclosed to agriculture in the post-medieval period.

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

Given 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; within the near area of the proposed site, this potentially includes Killabury Camp (1.5km), Ring Camp south of Illand (2.8km), and Battle Ring, East of Brockle (1.4km). Further to the southeast, at Kit Hill, and southwest, along the eastern slopes of Bodmin Moor, an extensive multi-period historic landscape includes numerous important Scheduled Monuments, with Kit Hill and Caradon Hill also falling within inscribed World Heritage Sites. In addition, there are a considerable number of Listed Buildings within a 10km radius of the proposed site, many of which were anticipated to be potentially intervisible with it. In the near vicinity, the historic Barton of Bottonnett, the Grade I Listed Trearrell Manor and chapel, and several Grade II Listed Buildings at Trebulet, were considered at greatest potential risk of negative impacts on their settings.

The topography in the vicinity of Bottonnett Farm is one of steep-sided valleys and narrow, winding, lanes with high hedgerows and tracts of woodland. Visibility to and from the site of the proposed wind turbine site was severely compromised at ground level as a result and a clear assessment of sites and setting impacts close to Bottonnett by a walkover survey was problematic. Overall, it was considered that the greatest visual impact, generally, would be from the west round to the east. Sites within an arc from east to west will potentially be impacted only by partial intervisibility with the upper hub of the turbine or its blade tips. Trearrell and Trebulet, to the south of Bottonnett, were not intervisible with the development site at ground level, due to the lay of the land, height of surrounding hedgerows and buildings presence. This was also the case for the majority of Listed Buildings within a 5km radius of the proposed development site. There was considered to be potential intervisibility with the prehistoric settlement earthworks of Battle Ring, east of Brockle and Ring Camp, south of Illand, although views from, or across, these sites were not possible during the ground survey. Setting impacts on the multi-period landscapes, Scheduled Monuments and World Heritage Sites on Kit Hill and across the eastern slopes of Bodmin Moor were also considered likely to some degree. Their distance from the development site, and the position of the turbine to the north of a hilltop would, however, be expected to reduce this impact considerably. Most crucially, the greatest setting impact from the development site would be on the historic Barton at Bottonnett and the Historic Landscape Character of the immediate landscape. Overall, the impacts of the proposed wind turbine on the archaeological resource were assessed as having a potential scored as **negative/minor**, principally dependant on proximity to the proposed turbine site and intervisibility with it

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

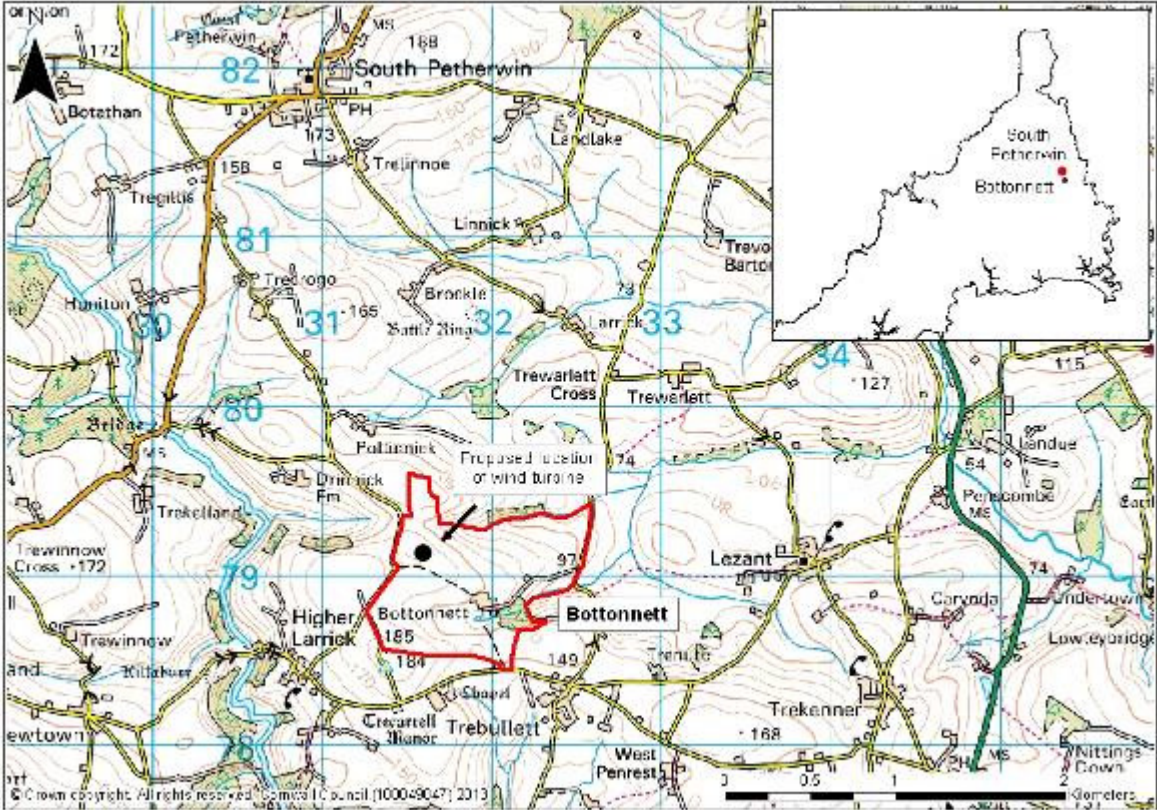


Fig 1. The location of Bottonnett Farm and the proposed wind turbine site.

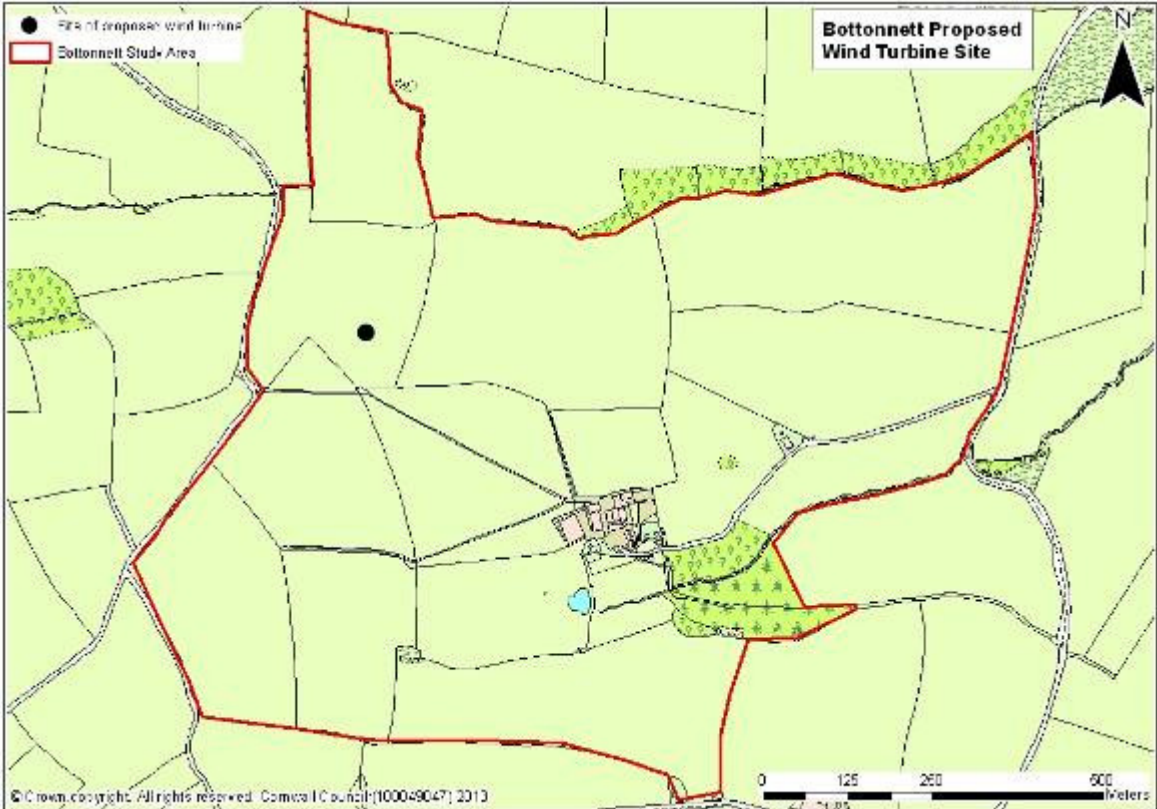


Fig 2. The location proposed for the wind turbine at Bottonnett Farm.

## **2 Introduction**

### **2.1 Project background**

Historic Environment Projects, Cornwall Council, were approached by Nicola Davies of Capture Energy Ltd in late May 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine at Bottonnett Farm, Trebulet, Launceston, as part of a proposed planning application. A cost schedule for this work was approved on 9 July 2013.

The proposal is for a 500KW wind turbine with a hub height of 50m and a maximum blade tip height of 77m to be sited at Bottonnett Farm, Trebulet, in the parish of Lezant, at SX 31601 79132. The site chosen for the wind turbine is currently agricultural land at a height of approximately 157m OD just to the north of a hilltop within an area of dissected upland. The area immediately surrounding the site proposed for the turbine is recorded as Anciently Enclosed Land (Farmland Medieval), though the site lies on the western edge of an area of former downland which was enclosed to agriculture in the post-medieval period.

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

Given 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; within the near area surrounding the proposed site, this potentially includes Killabury Camp (1.5km), Ring Camp south of Iland (2.8km), and Battle Ring, East of Brockle (1.4km). Further to the southwest and west, at Kit Hill and along the eastern slopes of Bodmin Moor, an extensive multi-period historic landscape includes important Scheduled Monuments at Kit Hill and Caradon Hill (also inscribed as World Heritage Sites), Minions, Stowe's Hill, Bearah Tor and Smallacombe Down, all of whose settings were anticipated to be potentially at risk of negative impact from the proposed development site. In addition, there are a considerable number of Listed Buildings within a 10km radius of the proposed site, many of which were anticipated to be potentially intervisible with it. In the near vicinity, the historic Barton of Bottonnett, itself, the Grade I Listed Tre-carrell Manor and associated chapel, and several Grade II Listed Buildings at Trebulet, were considered at greatest potential risk of negative impact, though it was recognised that scale and types of impact were likely to be dependent on local topography, the level of tree cover and the presence of any surrounding buildings.

An initial planning assessment (number PA13/04361) for a 500KW turbine and associated infrastructure was made on 14/05/2013, 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 50 metre turbine was granted at Trevozah Cross, circa 2.7km northeast of Bottonnett, in January 2012, under decision notice number PA12/000649, and is now operational; a further application at Trevozah Cross, under decision notice number PA11/07474, was given screening advice on 07/10/2011 but no further progress is reported. Two 50m turbine applications at Trevozah Barton, circa 2.8km northeast of Bottonnett, are currently open; PA12/10238 is still under consideration, while PA12/10239 was given screening advice on 12/03/2012. A 50 metre turbine at Higher Larrick, circa 720m west of Bottonnett was submitted in November 2012, under decision notice number PA12/1038, and has received screening advice. Pending the outcome of these applications, it is therefore considered that there is potentially some significant or adverse culmination with other proposed development in this particular location.*

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 at Bottonnett Farm, in the parish of Lezant, near Launceston.

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.

## **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)
  - Lezant Tithe Map (*circa* 1841),
  - 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 Bottonnett Farm, the viewshed was based on an 'overall observer elevation value' made up of the 'elevation value' or height above sea level of the ground at the observer viewpoint, with added to this additional offset of 50m to represent the height of the turbine hub and 77m to represent that of the blades.

This viewshed was checked on the ground, given that vegetation and other factors may substantially block views to and from key sites, whilst significant heritage assets within the theoretical viewsheds were visited (where access was possible) and the landscape within which they sit considered to determine intervisibility with the proposed development site, inclusion within key views, 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, 5km or 3Km were used to determine potential impacts on designated heritage assets (as appropriate); a radius of 1Km was used for undesignated heritage assets (see Figs 17 to 28).

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 model 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 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 for its cabling was also undertaken to examine the site for upstanding archaeology and to record the nature of the boundary types which might be impacted upon during the development.

### **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 lies at a height of approximately 157m OD, just to the north of a hilltop and within agricultural land at Bottonnett Farm, at SX 31601 79132. The site is located in a rural area to the southeast of South Petherwin, within an area of rolling upland between the River Inny to the southwest, and the Lowley Brook to the northeast (Figures 1, 2 and 12). The region is characterised by steep sided river valleys and tracts of woodland and is largely accessed via narrow, winding lanes, typically bordered by high hedgerows. The site has relatively closed-in views, particularly from the southeast through to the southwest, where the topography blocks views across to the multi-period landscapes on Kit Hill and the eastern flanks of Bodmin Moor from ground level, and to the northwest, where, again, the local topography is a constraining feature. To the north and northeast, however, the views open out across the rolling countryside of North Cornwall and into Devon, although some constraints on visibility imposed by topography still apply.

The proposed development area at Bottonnett Farm currently lies within farmland 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 (Fig 11). 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 agricultural heartland during the later part of the prehistoric period as well. The field chosen for the proposed wind turbine lies on the western edges of former downland enclosed during the post-medieval period, characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Modern Enclosed Land (Previously enclosed land significantly altered in the 20<sup>th</sup> century, or 20<sup>th</sup> century intake from upland ground)' (Fig 11).

To the south of Bottonnett Farm, the National Mapping Programme has recorded evidence for surviving sub-surface archaeology showing as cropmarks or soil marks, which suggest the linear field boundaries of a relict early medieval field system (Fig 13). Bottonnett Farm is a former Barton, the settlement here first being documented in 1326. The manor of Trearrell lies around 600m to the southwest; the current Hall and its associated chapel date to around the 16<sup>th</sup> century and are both Grade I Listed and designated as Scheduled Monuments (DCO1438).

There are a number of Scheduled Monuments within 3km of the proposal site, these including a number of late prehistoric defended enclosures and settlements, the medieval Hall and chapel at Trearrell Manor, and a medieval span bridge at Trekelland. Within a 10km radius of the proposal site are a further substantial number of Listed Buildings and Scheduled Monuments. In particular, these include significant multi-period landscapes on Kit Hill to the southeast, and across the eastern flanks of Bodmin Moor (including Caradon Hill and Stowe's Hill) to the southwest. These incorporate a range of prehistoric ceremonial and settlement features, such as barrows and stone rows, cairns, enclosures, hut circles and field systems. These areas also feature an important mining landscape dating to the medieval and post-medieval periods. Many of these sites are Scheduled Monuments, but the wider areas also fall within areas designated as Areas of Outstanding Natural Beauty and inscribed as a World Heritage Site. Although no Conservation Areas lie within a 3km radius of the proposed wind turbine site, there are three Registered Parks and Gardens that intersect with the 10km radius viewshed: the Grade II Listed Werrington Park and Penheale Manor to the north and northwest, and the Grade I Listed Endsleigh to the southeast.

The parent bedrock underlying the application site consists of Upper Devonian mud, silt and sandstones, whilst the soils are recorded as Denbigh 1 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.

*It was further noted that: The absorption capacity of the landscape character area in the vicinity of Bottonnett, as a whole, is therefore moderate, but that the nature of the development proposed may be reasonably accommodated.*

## **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 Conservation 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 1 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 63 potentially intervisible Scheduled Monuments (Figure 25. See also figures 17, 20 and 23).

The 10Km radius viewshed intersects three Registered Parks and Gardens (Fig 27).

The 10Km radius viewshed includes 22 Grade I Listed Building and 40 Grade II\* Listed Buildings (Fig 26, also Figs 18 and 19).

Within the 5km radius viewshed, the wind turbine would be theoretically intervisible to some degree with a number of Grade I, Grade II\* and Grade II Listed Buildings or groups of Listed Buildings, including those at Trecarrell and Trebullett, for example. The local topography, the level of tree and hedgerow cover, and extant buildings may constrain this (see Figs 18, 19, 21, 22 and 24).

### **5.3 Regional/county**

No regional or county designations apply to the proposed development site.

