



Glebe Farm, South Hill, near Callington, Cornwall

Archaeological assessment of proposed wind turbine



Historic Environment Projects

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The viewshed mapping was carried out by Krysia Truscoe.

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

Freedom of Information Act

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



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Cover illustration

Looking east from Linkinhorne Church towards the proposed turbine site, which is just to the right of the yellow field. Note the distinct drop in ground level between the churchyard/lann and the grassed throughway in front of the buildings on the right of the photograph.

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Abbreviations

EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
MCO	Monument number in Cornwall HER
NGR	National Grid Reference
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

1 Summary

Historic Environment Projects, Cornwall Council, was approached by Nicola Davies of Capture Energy Ltd in early February 2013 with a request to provide costs for an archaeological assessment of a single proposed 50m to hub (54m rotor diameter) wind turbine. The turbine is proposed for land at Glebe Farm, South Hill near Linkinhorne, mid-way between Bodmin Moor and the Tamar, in the parish of South Hill at OS Grid Reference SX 32784 73281.

The site chosen for the wind turbine lies in an area of farmland originally laid out during the medieval period, and is located at the head of a shallow south-west running valley. The site vicinity is strongly rural and largely unspoilt by modern development. A number of turbine and solar farm applications have been made for sites in the general area, but no such sites have yet been constructed.

There are many Listed Buildings, Scheduled Monuments and designated areas including areas of the Cornish Mining World Heritage Site within the surrounding area, a number of which fall within the zones of theoretical visibility. Much of the surrounding area is covered by AONB, AGSV and other protected areas.

This assessment report consisted of a desk-based assessment, a viewshed analysis (out to a maximum of 15Km) and a walkover survey.

Given the location chosen for the wind turbine, it was considered by English Heritage that there was some potential for negative impacts on the settings of some of the designated sites in the area, particular reference being made to the proximity of the Grade I Listed Buildings of South Hill and Linkinhorne Churches.

Assessment has shown that South Hill Church will be affected by the presence of a turbine at this location, and that Linkinhorne church, although not visible from the turbine site at ground level is likely to be visually affected in terms of views from the church itself, since the moving parts of the turbine would be visible above the tree line. Linkinhorne Round, although not designated, will also be affected because of the relative elevation of its site above the proposed turbine.

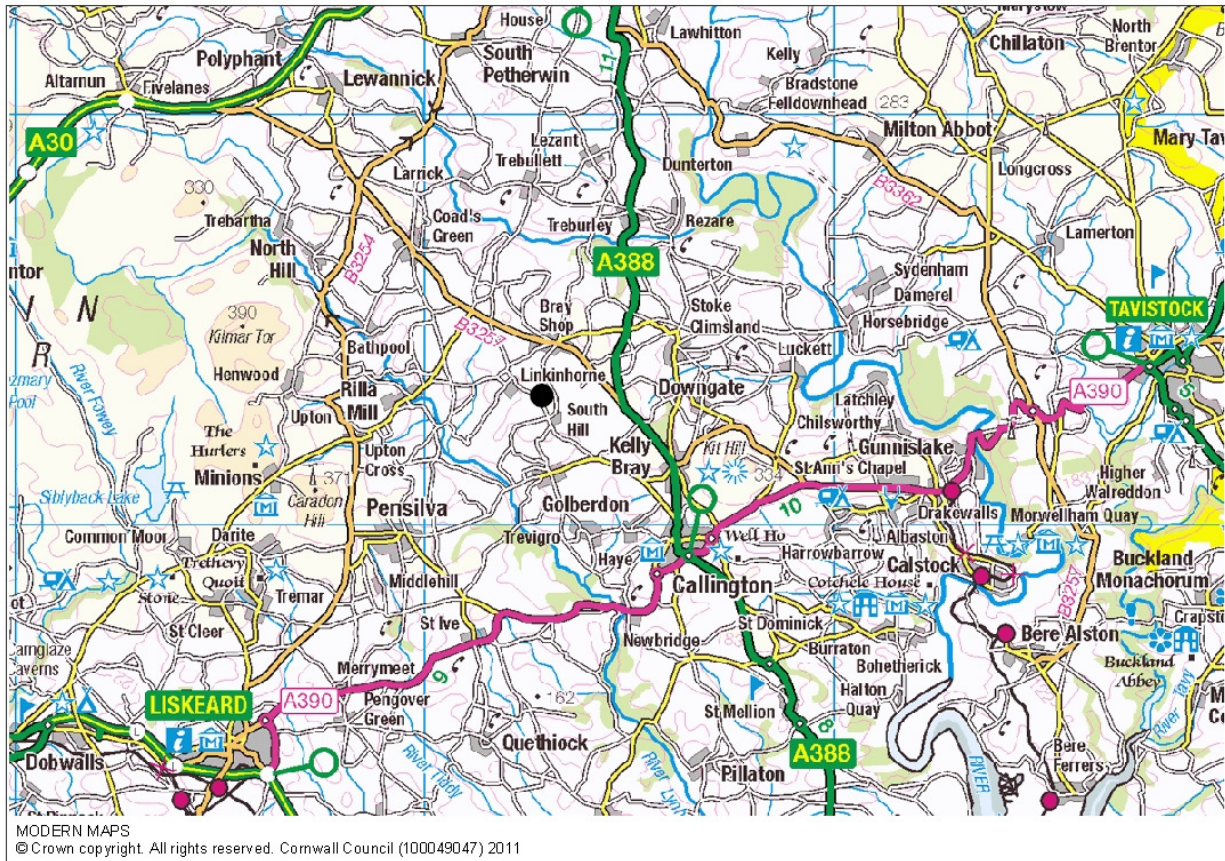


Fig 1 Area location map.

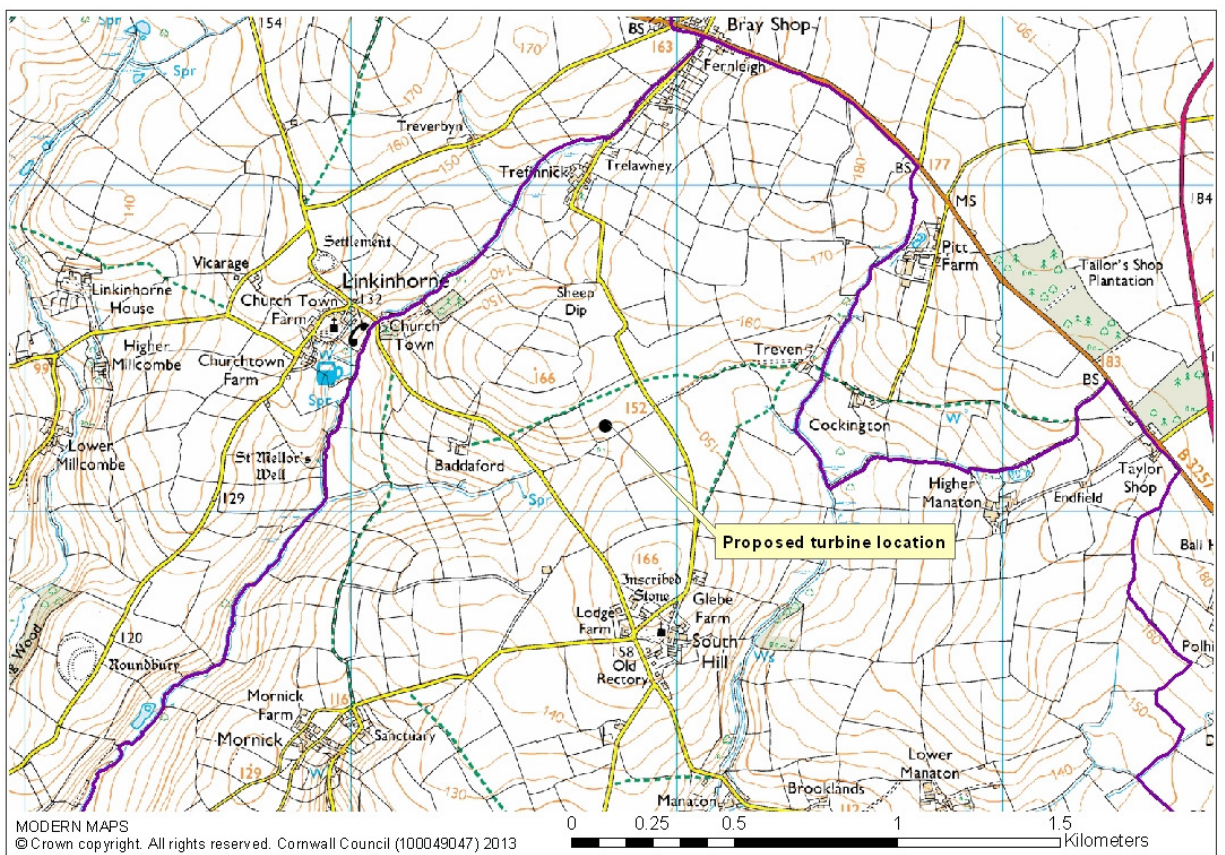


Fig 2 Site map showing proposed turbine location, parish boundaries in blue and public footpaths by green dashes.

2 Introduction

2.1 Project background

Historic Environment Projects, Cornwall Council, was approached by Nicola Davies of Capture Energy Ltd. in early February 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine near Callington, South Hill as part of a proposed planning application (PA 13/00732). This is an area of Cornwall which is currently experiencing a significant number of applications for wind turbines and solar farms. An assessment of the potential for cumulation will have been undertaken as a part of this report. The proposed wind turbine is to be 50m to hub height (54m rotor diameter) wind at a site at Glebe Farm, South Hill near Linkinhorne mid-way between Bodmin Moor and the Tamar.

English Heritage have summarised the considerations which should be taken into account when assessing the archaeological impacts of renewables proposals, including indirect impacts on designated sites, areas and the surrounding landscape. English Heritage has indicated that such impact assessments should also include an assessment of the potential for impacts on buried archaeology, effects on landscape amenity and cumulative impacts. A guidance table indicating recommended ZTV distances in the cases of wind turbines of varying heights is included in this guidance, in this specific instance the recommended ZTV radius being 15Km. Direct and indirect impacts on Scheduled Monuments and Grade 1 and II* Listed Buildings have been considered, together with designated landscapes. Impacts on Grade II Listed Buildings have been assessed out to a 5Km radius from the site.

A letter from English Heritage in response to the initial proposal for a wind turbine at this site included concerns over the proximity of the proposed turbine to Listed and Scheduled sites within the vicinity, particularly with reference to the two nearest Grade I Listed churches at Linkinhorne and South Hill. The relevant letter was sent from English Heritage's South West Office on 21/March/2013, letter reference POO228136.

A screening opinion for the proposal included a recommendation that the scope of the assessment should be guided by a brief produced by the Historic Environment Advice Officer (Central), Mr. Phil Copleston. In this instance it was agreed between Adam Sharpe (Project Manager) and Mr. Copleston that a standard brief could be utilised, but that the Written Scheme of Investigation produced by HE Projects would have to be approved before the study could commence (Appendix 10).

The relevant section of the standard brief guiding such assessments states:

An assessment of the archaeological potential of the site and the potential impacts of the development on surrounding historic assets will be required to provide information in support of a planning application for the proposed development in accordance with the requirements of National Planning Policy Framework paragraph 128.

Cornwall Council Historic Environment Service believes high quality design should play a key role in minimising any adverse effects of renewable energy projects, whether this is directed at the disposition of wind turbines and energy crops in the landscape or the positioning of photo-voltaic cells on historic buildings or within the countryside. Fundamental to achieving high quality design will be a sound understanding of the character and importance of the historic asset involved, whether at the scale of individual buildings and sites or more extensive historic areas and landscapes.

2.2 Aims

The principal aim of the study is to gain a better understanding of the impacts which would result from the construction of a wind turbine on land at Glebe Farm, South Hill near Callington in the parish of South Hill.

The overall project aims are to:

- Establish viewsheds of the proposal site.
- Draw together existing historical and archaeological information about the site and its landscape setting from published and unpublished sources and information on designated and undesignated assets from national and local Historic Asset registers (such as the CSHER, NMR, Heritage Gateway, etc).
- Review and analyse historic map evidence for the site.
- Consider any geotechnical or geophysical data for the site.
- Undertake a site 'walkover' survey.
- Produce short 'statements of significance' for designated historic assets that are potentially impacted on by the current proposals following the initial filtering of the ZTV. Where currently undesignated assets are identified their likely significance should be indicated i.e. 'national', 'regional' or 'local'.
- Inform whether archaeological recording of any extant remains is required.
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains is required.
- Inform whether palaeoenvironmental sampling would be required.
- Identify the construction, use and 'end of life' impacts of the current proposals on designated heritage assets (as listed in the NPPF) and on undesignated historic assets as described in PPS5.
- Follow English Heritage Guidance 'The Setting of Heritage Assets' (2011) to produce assessments of the significance of setting of affected assets and the impacts of the proposals on those settings.

The principal project objective is to produce an illustrated report setting out the range of potential impacts of the proposal, the relative significances of the potentially affected sites and suggestions for suitable mitigation measures.

A further objective is to produce an entry to the OASIS on-line index to archaeological projects.

2.3 Methods

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

Desk-based assessment

A desk-based assessment was carried out to inform the fieldwork stage. This comprised:

- Relevant published sources
- Historic maps, including:
 - Joel Gascoyne's map of Cornwall (1699)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (c1810)
 - South Hill Tithe map (c1840),
 - 1st and 2nd Editions of the OS 25 inch maps (c1880 and c1907)
- Modern maps
- GIS layers curated by Cornwall Council and the Historic Environment, Cornwall Council

Assessment of impacts on setting of heritage assets

Heritage assets intervisible with the sites of the proposed turbine were identified through the creation of a viewshed using GIS software. The methodology employs a 'bare earth' or Digital Terrain Model (DTM) given that features like woodland which may currently obscure views are not permanent features of the landscape. A viewshed was generated for an 'observer point' based on the location of the proposed turbine.

When performing a viewshed analysis, several variables were used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for the observer point. The viewshed was based on an 'observer elevation value' made up of the 'elevation value' or height above sea level of the ground at the observer viewpoint, with additional offsets of 50m and 77mm to represent the height of the hub and the tips of the rotor blades.

These viewsheds were checked on the ground from key sites, whilst significant heritage assets within the theoretical viewsheds were visited to determine intervisibility with the proposed development site, and hence the scale and type of any visual impacts which may affect the setting, as required by English Heritage (2011).

Fieldwork: survey

As directed by the brief, a walkover survey was undertaken within the environs of the site proposed for the wind turbine at Glebe Farm. Sites identified within the desk-based assessment were field checked and their condition noted. Areas of archaeological sensitivity were identified during the walk over survey.

Site visits were made to publicly-accessible potentially intervisible key heritage assets within the area covered by the viewshed zones to truth-check this mapping and to determine the likely scale of impact on these heritage assets of the construction of the wind turbine.

Fieldwork: photographic recording

High resolution digital photographs were taken from the location of the proposed turbine to record the landscape visible from its site, together with any heritage assets contained within it. Where practicable, images were taken from inter-visible heritage assets within the locality to determine the level of visual impact which might be expected from the proposed development. Images back towards the proposed site were taken from significant heritage asset receptors to indicate the likely degree of intervisibility between these heritage assets and the development site and the likely impacts on their settings.

The photo record comprises:

- General views from the site towards viewshed sites and to set the proposed site into its landscape context.
- General views from viewshed sites back towards the proposed turbine site.
- Images including both designated sites and the site of the proposed wind turbine to illustrate how its construction might impact on key views of them.

Creation of site archive

This included:

- Digital colour photographs stored according to HER guidelines.
- Project materials stored according to HER guidelines.
- Completion of an English Heritage/ADS OASIS online archive entry.

Assessment report

The results of the above phases of work have been presented in this assessment report.

A paper copy and a digital (PDF) copy of the report, illustrations and any other files will be deposited with in the Cornwall HER. Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres. These will be held back from public access until the planning application for the proposed turbine has been submitted and the information contained within the report will therefore be deemed to be within the public domain.

Archive deposition

An index to the site archive has been created and the archive contents prepared for long term storage, in accordance with HE standards.

An ordered and integrated site archive has been prepared in accordance with Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006 upon completion of the project. As the project is likely to produce solely a documentary archive this will be deposited with the Cornwall Record Office as well as the Courtenay Library of the Royal Institution of Cornwall.

A summary of the contents of the archive shall be supplied to the HEPAO.

The archiving comprises the following:

1. All correspondence relating to the project, the WSI, a single paper copy of the report together with an electronic copy on CD, stored in an archive standard (acid-free) documentation box.
2. The project archive will be deposited initially at ReStore PLC, Liskeard and in due course (when space permits) at Cornwall Record Office.

3 Location and setting

The site is located in a rural area of east Cornwall at OS Grid Reference SX 32784 73281, between Linkinhorne to the north and South Hill to the south. The wind turbine is to be sited at a height of 150m OD in a rectangular field on the western side of the main road between South Hill and Bray Shop. Soils in the vicinity are recorded as being Denbigh 1 loams over shale, the bedrock being Devonian mudstones and siltstones.

The site is located at the top eastern end of a coombe which runs west towards Baddaford and beyond. Topographically the landscape is undulating, with rounded hills and intervening valleys (see figures 24 to 36). It is quite heavily tree covered, with many tree-lined boundaries and deeply cut country lanes. Open views to the west extend out to Caradon Hill 6.5km on the eastern side of Bodmin Moor, and approximately 5km to the east to Kit Hill. Both of these major landmarks have associated Scheduled Monuments, particularly Caradon Hill. Many other views from the site are, however, obscured by trees and boundaries.

The site proposed for the turbine is recorded in the Cornwall and Scilly Historic Environment Record (HER) as 'Anciently Enclosed Land' (Farmland Medieval): that is, land whose boundary arrangements were reorganised to a substantial degree during the medieval period. It is likely, however, that this land has been used for cultivation and pastoral farming continuously since late prehistory. Lanes are generally deeply cut into the landscape and boundaries are often substantial and lined with mature trees, typical of this Landscape Character Type.