### **5.4 Local**

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

### **5.5 Rights of Way**

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

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

The site proposed for the wind turbine at Bottonnett Farm lies within agricultural land on the ridge top of a steep valley slope bordering the River Inny, to the west, and on the western edge of an area of former downland, which was enclosed to agriculture in the post-medieval period (Figures 1, 2 and 12). The surrounding area is part 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 *tre* prefix to many of the nearby farms and hamlets, such as Trecarrell, Trebullett, Trewinnow, Trebithick, Trewarlett, Trekelland, Drinnick indicates pre-Conquest origins as



farming hamlets. Bottonnett itself derives from the Cornish place-name prefix *bos*, or *bod*, indicating a smaller farm of broadly equivalent date to the *tre* settlements, although, as the early historic maps show (see Figs 3 to 6), Bottonnett had become significant enough to be named on many of these, with John Norden's map of Cornwall (Fig 3), drawn up in the late 1700's, also showing the name of the owner, one M Lowre.

Beyond, and partly intermixed with the land characterised as medieval farmland or 'Anciently Enclosed Land' (AEL), are areas of former downland. These are characterised by HLC as 'Farmland C20' or 'Modern Enclosed Land' (MEL); this is land that has been previously enclosed during the medieval, or post-medieval, periods and undergone subsequent alteration during the 20<sup>th</sup> century, or, alternatively, 20<sup>th</sup> century intakes from the rough ground (Fig 11). Some areas of plantation and scrub are also identified, and to the southwest of Bottonnett Farm itself is an area characterised as 'industrial- disused' land; there are two small disused quarries shown on the current OS 1:25000 Mastermap, whilst the circa 1841 tithe apportionment for Lezant records two fields here as 'Quarry Park' and 'Quarry Park Wood' (see below). The Cornwall HER further records the site of a post-medieval threshing mill, millwheel and millpond immediately to the west of these fields.

Within the characteristically ancient farmland surrounding Bottonnett, where the predominant soils are shallow fine loams, cut by steep sided river valleys, the physical evidence for earlier settlement within the locality can be found. The earthworks of late prehistoric/Romano-British enclosures, or 'rounds', survive at Battle Ring and Albaston to the north and northeast, Killabury and Rings camp, Illand, to the southwest and Trelaske Wood, to the northwest, to name but a few. A possible fogou (underground chamber) or post-medieval 'hull' is recorded at Bottonnett, potentially suggesting a prehistoric origin to the settlement here, and it is probable that most of the local pre-Conquest farms had similar antecedents. It is clear that all of the suitable surrounding landscape would have been farmed in late prehistory, the valleys providing sources of timber for building and fuel, whilst the rough upland ground would have provided rough summer grazing and a source of gorse for fuel and bracken for animal bedding.

Strong hints as to even earlier settlement within the wider area are to be found in the many prehistoric monuments and more extensive social and ceremonial landscapes, both local to Bottonnett, and further afield along the eastern flanks of Bodmin Moor to the southwest, and on Kit Hill to the southeast. A Bronze Age barrow cemetery is recorded on the higher ground to the northwest of Bottonnett at Trecrogo. In addition, the physical remains of farming settlements, field systems, funerary and ceremonial monuments, broadly of Neolithic and Bronze Age date, are widespread across the eastern slopes of Bodmin Moor at sites such as Caradon Hill, Stowe's Hill and East Moor, for example. The nature and extent of these prehistoric landscapes are designated as being of National importance, with many sites being Scheduled Monuments.

They further lie within Areas of Outstanding Natural Beauty. Minions and Caradon Hill also have evidence of medieval and post-medieval mining activity, with the wider area designated as the Caradon Mining District Area of the Cornish Mining World Heritage Site. Kit Hill, to the southeast of Bottonnett, also incorporates an extensive prehistoric landscape, as well as medieval and post-medieval mining activity, the whole containing some Scheduled Monuments and more widely falling within the Tamar Valley Area of the Cornish Mining World Heritage Site. Although both these areas lie at the furthest extent of the 10km zone around Bottonnett Farm, most of their prehistoric funerary and ceremonial sites were designed to be highly visible, with the result that the settings of these monuments have a wide reach, many of them potentially falling within the 'Zone of Theoretical Visibility' (ZTV) around the proposed wind turbine site at Bottonnett Farm. The wider landscapes incorporated within the World Heritage Site are also important in terms of the universal and cumulative value of their component sites; the World Heritage Site Areas at Caradon Hill and Kit Hill only intersect with the 10km buffer along their eastern and northeastern margins, but comprise significant and highly visual landmarks, nonetheless.

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). As mentioned previously (above), Bottonnett is named on this map, as is the landowner at the time, M Lowre. This is in contrast to Joel Gascoyne's map of Cornwall in 1699 (Fig 4), which depicts Trecarrell (shown as Trencarrol Mills), to the south of Bottonnett Farm and Treneard (l) (possibly referring to Trewarlett?), to the north. Thomas Martyn's map (Fig 5), drawn up a few decades later, shows rather more detail, although the named farmsteads differ slightly from Gascoyne's map; Bottonnett was again named, as were Trecarrell and Trebullett to the south.

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, depicting a semblance of terrain and areas of woodland in addition to the network of settlement and roads. Bottonnett was named, as were Trecarrell and Trebullett. The map also selectively recorded some historical landmarks; the Iron Age/Romano-British settlement, or 'round' at Killabury to the southwest of Bottonnett was depicted on the circa 1807 map as 'Round Bury'.

Bottonnett Farm was shown to be a significant holding at the time of the circa 1841 Tithe Map (Fig 7). Its situation within broadly agricultural land on the edges of higher downland is further illustrated by the morphology of some of the field enclosures, and their English field names as recorded in the circa 1841 tithe apportionment for Lezant. The combination of larger field enclosures, straighter field boundaries and field names that include the word 'park' potentially suggests some later enclosure across parts of the downland by the mid 19<sup>th</sup> century, with substantial areas designated as coarse pasture, coppice or plantations. 'Park' is a common component of English field names in Cornwall, but research by this author (Fleming 2009) suggests that it often appears to refer to secondary phases of enclosure and/or intake from Upland Rough Ground.

The landowner and occupier of Bottonnett Farm, as recorded in the circa 1841 tithe apportionment for Lezant, was George Sargent. The fields incorporated by Bottonnett Farm were recorded as fields 1323, and 1331 to 1377 as follows:

• 1323	Broom Park	Arable	11 acres, 0 roods, 2 perches
• 1331	Wood	Timber	2 acres, 2 roods, 21 perches
• 1332	Wood Orchard	Orchard	1 acre, 9 roods, 39 perches
• 1333	The Hill	Arable/ Coarse Pasture	4 acres, 3 roods, 27 perches
• 1334	Plantation	Plantation	0 acres, 0 roods, 16 perches
• 1335	Higher Ewe Park	Arable	10 acres, 1 rood, 21 perches
• 1336	Lower Ewe Park	Arable	10 acres, 1 rood, 14 perches
• 1337	Higher Underway	Arable	8 acres, 3 roods, 11 perches
• 1338	Underway Meadow	Pasture	3 acres, 2 roods, 9 perches
• 1339	Middle Underway Marsh	Coarse Pasture	3 acres, 3 roods, 2 perches
• 1340	Lower Underway Marsh	Arable/ Coarse Pasture	3 acres, 3 roods, 24 perches
• 1341	Lower Underway	Arable	8 acres, 0 roods, 26 perches
• 1342	Wood	Timber Plantation And Coppice	3 acres, 2 roods, 24 perches
• 1343	Ewe Park Marsh	Arable/	

		Coarse Pasture	1 acre, 1 rood, 17 perches
• 1344	Wood	Timber/Coppice	0 acres, 1 rood, 26 perches
• 1345	Furze Park	Arable	9 acres, 2 roods, 31 perches
• 1346	Furze Park Wood	Timber/Coppice	1 acre, 0 roods, 7 perches
• 1347	Little Hill Park	Arable	10 acres, 3 roods, 32 perches
• 1348	Horse Park	Arable	4 acres, 3 roods, 11 perches
• 1349	Canna Park Meadow	Orchard/Pasture	1 acre, 1 rood, 21 perches
• 1350	Quarry Park	Arable	9 acres, 2 roods, 22 perches
• 1351	Quarry Park Wood	Timber/ Coarse Pasture	0 acres, 1 roods, 34 perches
• 1352	Long Plot	Arable	1 acre, 1 rood, 36 perches
• 1353	Wood and Orchard	Timber/Orchard	0 acres, 0 roods, 26 perches
• 1354	Plantation	Timber	0 acres, 0 roods, 16 perches
• 1355	Canna Park	Arable (occasional)	2 acres, 2 roods, 24 perches
• 1356	Pound House Orchard	Orchard	0 acres, 3 roods, 21 perches
• 1357	Meadow	Garden	0 acres, 1 rood, 16 perches
• 1358	Mowhay	Mowhay	0 acres, 0 roods, 31 perches
• 1359	Town Place	Farm yard	1 acre, 1 rood, 7 perches
• 1360	Meadow	Garden	0 acres, 0 roods, 18 perches
• 1361	House and Garden	House and Garden	0 acres, 1 rood, 32 perches
• 1362	Meadow	Meadow/ Pasture	2 acres, 2 roods, 27 perches
• 1363	Yard Buildings		0 acres, 1 rood, 20 perches
• 1364	Higher Orchard	Orchard	0 acres, 1 rood, 26 perches
• 1365	Long Orchard	Orchard	0 acres, 1 rood, 2 perches
• 1368	The Higher Meadow	Arable (occasional)	2 acres, 2 roods, 11 perches
• 1369	Orchard	Orchard/Arable	0 acres, 1 rood, 26 perches
• 1370	Home Park	Arable	15 acres, 2 roods, 6 perches
• 1371	Great Hill Park	Arable	12 acres, 2 roods, 26 perches
• 1372	Yonder Bushlands	Arable	10 acres, 2 roods, 21 perches
• 1373	Homer Bushlands	Arable	15 acres, 1 rood, 6 perches
• 1374	Plantation	Plantation	0 acres, 0 roods, 11 perches
• 1375	Twelve Acres	Arable	14 acres, 0 roods, 10 perches
• 1376	Lower Hugginstone	Arable	7 acres, 0 roods, 12 perches
• 1377	Higher Hugginstone	Arable	7 acres, 3 roods, 9 perches

The major enclosure boundaries at Bottonnett 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 (Fig 9). The site proposed for the wind turbine lies towards the western boundaries of Bottonnett Farm, though the detail on the circa 1841 tithe map for Bottonnett (Fig 7) is too indistinct to be clear on the field name or number.

Current OS mapping (Figs 11-13) and the 2005 Cornwall Council aerial photograph (Fig 10) show that the essential morphology of principal field boundaries within the extent of Bottonnett Farm continue to reflect the earlier 19<sup>th</sup> and 20<sup>th</sup> century pattern of enclosure.

The analysis of historic aerial photographs undertaken as part of the English Heritage National Mapping Programme (Figure 13) suggests several linear boundaries (PRN 75100) to the south of Bottonnett Farm, the morphology of which suggest the remains of a possible early medieval field system.

## **7 Results of site walkover**

See Figures 29 to 36.

A site walkover was undertaken on 22 August 2013. The weather was fine, with clear skies and sunshine all day, although there was hazy visibility that reduced the clarity of distant views, particularly towards late afternoon.

The site proposed for the wind turbine had been newly ploughed prior to the date of the survey; the field seems to have been used for arable cultivation on a regular basis over the past few years. It is largely enclosed within low Cornish Hedges, though mature trees occupy the hedges at the northwestern end of the field, partially blocking views out of the field in this direction. The field lies below a hillcrest to its south and slopes relatively steeply away to the north and northwest. There seems some likelihood that soil creep has occurred on the slopes as a result of repeated cultivation activities. The bare soil of the proposed turbine site was fieldwalked; the soil was a dark brown silty loam with many angular, slatey, stones but its surface appeared clear of any artefactual material.

There were no impediments to survey, and during the site walkover good visibility was possible in all directions. The views east from the proposed turbine site were impeded by the height of the hedgerow, while to the southeast, south and southwest, the views out of the field were impeded by the hedgerows and the crest of the hill. At ground level from the proposed turbine site there was no view east towards Lezant or southeast towards Kit Hill, Caradon Hill or Stowe's Hill, although the latter was achieved by moving just a few metres towards the southernmost hedgeline (Figs 31 and 32). To the west and northwest, there were restricted views over the tree cover towards the east-facing hillside and Trecogo; South Petherwin, also to the northwest, was not visible from ground level due to the rolling terrain and tree cover. The clearest views from the field were to the north and northeast, where the ground sloped away quite sharply to allow clear views towards Trevozah Cross and the recently operational wind turbine there.

Views of the landscape to the north northeast of the proposed development site were generally very open. Elsewhere, almost all views were closed in and very local.

## **8 Results of viewshed analysis**

See Figures 17 to 28.

Given the topography of the site and its surroundings and the 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 the Zone of Theoretical Visibility (ZTV) may be significantly constrained in some directions, particularly to the north, northwest, south and southeast. 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 the local terrain, by intervening buildings within settlements or farmsteads, or by the high hedgerows and mature groups of trees (albeit on a temporary basis, should such hedgerows be lowered or trees subsequently be felled).

## **8.1 1 km radius ZTV**

See Figures 16 to 19.

Given the nature of the local topography and the relatively high elevation of the proposed wind turbine, the ZTV suggests that the turbine masts or blades could potentially be visible from approximately 90% of this zone, the main exceptions being the lower slopes of a section of the Inny River valley to the southwest near Higher Larrick, the lower slopes of Bottonnett land to the south, bordering Trecarrell Manor and parts of Trebulet, the southern slopes bordering the approach to Bottonnett Farm to the east, and a section of north facing slope to the northwest near Pollinnick (Figs 17 and 18). The zone extends to the upper western slopes of the River Inny to the west, to the northwest of Pollinnick in the northwest, to the western edges of Bottonnett in the west, and to the south of Trecarrell Manor in the south. The zone includes the Scheduled Monument of Trecarrell Hall and Chapel as well as five separately Listed Buildings at Trecarrell, the Grade I Listed Hall and Chapel and the Grade II Listed stables, barn and wellhouse (Fig 19).

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

See Figures 20 to 22.

The wind turbine could potentially be visible from around 75% of the 1km to 3km radius area around it, its visibility being notably constrained by local topography, particularly along the upper sections of the steep valley slopes bordering the River Inny to the south and southwest of the site, and along smaller, but equally steep river valleys and hillsides facing away from the site to the south, north and west. This zone extends north to South Petherwin, northeast to Trekelland, southeast as far as Trekenner, and southeast as far as Coads Green.

It seems unlikely that the wind turbine will be intervisible with many sites within the 3km radius to the south or southwest, due to the steep topography and the height of tree and hedgerow cover in this direction. There is greater potential intervisibility with the site from the northwest round to the northeast, where the landscape is more open, although the ZTV coverage is more intermittent beyond the 3km radius in this direction beyond the steep valley sides bordering the Lowley Brook. To the east the potential intervisibility with the site may again be constrained by the local topography and the heights of the hedgerows; the ZTV coverage is also more intermittent in this direction beyond the 3km radius, again beyond the Lowley Brook which runs southwards at this point.

This zone contains a number of potentially intervisible Scheduled Monuments, though the majority of these are situated within woodland or on the slopes of steep valleys. Battle Ring to the north northeast, and Ring Camp south of Illand to the southwest are exceptions to this, being located within agricultural enclosures on elevated ground (Figure 20). It was not possible to confirm the intervisibility, or otherwise, of these two monuments with the proposed turbine site at Bottonnett due to issues of access and a lack of suitable viewpoints.

The 1km to 3km zone contains no Registered Parks and Gardens or Conservation Areas. It does, however, include the Grade I Listed Building of St Paternus Church, South Petherwin, two Grade II\* Listed Buildings: Lower Trekenner Farmhouse and Trekelland Bridge, and 54 Grade II Listed Buildings (Figure 21), although not all the latter fall wholly within the ZTV coverage, as demonstrated at Trebulet for example (see Fig 22).

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

See Figures 23 and 24

The wind turbine could potentially be visible from around 40% of the 3km to 5km radius area around it, with visibility again being significantly constrained by the local topography. In particular, the western facing slopes of the Lynher River Valley in the southwest of this zone, are potentially excluded from the ZTV, as are substantial areas to the northeast of South Petherwin and to the west of this zone around Treburley. This

zone extends to North Hill in the southwest, to the southern margins of Launceston in the north, to Lawhitton in the northeast, and to Bray Shop in the southeast.