There are Grade I Listed churches at Linkinhorne 878m to the west-north-west and at South Hill 660m to the south-south-east. The National Mapping Programme has recorded cropmark evidence for late prehistoric to Romano-British period rounds (enclosed farming settlements) 542m to the west-north-west, 967m north-west and 1,545m west-north-west around Linkinhorne and 1,4400m north-east at Pitt Farm, whilst the Iron Age Roundbury hillfort is 1,745m to the west-south-west.

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 impacts on the settings of heritage assets (both designated and undesignated) within the viewshed of the proposed turbine site in line with paragraph 129 of the 2012 National Planning Policy Framework (NPPF), sections 16(2) and 66(1) of the Planning (Listed Buildings and Conservations Areas) Act 1990 Chapter 9, and English Heritage guidance relating to the setting of historic assets (2011) and on wind energy and the historic environment (2005), namely:

- Grade I, II* Listed Buildings, Scheduled Monuments, World Heritage Site Areas, Registered Parks and Gardens and Conservation Areas – 15Km radius.
- Grade II Listed Buildings – 5km radius.
- Non-designated heritage assets – 1Km radius.

5 Designations

5.1 International

No international designations apply to the specific site.

Two areas of the Cornish Mining World Heritage Site lie within the surrounding landscape, these being the Caradon Mining District, located between 4km and 8.5km to the west of the site, and the Tamar Valley, lying between approximately 3km and 15km to the east.

There are in addition two Special Areas for Conservation (Phoenix United Mine and Crow's Nest) within the 5-10km zones and a further larger one within the 9-15km zone (Plymouth Sound and Estuaries) from site.

5.2 National

No national designations apply to the proposed development site.

Within a 1km radius two potentially intervisible Scheduled Monuments can be found – South Hill inscribed stone to the south and St Melor's Well to the west (see figure 15). On the 5km radius line a single Scheduled Monument exists at Tokenbury Camp, while in the 5-10km zone a further 20 Scheduled Monuments can be found (the majority of which lie to the west of the site). A further three lie within the 10-15km zone (see figure 12).

The 1km radius zone includes two Grade I Listed Buildings (the Church of St Melor at Linkinhorne to the west and the Church of St Sampson at South Hill to the south) and one Grade II* Listed Building (St Melor's Well) (see figures 15 and 16).

Within the 5Km radius area of the viewshed, the wind turbine would be theoretically intervisible with a further two Listed Buildings – the Grade I Church of St Mary at Callington to the south east and the Grade II* Westcott former farmhouse to the west (see figures 13 and 14).

There are a number of Grade II Listed Buildings (single and grouped) within the 1km zone (these being made up of a telephone kiosk, a tombchest, a cart-shed and a number of cottages), as also within the 5km radius, these including such sites as milestones, boundary stones, cottages and farmhouses (see figures 13 and 14).

The 5-15km radius viewshed intersects four Registered Parks and Gardens at Endsleigh to the north east, Werrington Park to the north, Catchfrench and Port Eliot to the south (figure 20).

There are, in addition, a number of Sites of Special Scientific Interest (SSSI), and a single National Nature Reserve within the 5-15km zones.

5.3 Regional/county

There are no regional/county designated areas within a 1km radius of the site.

There are, however, many designated areas that fall within or partly within the 5km radius zone – two Areas of Great Landscape Value (AGLV); two Areas of Great Scientific Value (AGSV); two Areas of Outstanding Natural Beauty (AONB); two Areas of Great Historic Value (AGHV); many County Wildlife Sites; two Regionally Important Geological / Geomorphological Sites; and a single Historic Settlement (Callington).

5.4 Local

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

5.5 Rights of Way

A right of way runs east to west across the northern side of the proposed wind turbine field (see figure 2), at an approximate 70m distance from the location proposed for the turbine. The footpath does not run across the route of the access track.

This area is not registered as open access land under the CROW Act 2005.

6 Results of desk-based assessment

The proposed turbine will be erected in a rectangular, slightly round cornered field located within land classified as Anciently Enclosed Land of Medieval Farmland type. The field has a gentle west facing aspect and lies at the head of an occasionally spring-fed coombe-like valley (figure 3). The field is at its highest in its north-west, and lowest in its south-western corner. It was shown on the *circa* 1840 Tithe Map, and the 1880 and 1907 OS 25" to a mile maps as a small enclosed area. Today this forms a low lying, damp pocket of ground. The site lies within an area characterised by long-running curvilinear boundaries with interconnecting slightly curvilinear and straighter short boundaries. This patterning is typical of a long-lived medieval field landscape with possible late prehistoric origins.

Associated late prehistoric activity is still traceable through the presence of nearby rounds and enclosures at Linkinhorne, Baddaford, Bray Shop, Pitt and Roundbury, while a Romano-British find spot is recorded at South Hill. It is clear that all of the suitable surrounding landscape would have been farmed or used in late prehistory, the larger river valleys associated with the Tamar and the Lynher, together with the smaller valleys providing sources of timber for building and fuel, access to fishing, water birds and animal watering sites, whilst high ground at Bodmin Moor and around Kit Hill would have provided extensive areas of rough summer grazing and sources of gorse for fuel and bracken for animal bedding, as well as the sites for ceremonial and funerary monuments.

Early medieval activity has survived in the form of remnant field systems and boundaries at Baddaford, Cockington, Pitt Farm, Trefinnick and Mornick, an inscribed stone in South Hill churchyard (figure 32), and a lann at Linkinhorne associated with the church (see photograph figure 33). Linkinhorne, first recorded as *Lynkynhorne* translates as 'Church-site of Kenhoarne' (Padel 1988, 110), or *lann* plus a personal name, but not that of the patron saint (Padel 1985, 142). South Hill (*Suthhulle* in 1270) is an English name, with the pre-fix 'south' to distinguish it from North Hill. South Hill is thought to be a daughter or satellite settlement of North Hill (Padel 1988, 157). The

site proposed for the wind turbine lies within the ecclesiastical parish of South Hill. A number of the settlements in the area have *tre* prefixes such as Trefinnick, Treverbin and Treven, indicating probable pre-Conquest origins as farming hamlets. Further afield ceremonial monuments, many of them Scheduled, are to be found on the higher ground to the east and west, particularly on the eastern side of Bodmin Moor.

The first mapping depicting this area dates to the 17th century, when John Norden's map (drawn up at the end of the 17th century, though not published until 1728, figure 5) depicting the Hundred of 'Easte', showed churches, settlements and principal houses within the district. Joel Gascoyne's 1699 map showed Linkinhorne spelt as *Lingrinkhorne*, while Thomas Martyn's 1748 map similarly showed the principal settlements, churches and family seats of the period.

The field's basic outline remains unchanged from that shown on the 1841 Tithe Map (figure 5), with the exception of the removal of a north to south running boundary which ran across the western side of the field (very close to the site of the turbine itself). Figure 5 shows the field names as recorded in the accompanying Tithe Apportionments. All are in English and most are livestock related, suggesting their relatively late establishment, possibly within an originally larger earlier enclosure.

The 1st and 2nd Editions of the 1880 and 1907 Ordnance Survey 25" to 1 mile mapping (figure 6), shows a largely similar field layout to that existing today. The deeply cut lanes running between South Hill, Linkinhorne and the other churchtowns and farming hamlets of the area attest to the long-lived character of this landscape and layout.

The largely pastoral character of this agricultural landscape so strongly suggested by the Tithe Map field names (figure 4) continues today and is clearly visible from aerial photographs of the area (see figure 9). Figure 9 shows Baddaford, Linkinhorne, Treven, Cockington and the northern tip of South Hill.

The analysis of historic aerial photographs undertaken as part of the English Heritage National Mapping Programme (figure 19) suggests that more in the way of field boundaries/remnant field systems and small enclosures formerly existed within the area, though have now been removed. These could potentially date from either the medieval or the later prehistoric periods and may well have associated residual scatters of finds (see the Romano-British find spot at South Hill).

7 Results of site walkover

A site walkover was undertaken on 15th May 2013. The weather was bright, becoming cloudier as the day progressed.

The field in which the turbine and access track will be sited was under lush pasture with a mix of clover, dandelions, dock, etc. Some surface disturbance around the eastern corner at the entrance to the field from the road, near the animal watering tanks, showed that past ploughing activity has disturbed underlying killas and quartz. Occasional large quartz blocks within and placed against the southern boundary suggests ongoing field clearance of ploughed up stone.

The field is surrounded by large earth and stone boundaries which had an average 2m width at their bases and a height varying between 0.6m and 1.25m. Vegetation on the hedges varied, including a range of flowering plants, well-maintained hawthorn growth and tall mature trees. Wooden post and barbed wire fencing rendered the boundaries animal proof. The earth and stone fabric of each boundary has seen significant collapse, burrowing, tree root damage and probable past livestock erosion. They are at the moment suffering from benign neglect. Occasional past repairs were visible, but some of this has since been dislodged.

The field is highest in the north-west corner, beyond which lies slightly higher ground and a scattering of boundary trees (figure 25), significantly reducing views across to Linkinhorne. The lowest part of the field lay to the south-east. This, at the time of

survey, was very damp, though there was no surface water. This corner of the field is at the head of a coombe-like depression which extends west from the site towards Baddaford.

There were no impediments to survey.

- Looking due west from the site it was clear that much of the Caradon Hill and Minions area directly overlooks the site (figures 24 and 33), because of the much higher relative height of Caradon Hill (c370m), despite its 6.5km distance. Closer to the site at lower lying Baddaford, trees and boundaries largely rendered the site invisible.
- To the north-west, the confluence of similar boundaries in conjunction with the natural slope of the land again significantly limited views out towards Linkinhorne, which is itself shrouded in an attractive swathe of mature trees associated with ancient boundaries, by the main lane linking Linkinhorne to South Hill and by general garden/landscape planting.
- Looking due north from the site, views are greatly constrained by the rise in ground level and by the northern field boundary.
- To the north east of the site, the views are more extensive and the ground is often higher, but trees and boundaries, particularly those lining the South Hill to Bray Shop road limit views of closer areas of the landscape.
- To the due east is the South Hill to Bray Shop road, with the hamlets of Treven and Cockington. Here, trees planted around both settlements, particularly at Cockington, restrict views from ground level.
- To the south-east Kit Hill can clearly be seen rising on the horizon. Close to its base is Callington, which is barely visible from the site.
- South Hill is due south of the site. Trees block many views in this direction, but the Church tower is visible from the proposed turbine location, whilst almost the whole height of the church tower is visible from the higher north-western corner of the field.
- To the south-west is the settlement of Mornick, which is shrouded in trees associated with medieval boundaries and intervening tree lined lanes.

8 Results of viewshed analysis

Despite the height of the proposed wind turbine, the combination of the topography of the site and its surrounding tree and boundary-rich landscape, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be constrained in some directions. The ZTV has been mapped to a distance of 15Km from the site, showing that large areas of ground to the south, south-east and south-west beyond 7.5km from site will not be intervisible with any portion of the turbine. In zones closer to the site, the visibility of the turbine will diminish with distance, and will, at many local sites, be blocked by intervening buildings within settlements or farmsteads or by mature groups of trees (albeit on a temporary basis, should such trees subsequently be felled).

8.1 1 km radius ZTV

See Figures 15, 16, 17, 18 and 19

Given the nature of the local topography and the height of the proposed wind turbine, the ZTV suggests that the turbine mast or blades will be visible from 90-95% of this zone, with the exception of two small pockets to the south and east of Linkinhorne and South Hill. The zone is predominantly made up of medieval farmland with pockets of Modern Enclosed Land, and contains a number of elements indicative of long term occupation in the vicinity, including designated and non-designated sites. The zone

includes Grade I, II* and II Listed Buildings and two Scheduled Monuments comprising St Melor's Well near Linkinhorne and an inscribed stone at South Hill. It is likely that there will be some visual impact on settings for some features within this 1km zone, particularly in relation to South Hill Church, and to a lesser extent to Linkinhorne church.

8.2 1km to 5km radius ZTV

See Figures 12, 13 and 14.

The wind turbine will be theoretically visible from around 40% of the 1-5km radius area surrounding the proposed site. The ZTV is severely limited by local topography, particularly along valleys and hillsides not facing the site. A large pocket of land to the east, as well as areas to the north and south will not be visible from the site. However, two patches of north-east to south-west aligned ground to the south east of the turbine will be intervisible with it, as will be a large but patchy swathe of land to its west.

Beyond 2km from the site, the area of potentially intervisible land significantly reduces, particularly to the east (around Downgate), to the north and some areas to the south. To the west, around Bathpool, Rilla Mill, Upton Cross and Pensilva, a larger area will potentially be intervisible with the turbine, but here distance, along with potentially temporary landscape planting, woods, vegetated boundaries and the built environment will all help to diminish the potential visibility of the site. Around some topographical features such as the River Lynher Valley to the west of the site and some hilltop locations and east facing slopes there will be views of the proposed turbine, but here again trees, planted boundaries and buildings etc will often severely limit intervisibility.

This zone contains a number of potentially intervisible Listed Buildings and a single Scheduled Monument at Tokenbury Camp. It also contains parts of the peripheries of two World Heritage Sites, and one Conservation Area at Rilla Mill. No Registered Parks and Gardens are affected within this zone. The edges of areas designated as AONB, SSSI and AGHV just extend in to the 5km zone, as does Callington's Historic Settlement.

8.3 5km to 15km radius ZTV

See Figures 12, 13, 20, 21, 22 and 23.

The wind turbine will be theoretically visible to a maximum of 10% of the 10-15km zone. The actual 15km radius extends from Tavistock, Devon, in the east, to Bolventor in the west on Bodmin Moor, and from just over 3km north of Launceston to just north of Saltash in the south-south-east. Areas beyond 10km are considered to be unaffected by the turbine proposal because of distance, although an argument for a potential cumulative affect (given the number of turbine and solar farm applications for this area) could perhaps be made for the 10-15km zone.

The ZTV suggests that only a very small portion of this area will be intervisible with the turbine. The west facing slopes of the River Tamar located to the east of the site, and valley slopes facing east from the River Lynher in the west are potentially intervisible, as are occasional valley slopes and hill tops to the north, but in general the patterning of the ZTV is very patchy and largely absent to the south-west, south and south east, and is very patchy to the north, north-west and north-east.

A notable concentration of Scheduled Monuments exists in the western part of this zone (see below). The 5-15km ZTV also includes parts (often small parts) of two areas of the Cornish Mining World Heritage Site, Registered Parks and Gardens, Sites of Special Scientific Interest, Conservation Areas, areas of landscape designated as AONB, AGLV and AGHV, as well as the Historic Settlement of Launceston. The Historic Settlement of Liskeard does not fall within the ZTV.

8.4 Scheduled Monuments within the 15 km radius ZTV

See Figure 12.

There are 22 Scheduled Monuments within 15km of the proposed wind turbine site at Glebe Farm which fall within its ZTV. These sites are listed below in broadly chronological order. Most of the prehistoric sites are on Bodmin Moor:

- 1 Neolithic long cairn, prehistoric field systems, linear boundaries and medieval enclosure
- 4 cairns (1 banked, 1 platform, 1 ring, 2 round)
- 1 pair of round barrows
- 1 single barrow
- 2 enclosures with hut circle/s
- 1 group of 3 prehistoric adjoining boundaries
- 2 hut circles with boundary wall
- 4 Prehistoric/Romano-British enclosures/hillforts/'camps'
- 1 Early Medieval transhumance hut
- 1 pair of transhumance huts
- 1 Early Christian inscribed stone (photo 32)
- 1 wayside cross
- 1 holy well
- 1 Post-Medieval tin and copper mine set in a Medieval field system.

Some of these potentially intervisible Scheduled Monuments consist of structures such as wayside crosses, inscribed stones, holy wells, whose settings are inherently very local and were never designed or intended to be viewed from a distance. Two Scheduled Monuments of this 'local' type are within a 1km radius of the turbine site – St Melor's Well located to the west of the proposed turbine and the inscribed stone in South Hill churchyard located to the south.

In contrast, hillforts, barrows, standing stones and stone circles were intended, when constructed, to have far-ranging settings. The vast majority of these sites lie between 5km and 7.5km west of the site on Bodmin Moor, with the exception of Cadson Bury Hillfort and two barrows on Viverdon Down located 5-8km to the south, and Dunheved Cross, Trethinna Camp and Kernick Barrow located 10-15km to the north.

Although there is likely to be a degree of intervisibility between these sites and the proposed wind turbine, in most cases views will be relatively distant, in some partial and in others locally blocked by vegetation or structures. Given the topography of the site selected for the wind turbine, strongly negative impacts on the settings of most of the Scheduled Monuments are not expected to occur.

8.5 Registered Parks and Gardens within the 15km radius ZTV

See Figures 20.

Although parts of some Grade I and II Registered Parks and Gardens fall within the potential ZTV, where they do the area affected is only very limited and peripheral. Port Eliot, Catchfrench and Werrington Park are all in excess of 10km away from the turbine site, while Endsleigh lies between 5km and 10km from the site. In all cases the proposed turbine, where visible will be barely perceptible as a landscape object. No negative impacts on the setting of these designated landscapes are, as a result, likely to occur. The four parks and gardens are:

- Endsleigh – Grade I
- Port Eliot – Grade I
- Catchfrench – Grade II
- Werrington Park – Grade II

Note: There are no Registered Battlefields within 15Km of the site proposed for the wind turbine at Glebe Farm.

8.6 Grade 1 and II* Listed Buildings between the 5-15km radii

See Figure 13.

There are 41 grade 1 and 71 grade II* Listed Buildings which fall in the 5km to 15km zone around the site. These include a variety of buildings, which take very different forms and serve very different functions. Building types range from the religious to industrial, everyday domestic and settlement-related sites to the more grandiose and regionally important sites such as Cotehele House and Launceston Castle keep, gatehouses and associated buildings.