This zone only contains a small number of Scheduled Monuments, predominantly in the northwest near Lewannick, although only three: the Ring Bank in the corner of Lewannick Plantation, an early Christian memorial stone in Lewannick churchyard, and a stone cross in the garden of Trelaske House are potentially intervisible with the proposed wind turbine site (Fig 23). The confined settings of the memorial stone and stone cross would not be considered as greatly impacted by any intervisibility with the proposed wind turbine. The ring bank lies within a wooded plantation and any potential intervisibility is currently prohibited by the current level of tree cover. It was not possible to confirm any potential intervisibility with the proposed development site should this tree cover be removed at any point.

The 3km to 5km zone contains no registered Parks and Gardens or Conservation Areas. It does, however, contain five Grade II\* Listed Buildings and 129 Grade II Listed Buildings, although these do not all fall within the ZTV (Fig 24).

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

See Figures 25 to 28.

This zone extends out to Caradon Hill to the southwest, to Kit Hill to the southeast, to North Petherwin to the northwest, and to Tinhay to the northeast.

The visibility of the proposed wind turbine site within this zone is likely to be low, being largely confined to the northeast facing slopes of Bodmin Moor in the southwest of the zone, to limited patches along the slopes of the Inny river valley in the northwest and bordering the Tamar river valley in the east of the zone. The proposed wind turbine will potentially be visible from around 20-30% of this zone, although any impact on the settings of many of the more distant sites, such as along the edges of Bodmin Moor in the southwest, will be moderated by the positioning of the turbine on the far north eastern slope of a hill, away from this direction and by its relatively considerable distance from these sites.

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

This zone contains a substantial number of Scheduled Monuments, predominantly situated along the eastern margins of Bodmin Moor (Fig 25), and 29 Grade I or II\* Listed Buildings, (Fig 26). Very few of the latter suggest any significant degree of intervisibility with the proposed wind turbine at Bottonnett Farm, whilst, as mentioned above, the distance and position of the proposed site from the Scheduled Monuments along the eastern flanks of Bodmin Moor would be anticipated to very significantly reduce any negative impact.

This zone includes three Registered Parks and Gardens: at Endsleigh (Grade I) and Werrington Park and Penheale Manor (both Grade II) to the north (Fig 27). Only the very southern edges of Werrington Park and the southwest approach to Penheale Manor (away from the proposed development site) potentially fall within the 10km ZTV, whilst the limited potential intervisibility with parts of Endsleigh is likely to be mitigated by the level of tree and vegetation cover there. Two parts of the Cornish Mining World Heritage Site: the Caradon Hill Mining District and the Tamar Valley, also intersect with this zone, although the distance from the proposed turbine site at Bottonnett Farm and the potential intervisibility of only selected monuments within these designated sites would also be anticipated to constrain any negative impact on their landscape settings.

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

See Figure 25.

There are 63 Scheduled Monuments within 10km of the proposed wind turbine site at Bottonnett Farm and falling within its ZTV, as follows:

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

- 1 medieval and post-medieval tin and copper mine
- 1 standing stone
- 2 individual barrows
- 8 cairns
- 2 early medieval transhumance huts
- 2 hillforts
- 24 prehistoric settlements with associated fields
- 6 prehistoric field systems (some reused into the medieval period)
- 1 late medieval bridge
- 7 rounds
- 2 early medieval ringbanks
- 1 undated enclosure
- 2 crosses, cross base or cross heads
- 1 medieval Hall and chapel

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 of impacts on their settings therefore needs to be made.

Hillforts, barrows, standing stones and stone circles, 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 many 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 Bottonnett wind turbine, and the distance of many of these significant sites from the proposed development, negative impacts on the settings of most Scheduled Monuments are considered unlikely or of minor scale only.

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

See Figure 27.

The very southern edges of the Grade II Registered Park and Garden at Werrington Park are potentially intervisible with the proposed wind turbine site at Bottonnett, though at such a distance that the wind turbine is likely to be barely perceptible as a landscape object. The southwestern approach to Penheale Manor, and fragments of its northwestern borders are also potentially intervisible with the proposed wind turbine site, although the approach to Penheale faces away from the site, and the Park is situated on

the 10km radius, so again, the wind turbine is unlikely to be clearly perceptible or impact in any way on the designed setting of Penheale. Equally, there are some areas within the Grade I Registered Park and Garden at Endsleigh that potentially fall within the 10km ZTV, although most of these are likely to be currently obscured by woodland. No negative impacts on the setting of these designated landscapes are likely to occur, therefore.

## **8.7 Areas of the Cornish Mining World Heritage Site within the 10km radius ZTV**

See Figure 28

The eastern edges of the Caradon Mining District Area of the Cornish Mining World Heritage Site, and the north western edges of the Tamar Valley Area of the World Heritage Site are intersected by the 10km radius ZTV. Within these inscribed areas both Caradon Hill and Kit Hill are significantly elevated with wide landscape vistas and comprising significant landmarks over wide areas. Both also contain a number of Scheduled Monuments which are of National importance. Although at a distance from the proposed wind turbine site, the scale and significance of these sites means that some negative impact on their extensive settings may occur.

## **8.8 Grade 1 and II\* Listed Buildings within the 10km radius ZTV**

See Figure 26.

There are 971 Listed Buildings of all grades within 10Km of the proposed wind turbine at Bottonnett, 152 of these falling within the ZTV.

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

- 1140786 – The Church of St. Sampson
- 1297830 – The Church of St. Stephen
- 1142745 – The Church of St. Paternus
- 1219694 – Trearrell Manor
- 1291332 – Chapel of St Mary Magdalene (Trearrell)

Three of the Grade I Listed Buildings lie within 5km of the proposed wind turbine site, but only those at Trearrell Manor and Chapel, which lie within 600m of the proposed wind turbine site, were judged to be potentially vulnerable to impacts on their settings.

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

- 1291321 – Lower Trekenna Farmhouse and Cottage
- 1220632 – Stoke Climsland Church
- 1328056 – Trerithick and Garden Walls to Front
- 1142741 – Treguddick
- 1263226 – Church of St Michael
- 1142740 – Barn about 25 metres southwest of Tredown Farmhouse
- 1291535 – Greystone Farmhouse

Five of the Grade II\* Listed Buildings lie less than 5Km away from the proposed wind turbine site, but only two of these were judged to be potentially vulnerable to impacts on their settings:

- 1291321 – Lower Trekenna Farmhouse and Cottage
- 1291535 – Greystone Farmhouse



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

See Figure 21.

Within the 5km zone there are 196 Listed Buildings of all grades. Of these, 186 are Listed Grade II, as follows:

- 31 farmhouses
- 38 groups of farm buildings, including stables, barns, piggeries and granaries
- 28 houses
- 1 mill house
- 1 mill
- 2 lodges
- 1 rectory
- 1 vicarage
- 2 bartons
- 2 manors
- 9 cottages
- 3 chapels
- 3 churches
- 1 church town
- 2 crosses
- 1 cross base
- 9 headstones
- 4 tombchests
- 5 bridges
- 4 gate piers and gates and/or railings
- 1 Norman pier
- 20 milestones
- 1 boundary stone
- 1 pump house
- 1 guidepost
- 1 gazebo
- 1 telephone kiosk
- 1 doctor's surgery
- 1 Lodge
- 1 Ledger stone
- 1 churchyard entrance
- 1 war memorial
- 1 lime kiln
- 1 wash house
- 2 well houses

- 1 butter well
- 1 bee bole

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 guideposts, milestones, stiles, churchyard walls, lych gates, etc., headstones or chest tombs, crosses, bridges and village halls. Others such as houses, farmhouses and manors have rather more extensive settings; but in terms of their designation as heritage assets these are still likely to be limited in extent. Few if any of these structures are likely to have been constructed with the historic aim of being dominant in the landscape, or intended to be viewed from a distance, or with designed vistas. On the other hand, several of the assets were probably designed to be 'ornaments' to the adjacent area, often to be viewed from an adjacent approach.

It should be noted that this assessment of 'setting' refers to the heritage significance of these historic structures; individuals' perceptions of 'setting', in terms of amenity and aesthetics, or the potential for enjoying and appreciating a heritage asset, may, of course, differ.

As a substantial number of Listed manors, houses and farmhouses lie within a 3km radius of the proposed wind turbine site and may be partly intervisible with it, impacts on potentially sensitive Grade II Listed Buildings have been evaluated within an area extending out to approximately 3Km from the proposal site (though this has been varied according to local topography, taking in the openness and general orientation of views).

- The stables and barns at Trecarrell (Fig 19) are close to the site proposed for the wind turbine at Bottonnett, and may have partial intervisibility with it, although the local topography and level of vegetation and buildings presence may mitigate this (it was not possible to verify this during the site visit due to issues of access).
- A number of Grade II Listed Buildings at Trebuletts (Fig 22) are close to the site proposed for the wind turbine at Bottonnett, and may have whole or partial intervisibility with it; the proposed site was not visible at ground level from any point that could be accessed and the local topography and presence of surrounding buildings appear to suggest this will be minimal or unlikely.

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 Grade II Listed Buildings appear likely.

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

No Conservation Areas fall within the 3km radius ZTV.

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

See Figure 14.

The ZTV mapping suggests that around 90% of the landscape within a 1km radius of the Bottonnett 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 20 intervisible sites, as follows:

### Prehistoric

- MCO6812 – Trecarrell lithic scatter (findspot)
- MCO6861 – Bottonnett Iron Age fougou or post-medieval hull (extant structure)

### Early Medieval

- MCO39639 – Bottonnett field system (extant)
- MCO39632 – Higher Larrick Common field system (extant)

- MCO13561– Bottonnett settlement (documentary evidence)

#### Medieval

- MCO10255/6 –Trecarrell chapel (documentary/ extant structure)
- MCO29755 – Trecarrell barn (extant structure)
- MCO47154 – Bottonnett field boundary (extant)
- MCO14314 – Drinnick settlement (documentary evidence)

#### Post-medieval

- MCO12434 – Pollinnick mine (extant structure)
- MCO39622 – Bottonnett extractive pit (extant structure)
- MCO39637 – Higher Larrick (demolished structure)
- MCO39623 – Bottonnett spoil heap (extant structure)
- MCO47150 – Trebullett Hill settlement (extant)
- MCO47151 – Bottonnett wheel pit, mill pond, threshing mill (demolished structure)
- MCO47152 – Bottonnett cider press base (documentary/ findspot)
- MCO47153 – Bottonnett settlement (extant)
- MCO47166 – Trecarrell privy house (extant structure)
- MCO47162 – Trecarrell horse engine house (demolished structure)
- MCO11107 – Bottonnett house, on the site of a Barton (extant structure)

Given the natures of these sites, the proposed wind turbine at Bottonnett would have no significant impact on the majority of their settings. Bottonnett Farm lies circa 450m southeast of the proposed turbine site on the site of a medieval Barton, and has at least early medieval, if not prehistoric origins, though it is only documented from the 14<sup>th</sup> century. Bottonnett also has a number of undesigned monuments within, or immediately adjacent to, the farm complex. There are no designations relating directly to Bottonnett, but it is, nonetheless, a significant heritage asset on many counts. Although the proposed wind turbine site is not visible at ground level from the approach road leading to Bottonnett Farm, it is probable that some parts of the upper blades or hub may be visible from parts of the approach and within the farm complex itself. This would be considered to potentially compromise certain views towards the farm and to have a negative impact on its setting and the Historic Landscape Character of the surrounding area.

## **9 Field verification of ZTV**

See Figures 29 to 36.

The viewshed mapping and potential impacts were, wherever possible (given constraints on public access and the general topography of the area) ground checked from a number of locations, including sites at Trecarrell, Trebullett, Coads Green, Lewannick, South Petherwin, Trecrogo, Trewarlett and Lezant, in the vicinity of Bottonnett, and further afield from selected viewpoints on Kit Hill, Caradon Hill and Stowe's Hill, which incorporated the multi-period landscapes and Scheduled Monuments in those areas.

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 proposed

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 development site at Bottonnett back to these sites. In practice, the results of this were somewhat limited, due to the closed nature of views in the local area. This was largely caused by the narrow, winding roads, which tended to hug the valley floors or climb steeply between high hedgerows and tracts of woodland. The practicality of finding both a suitable viewpoint and a safe place to stop for photographs was constrained by these factors. Within settlements, groups of buildings and mature trees and shrubs also blocked many views back to the site. The visibility cut-off imposed by the local topography suggested by the viewshed mapping was confirmed, though from ground level many areas of suggested intervisibility were closed up by woods and hedgerows and the general lay of the land.

Field verification tended to confirm the viewshed mapping; the caveat to this is that the majority of sensitive sites and monuments to the southeast, south and southwest of Bottonnett would potentially only be intervisible with part of the upper turbine hub and/or blades even within the 1km radius zone due to the positioning of the turbine below a hillcrest, the topography of the landscape and the level of tree cover. Although there is some greater intervisibility in this direction with the sensitive monumental landscapes on Kit Hill, Caradon Hill, Stowe Hill and Bearah Tor, these lie at the 10km limits and the settings impact is mitigated by both distance and the low set position of the development site.

From ground level the areas of intervisibility seem likely to terminate just under 1km to the southwest of the site, although vegetation and the lay of the land may reduce this even further. From the west southwest through to the east southeast, the area of intervisibility potentially extends to the 3km radius, although vegetation cover and the lay of the land to the west and east may also block many views in these directions. To the north and northeast, the slope of the field containing the proposed development site allows more open views beyond the 3km radius. Although vegetation and the lay of the land reduce visibility beyond this extent to some degree, there remains a generally open view to some considerable distance in this direction. The positioning of the proposed turbine site does, therefore, appear to have taken into consideration the direction and potential intervisibility with the most sensitive monuments in the surrounding area.

Note: the majority of the most sensitive monumental landscapes which may be potentially intervisible with the proposed turbine site at Bottonnett lie between 5km and 10km away to the southeast and southwest, and are likely to be only partly intervisible with the upper parts of the hub or blades, where they will be viewed across a number of intervening hilltops and ridges. Setting impacts beyond 1km from the site in this direction are generally considered to be minor, given the distance of sensitive sites, the nature of the topography and the vegetation cover.

## **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), as there are currently a number of medium to large-scale wind turbines operational or pending application or pre-application stages within this part of North Cornwall. Specifically, those within 3km to the northeast of the Bottonnett site are at Trevozah Cross (2.7km) (77m to tip, operational), Trevozah Barton (2.8km) (2 x 77m to tip, pending), Higher Larrick (720m) (77m to tip, pending). Of two further applications at Trevozah Cross, one has lapsed and another been refused.

Although there are few areas within this general locality where wind turbines are prominent within local views, the operational turbine at Trevozah Cross is clearly visible

from the Bottonnett site (see Fig 29). This turbine is clearly identifiable from the monuments on Kit Hill and the eastern flanks of Bodmin Moor, and the proposed turbine at Bottonnett would fall within the same close viewshed. A further operational turbine is visible from the Bottonnett site on the skyline looking to the northwest towards Trecogo (see Fig 30); this is considered unlikely to contribute towards any major cumulative impact on the settings of sites in this area, however, given the local topography and the nature of vegetation cover.

## 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 Bottonnett.

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of the wind turbine on land at Bottonnett 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, distance from the site will significantly reduce any impact.

There is some potential for moderate negative impact on the settings of sensitive receptors within the immediately local landscape out to one kilometre from the site, including high grade Listed Buildings and some Scheduled Monuments, such as the late prehistoric enclosed settlements, or rounds, at Ring Camp, Illand and Battle Ring, Brockle. Beyond this zone, any impacts are likely to be minor, negligible or neutral in character.

There will be some impacts on the Historic Landscape Character of the surrounding landscape, given that this will be the second structure of this type within a 3km radius of what is, largely, an agricultural landscape whose character reflects its medieval origins. In addition, there is some potential for a negative impact on the setting of Bottonnett Farm, itself, which, although undesignated, could be considered a valuable heritage asset.

## 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 the wind turbine could have direct, physical impacts on any buried archaeology of the site through the construction of the turbine foundations, through the undergrounding of cables, and through the provision of any works compound, together with any permanent or temporary vehicle access ways into and within the site. Such impacts would be **permanent** and **irreversible**.