The majority of these sites do not fall within the ZTV, and as such the turbine would not have a direct view of or from them. Of those that do fall within the ZTV, most are sufficiently distant for the single turbine to have little or no significant impact.

Grade 1

- 16 - churches
- 1 - church yard monument
- 1 - chapel
- 7 - bridges
- 2 - Cotehele House and associated retainers court
- 6 – manor houses, farmhouses and terraced houses
- 2 - wells
- 2 - gate piers
- 3 - fortification features (Launceston Castle, North Gatehouse and South Gate)
- 1 - barn
- 1 - cartshed

Grade II*

- 7 – churches
- 1 – priory remains
- 3 – chapels and chantrys
- 4 - stone crosses
- 3 - statues, monuments, mausoleum
- 30 – farmhouses, town houses, barton, terraced houses
- 2 - gate piers/garden railings and folly
- 8 – bridges and viaducts
- 2 – hotel and inn/shop
- 2 – watermill and corn mill

- 2 – fortifications (Pentillie Castle and Launceston town walls)
- 3 – threshing barn, barn, dovecot
- 2 – guildhall and clock tower
- 2 – industrial smelting works and saw mill

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

8.7 World Heritage Sites within the 5km radius ZTV

See Figure 20.

Two areas of the Cornish Mining World Heritage Site extend out from beyond the 3km radius towards the 15km zone. These are:

- The Caradon Mining District
- The Tamar Valley

The Caradon Mining District, located to the west of the site is largely contained within the 5-10km zone and lies on the eastern edge of Bodmin Moor. Much of the eastern edge of this area lies within the ZTV, and because of its relative height will probably have clear views of the whole of the proposed turbine.

The Tamar Valley area covers a large swathe of land to the east of the site, although much of the designated area does not fall within the ZTV. Kit Hill is distant from, but will be clearly intervisible with the site.

8.8 Conservation Areas within the 5km radius ZTV

See Figure 21.

Four conservation areas fall within, or are touched by, the 5km radius. The conservation areas are in order of proximity:

- Rilla Mill
- Stoke Climsland
- Callington
- Minions

The Minions area is almost entirely within the 5-10km zone; only a thin sliver of land at its extreme eastern edge will fall within the ZTV.

The remaining three areas are all within a 5km radius of the site. The entirety of the Callington conservation area falls within the ZTV, close to the 5km radius line. The distance between Callington and the site is sufficient to reduce the visual impact of the turbine for most of the settlement. This is further reduced by the density of Callington's historic core of buildings, many of which are shielded from views of the site by peripheral buildings blocking views outwards – as for example was found at Callington's St Marys Church, where buildings beyond the western edge of the churchyard, along with other features that were further afield blocked direct views to and from the church with the site.

Stoke Climsland and Rilla Mill are both closer to the site and are well within the 5km zone, although both are largely outside the ZTV.

8.9 Grade 1 and II* Listed Buildings within the 5km ZTV

See Figure 15, 16 and 20.

There are 5 Grade 1 and II* Listed Buildings within 5Km of the proposed wind turbine site which fall within the ZTV. These are listed below:

- Church of St Melor, Linkinhorne – Grade I
- Church of St Sampson, South Hill – Grade I
- Church of St Mary, Callington – Grade I
- St Melor’s Well – Grade II*
- Westcott Farmhouse– Grade II*

Three of these buildings lie within the 1km ZTV around the site – the Church of St Melor, the Church of St Sampson and St Melor’s Well (which is also a Scheduled Monument). The remaining two sites lie at 3.5km (Westcott Farmhouse) and almost 5km (Church of St Mary) from the site proposed for the turbine.

Of these sites Linkinhorne and South Hill churches were judged to be potentially the most vulnerable to impacts on their settings because of their proximity to the proposed turbine and the original desire for them to be visible markers within the landscape. Linkinhorne Church is not clearly visible from ground level at the site proposed for the wind turbine because of a combination of trees and boundaries and the undulating intervening landscape (figure 33 and 34). The church could not be spotted from the site from ground level (figure 25). Callington Church is also not clearly intervisible from ground level because of a combination of distance, intervening buildings, trees and boundaries. South Hill Church tower was clearly intervisible from the site from ground level.

8.10 Grade II Listed Buildings within the 5km radius ZTV

See Figure 14.

Within the 5km ZTV radius zone there are 67 grade II Listed Buildings of various type and date. These are as follows:

- 5 boundary or borough stones
- 8 milestones
- 1 guide stone
- 4 barns/cartshed
- 12 farmhouses
- 2 gateways/gate piers
- 3 manors and associated structures
- 10 houses (including smaller cottages/terrace houses)
- 1 mansion house
- 1 well house
- 9 churchyard monuments/monument groups, tombchests and related structures
- 1 Quaker Meeting House
- 5 shops/commercial buildings
- 2 inns/former inns
- 1 telephone kiosk

- 1 Women’s Institute Hall
- 1 vestry and lock-up cells

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

Impacts on the settings of the majority of these grade II Listed Buildings are judged likely to be neutral, given that many were only ever designed to have localised settings, these including guide, mile and borough stones, chest tombs and churchyard monuments, a telephone kiosk, commercial buildings and lock-up cells. Others buildings such as houses, farmhouses and mansions may have more extensive and sometimes designed settings, frequently with associated with formal planted areas, though many are surrounded by deeply cut lanes and tree lined boundaries.

Impacts on potentially sensitive Listed Buildings have been selectively evaluated up to 2Km from the site. The majority of these are mile and boundary stones, but there will be some limited visibility through or over trees of the upper part of the turbine from Treven, Mornick and Lower Manaton (figure 15).

Within 1km of the site there are a number of Grade 1, II* and II Listed Buildings. All of these have the potential to be adversely affected by the turbine. One group located in and around St Melor Church (figure 16) appeared from the mapped ZTV to be particularly vulnerable to visual impact, but on visiting were found to be in large part likely to be shielded from view by intervening boundaries, lanes, trees and occasionally by later agricultural buildings. Nevertheless, the substantial height of the wind turbine, its colour (white) and the movement of its blades are likely to make it a distinctive feature within the local landscape, and there is the potential for it to intrude into key views of some designated sites and structures.

8.11 Historic Environment Record sites within the 1km ZTV

See Figures 17, 18 and 19.

The ZTV mapping suggests that at least 90% of the landscape within a 1km radius of the 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 36 intervisible sites of all dates. These often undesignated sites include:

Prehistoric

MCO7568 - Baddaford - Enclosure/ round?

MCO7668 - Bray Shop - Round?

MCO8180 - Linkinhorne – Round (see Figure 35)

Romano-British

MCO1352 - South Hill - Findspot

Early Medieval

MCO21388 - Baddaford - Building

MCO23445 - Linkinhorne – Lann (see Figure 33)

MCO39587 - Baddaford - Field boundary

MCO39588 - Linkinhorne - Field boundary

MCO39589 - Baddaford - Field system

MCO39592 - Linkinhorne - Streamworks

MCO39593 - Cockington - Field boundary

MCO39594 - Cockington - Field boundary

- MCO39596 - Pitt Farm - Field system
- MCO39597 - Trefinnick - Field system
- MCO7175 - South Hill - Inscribed stone (a Scheduled Monument, see Figure 33)

Medieval

- MCO14036 - Cockington - Settlement
- MCO17883 - Treven - Settlement
- MCO46189 - South Hill - Architectural fragment
- MCO46191 - Linkinhorne - Cross
- MCO47633 - Baddaford - Architectural fragment/farmhouse settlement
- MCO47648 - Treven - Architectural fragment, barn, farmhouse
- MCO47672 - Trefinnick - Architectural fragment, chapel?
- MCO5485 - Linkinhorne - Cross head?
- MCO5784 - South Hill - Cross? (field name)
- MCO5785 - South Hill - Cross slab?
- MCO6365 - Linkinhorne - Church (Grade I Listed, see Figures 33-34)
- MCO6433 - South Hill - Church (Grade I Listed, see Figures 30-31)
- MCO7101 - St Melor's - Holy Well (Grade II* Listed as well as Scheduled)

Post Medieval

- MCO39566 - South Hill - Quarry
- MCO39585 - Linkinhorne - Quarry trackway
- MCO47634 - Baddaford - Settlement
- MCO47646 - South Hill - School
- MCO47647 - South Hill - Coach House
- MCO47649 - Treven - Cider Mill/settlement
- MCO47671 - Cockington - Settlement
- MCO47673 - Trefinnick - Granary, Horse Engine House

Sites for each period tend to have a distinct character. The prehistoric sites are entirely composed of rounds/enclosures, the Romano-British site is a findspot and the early medieval sites are predominantly field system related. The medieval sites are largely religious or (occasionally) domestic in character, while the post-medieval sites tend to be settlement or 'work' related. As a whole these sites form three dense groups – to the east associated with Treven and Cockington, to the south associated with South Hill and to the west associated with Baddaford and Linkinhorne.

Given the nature of these sites, and the undulating topography, in conjunction with the density of tree and bush topped boundaries, the proposed turbine will have only a limited visual impact on the majority of their settings. However, it should be borne in mind that the removal of trees or boundaries in the area would potentially have a very significant impact on the intervisibility between these sites and the proposed turbine. Almost without exception all lanes in the area are either deeply cutting or flanked by considerable sized and vegetated boundaries, rendering the proposed wind turbine site generally invisible from public access routes, except through occasional gateways.

9 Field verification of ZTV

See Figures 11, 12, 13 and 14.

The viewshed mapping and potential impacts were, wherever possible (given constraints on public access) ground checked from a number of locations, including sites at, adjacent to or overlooking South Hill, Linkinhorne and Baddaford within the 1km ZTV, and at Minions, Caradon Hill and around Henwood (south of North Hill) where a number of Scheduled Monuments lie to the west of the site within the 10km ZTV.

At selected accessible designated heritage sites the potential visibility (and proportional visibility) of the proposed turbine was considered. Views out from the site towards key heritage assets were checked from the application site itself. Though true levels of intervisibility were impossible to determine from ground level given that the turbine has not yet been constructed, 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 back towards the site, and from the site towards them. Whilst views from the surrounding high ground allowed the location of the proposed wind turbine to be determined within the landscape (as from Caradon Hill), in the lower lying ground (for example nearby Baddaford, Treven and Cockington) field boundaries, woods and other tree plantings blocked views back towards it; within settlements, groups of buildings and mature trees and shrubs also blocked many views towards the site. The visibility cut-off imposed by the local topography suggested by the viewshed mapping was confirmed, though from ground level some areas of suggested intervisibility were closed out by tree-lined lanes and boundaries (as in and around Linkinhorne).

Field verification largely confirmed the viewshed mapping. From ground level the areas of intervisibility extend out across about half of the 1km zone; reaching out to the west (6.5km) in a finger-like pattern up towards Bodmin Moor; to the south-east (5km); and to the south (1km) and the north-east (about 1.5km). The loss of some man-made structures and/or the felling of trees and woods would significantly increase ground level views out from the proposed turbine location. Walking up to the highest part of the field, in the north-west corner did increase the range and clarity of some of these views – particularly those to the south and east, but views due north remained constrained by the nearby boundary and by topography.

Very patchy pockets of intervisibility were mapped within the 15km zone to the north and east, but sites that fall within this zone are too far from the turbine for a significant impact on their settings to occur. In general most sites beyond a 2-3km distance from the turbine will not be majorly affected.

10 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.

10.1 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.*

10.2 Former Cornwall Structure Plan

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

10.2.1 Policy 1

'Development should be compatible with:

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

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

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

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

10.2.2 Policy 2

Throughout Cornwall, development must respect local character and:

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

10.3 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.

11 Likely impacts of the proposed development

11.1 Types and scale of impact

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

- **Types of impact, construction phase**

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

- **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 (77m), 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.

11.2 Scale and duration of impact

The impact 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.

- **Potential and residual impacts**

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 11.3, 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 12.

11.3 Assessment of impact

11.3.1 Impacts on designated sites in the 5-15km zone

Impacts on the settings of designated heritage sites between 5km and 15km from the proposed turbine site have been assessed as **neutral** to **negative/minor** overall. This grading is based on a combination of distance, site characteristics, importance and level of visibility. The visual impacts will be **temporary and reversible**.

- A dense group of Scheduled Monuments of various dates and type (see section 7.4), lie between 5km and 7.5km to the west of the site (see figure 12). These have been given a group impact grading of **neutral** to **negative/minor** depending on probable intervisibility. The long cairn and barrows (see above), were when built intended and designed to dominate the local landscape, and as such any modern dynamic object set on a tall tower would visually diminish their original setting. However, the distance of these monuments from the proposed turbine reduces this impact significantly. Had they been within the 5km zone this grading would have been considerably increased. Figure 36 shows the view across the whole area of the proposed turbine site from immediately adjacent to Caradon Hill. Figure 24 shows Caradon Hill from the wind turbine site.
- Grade I and II* Listed Buildings within this zone (see figure 13) largely fall outside the ZTV, this including those within Launceston, Calstock and Liskeard. Others are too far from the turbine for a negative impact to occur, and as such they have been given a **neutral** grade, in part because of the density of intervening trees, boundaries and lanes etc., and in some cases the blocking effects of nearby structures. However, there is an exception at Trecarrell Manor which is a Grade I Listed Building 5km to the north of the site and within the ZTV. This Impacts on this designated building have been graded **neutral to negative/minor**, given that features which potentially block intervisibility are potentially temporary, and because, should it subsequently become visible from Trecarrell Manor, the Glebe Farm turbine would increase the cumulative effect of any other turbines visible from this site.
- While there are a number of grade II Listed Buildings (see figure 13) within the 5-15km ZTV, many are shielded from view by trees, boundaries or other buildings and have relatively limited settings. In addition, increasing distance from the proposed turbine will reduce any impact to **neutral**.
- The proposed turbine will have only a limited impact on designated areas. Sections of Registered Parks and Gardens barely exist within the ZTV. Two areas of the Cornish Mining World Heritage Site fall within the area. Almost half of the Caradon District area will fall within the ZTV (see figure 20), although it is likely that most parts of the affected area will be shielded from views of the turbine via intermediate tree and boundary lines or by built structures. The Tamar Valley area has only approximately 10% of its area within the eastern part of the ZTV, and much of this lies in excess of 7.5kms from the proposed turbine site. Because of the distances involved and the likely piecemeal visibility of the site, the potential visual impact of the turbine on the setting of the WHS has been graded as **neutral**, few sites within the area being likely to be more majorly affected even following the loss of any temporary blocks to intervisibility, the potential impacts on these being **negative/minor**.

11.3.2 Impacts on designated sites in the 1-5km zone

Impacts on the settings of designated sites within the 1km to 5km zone of the site have been graded as borderline **negative/minor** overall. This grading is based on a combination of distance, site characteristics, importance and level of visibility. The impacts have been assessed as **temporary and reversible**.

- One Scheduled Monument lies within the 1-5km ZTV. Tokenbury Camp lies just within the 5km radius zone, to the south-west of the proposed turbine (figure 12). Because of its distance from the turbine, the impact on its setting has been graded as **negative/minor**.
- One Grade I Listed Building lies within the zone at Callington (St Marys church), close to the 5km radius (see figure 14). Because of its distance from the turbine, and the fact that buildings and trees block all intervisibility, the setting impact has been graded as **neutral**.

- Two Grade II* Listed Buildings also lie within this zone, Westcott Farmhouse to the west and Stoke Climsland Church to the east. Both lie on the peripheries of patchy areas of the ZTV, 3.5km away from the proposed turbine site. Given the combination of their significance and their distance from the turbine, the potential impact for each has been carefully considered. For Westcott, trees and hedges appear likely to render the wind turbine invisible from the site, whilst a visit to Climsland Church showed that although the approximate area would experience some degree of intervisibility the field proposed for the wind turbine was not visible from ground level, though the turbine itself might be. Both have been graded as borderline **neutral - negative/minor**.
- A number of Grade II Listed Buildings lie within the 1-5km ZTV (see figures 13 and 14). Within the 3km zone approximately a third are milestones, boundary and parish stones, and the majority of the other structures are farmhouses (for example Lower Manaton to the east and Mornick to the south-west, barns and gate piers). These have limited or very limited settings and the impacts have been graded as **neutral – negative/minor**. Many of the Listed Buildings in this zone will be in part or in whole shielded from views of the wind turbine by trees, vegetated boundaries and by undesignated buildings.

11.3.3 Impacts on archaeological sites within the 1km zone

Impacts on the settings of designated and non-designated sites within the 1km zone of the site have been broadly graded as **negative/moderate**, with the effect on South Hill Church recorded as being likely to be **negative/significant**. This grading is based on a combination of distance, site characteristics, importance and level of intervisibility or the likelihood that the wind turbine will intrude into key views of the designated sites. The impacts will be **temporary and reversible**.

- There are two Scheduled Monuments (see figure 15) within 1km of the proposed turbine site. These are St Melor's Well to the west of the turbine site and South Hill inscribed stone (figure 33) to the south in South Hill Churchyard. Both of these sites were always intended to be locally visible, locally accessible sites with no requirement to be visually dominating features within the wider landscape. The construction of the turbine would have a **negative/minor** impact on the setting for each of these monuments because of the physical proximity of the turbine, which is out of character with their original local character and landscape setting. In both cases the removal of intervening tree, boundary and building blockages to their inter-site visibility with the turbine would increase that visual impact rating to **negative/moderate**.
- There are two Grade I Listed Buildings in the 1km zone (see figure 14 and 16), the Church of St Melor at Linkinhorne to the west (figure 33), and the Church of St Sampson at South Hill to the south (figures 30 and 31). All churches were originally built with the intention of them being dominant landmarks within their landscape setting, visually linking communities. The construction of a wind turbine, with its moving components will significantly reduce the intended visual impact of these sites within this zone, whilst cumulative effects may result where there are other turbines within the local landscape. South Hill church tower is partly visible from the site, and entirely visible from the upper north-western corner of the field (the height of which is likely to broadly equate with the hub height of the turbine). The impact has as a result been graded as **negative/significant**. Linkinhorne Church could not be clearly seen from the site, although the turbine blades are likely to be visible and may intrude into views of and views from the church. As a result the impact for this site has been graded as borderline **negative/minor-negative/moderate** due to proximity.
- A number of Grade II Listed Buildings (see figure 14 and 16) exist within the zone, these include a farmhouse, gate piers, churchyard monuments and a telephone kiosk. The visual impact of the turbine on these sites has been graded

as **negative/minor**, although views between Treven farmhouse and barn and the site are vulnerable to tree removal, in which case the turbine would become much more visible. Most of these sites have only ever had a very limited range of designed visibility from these structures. The associated gate piers were designed to impress as an approach from the road, but not as dominating skyline or landscape features. Similarly the phone box in Linkinhorne has only a local setting.

- Undesignated sites (see figures 17 and 18) recorded within the HER include three prehistoric rounds/enclosures, one Romano-British, 11 early medieval, 13 medieval and eight post-medieval sites. These are judged to be of local and/or borderline regional importance. The stone crosses, for example have either been moved or are fragmentary/missing (Langdon 2005). This density of sites clearly shows the long-term duration of settlement and land use within this zone and indicates the potential for as yet unknown sites of all dates and character to exist below ground. The impact of the turbine has been graded as **negative/minor** for the settings of these sites.

One exception to this is the apparently well preserved Linkinhorne Round (figure 35), which, because of its height overlooks trees, boundaries and north-east Linkinhorne itself, with clear views out towards South Hill Church. Much of the turbine will be visible from the site, and it has as a result been graded **negative/moderate**, despite lying a kilometre away from the site. Although the site is undesignated, it has been judged to have national importance by virtue of its equivalent importance to other sites of this type in Cornwall which have been designated as Scheduled Monuments.

11.3.4 Direct impacts on archaeological sites within the development area

There is the potential for physical damage to occur during the construction phase to below ground archaeology in the area of the turbine, cabling or access track. Historic mapping confirms that at least one removed probable medieval field boundary underlies the turbine location. The boundary was originally part of a small number of narrowly spaced, parallel lined fields and boundaries. It is shown as extant on the c1841 Tithe Map but had been removed by 1880 (see figures 4 and 5) and is likely to represent one of the boundaries formerly defining the medieval strip fields located here. The impact of the proposed turbine's construction on the removed boundary is graded as potentially **negative/moderate**, based on the fact that it will un-questionably be destroyed within the area of construction works, (making the impact both **permanent and irreversible**), but that the portion which will be lost will constitute only a small portion of the original. The potential for soil creep in the area, with particular regard to the low-lying south-western corner of the field may have sealed remains, which could just possibly have significance for semi-waterlogged deposits. Similarly the presence of large quartz blocks in/on the southern boundary might imply sub-surface or ploughed out features susceptible to disturbance during works. Geophysical survey within the proposed development area would greatly assist in determining potential direct impacts on sub-surface archaeology at this site.

Note: In addition the National Mapping Programme has plotted a number of sites and anomalies within the 1km zone (see figure 19), a number of these lying only half a kilometre away. These include a small 'C' shaped enclosure located between Linkinhorne and the proposed turbine, and field system elements at Baddaford. This suggests that there is the potential for other unknown features to exist within the immediate area. Scales of impact will vary with the degree of significance of individual sites or features below ground and within the construction area. They would also vary according to the proportion of the site affected.

11.3.5 Impacts on Historic Landscape Character and other landscape designations

A 77m high to blade tip wind turbine installation at Glebe Farm can be predicted to have a negative impact on the local landscape in terms of its historic and natural character. This negative impact will persist throughout the operational phase of the turbine, but will cease following its end of use and subsequent dismantling.

- There will be some significant visual impact on the Historic Landscape Character (HLC) of the area, characterised as formerly Anciently Enclosed Medieval Farmland (figure 7). The turbine's visibility within the ZTV will vary with topography, distance and intervening obstacles. Within the 1km radius it is graded as **negative/moderate**. This grading will reduce with distance from the site.
- No landscape designations cover the landscape within the 1km ZTV. However, a considerable number of significant landscape designations extend, although sometimes only peripherally, into the 5km ZTV. These include the Historic Settlement of Callington, plus areas of AONB, AGHV, SSSI, and Conservation Areas (see figures 21, 22 and 23). Areas of AGLV areas are within the 5-15km zone of the ZTV.

11.3.6 Potential cumulative impacts

Throughout this report impacts have only been assessed for the single turbine proposed, but it is known that a number of applications are being considered within the surrounding area for the construction of both solar farms and other wind turbines. As a result it is likely that some degree of cumulative impact will ensue.

12 Mitigation strategy

In a case where the finalised site design would seem likely to result in unavoidable physical impacts on below-ground or above ground sites (whether designated or not), 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.

At this site there is the possibility that as yet unrecorded remains exist below ground, which may be directly impacted upon by the proposal to construct a wind turbine with associated cable trenches and access track at this location. A range of means to mitigate against 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.

Geophysical survey

The Historic Environment Planning Advice Officer may require a geophysical survey of the proposed site to provide sufficient information to determine the potential for sub-surface impacts on archaeological features before a recommendation for the granting of planning permission could be made.

A geophysical survey would be intended to locate any major sub-surface anomalies such as archaeological pits, ditches, floor surfaces, burnt deposits or stone built remains such as walling. With archaeological interpretation, the resulting plans of a geophysical survey can be very useful in predicting potential significant remains, allowing for the re-drafting of development plans in order to minimise damage or to put in place plans for dealing with the potential costs of excavation and post-excavation works.

A geophysical survey can also usefully identify more recent features such as sub-surface cables and water pipes, allowing for either avoidance through re-location of the turbine or particular care during works in the case of anomalies lying close to the proposed works.

Watching brief

The Historic Environment Planning Advice Officer may require an archaeological watching brief, which would be undertaken during all topsoil removal within the area of the turbine footprint and the access track.

A watching brief would require the presence of an archaeologist during the mechanical removal of topsoil with a toothless grading bucket. The archaeologist would monitor the depth of topsoil strip, record all deposits uncovered following standard IfA practice, using context numbered notes, drawings and photographs, collect all finds and excavate all archaeological features as and if required by hand. Soil samples would be collected as necessary for analysis and potentially for scientific dating.

The undertaking of a geophysical survey prior to machine work on site often significantly reduces un-expected costs through the re-location of any intrusive works.

Site redesign

Should the archaeological assessment, walkover, viewshed analysis or geophysical survey be deemed to have identified significant features, re-design of the proposed turbine location might be requested by the Historic Environment Planning Advice Officer.

This approach provides for preservation by record of upstanding or buried archaeological features or artefacts and can reduce impacts on the archaeology of the site to significantly lower levels. Any remaining physical impacts would be **permanent** and **irreversible**.

13 References

13.1 Primary sources

Cornwall County Council 2005 aerial mapping 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 South Hill* (licensed digital copy at HE)

13.2 Publications

Cornwall County Council, 1996. Cornwall Landscape Assessment 1994, Cornwall County Council, Truro.

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

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

Gascoyne's 1699 Map of Cornwall

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

Langdon, A. 2005, *Stone Crosses in East Cornwall*. The Federation of Old Cornwall Societies Cornish Cross Series No. 3, Penryn

Martyn's 1748 Map of Cornwall

National Soil Resources Institute Soil Systems Group 2004. GIS data held by Cornwall Council. Data copyright © Cranfield University

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

Padel, O.J. 1985, *Cornish place-name elements*, Nottingham

Padel, O.J. 1988, *A popular dictionary of Cornish place-names*, Penzance

13.3 Websites

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

14 Project archive

The HE project number is **PR146254**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Kennall Building, Old County Hall, Station Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Digital photographs stored in the directory: R:\Historic Environment (Images)\SITES.E-H\Glebe farm turbine 2013
3. English Heritage/ADS OASIS online reference: cornwall2-151216

This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites G\Glebe Farm South Hill wind turbine assessment 2013



Fig 3 Extract from the OS First Edition One Inch Map c1809.

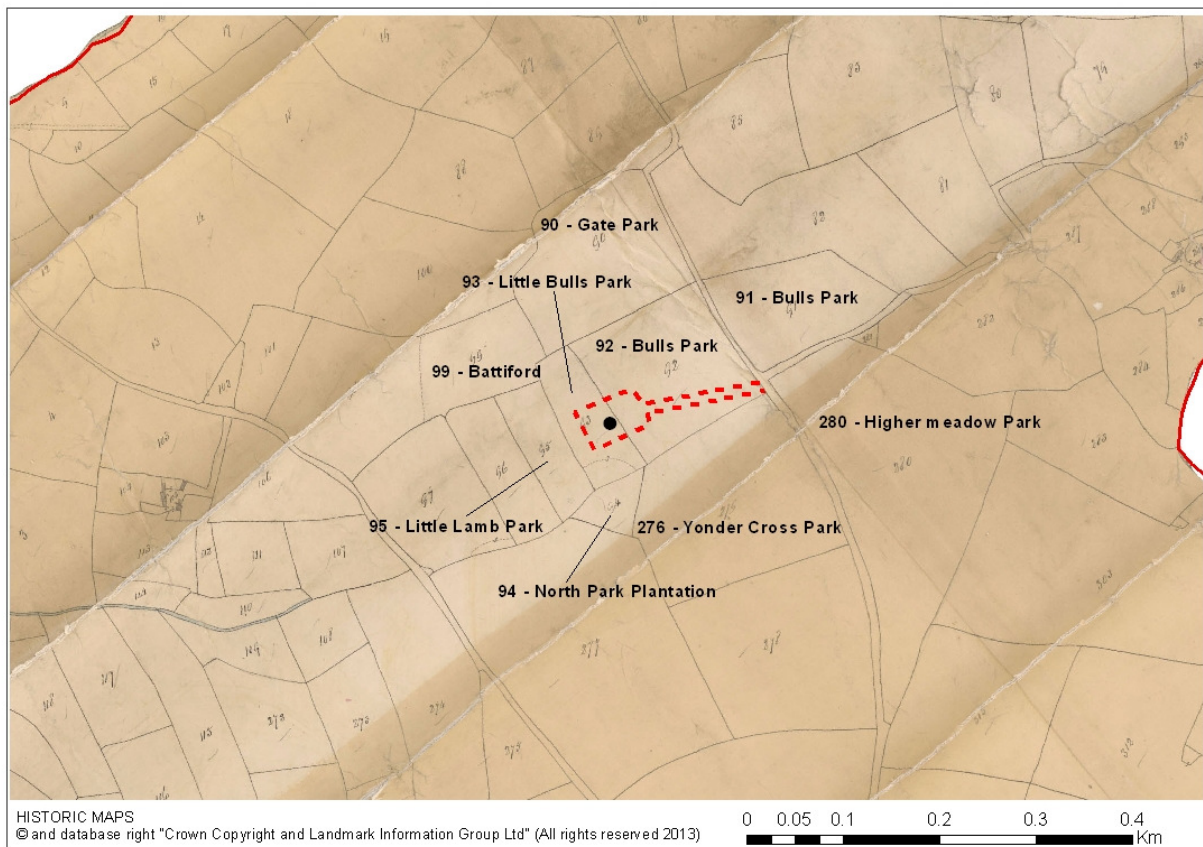


Fig 4 Extract from the Tithe Map for South Hill parish, c1841. Contemporary field names have been added from the Tithe Apportionments List.



Fig 5 Extract from John Norden's 17th century map showing Easte Hundred, and the two churches at South Hill (Sowthill) and Linkinhorne (Lynkinhorne).

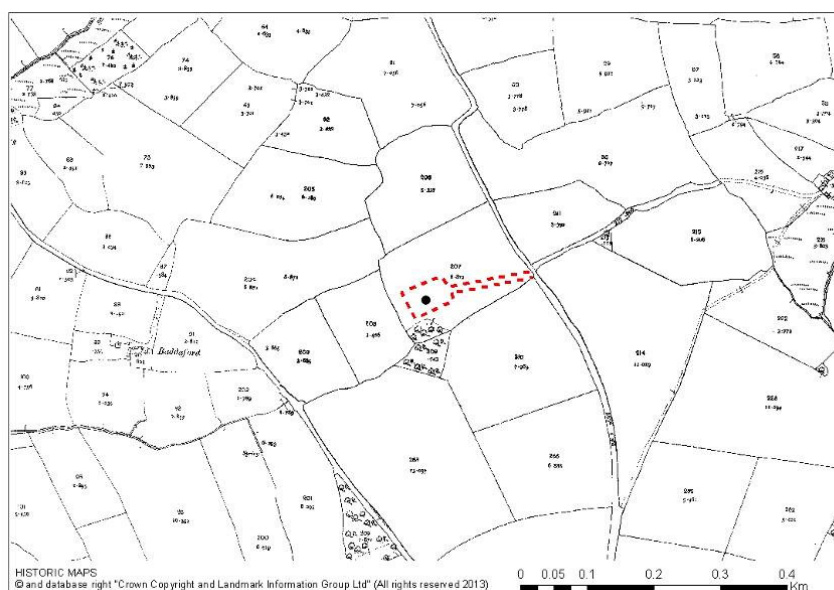
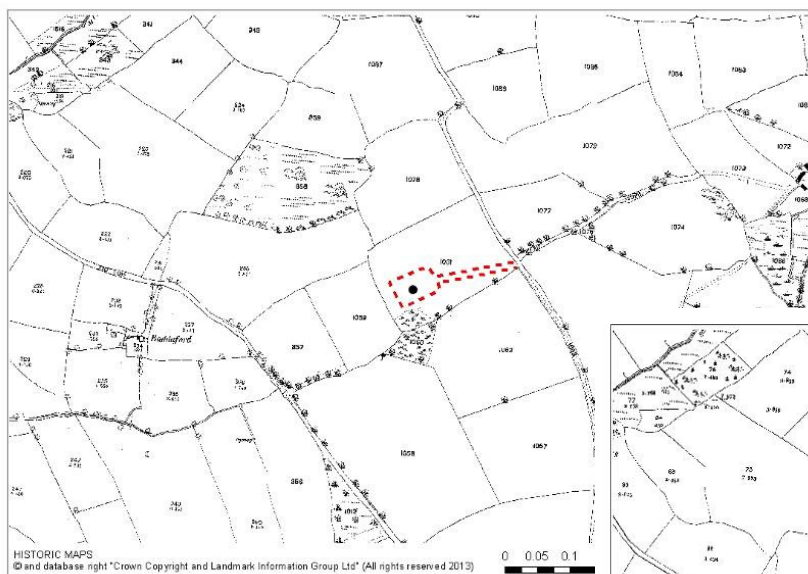


Fig 6 First and Second Edition (top and bottom) extracts from the Ordnance Survey 25 Inch Maps, dated to c1880 and 1907 respectively.

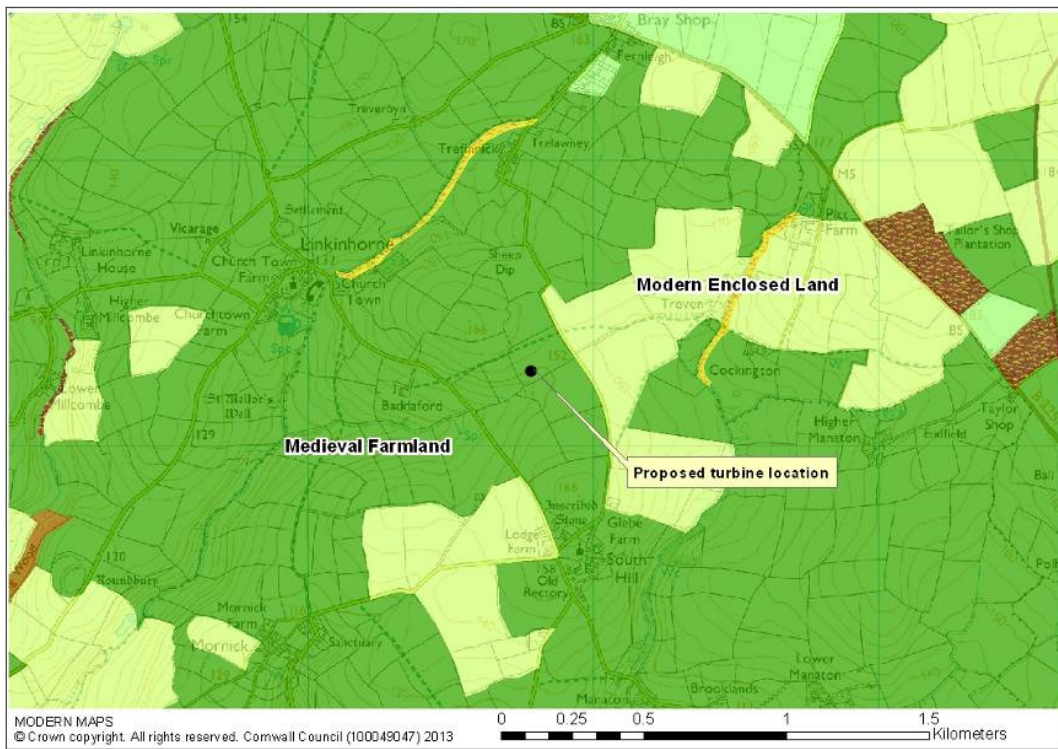


Fig 7 Historic Landscape Characterisation map.