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

This wind turbine might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during the operational phase, given its height (50/77 metres), 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/moderate** on Bottonnett Farm and its historic landscape setting, and **negative/minor** on the Grade I Listed medieval Hall and chapel at Trecarrell, and to a lesser degree to its associated Grade II Listed barns, stables and well house (though proximity to the turbine site suggests that the impacts may be negative/moderate or higher, unless mitigated by topographical or other factors). The impact of the current proposal on the Grade II Listed Buildings at Trebullet is also considered to be **negative/minor**, given that any potential intervisibility with these



buildings will be significantly reduced due to the local topography, the nature of vegetation and surrounding buildings presence.

Impacts on the settings of designated heritage sites between 3km and 10km from the proposed turbine site have been assessed as **neutral** overall, as have the majority of those lying between 3km and 10km from the field at Bottonnett. Two Scheduled Monuments lying between 1km and 3km from Bottonnett, Ring camp, south of Illand and Battle Ring, east of Brockle, could not be assessed by the ground survey but the impact of the proposed turbine site on their settings is tentatively assessed as **negative/minor**, subject to any demonstrated intervisibility.

The potential for impacts on sub-surface archaeology within the development site is currently considered unlikely or likely to be minor in scope.

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**

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

Scales of impact will vary with the degree of significance of individual sites, and with the proportion of the whole site which would be affected. Although there is some evidence for an early medieval settlement and field system at Bottonnett, there is currently nothing to suggest any potential for impacts on potentially significant sub-surface archaeology to take place within the field containing the proposed development site.

### **13.2.2 Impacts on the settings of surrounding key heritage assets**

The proposed wind turbine is considered likely to have some 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 potentially to a degree on the setting of some Scheduled Monuments within the 3km zone, which could not be accurately assessed by the ground survey.

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

- Although there are a number of Scheduled Monuments within the 3km zone, the majority of these would have had relatively limited settings, and where there is any intervisibility with the proposed turbine site, this is likely to be limited by the level of vegetation cover and the lay of the land. Even where the settings of these sites could not be effectively assessed by the ground survey, it is unlikely that any intervisibility would have a major negative impact.
- 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 the local topography, the nature of local vegetation and by the presence of surrounding buildings. In the case of Trecarrell, there may be some limited views of the upper hub or blade tips of the wind turbine where there are gaps in the vegetation cover, or from selected points where the topography allows views across to the turbine site, but this could not be effectively assessed from ground level on the road in front of Trecarrell. The Grade II Listed Buildings at Trebullet

appear to be largely free of any negative impact from the proposed wind turbine, although this assessment was made at ground level and with only limited access to the site. It is possible that there may be some limited intervisibility with the upper hub or blade tips of the proposed turbine, but this is likely to be very minor. There is a greater likelihood for the view of Bottonnett from its approach road to be impacted by intervisibility with the upper hub or blade tips behind the farmhouse, although the proposed development site is not visible from the road at ground level. There are no designated sites at Bottonnett, but the farm holdings, on the site of a former medieval Barton, are a valuable heritage asset, nonetheless.

- There are currently two clearly visible individual wind turbines within the surrounding landscape, particularly the turbine at Trevozah Cross to the northeast. This has been demonstrated as being visible from a number of elevated points within the 10km zone around Bottonnett, largely from the southeast and southwest. Nonetheless, the area around Bottonnett currently retains much of its essentially long-standing agricultural character. The erection of a wind turbine at Bottonnett will, therefore, introduce a further highly-visible modern feature into this landscape, and this will, as a result, impinge to some degree on the settings of some Scheduled Monuments and Listed Buildings in the immediate locality.
- 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 the impacts on their settings are likely to be minor, or neutral.
- There are two areas of the Cornish Mining World Heritage Site within the viewshed: the Caradon hill Mining District, and the Tamar Valley, whose northeastern and northwestern edges, respectively, intersect with the 10km radius viewshed for Bottonnett. The upper hub and blades of the proposed turbine are likely to be visible from selected monuments within these sites, which, cumulatively, could be considered to have a significant landscape setting. Nonetheless, their distance from Bottonnett is considered likely to result in relatively minor negative impacts on their settings as a whole.
- There are three Registered Parks and Gardens that intersect with the 10km radius viewshed, although the distance of these from Bottonnett and the limited intervisibility with the proposed turbine site is unlikely to result in any impact on their settings.
- There are no Registered Battlefields within the 10km radius viewshed of the proposed wind turbine.
- There are no Conservation Areas within the 10km radius viewshed of the proposed wind turbine.
- 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 25.

Identifier	Site	Impact
1004463	Battle Ring, E of Brockle	Negative/minor
1003075	Camp, S of Illand	Negative/minor
1011687	Banked Cairn on Caradon Hill	Neutral

Identifier	Site	Impact
1012049	Prehistoric Enclosure and Hut Circles, Minions Moor	Neutral
1012352	Earlier Prehistoric Hill Fort, Pound, Cairn and Hut Circles on Stowe's Hill	Neutral
11010233	Rillaton Barrow, Minions Moor	Neutral
1010221	Neolithic Long Cairn, Prehistoric Field System, Medieval Enclosure W. of Blackcoombe Farm	Neutral

Despite the relative distance of the majority these sites to the proposed wind turbine, along with the topographical character of the local landscape, will limit setting impacts on many of these sites, as indicated above.

World Heritage Site - see Figure 28.

Identifier	Site	Impact
DCO1759	Caradon Mining District	Negative/minor
DCO1757	Tamar Valley	Negative/minor

Grade I Listed Buildings - see Figure 26, and Figures 18 and 19.

Identifier	Site	Impact
1219694	Trecarrell Hall	Negative/minor
1291332	Trecarrell Medieval Chapel	Negative/minor

Grade II\* Listed Buildings - see Figure 26

There are none considered to be impacted

#### **13.2.4 Designated heritage assets within the 3km radius viewshed.**

Grade II Listed Buildings - see Figure 21.

Identifier	Site	Impact
1291375	Pair of C19 Cottages, Trebuletts	Negative/minor
1291331	Trecarrell Cottage, Trebuletts	Negative/minor
1219753	Barn at Trecarrell	Negative/minor
1219695	Stable and Pigsties at Trecarrell	Negative/minor

The wind turbine may be in partial view of the barn and stables at Trecarrell, circa 600m south of the proposed development site at Bottonnett, though this could not be effectively assessed at ground level from in front of the site. Intervisibility with these may be limited through partial blocking by trees and local topography, whilst their limited settings will further reduce any potential impact. The Grade II Listed Buildings at Trebuletts may be partially intervisible with the wind turbine, though any impact on their settings may again be reduced by the surrounding vegetation and topography. The loss of screening vegetation at Trecarrell, in particular, would potentially raise the level of impacts on the designated agricultural buildings here.

Conservation Areas

None fall within this zone.

Registered Parks and Gardens - see Figure 27

There are none considered to be impacted.

### **13.2.5 Undesignated heritage assets within the 1Km radius viewed**

See Figure 14.

None likely to be affected given that the majority are either cropmarks, underground or demolished structures or documented sites/place names.

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

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

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

## **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 elements of affected designated sites 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**

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

In the instance of the site at Bottonnett, there is an indefinable possibility of at-present unrecorded below ground remains being directly impacted upon by the proposal to construct a wind turbine at this location. The Historic Environment Planning Advice Officer may require a geophysical survey of the sites proposed for the turbine to provide a level of information sufficient to determine the potential for sub-surface impacts on archaeological features before a recommendation for the granting of planning permission could be made.

Archaeological recording in the form of the recording of elements of the site which might be negatively impacted upon by the works might take the form of a watching brief (observation by an archaeologist during mechanical ground reduction activities) where any significant features or areas of ground are to be disturbed (for instance for the foundations for the turbine or during cable trenching), in areas where significant features

might have been identified through the site walkover, or where the balance of probability suggested that sub-surface archaeology might survive. This approach provides for preservation by record of upstanding or buried archaeological features or artefacts and reduces any impacts on the archaeology of the sites to **negative/minor**. Any resultant impacts would be reduced to **permanent** and **irreversible**.

In the instance of the proposed wind turbine at Bottonnett, no indications were found that this is likely to be required.

It should be noted that the form of any mitigation applied to the site would be determined by the HEPAO, who might require studies additional to this assessment in order to determine his recommendations.

## **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 Lezant* (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**

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

## **16 Project archive**

The HE project number is **146290**

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\Bottonnett Farm Walkover Survey 22-8-13
3. English Heritage/ADS OASIS online reference: cornwall2-158144
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites B\Bottonnett wind turbine assessment 2013\Report\2013R059 Bottonnett wind turbine assessment report.doc



Fig 3. The proposed turbine site at Bottonnett Farm 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 proposed turbine site and its surroundings, as shown on Martyn's 1748 Map of Cornwall. The project area is circled in red.

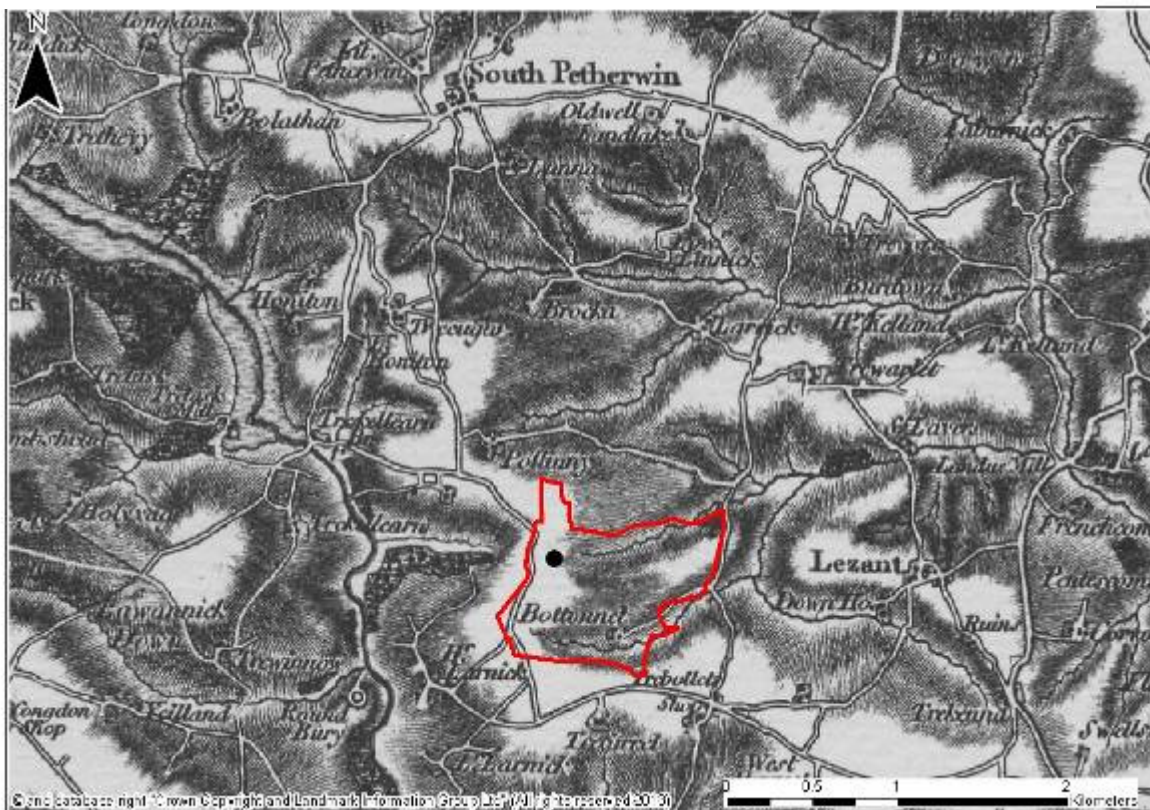


Fig 6. The project area and its surroundings as shown on the circa 1807 1<sup>st</sup> Edition OS mapping. The turbine project area is slightly offset because of the differing projections used by the 19<sup>th</sup> century OS surveyors and modern mapping.



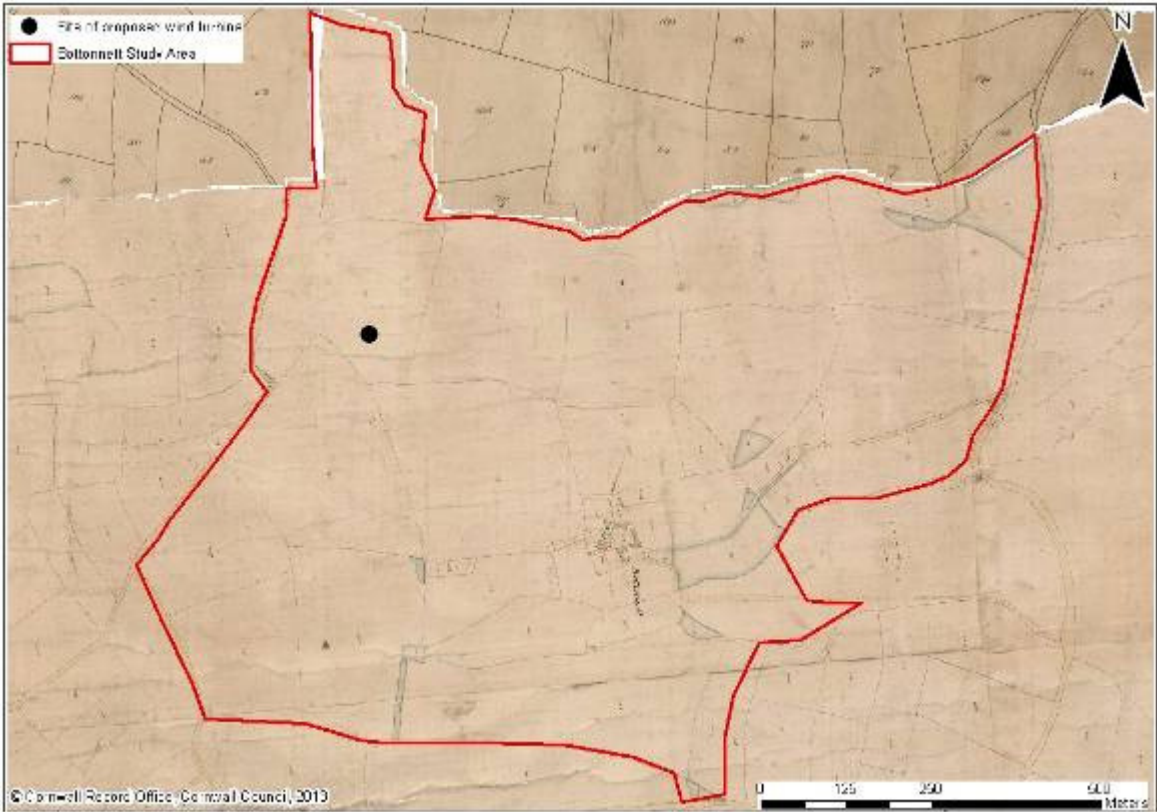


Fig 7. The project areas as shown on the circa 1841 Lezant Tithe Map. The proposed turbine is indicated by a black dot.