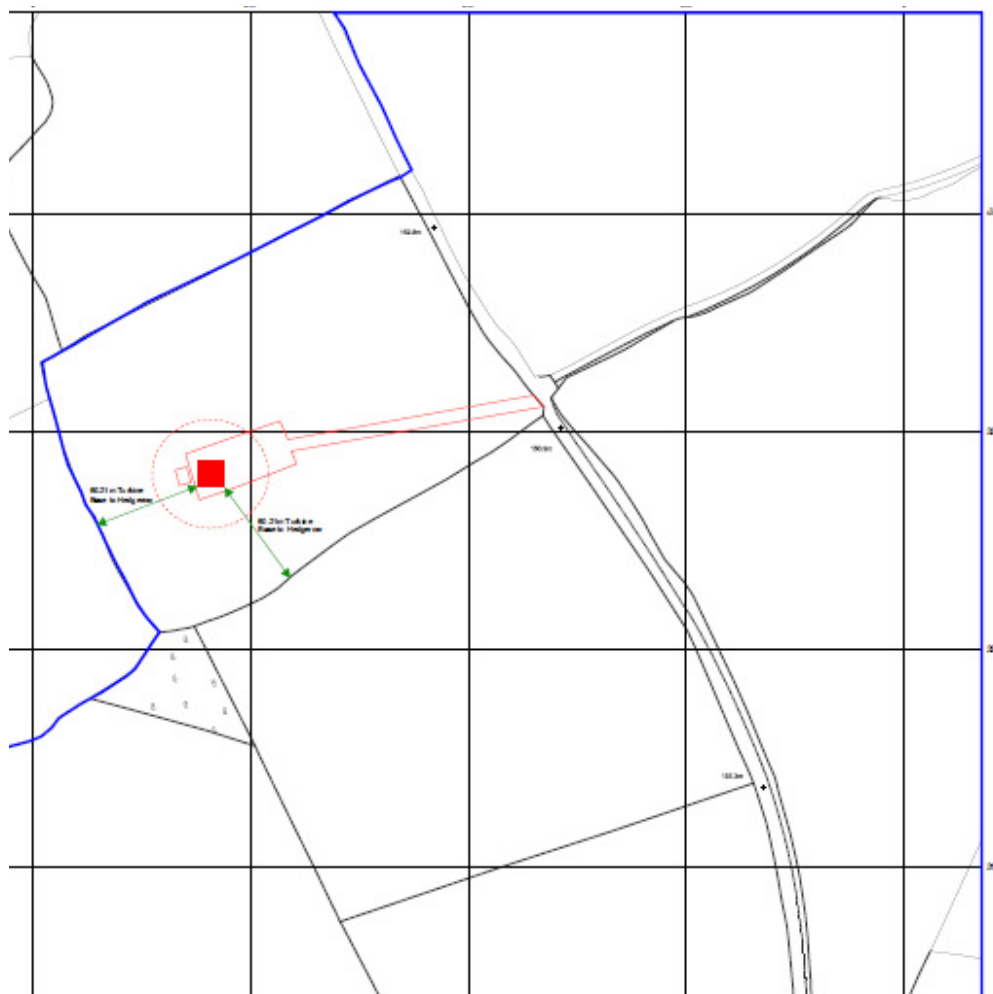
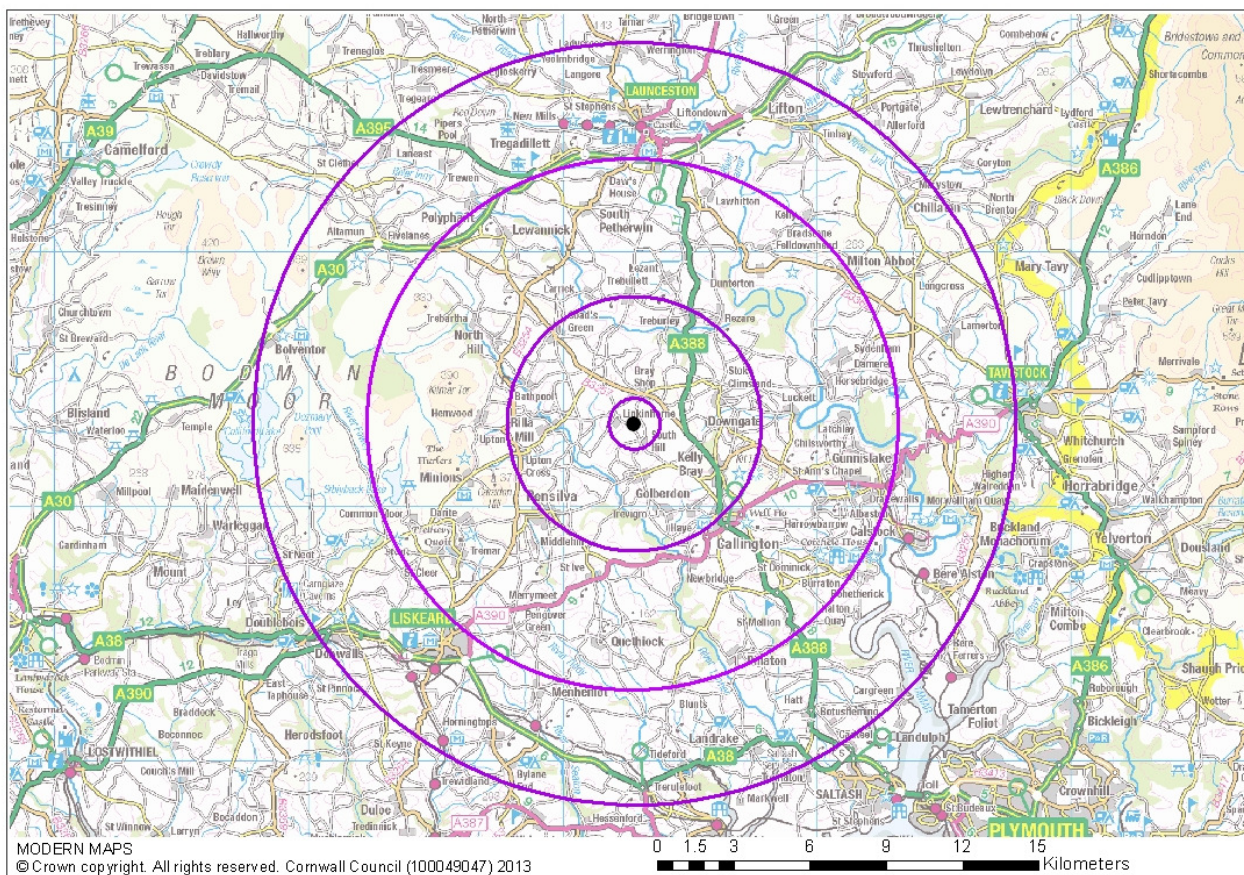


Fig 8 Plan showing proposed turbine location and route of temporary access track.



Fig 9 Aerial photograph of the site vicinity, taken in 2005.



10 The site (centred) with radiating 1, 5, 10 and 15km diameter zones marked.

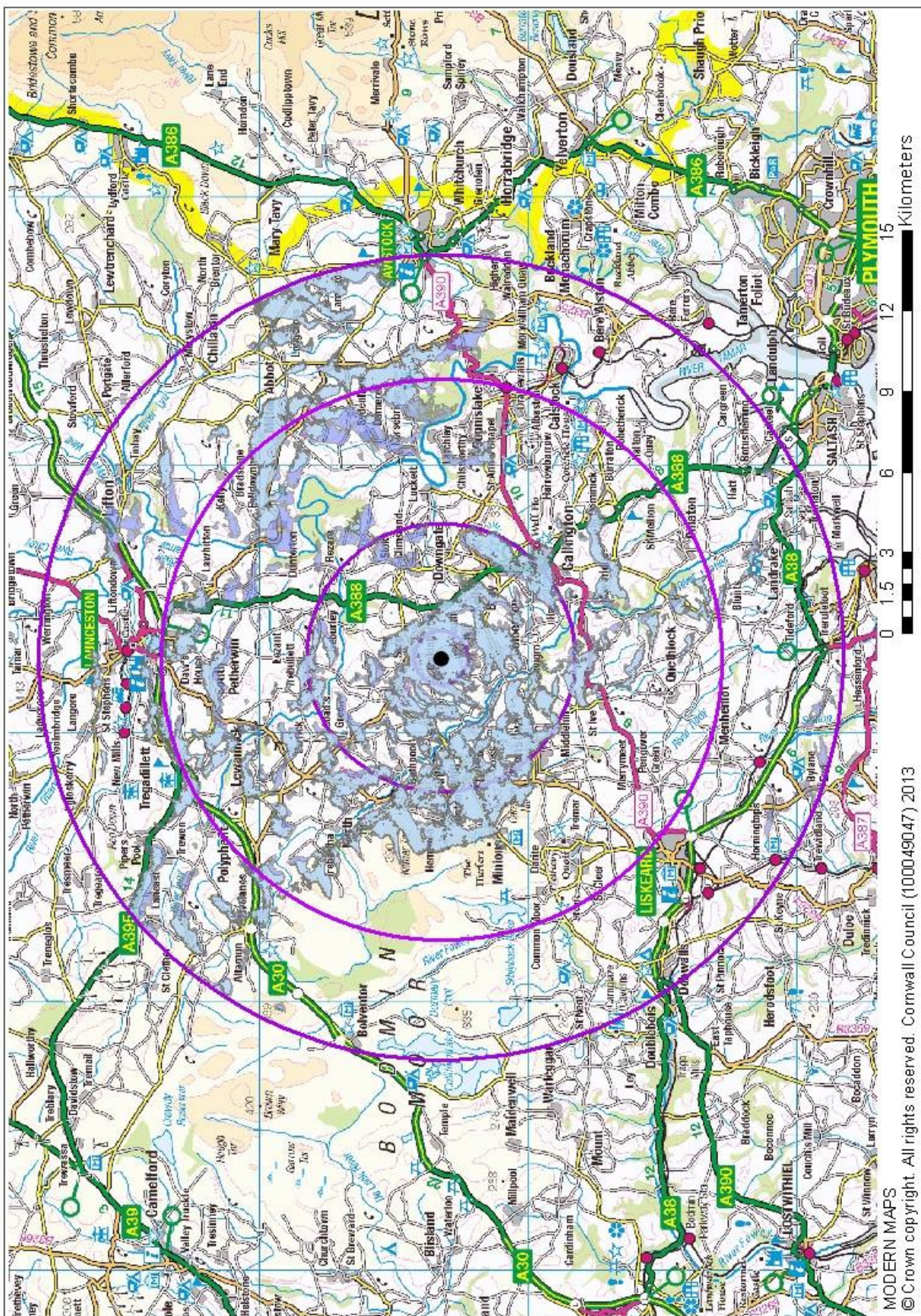


Fig 11 The site with view sheds shown for the hub (turquoise) and the blades (purple) within a 15km radius.

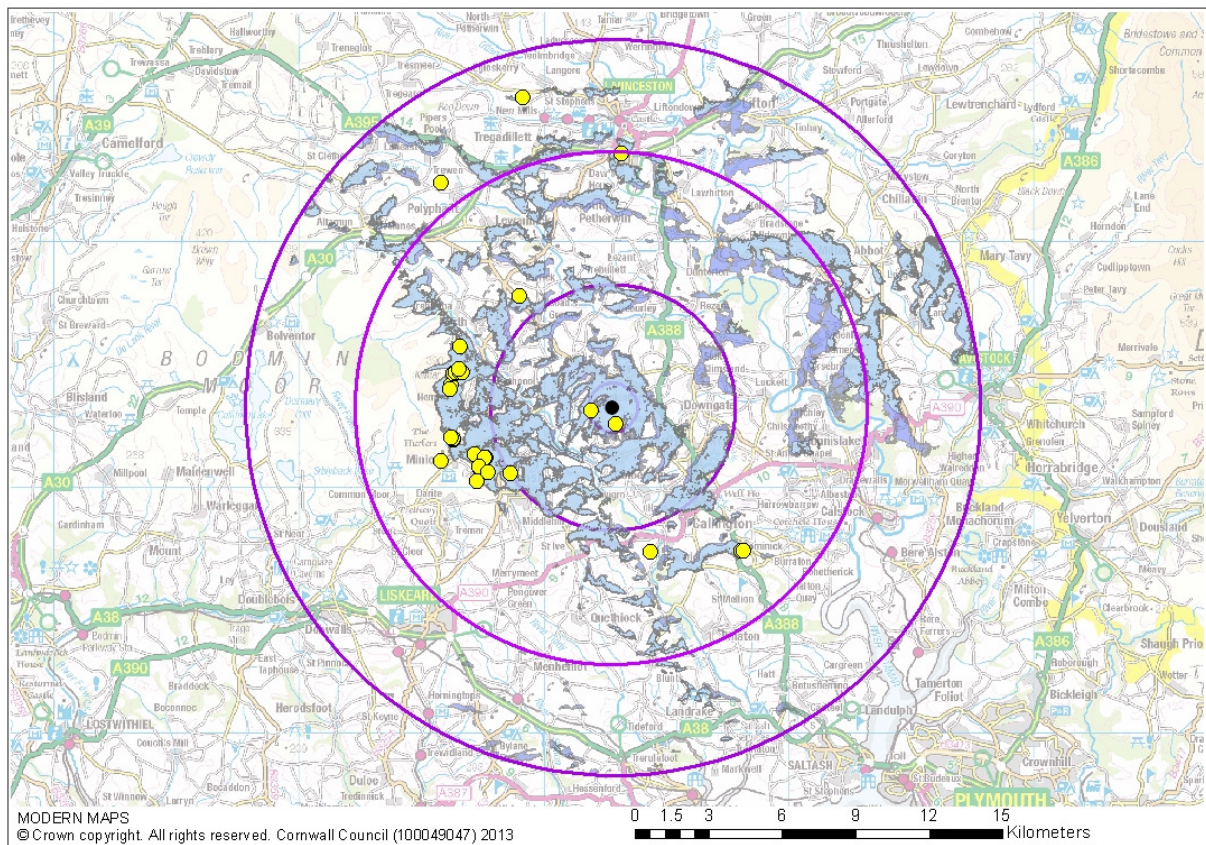


Fig 12 All Scheduled Monuments within a 15km radius of the site.

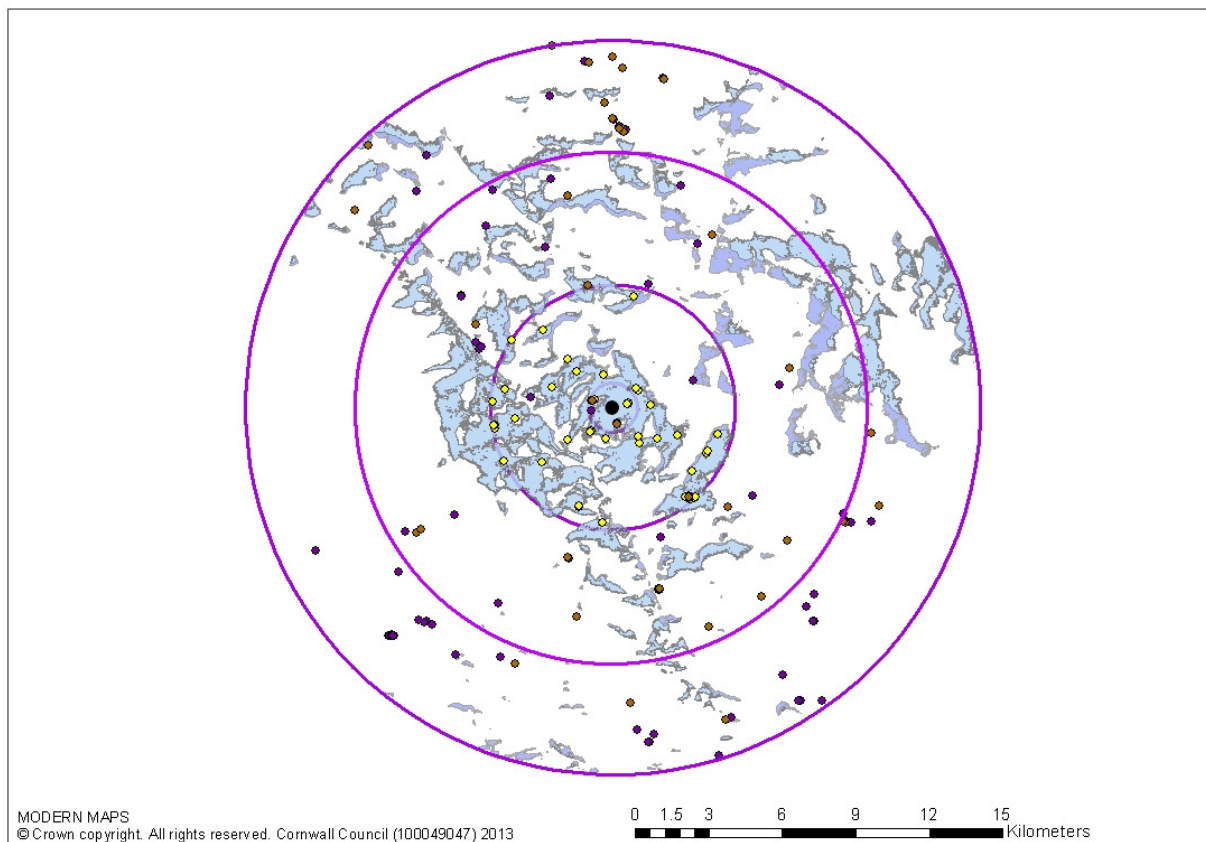


Fig 13 All grade I, II* and II Listed Buildings within a 15km radius of the site. Grade I are shown in purple, Grade II* in red, and Grade II in yellow (these last within the 5km ZTV only).