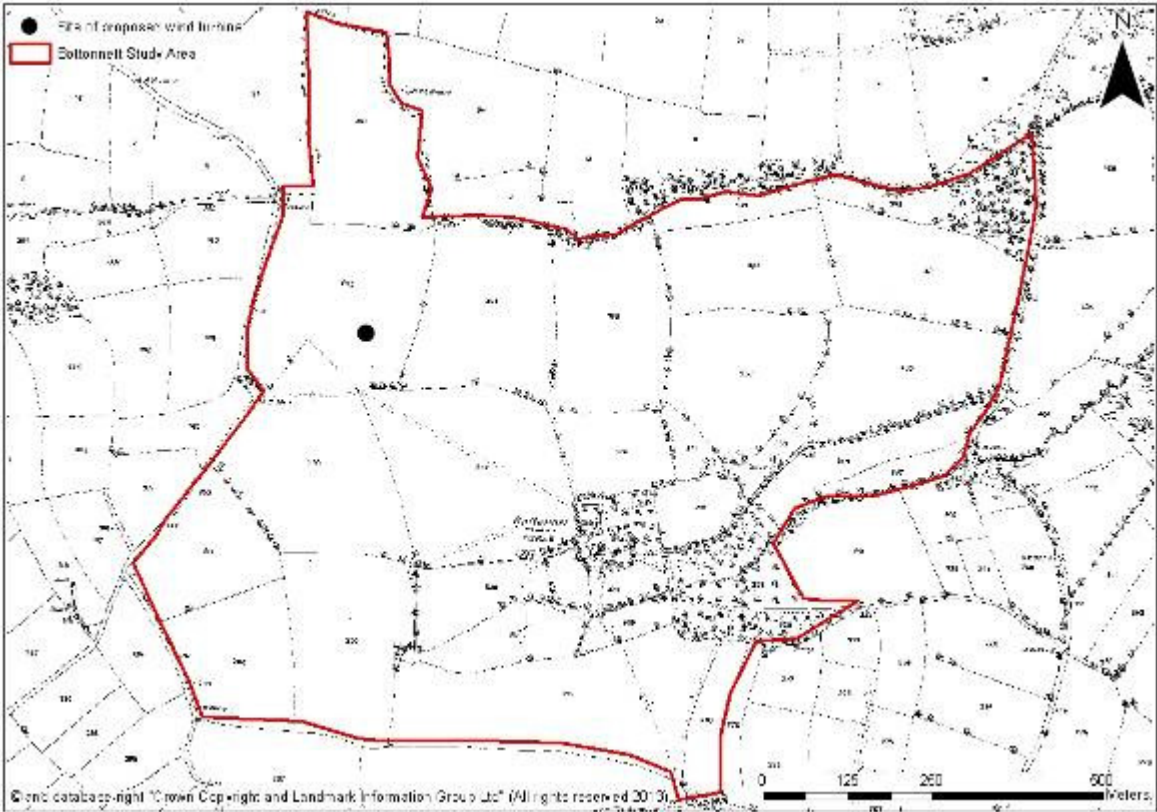


Fig 8. The project area as shown on the circa 1877 1<sup>st</sup> Edition OS 1:2500 mapping.

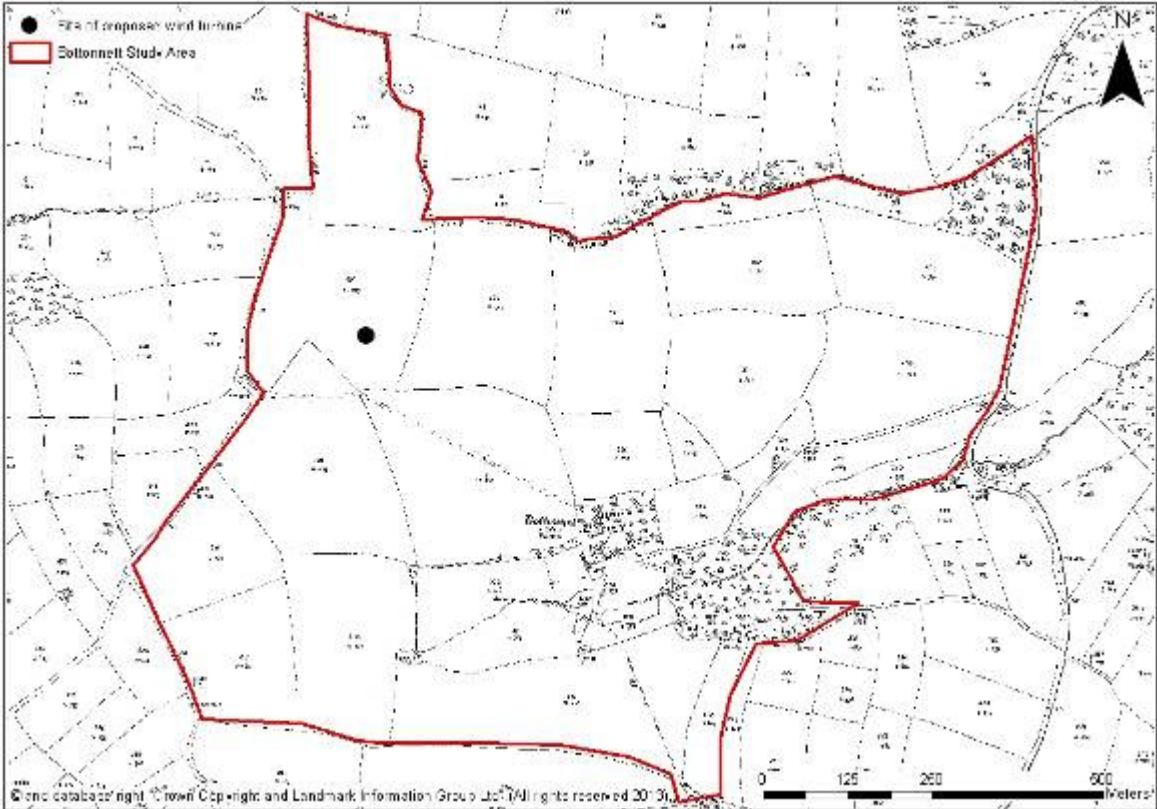


Fig 9. The project area as shown on the circa 1908 OS 1:2500 mapping.



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

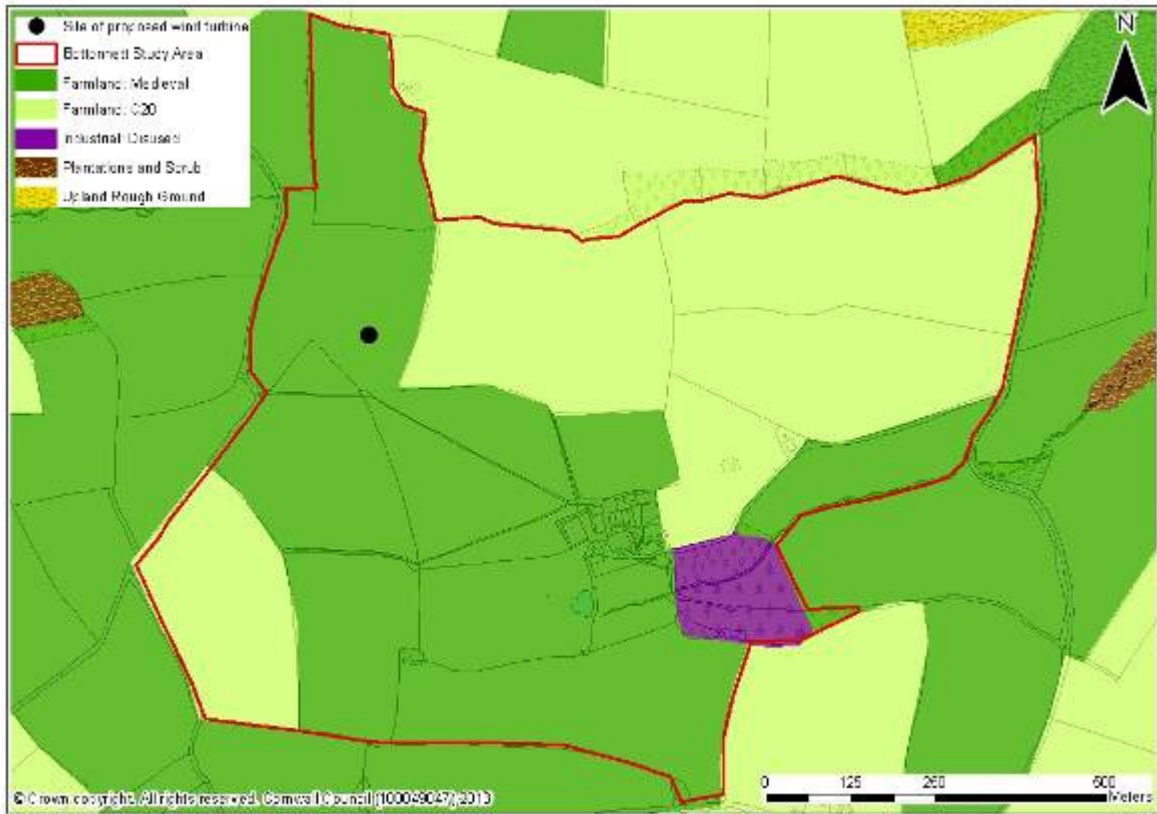


Fig 11. Historic Landscape Character mapping showing how this area of countryside is derived from land enclosed during the medieval period.

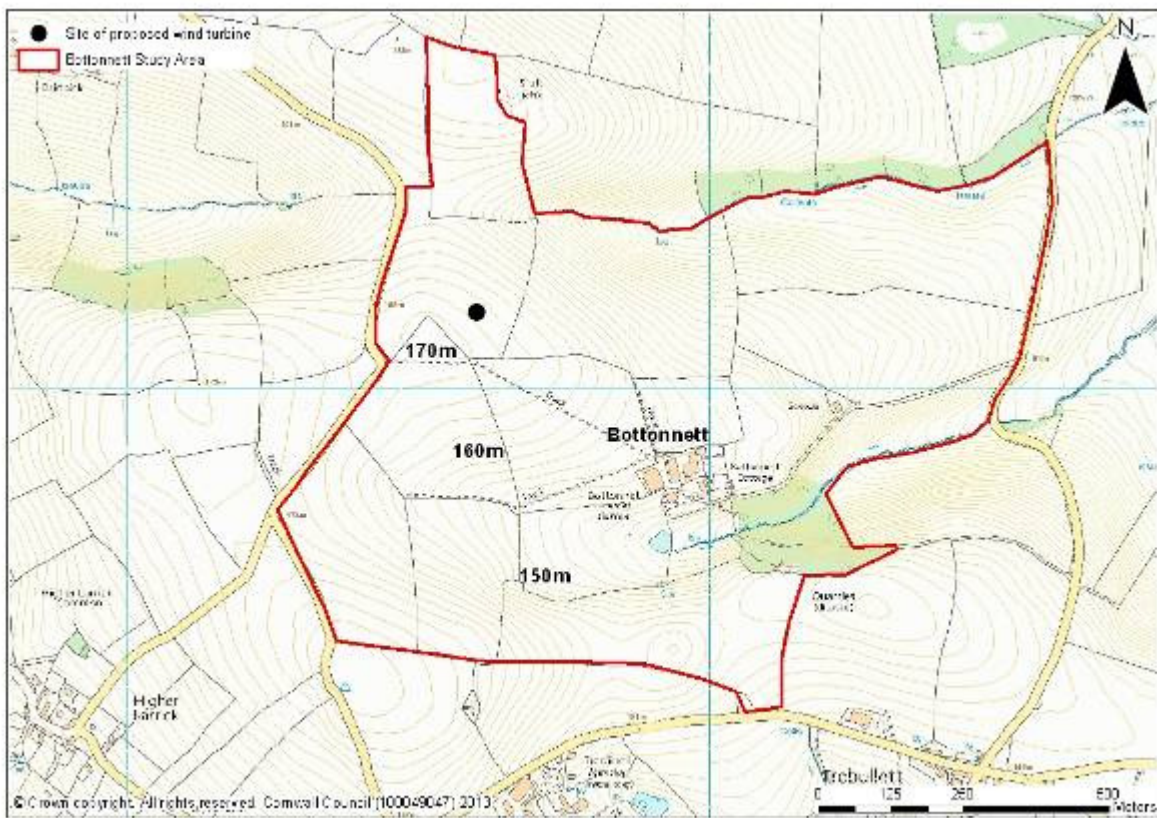


Fig 12. OS contour data for the area immediately surrounding the proposed wind turbine shows its site located near the crest of an east facing spur, on its northeastern slope.

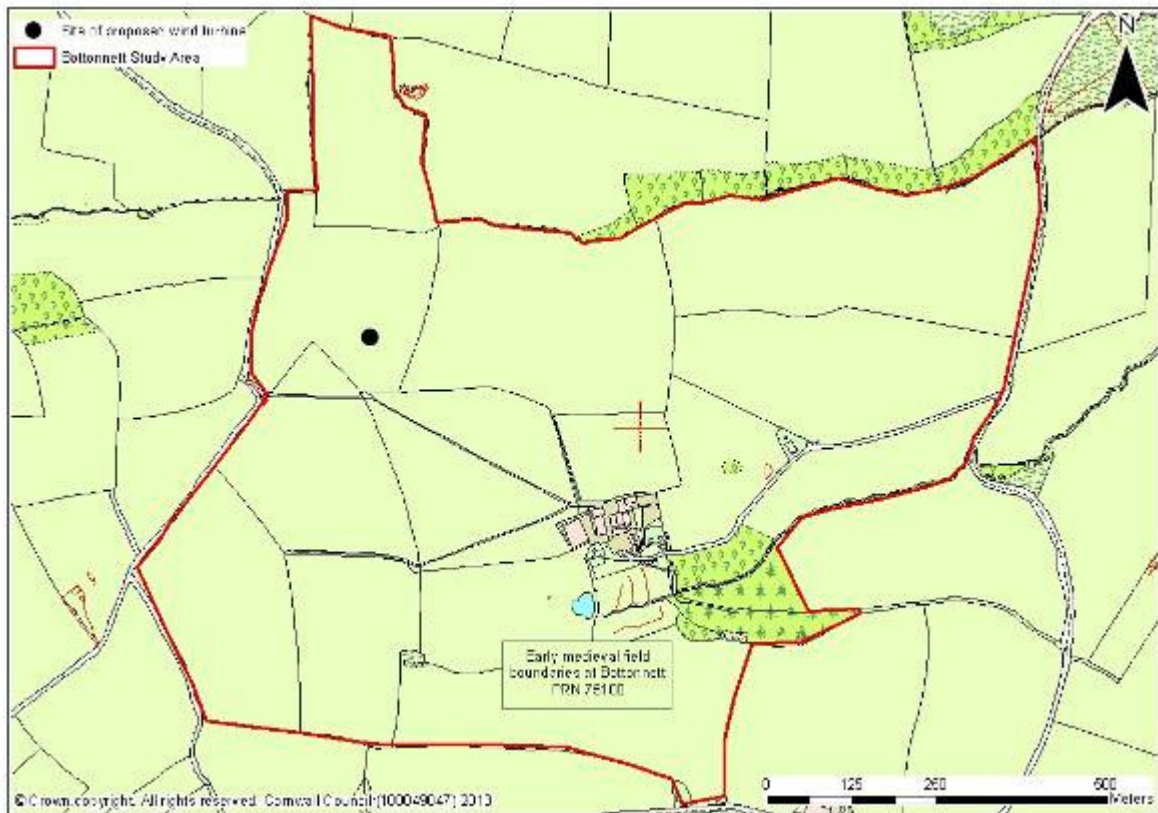


Fig 13. Cropmark archaeological sites within the vicinity of the site at Bottonnett Farm, recorded by the National Mapping Project.

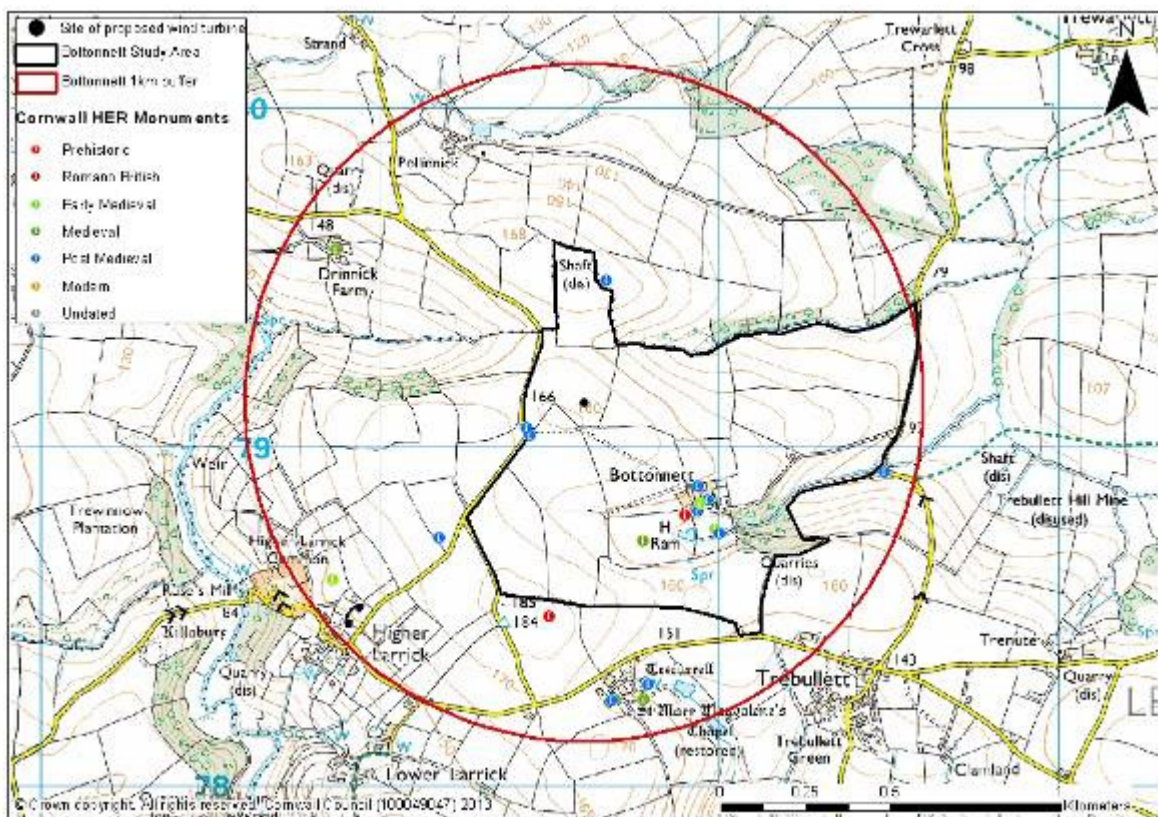


Fig 14. Sites within a 1km radius of Bottonnett Farm, recorded in the Cornwall and Scilly HER.