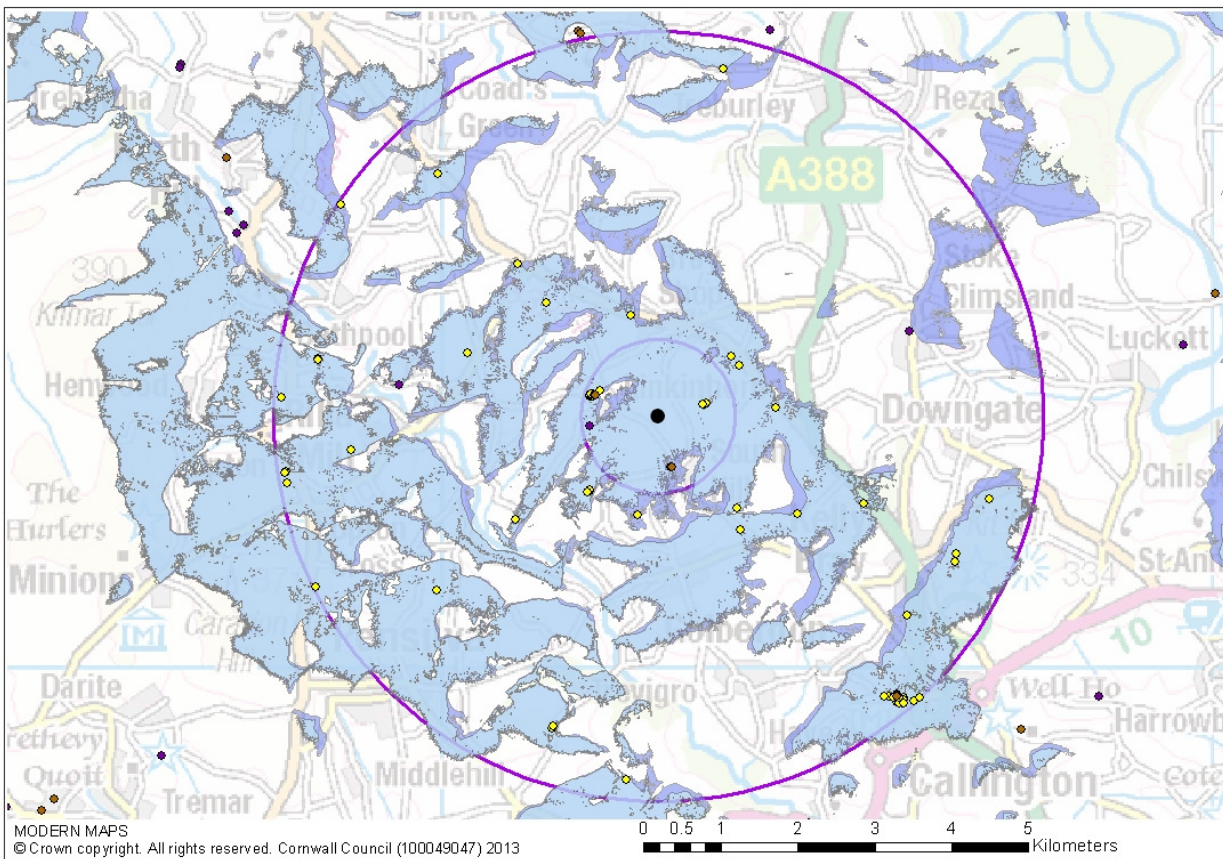


Fig 14 The 1 and 5km radii showing all Listed Buildings (Grade I in purple, Grade II* in red, and Grade II in yellow).

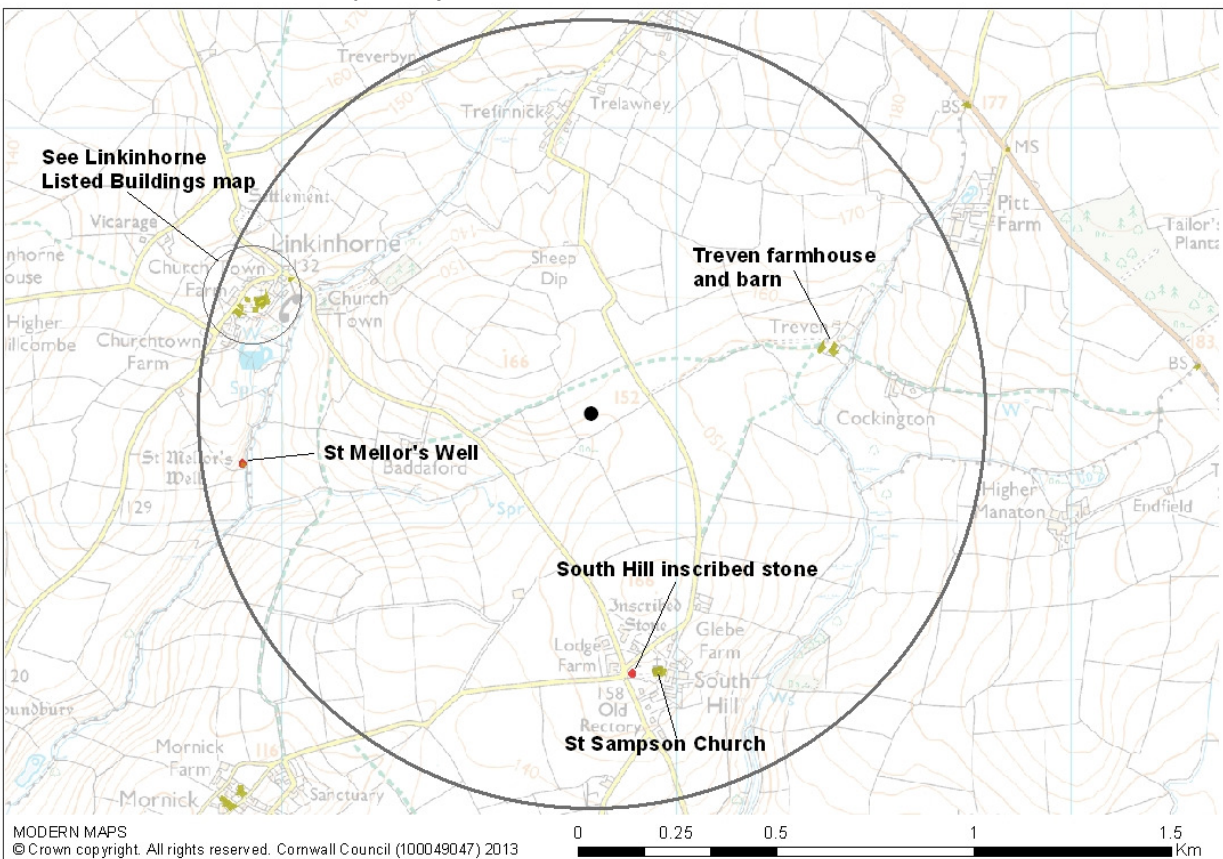


Fig 15 All Scheduled Ancient Monuments (red) and all Listed Buildings (yellow) within a 1km radius of the site.

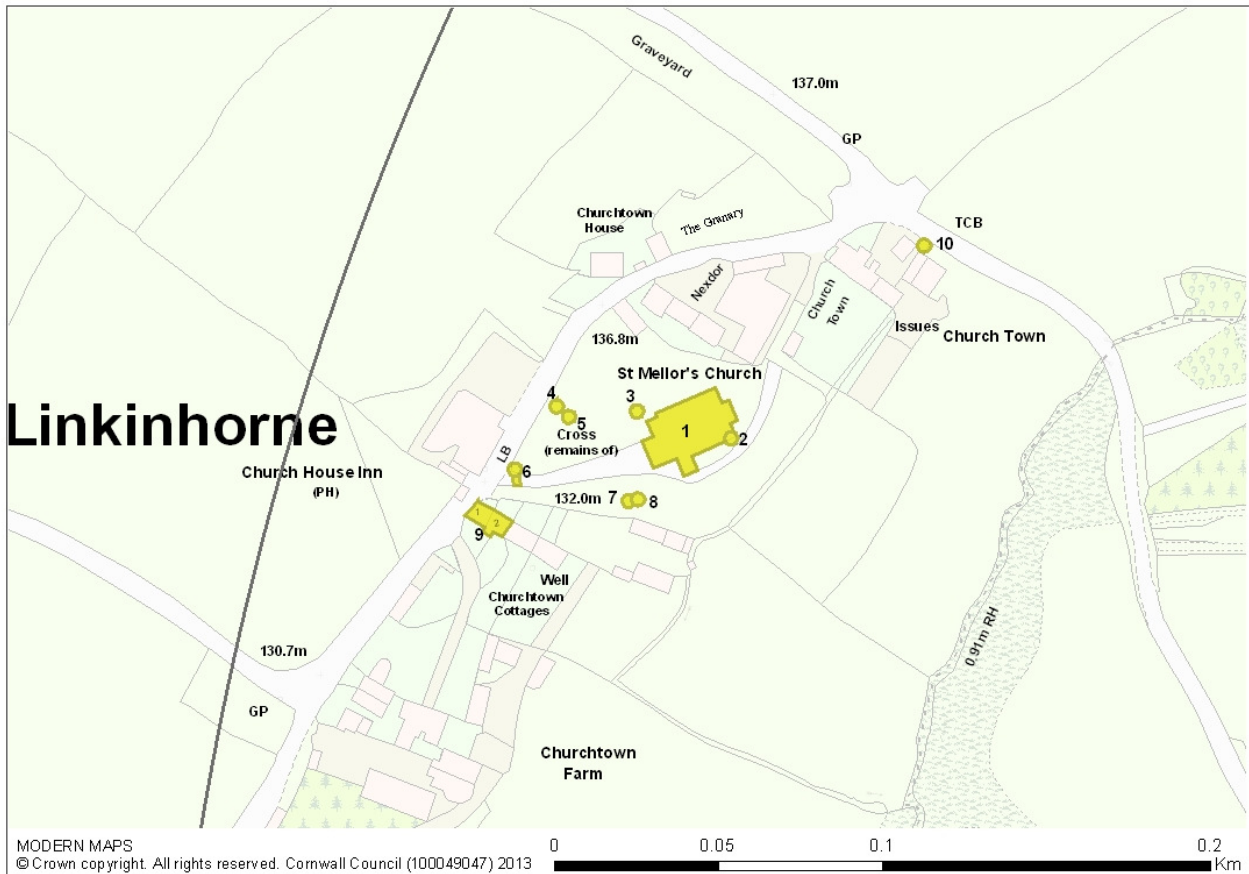


Fig 16 The complex of Listed Buildings in Linkinhorne (yellow) to the west of the proposed turbine site, showing the 1km radius ZTV boundary to their west.

- LB 1** - Church of St Melor - Grade I - Nat. Ref. No. 1311136
- LB 2** - Group of 5 monuments - Grade II - Nat. Ref. No.1329196
- LB 3** - Dingle monument - Grade II - Nat. Ref. No. 1159230
- LB 4** - Unidentified monument - Grade II - Nat. Ref. No. 1311114
- LB 5** - Elsord and Dingly monuments - Grade II - Nat. Ref. No. 1329197
- LB 6** - West churchyard gate entrance - Grade II - Nat. Ref. No. 1140501
- LB 7** - Landry monument - Grade II - Nat. Ref. No. 1159237
- LB 8** - Torway monument - Grade II - Nat. Ref. No. 1140500
- LB 9** - Churchtown Cotages No.1 and 2 - Grade II - Nat. Ref. No. 1159260
- LB 10** - Telephone kiosk - Grade II - Nat. Ref. No. 1389439

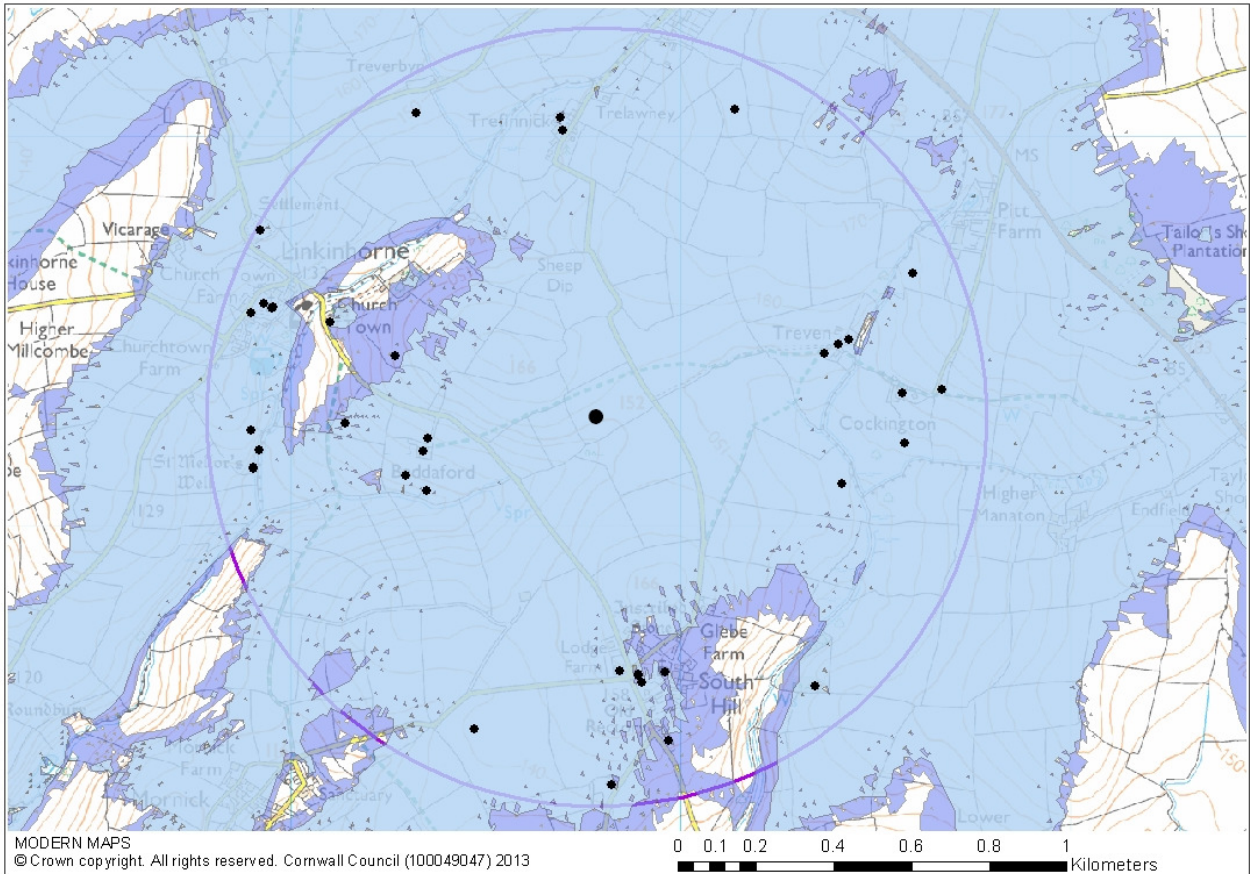


Fig 17 All HER sites within a 1km radius of the proposed turbine site, showing the ZTV.

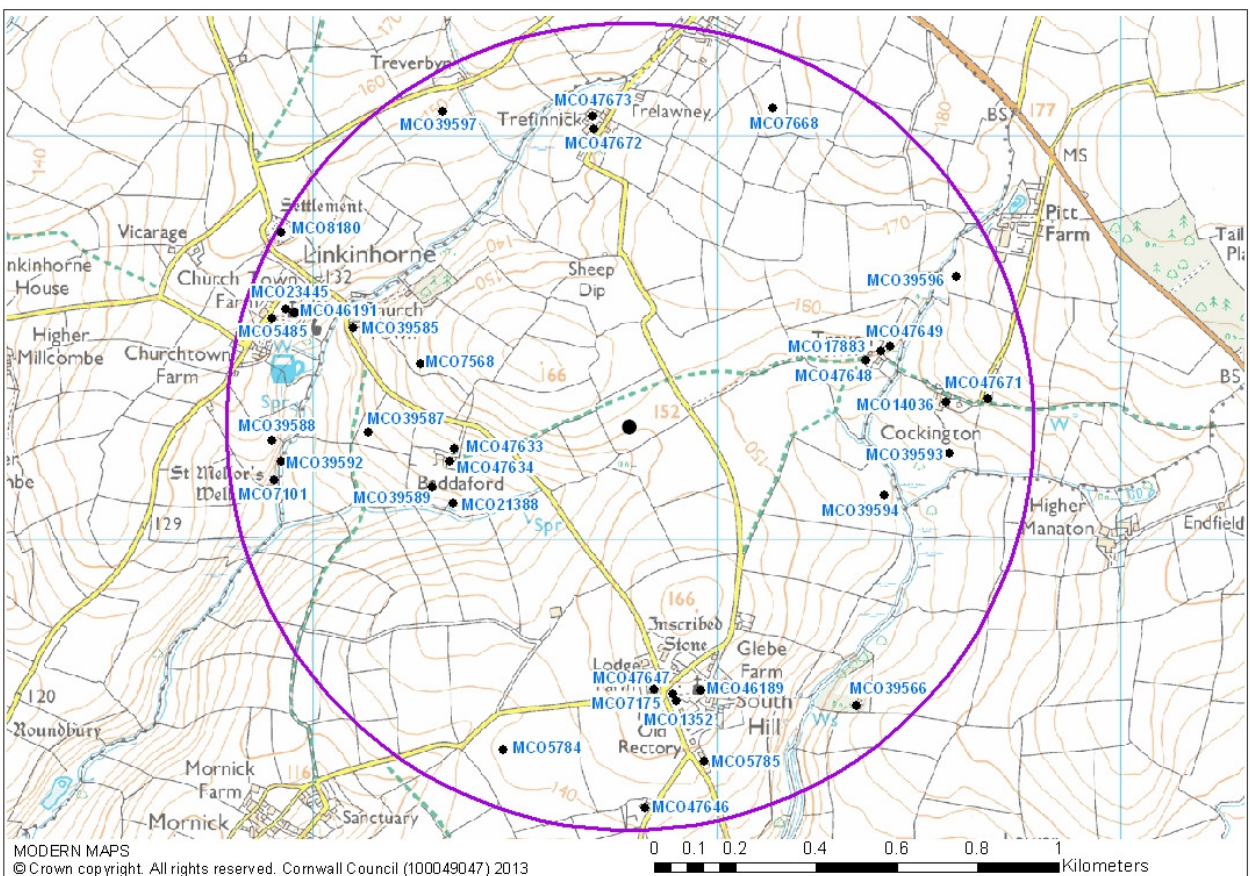


Fig 18 The 1km radius with the location of all HER monuments (non-designated).

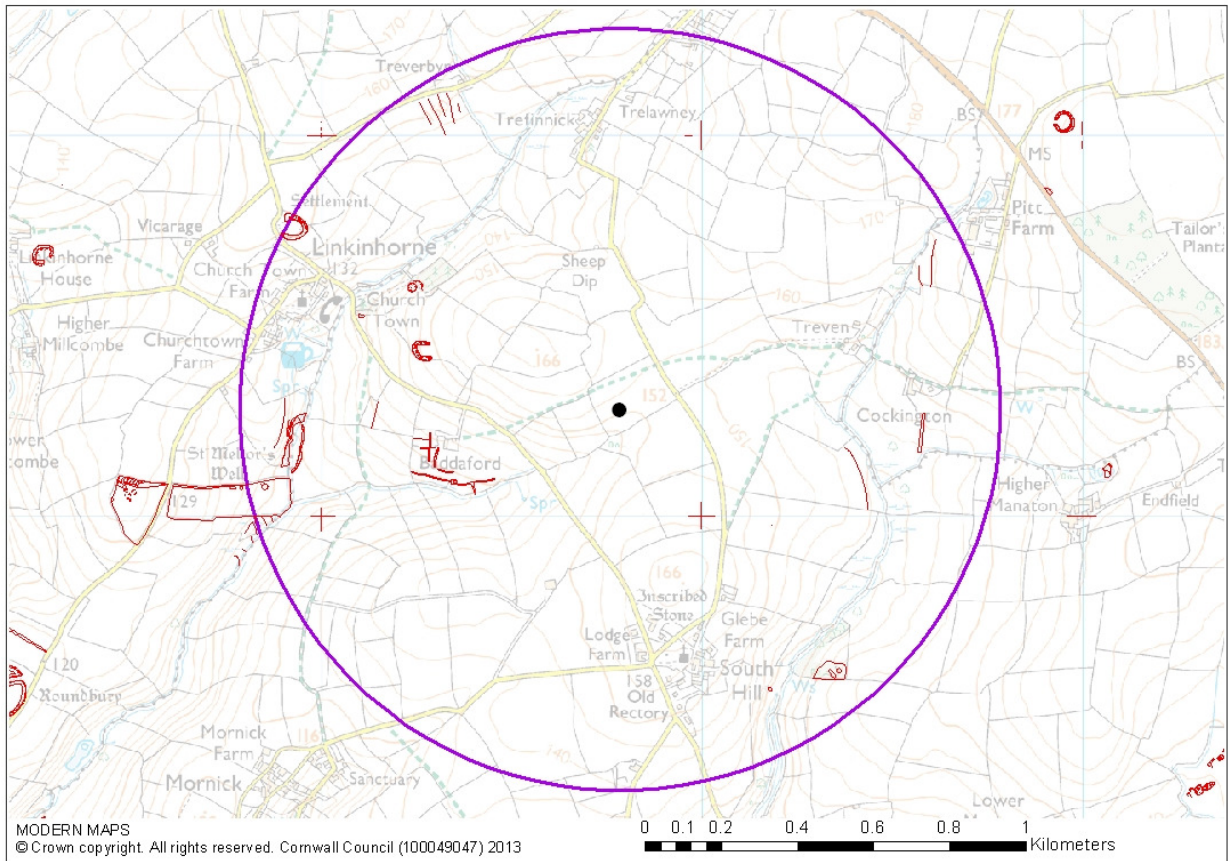


Fig 19 All National Mapping Programme identified features within the vicinity, showing the 1km radius line.

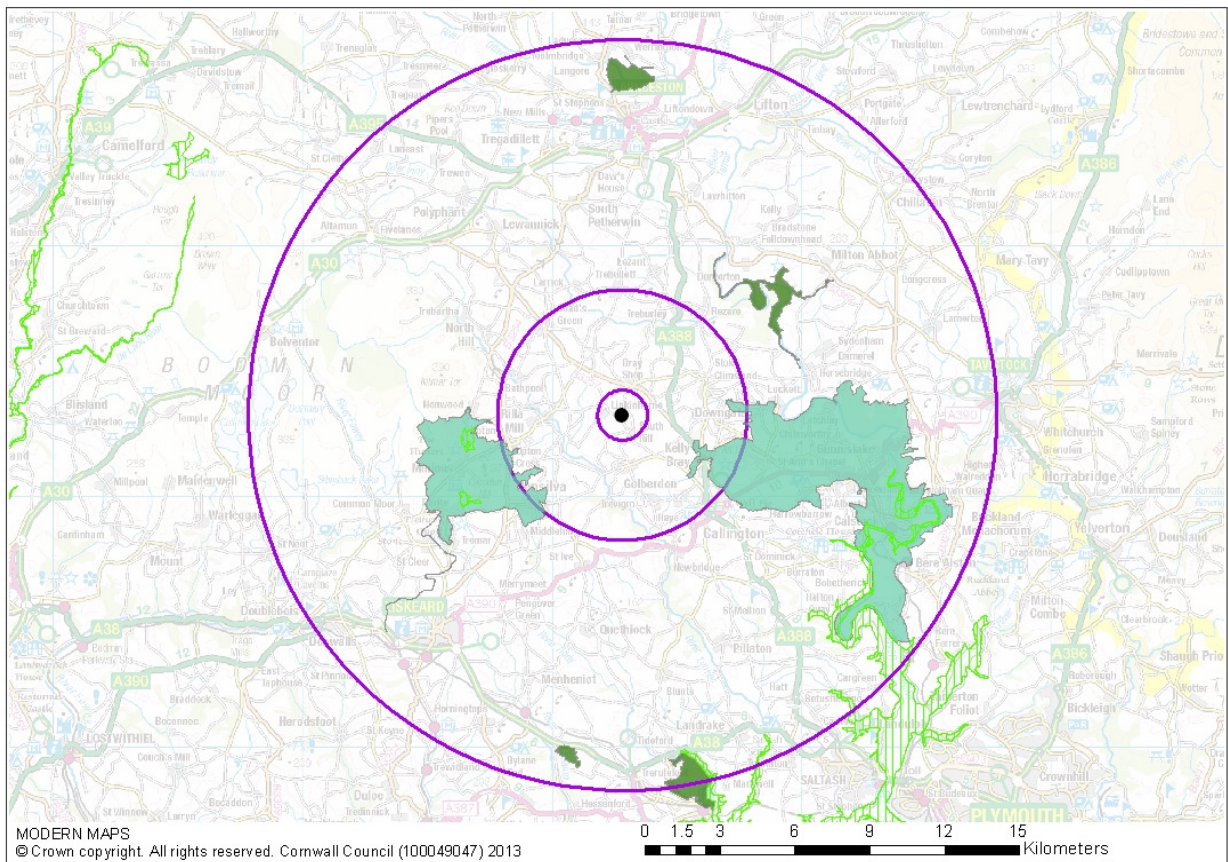


Fig 20 The 15km ZTV with the World Heritage Sites shown as green, the Registered Parks & Gardens as dark green and Special Areas for Conservation as yellow/green.

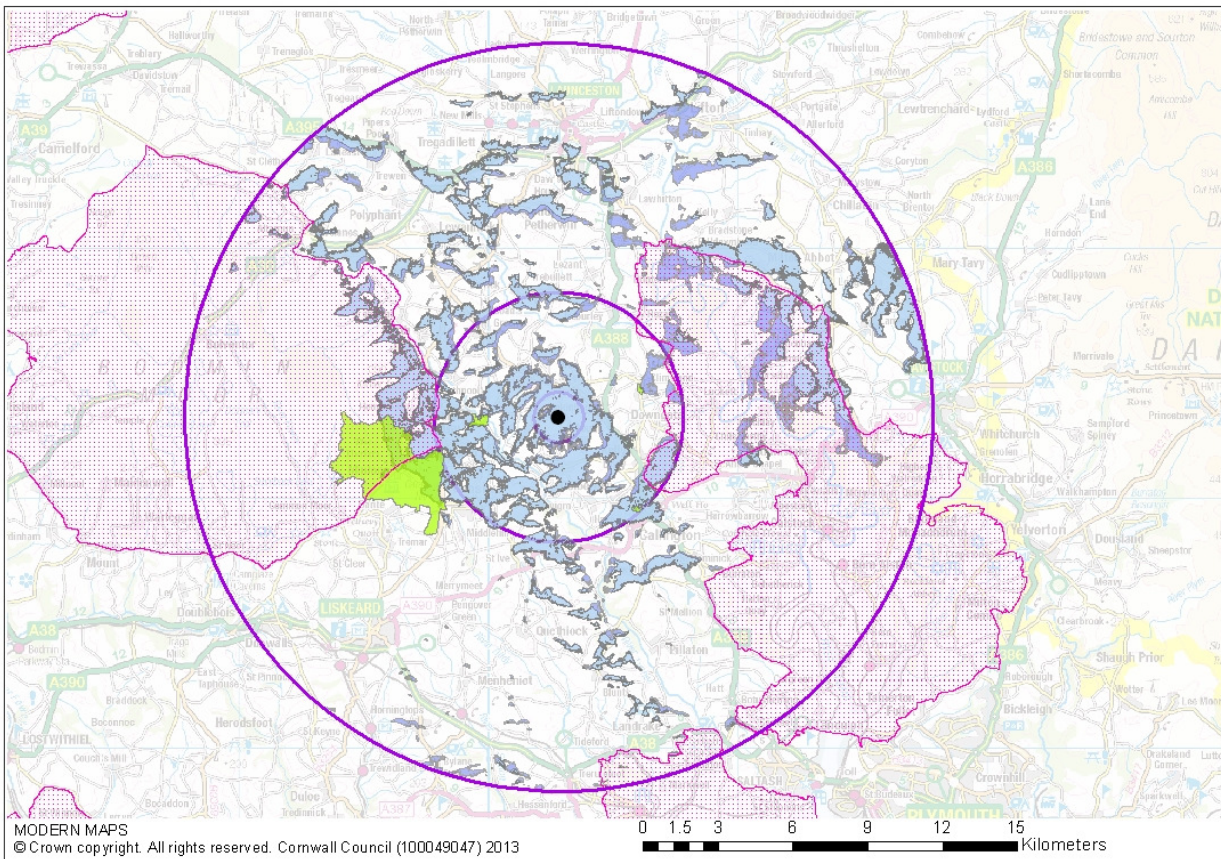


Fig 21 The 15km ZTV with Conservation Areas shown in yellowish green and Areas Of Natural Beauty (AONBs) as stippled mauve.

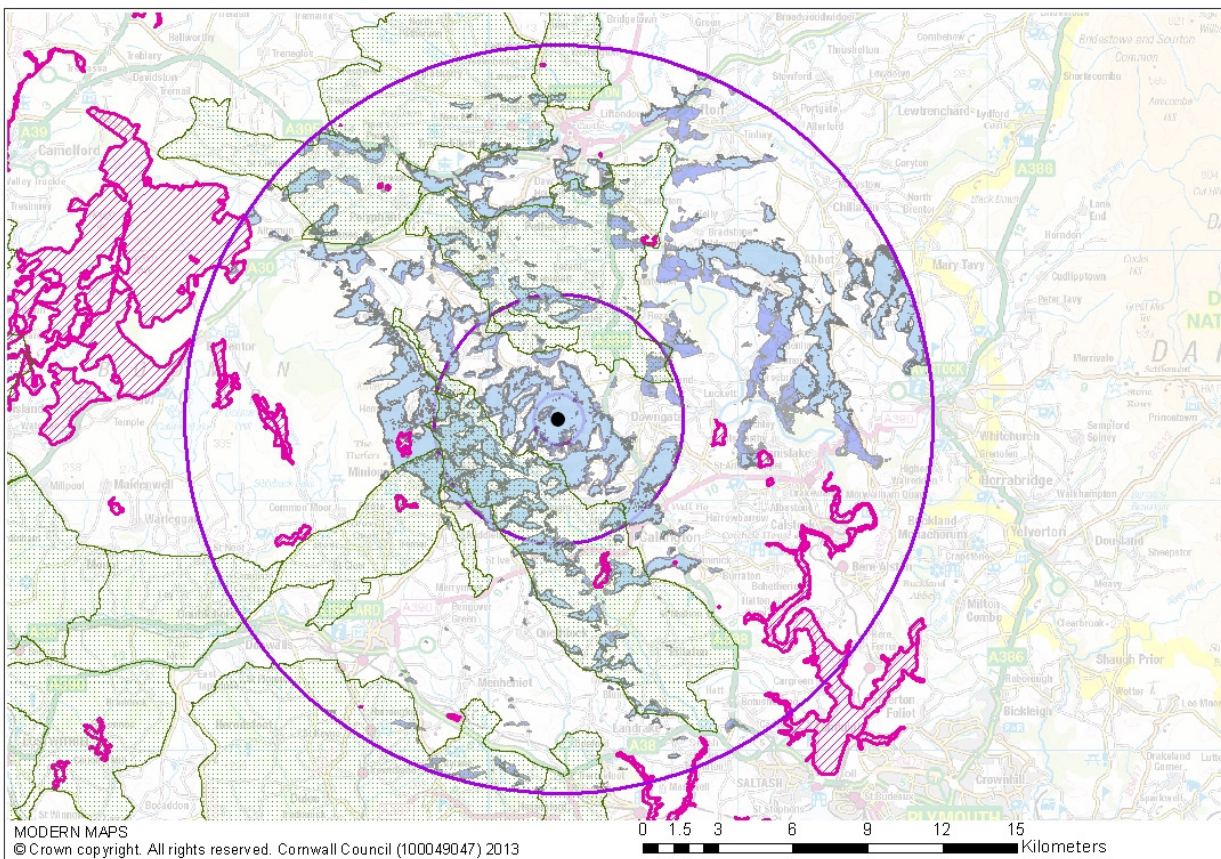


Fig 22 The 15km ZTV with Sites of Special Scientific Interest (SSSIs) shown in green and Areas of Great Landscape Value (AGLVs) in mauve hatch.

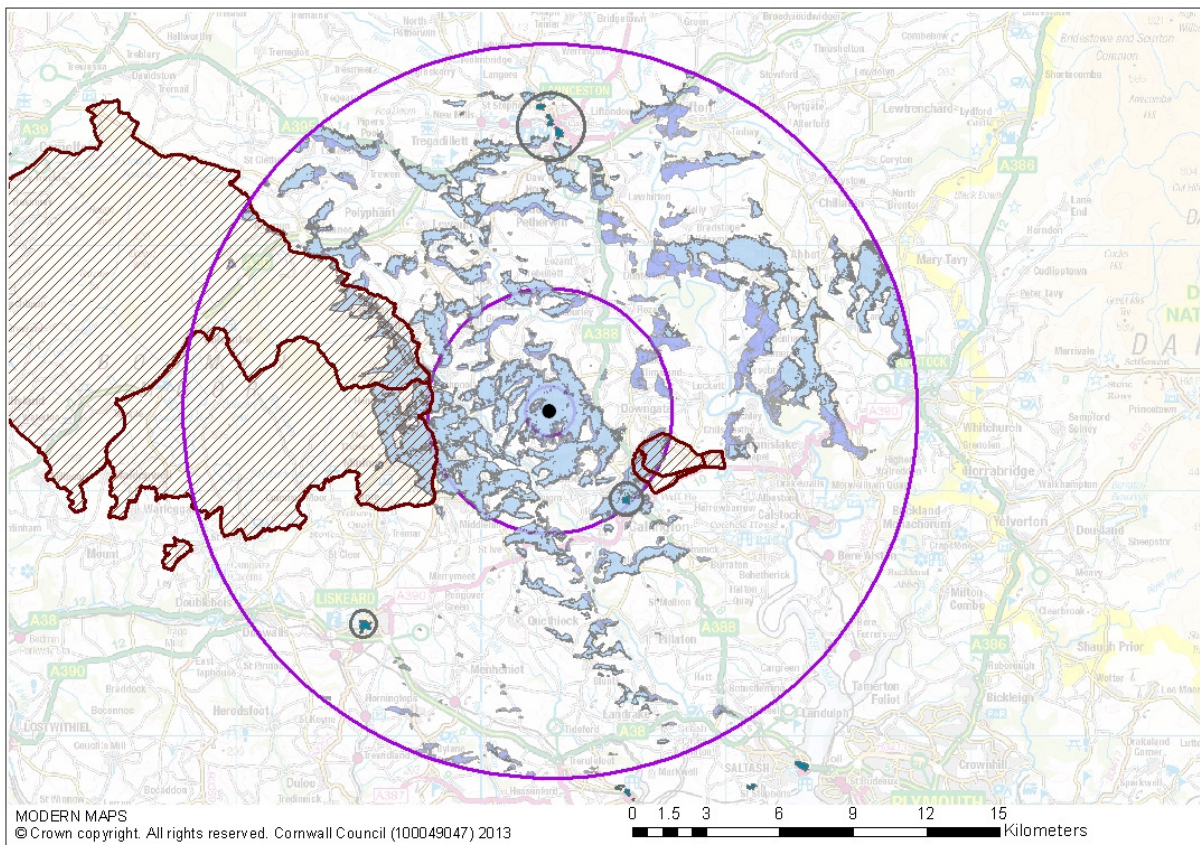


Fig 23 The 15km ZTV with Areas of Great Historic Value (AGHVs) shown in brown and Historic Settlements circled.



Fig 24 Looking west from the site towards Caradon Hill (6.25km away), the Caradon WHS area and the associated swathe of Scheduled Monuments of all periods.



Fig 25 Looking north-west from the site showing the rising slope of the field in this direction. Below the horizon, behind the left hand tall tree lies Linkinhorne Church and settlement.



Fig 26 Looking north-east across the field from the proposed turbine location.



Fig 27 Looking due east towards the nearby road along the line of the proposed turbine access track.



Fig 28 Looking 5km east-south-east towards Kit Hill, showing clear views from and to the site.



Fig 29 Looking 0.75km south-east across the proposed turbine location from the top north-west corner of the field, showing South Hill Church tower (framed).