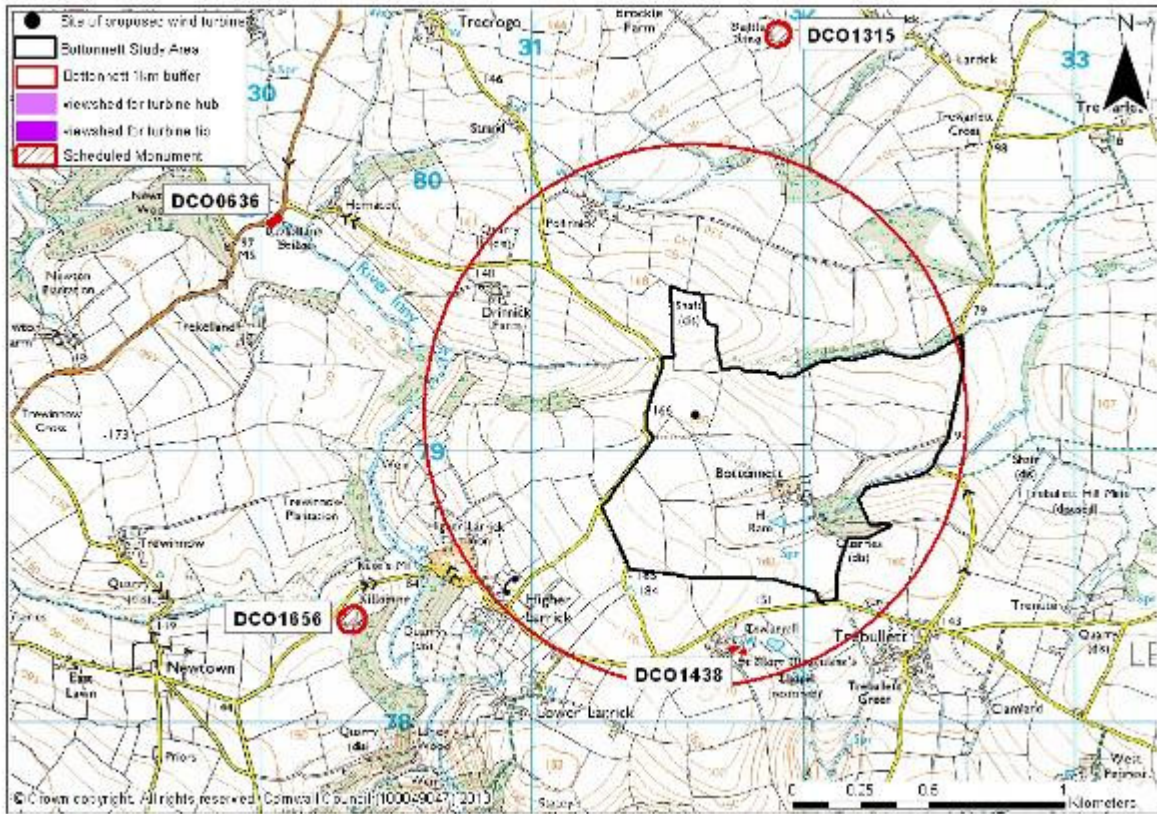


Fig 15. National Monument Numbers for Scheduled Monuments within the landscape immediately surrounding Bottonnett.

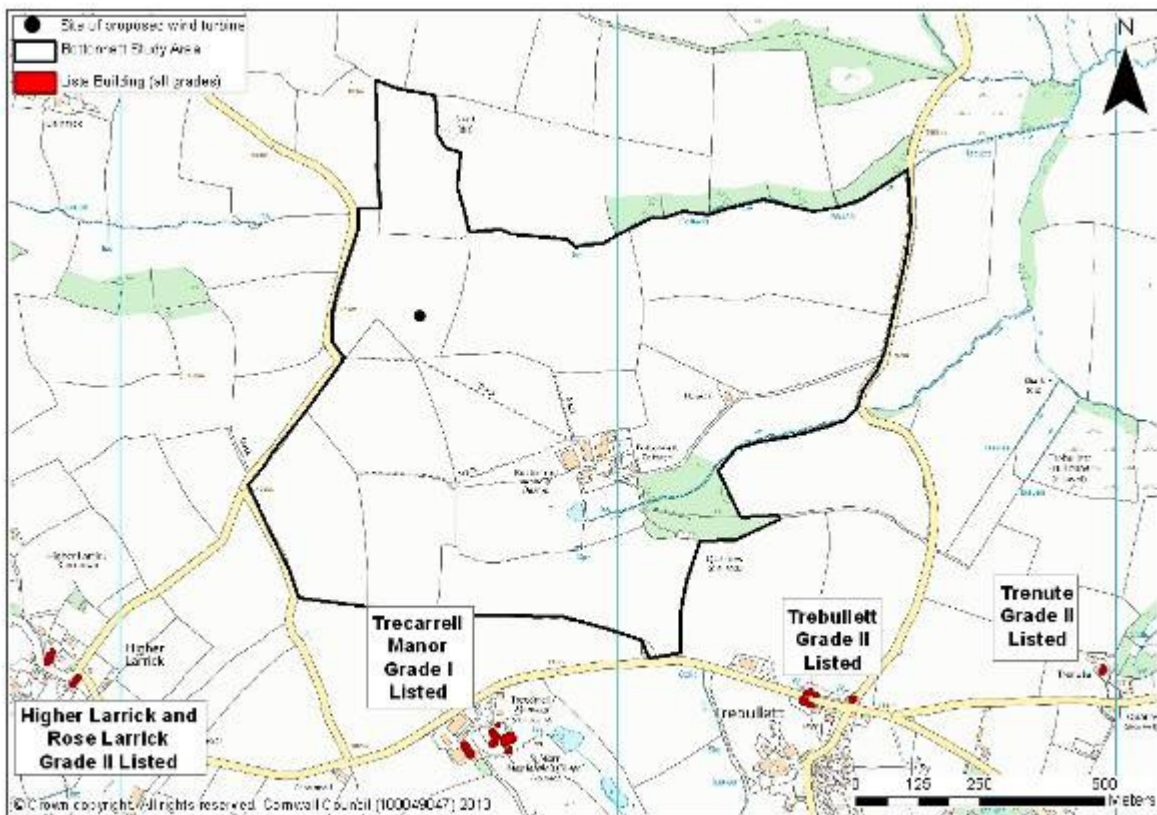


Fig 16. Listed Buildings within the landscape immediately surrounding Bottonnett, at Higher Larrick, Trecarrell Manor, Trebuletts and Trenute.

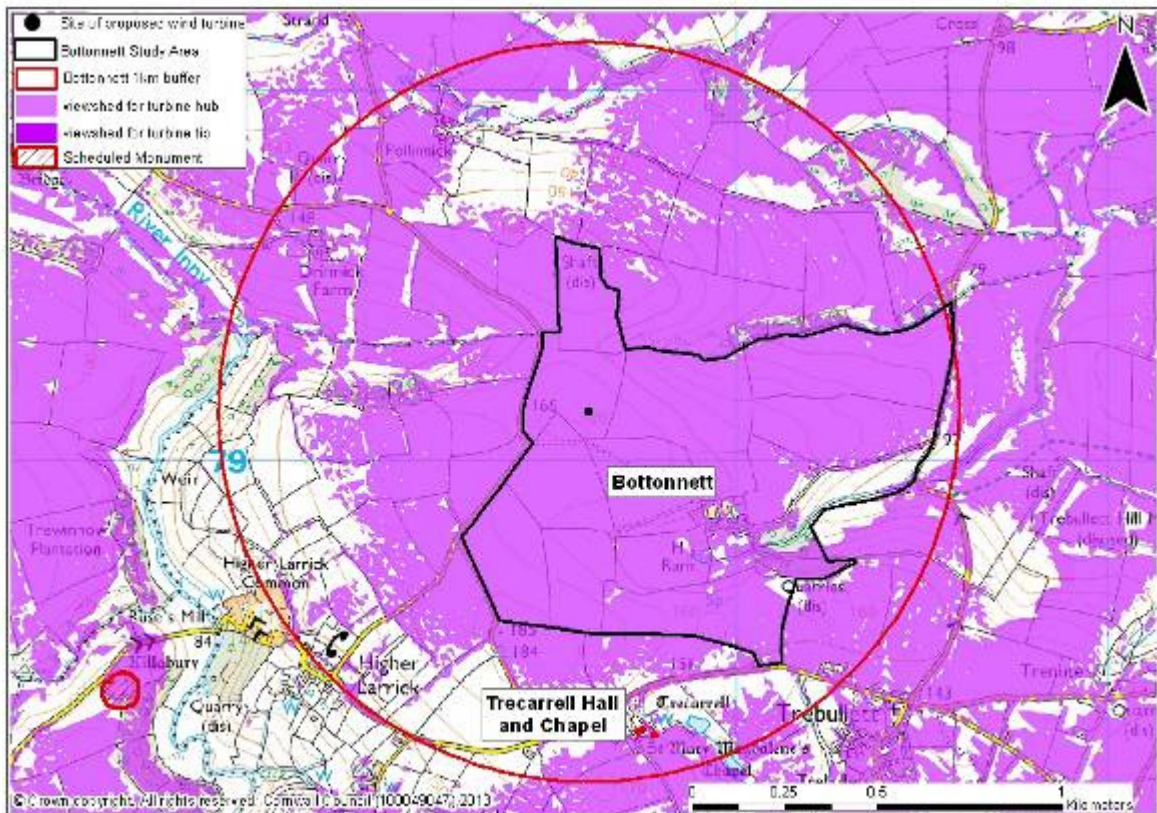


Fig 17. Mapping showing potentially intervisible Scheduled Monuments in and around the 1km radius ZTV of the site proposed for the wind turbine.

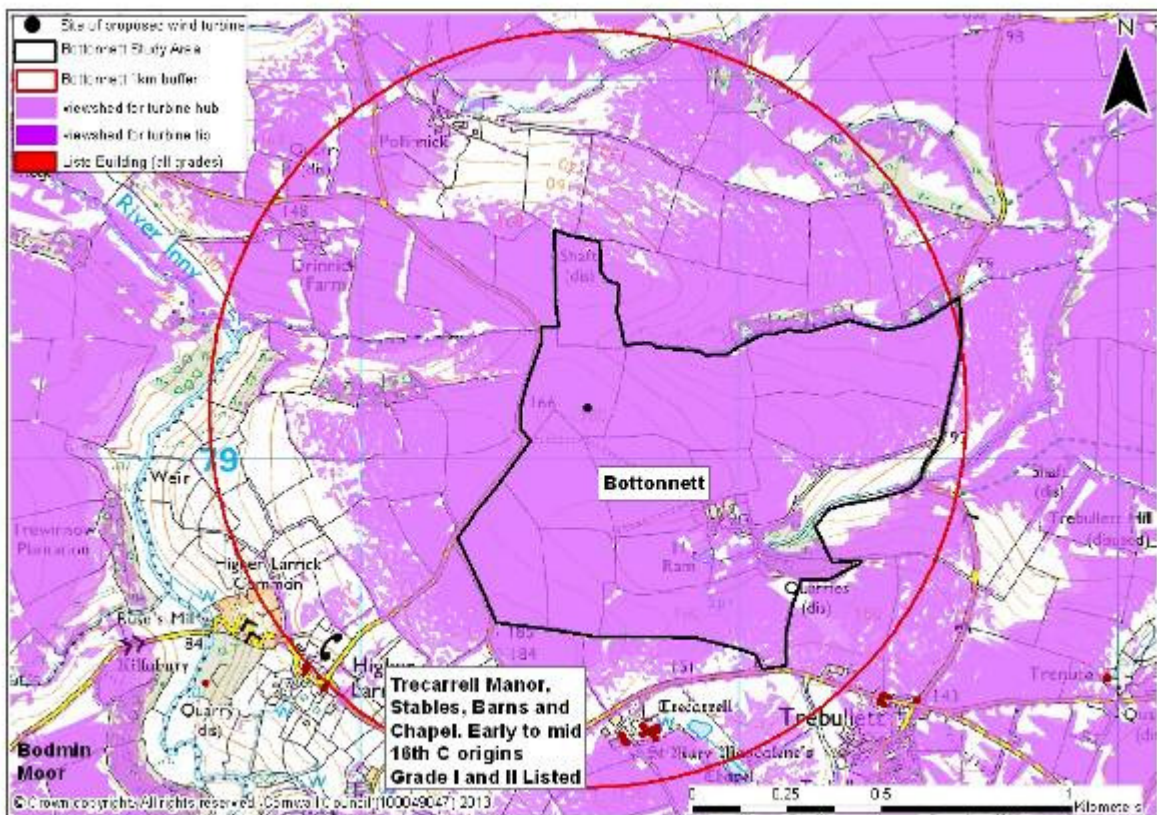


Fig 18. Mapping showing potentially intervisible Listed Buildings within the 1km radius ZTV of the site proposed for the wind turbine.

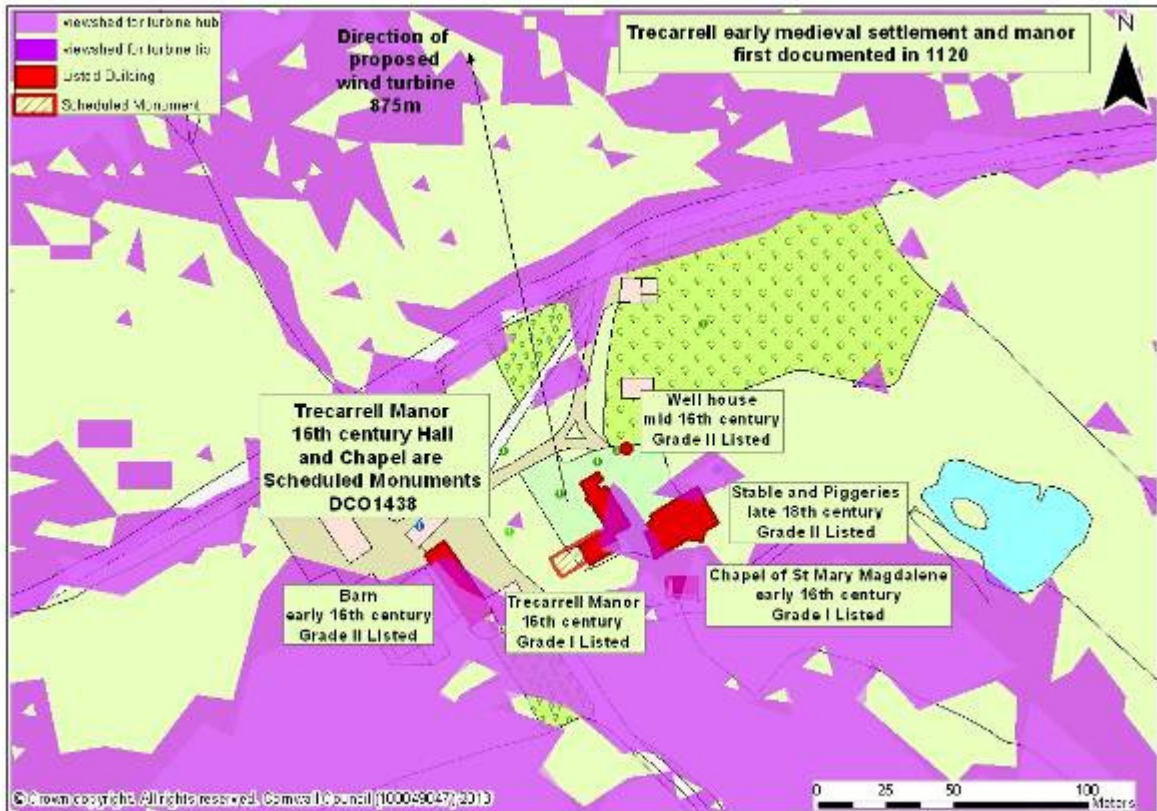


Fig 19. Detail of the ZTV mapping for Listed Buildings at Trecarrell Manor, all of which theoretically lie wholly or partly within the ZTV at less than 1km distance from the proposed wind turbine at Bottonnett to the northeast (shown by the arrow).

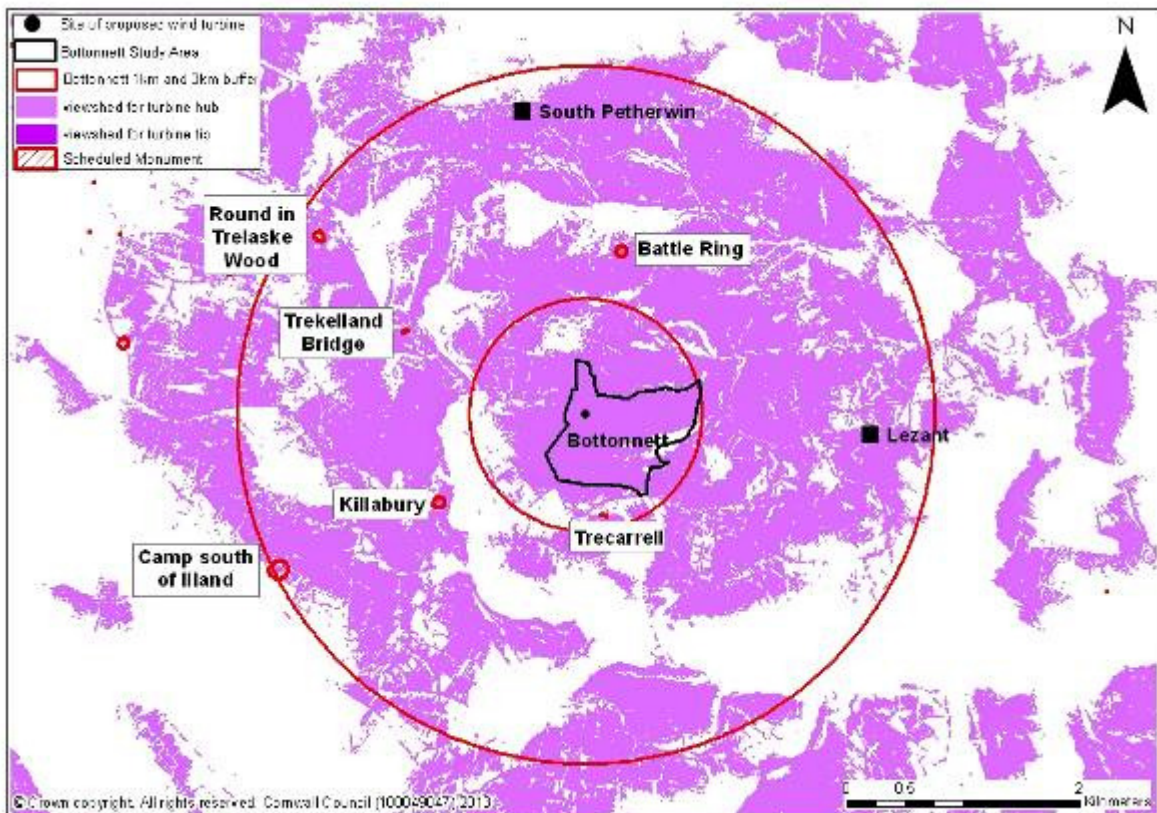


Fig 20. Mapping showing significant and potentially intervisible Scheduled Monuments within the 3km radius ZTV of the proposed wind turbine site at Bottonnett.

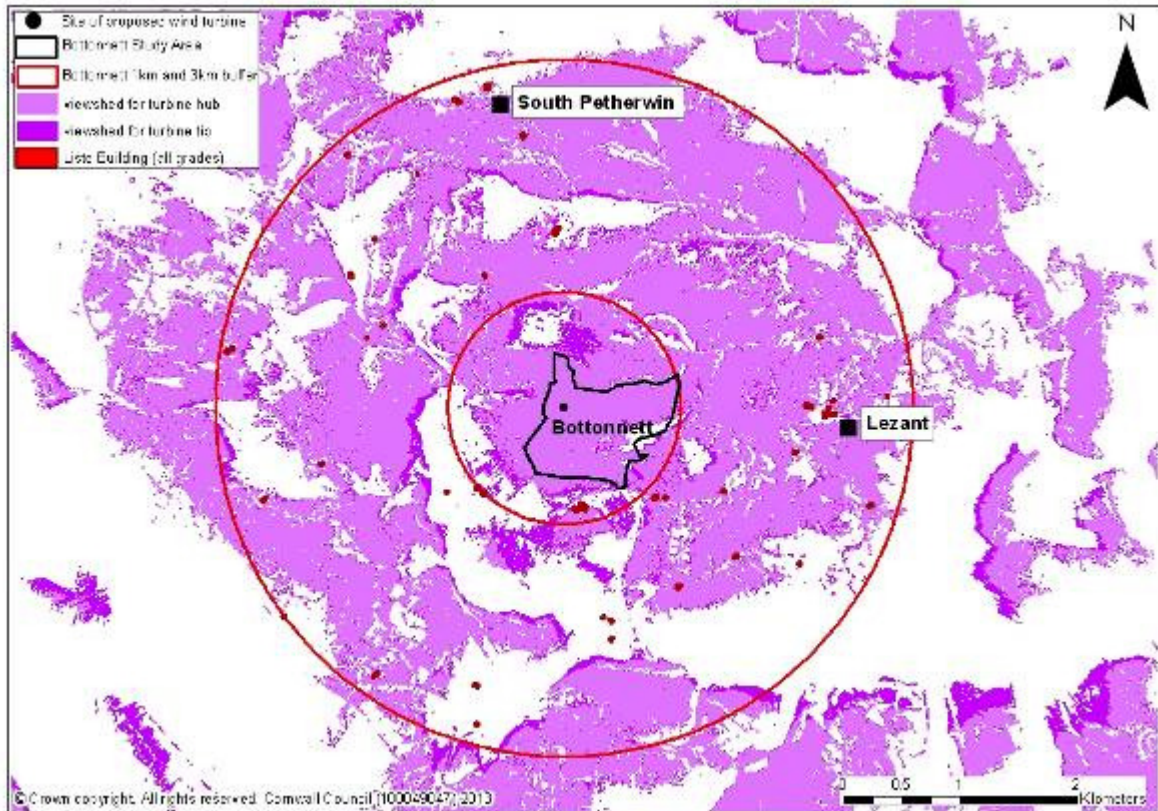


Fig 21. Mapping showing potentially intervisible Listed Buildings (all grades) within the 3km radius ZTV of the proposed wind turbine site at Bottonnett.

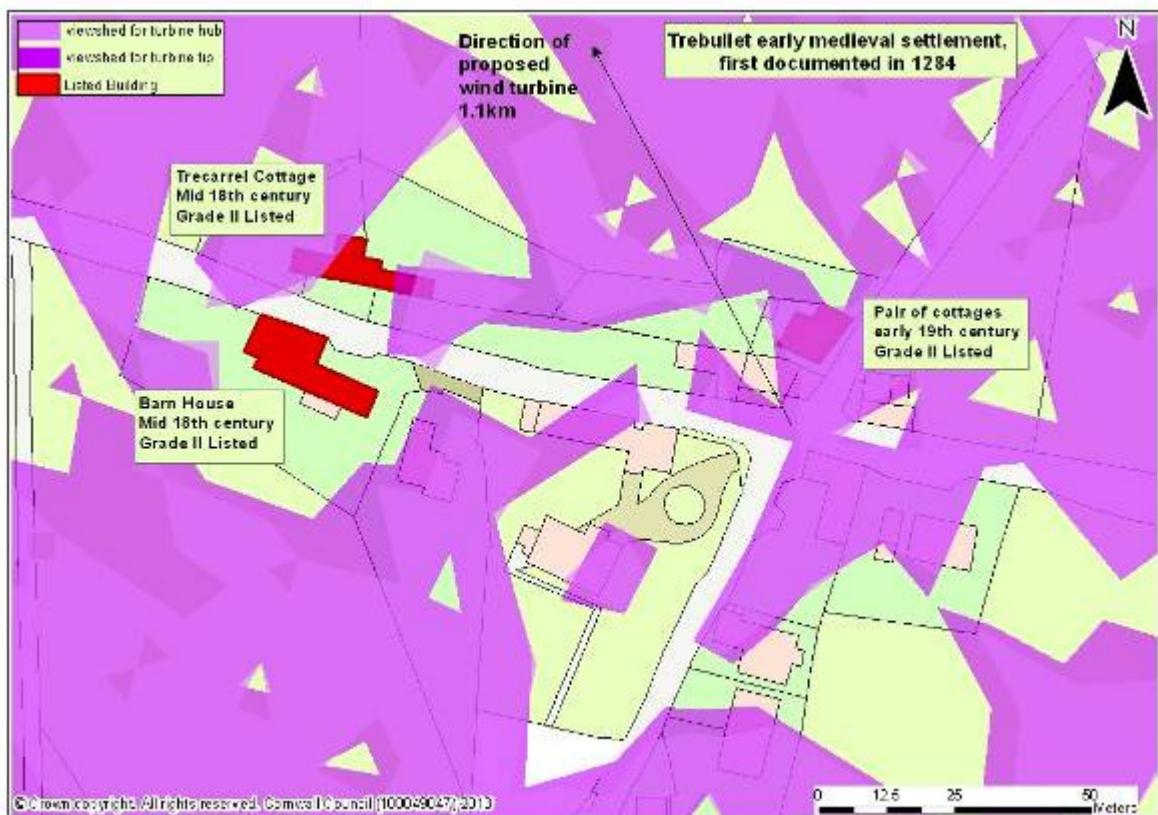


Fig 22. Detail of the ZTV mapping for Listed Buildings at Trebulet, some of which theoretically lie wholly or partly within the ZTV at less than 1km distance from the proposed wind turbine at Bottonnett, to the northeast (shown by the arrow).



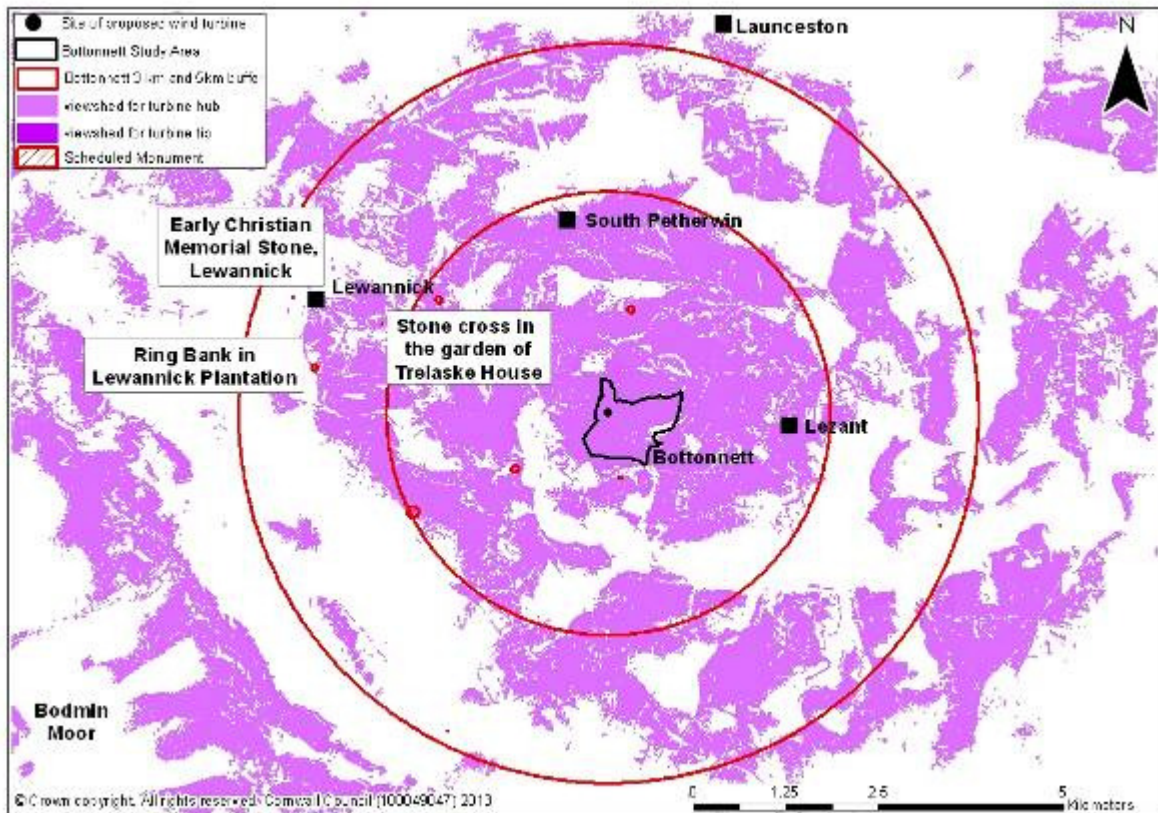


Fig 23. Mapping showing significant and potentially intervisible Scheduled Monuments within the 3km to 5km radius ZTV of the proposed wind turbine site at Bottonnett.

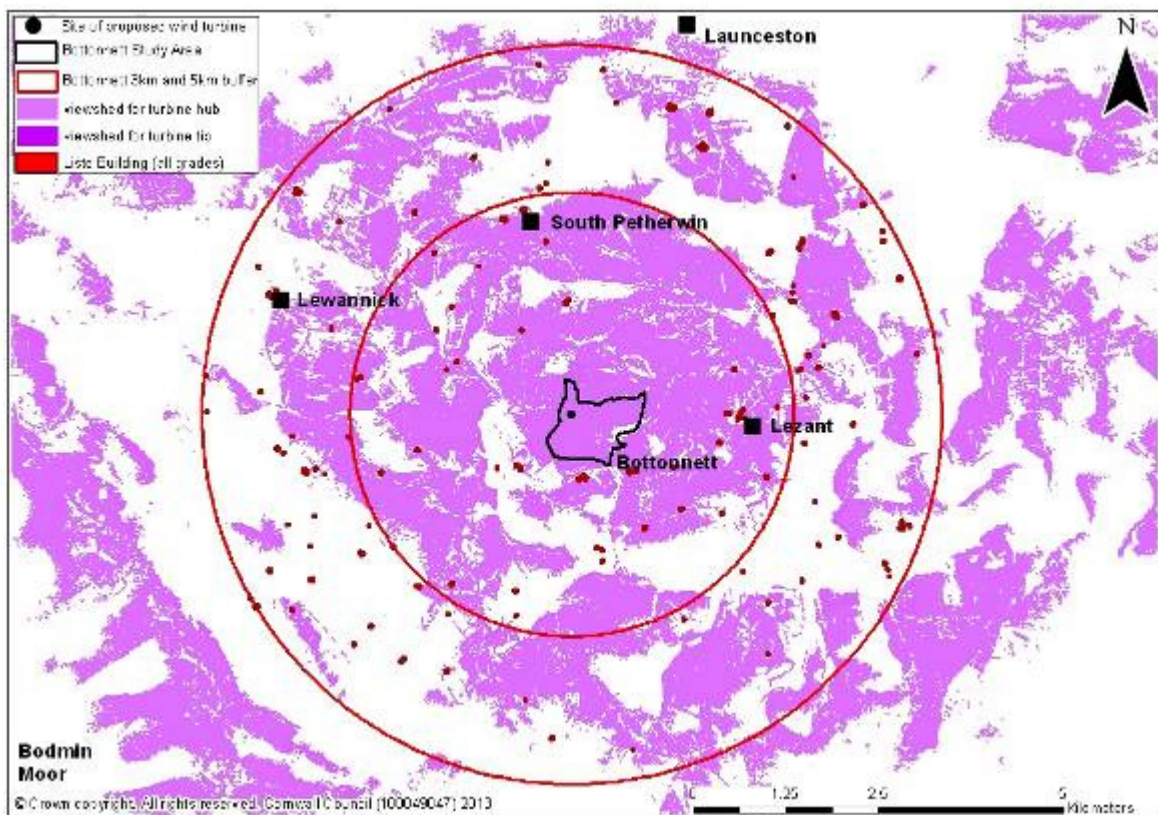


Fig 24. Mapping showing potentially intervisible Listed Buildings (all grades) within the 5km radius ZTV of the proposed wind turbine site at Bottonnett.

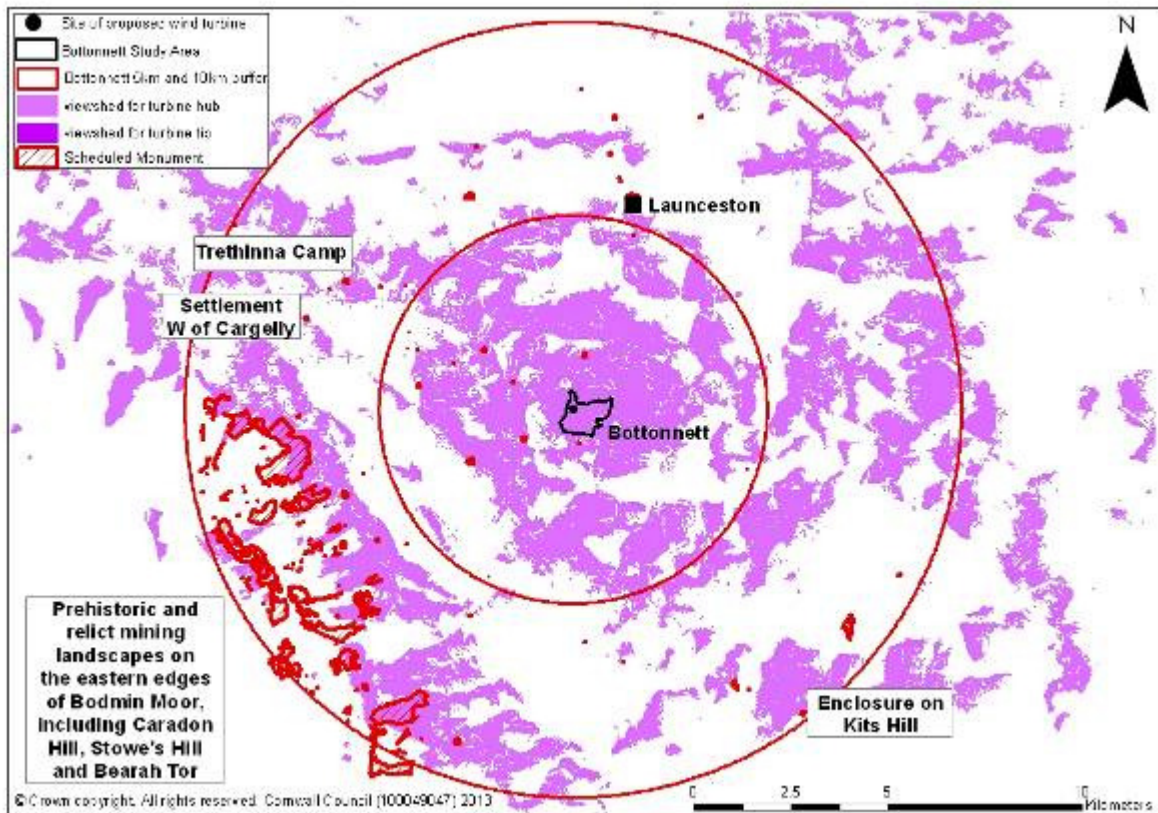


Fig 25. Mapping showing potentially intervisible Scheduled Monuments within the 5km to 10km radius ZTV of the proposed wind turbine site at Bottonnett.

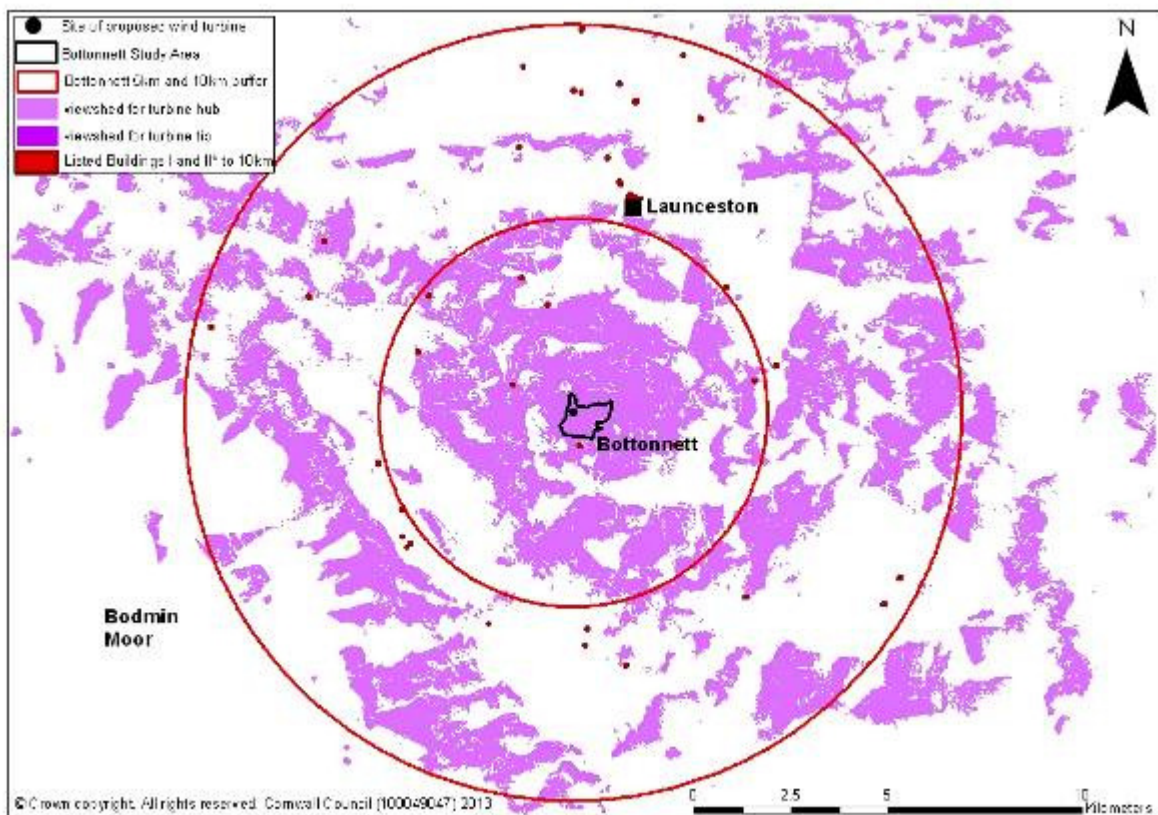
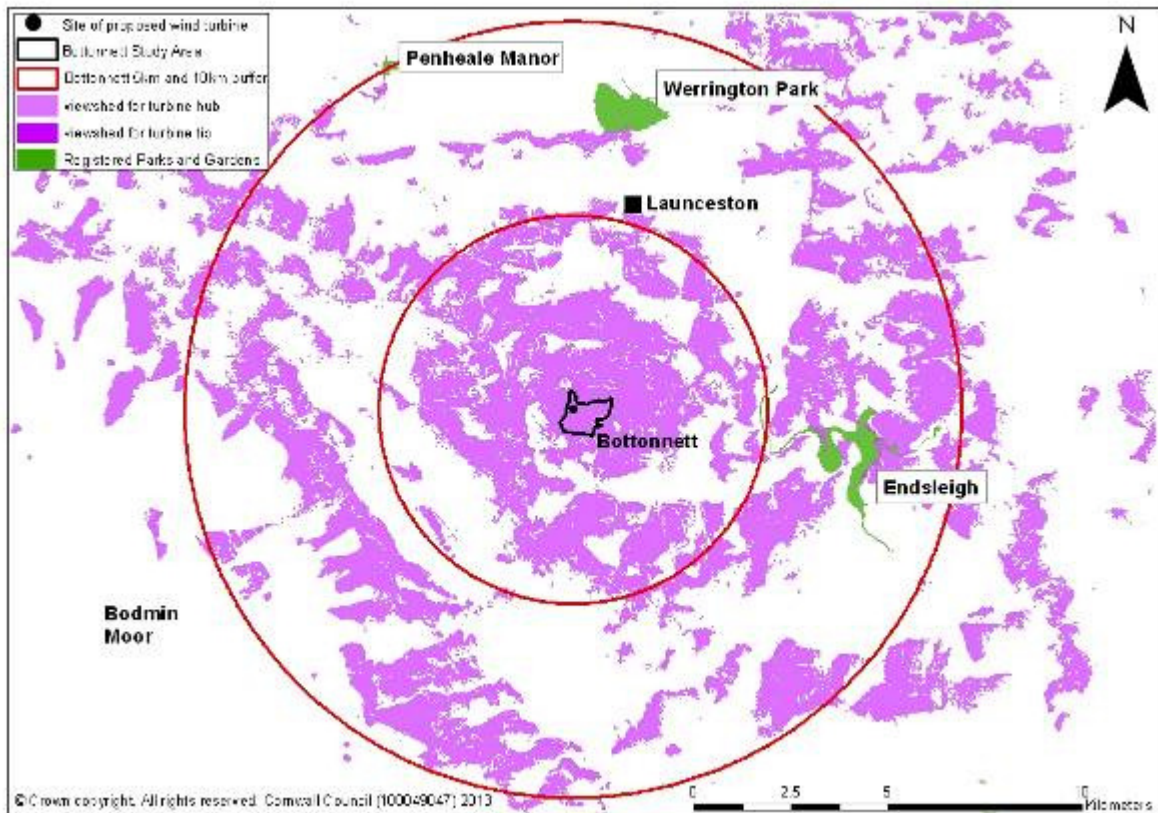
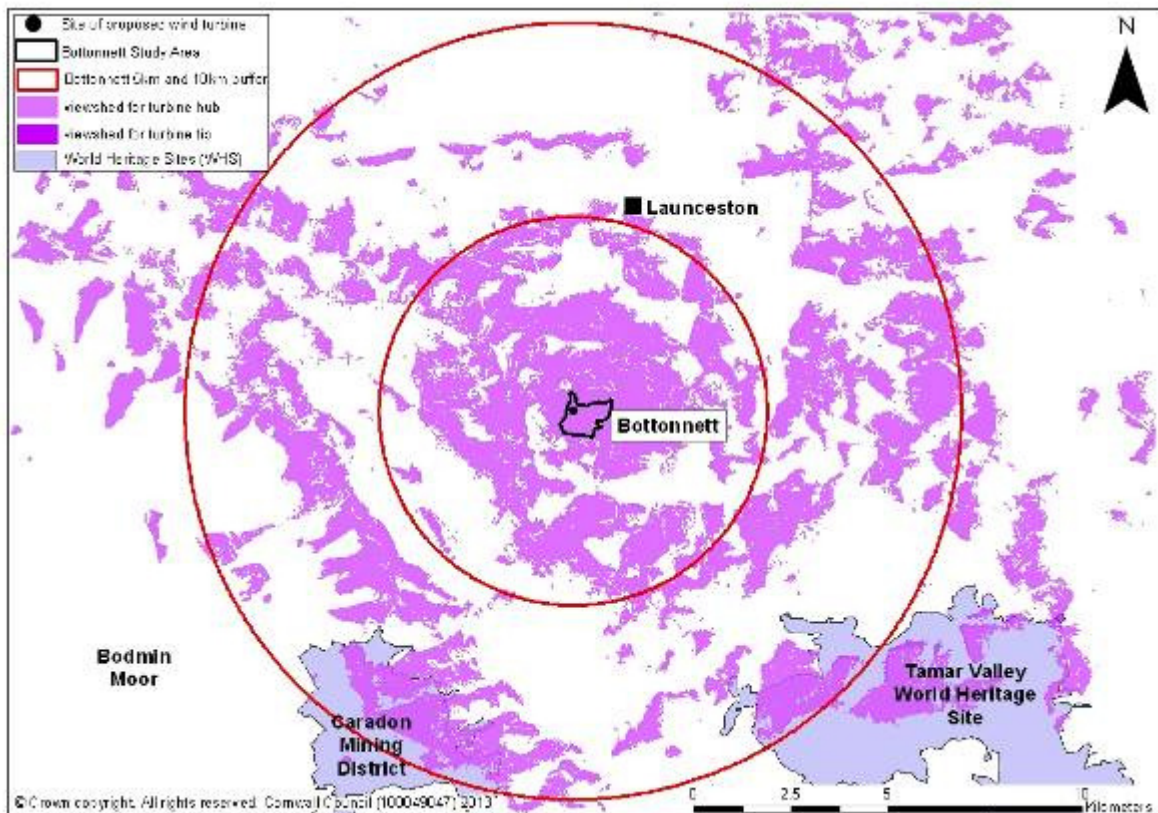


Fig 26. Mapping showing potentially intervisible Grade I and Grade II\* Listed Buildings within the 5km to 10km radius ZTV of the proposed wind turbine site at Bottonnett.



*Fig 27. Mapping showing the potentially intervisible Registered Parks and Gardens that lie within the 5km to 10km radius ZTV of the proposed wind turbine site at Bottonnett.*



*Fig 28. Mapping showing the potentially intervisible areas of the Cornish Mining World Heritage Site: the Caradon Mining District and the Tamar Valley, which lie within the 5km to 10km radius ZTV of the proposed wind turbine site at Bottonnett.*



*Fig 29. A general view of the field proposed for the wind turbine at Bottonnett Farm, looking from the proposed development site north eastwards towards an already operational wind turbine at Trevozah Cross.*



*Fig 30. Looking northwest from the proposed turbine site towards Trecogo. An already operational wind turbine is just visible on the skyline, mid centre.*



*Fig 31. Looking southeast towards Kit Hill, on the skyline. Kit Hill is only visible from ground level a few metres upslope from the proposed turbine site, as shown here, but would potentially be intervisible with the upper part of the turbine, if installed.*



*Fig 32. Looking south southwest towards Caradon Hill and Stowe's Hill; these are not visible at ground level from the proposed turbine site, but would potentially be intervisible with the upper part of the proposed turbine, once installed. The photograph is taken upslope from this point, from the southern field boundary.*



*Fig 33. Looking northwest from the summit of Kit Hill towards Bottonnett. The heat haze has obscured the clarity of the photograph, but the wind turbine at Trevozah Cross was visible from this viewpoint. The proposed site at Bottonnett lies southwest of this, but, at ground level, was not visible or identifiable.*



*Fig 34. Looking northeast towards the proposed turbine site at Bottonnett Farm from the summit of Rillaton Barrow on Minions Moor. The site is not visible at ground level from this point, although the wind turbine at Trevozah Cross can be seen mid right of centre, shown by arrow; Bottonnett lies to the left of this.*



*Fig 35. The view northeast from the summit of Stowe's Hill, looking towards Bottonnett Farm. The proposed wind turbine site is not visible at ground level, lying over the northern crest of a hill, but the operational turbine at Trevozah Cross, circa 2.7km to the northeast of Bottonnett, is visible mid centre, shown by the arrow.*



*Fig 36. The view just below the summit of Caradon Hill looking northwest towards Bottonnett Farm. The wind turbine at Trevozah Cross lies just to the right of centre, shown by the arrow. Bottonnett Farm, not visible from ground level, lies just to the left.*