Fig 30 An enlarged view of the boxed area in Fig 29, showing South Hill church tower as viewed from the top north-west corner of the proposed turbine field.



Fig 31 Looking north-north-west from South Hill Church, showing the slight rise in ground level between the church and the site, located beyond the modern house.



Fig 32 Looking north towards the site across South Hill churchyard, showing the Scheduled inscribed stone.

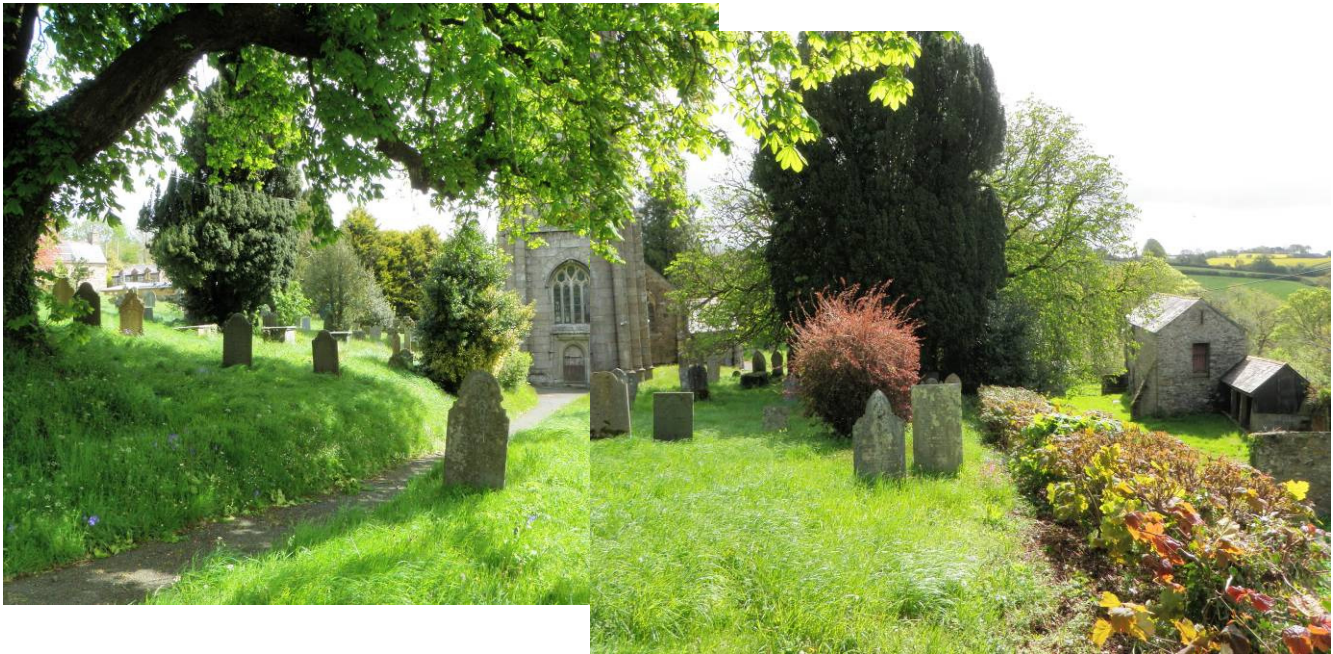


Fig 33 Looking east-north-east from St Melor's Church, Linkinhorne showing the site of the turbine to the extreme right of the picture, and the edge of the lann.



Fig 34 Looking east from St Melor's churchyard towards the site. Its approximate location is circled.



Fig 35 Looking east-south-east across Linkinhorne Round MCO8180 towards the turbine site (horizontal oval), together with South Hill Church (vertical oval).



Fig 36 Looking east from the northern edge of Caradon Hill and the WHS towards Kit Hill to the east. The turbine location is circled.

15 Appendix 1: Written Scheme of Investigation

Glebe Farm, South Hill, wind turbine: Written Scheme of Investigation for archaeological assessment

Client: Capture Energy Ltd
Client contact: Nicola Davies
Client tel: 01209 716861
Client email: Nicola@capture-energy.co.uk



Project background

Historic Environment Projects were contacted in early February 2013 by Nicola Davies of Capture Energy Ltd with a request for the costs of an assessment of the potential impacts of the construction of a 50m to hub height (54m rotor diameter) wind turbine proposed for a site at Glebe Farm, South Hill near Linkinhorne mid-way between Bodmin Moor and the Tamar.

English Heritage have summarised the considerations which should be taken into account when assessing the archaeological impacts of renewables proposals, including indirect impacts on sites, areas and the surrounding landscape. English Heritage has indicated that such impact assessments should also include an assessment of the potential for buried archaeology, effects on landscape amenity and cumulative impacts. A guidance table indicating recommended ZTV distances in the cases of wind turbines of varying heights is included in this guidance, in this instance the recommended ZTV radius being 15Km. Direct and indirect impacts on Scheduled Monuments and Grade 1 and II* Listed Buildings would need to be considered out to 10Km, together with designated landscapes (Registered Parks and Gardens and Registered Battlefields). Impacts on Grade II Listed Buildings would need to be assessed out to 5Km radius of the site.

A screening opinion for the proposal included a recommendation that the scope of the assessment should be guided by a brief produced by the Historic Environment Advice Officer (Central), Mr. Phil Copleston.

A standard brief guiding such assessments states:

An assessment of the archaeological potential of the site and the potential impacts of the development on surrounding historic assets will be required to provide information in support of a planning application for the proposed development in accordance with the requirements of National Planning Policy Framework paragraph 128.

Cornwall Council Historic Environment Service believes high quality design should play a key role in minimising any adverse effects of renewable energy projects, whether this is directed at the disposition of wind turbines and energy crops in the landscape or the positioning of photo-voltaic cells on historic buildings or within the countryside. Fundamental to achieving high quality design will be a sound understanding of the character and importance of the historic asset involved, whether at the scale of individual buildings and sites or more extensive historic areas and landscapes.

Site history

The site is located in a rural area of east Cornwall at OS Grid Reference SX 32784 73281 near Linkinhorne. The wind turbine is to be sited at a height of 150m OD on soils recorded as being Denbigh 1 loams over shale, the bedrock being Devonian mudstones and siltstones.

The area immediately surrounding the site proposed for the turbine is recorded as Anciently Enclosed Land (Farmland Medieval). There are Grade I Listed churches at Linkinhorne 878m to the WNW and at South Hill 660m to the SSE. The National Mapping Programme has recorded cropmark evidence for late prehistoric – Romano-British period rounds (defended farming settlements) 542m to the WNW, 967m NW and 1,545m WNW around Linkinhorne and 1,440m NE at Pitt Farm, whilst Roundbury hillfort is 1,745m to the WSW.

The viewshed will extend to the eastern fringes of Bodmin Moor just over 5km to the west of Glebe Farm where there are a significant number of Scheduled prehistoric and medieval sites and landscapes, to Kit Hill 5km to the east (again the location of a Scheduled Monument), the Scheduled Cadson Bury 6km to the south; there are at least five Scheduled rounds in the zone from 5km to 10km to the north of Glebe Farm; others are found near Tokenbury and North Hill to the south west and north west respectively of Glebe Farm.

This is an area of Cornwall which is currently experiencing a significant number of applications for wind turbines and solar farms. An assessment of the potential for cumulation will be undertaken as part of the reporting process.

Project extent

The assessment will consider the surviving heritage assets within the area immediately surrounding the site proposed for the wind turbine and the route for its cable connection. The viewshed analysis will model intervisibility with heritage assets within the landscape surrounding the site proposed for the wind turbine as set out in an English Heritage letter dated 1 July 2012.

The proposed archaeological assessment is, in part, 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 any cable trenching, siting of temporary compounds, cranes or other equipment and with any associated semi-permanent infrastructure.

The assessment will also take into account and quantify impacts on the settings of heritage assets (both designated and undesignated) within the viewshed of the proposed turbine site in line with Policy HE6 in PPS5, sections 16(2) and 66(1) of the Planning (Listed Buildings and Conservations Areas) Act 1990 Chapter 9, and English Heritage guidance relating to the setting of historic assets (2011) and on wind energy and the historic environment (at a minimum):

- Non-designated heritage assets – 1 Km radius.
- Scheduled Monuments, Grade 1 and Grade II* Listed Buildings – 10Km radius.
- Grade II Listed Buildings – 5Km radius.
- Conservation Areas – 5Km radius.
- Registered Parks and Gardens – 10Km radius.
- World Heritage Site – 10Km radius.

Aims and objectives

The assessment needs to both a) assemble an evidence base to identify those historic assets which may be impacted by the proposed development and b) evaluate the significance of the assets affected and the significance of their settings and identify potential impacts on that significance either direct or indirect. This will involve a desk based assessment including a viewshed analysis to establish the Zone of Theoretical Visibility (ZTV) of the proposal site, the drawing together of information from Heritage

Asset registers and other sources including historic maps, and a walk over survey of the extant remains of the site including the preparation of photographic montages of key views affected. This work should be capable of providing evidence for the assessment of impacts of the development and informing options for its design.

The site specific aims are to:

- Establish viewsheds of the proposal site.
- Draw together existing historical and archaeological information about the site and its landscape setting from published and unpublished sources and information on designated and undesignated assets from national and local Historic Asset registers (such as the CSHER, NMR, Heritage Gateway, etc).
- Review and analyse historic map evidence for the site.
- Consider any geotechnical or geophysical data for the site.
- Undertake a site 'walkover'.
- Produce 'statements of significance' for all designated historic assets, that are identified as potentially impacted on by the current proposals following the initial filtering of the ZTV. Where currently undesignated assets are identified their likely significance should be indicated i.e. 'national', 'regional' or 'local'.
- Inform whether archaeological recording of any extant remains is required.
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains is required.
- Inform whether palaeoenvironmental sampling would be required.
- Identify the construction, use and 'end of life' impacts of the current proposals on designated heritage assets (as listed in the NPPF) and on undesignated historic assets as described in PPS5.
- Follow English Heritage Guidance 'The Setting of Heritage Assets' (2011) to produce assessments of the significance of setting of affected assets and the impacts of the proposals on those settings.

The principal project objective is to produce an illustrated report setting out the range of potential impacts of the proposal, the relative significances of the potentially affected sites and suggestions for suitable mitigation measures.

A further objective is to produce an entry to the OASIS on-line index to archaeological projects.

Working methods

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

Desk-based assessment

A desk-based assessment will be carried out to inform the fieldwork stage. This will comprise:

- Relevant published sources
- Historic maps, including:
 - Joel Gascoyne's map of Cornwall (1699)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (c1810)
 - South Hill Tithe map (c1840),

- 1st and 2nd Editions of the OS 25 inch maps (c1880 and c1907)

- Modern maps
- GIS layers curated by Cornwall Council and the Historic Environment, Cornwall Council

Assessment of impacts on setting of heritage assets

Heritage assets intervisible with the sites of the proposed turbine will be identified through the creation of a viewshed using GIS software. The methodology employs a Digital Terrain Model (DTM), or 'bare earth' given that features like woodland which may currently obscure views are not permanent features of the landscape. A viewshed will be generated for an 'observer point' based on the location of the proposed turbine.

When performing a viewshed analysis, several variables will be used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for the observer point. The viewshed will be based on an 'observer elevation value' made up of the 'elevation value' or height above sea level of the ground at the observer viewpoint, with added to this additional offsets of 50m and 77mm to represent the height of the hub and the tips of the rotor blades.

These viewsheds will be checked on the ground from key sites, whilst significant heritage assets within the theoretical viewsheds will be visited to determine intervisibility with the proposed development site, and hence the scale and type of any visual impacts which may affect their settings, as required by English Heritage (2011).

Fieldwork: survey

As directed by the brief, a walkover survey will be undertaken within the environs of the site proposed for the wind turbine at Glebe Farm. Sites identified within the desk-based assessment will be field checked and their condition noted. Unrecorded sites identified during the walkover survey will be located using a hand-held GPS unit and will be added to a base map generated during the desk based assessment. Areas of archaeological sensitivity will be identified during the walk over survey.

Site visits will be made to publicly-accessible potentially intervisible key heritage assets within the area covered by the viewshed zones to truth-check this mapping and to determine the likely scale of impact on these heritage assets of the construction of the wind turbine.

Fieldwork – magnetometer survey

Assessments of this type are normally accompanied by a magnetometer survey, this being 1Ha in size centred over the proposed turbine location, with a 30m wide corridor centred on the cabling route and construction access route. This enables the potential below-ground impacts of the groundworks associated with the development and the need for any further evaluation trenching to be established, together with any recommendations for mitigation. The geophysical survey is not part of this proposal, but would normally be commissioned by the developer. The results of any geophysical survey undertaken as part of this application should be supplied to HE Projects and a summary and appropriate figures will be incorporated into the assessment report.

Fieldwork: photographic recording

High resolution digital photographs will be taken from the location of the proposed turbine to record the landscape visible from its site, together any heritage assets contained within it. Where practicable, images will also be taken from inter-visible heritage assets within the locality to determine the level of visual impact which might be expected from the proposed development. Images back towards the proposed site will be taken from significant heritage asset receptors using a 50mm focal length lens on a high resolution digital camera (the equivalent of a 75mm lens on 35mm film to

indicate the likely degree of intervisibility between these heritage assets and the development site and the likely impacts on their settings.

The photo record will comprise:

- general views
- examples of archaeological detail

The methodology for the photography is set out as follows:

- Photographs of details will be taken with lenses of appropriate focal length
- A tripod will be used to take advantage of natural light and slower exposures
- Difficulties of back-lighting will be dealt with where necessary by balancing the lighting by the use of flash

Creation of site archive

This will include:

- Digital colour photographs stored according to HER guidelines
- Project materials stored according to HER guidelines
- Completion of an English Heritage/ADS OASIS online archive entry.

Archive report

The written report will include:

- A concise non-technical summary of the project results;
- The aims and methods adopted in the course of the investigation;
- A discussion of the archaeological findings setting out a brief background history to the project area, designations applying to it and heritage assets within its Zone of Theoretical Visibility (ZTV), a brief inventory of intervisible heritage assets and their significances, and the direct and other impacts on heritage assets which might result from the development;
- Summary management recommendations based on the findings of the various survey components (including geophysical survey, if commissioned) to inform whether an archaeological evaluation of any potential buried remains is recommended, or that the turbine be repositioned to avoid any sensitive buried features
- A location map and a plan showing those areas examined as part of the archaeological recording. All plans shall be tied to the national grid;
- A summary of the archive contents;
- References;
- A copy of the approved WSI will be included as an appendix;
- Supporting illustrations: location map, historic maps, viewshed mapping, photographs.

A paper copy and a digital (PDF) copy of the report, illustrations and any other files will be deposited with in the Cornwall HER. Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres. These will be held back from public access until the planning application for the proposed turbine has been submitted and the information contained within the report will therefore be deemed to be within the public domain.

Archive deposition

An index to the site archive will be created and the archive contents prepared for long term storage, in accordance with HE standards.

An ordered and integrated site archive will be prepared in accordance with Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006 upon completion of the project. As the project is likely to produce solely a documentary archive this will be deposited with the Cornwall Record Office as well as the Courtenay Library of the Royal Institution of Cornwall.

A summary of the contents of the archive shall be supplied to the HEPAO.

The archiving will comprise the following:

3. All correspondence relating to the project, the WSI, a single paper copy of the report together with an electronic copy on CD, stored in an archive standard (acid-free) documentation box.
4. The project archive will be deposited initially at ReStore PLC, Liskeard and in due course (when space permits) at Cornwall Record Office.

Timetable

The study is anticipated to be commenced during early 2013. HE Projects will require at least two weeks notice before commencement of work, in order to arrange field staff time and arrange other logistics.

The archive report will be completed within 3 months of the end of the fieldwork. The deposition of the archive will be completed within 3 months of the completion of the archive report.

Monitoring and Signing Off Condition

Monitoring of the project will be carried out by Phil Copleston, Historic Environment Planning Advice Officer. Where the Historic Environment Planning Advice Officer is satisfied with the archive report and the deposition of the archive written discharge of the planning condition will be expected from the local planning authority (LPA).

Monitoring points during the study will include:

- Approval of the WSI
- Notification of commencement of fieldwork
- Completion of archive report
- Deposition of the archive

Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE employs some 20 project staff with a broad range of expertise, undertaking around 100 projects each year.

HE is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis

- Maritime and coastal zone assessments
- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

Standards



HE is a Registered Organisation with the Institute for Archaeologists and follows their Standards and Code of Conduct.

As part of Cornwall Council, the HES has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Terms and conditions

Contract

HE Projects is part of Historic Environment, Cornwall Council. If accepted, the contract for this work will be between the client and Cornwall Council.

The views and recommendations expressed will be those of the HE projects team and will be presented in good faith on the basis of professional judgement and on information currently available.

Project staff

The project will be managed by a nominated Senior Archaeologist (Adam Sharpe BA MIfA) who will:

- Discuss and agree the detailed objectives and programme of each stage of the project with the client and the field officer, including arrangements for health and safety.
- Monitor progress and results for each stage.
- Edit the project report.
- Liaise with the client regarding the budget and related issues.
- Provide background information to the geophysical survey contractor.

Work will be carried out by suitably qualified and experienced HE Projects staff.

Report distribution

Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres.

A digital copy of the report, illustrations and any other files will be held in the Cornwall HER and also supplied to the client on CD or other suitable media.

Copyright

Copyright of all material gathered as a result of the project will be reserved to the Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

Freedom of Information Act

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

HE will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

Health and safety statement

HE follows the Council's *Statement of Safety Policy*. For more specific policy and guidelines HE uses the manual *Health and Safety in Field Archaeology* (2002) endorsed by the Standing Conference of Archaeological Unit Managers and also the Council for British Archaeology's Handbook No. 6 *Safety in Archaeological Field Work* (1989).

Prior to carrying out on-site work HE will carry out a Risk Assessment.

Insurance

As part of Cornwall Council, HE is covered by Public and Employers Liability Insurance.

Adam Sharpe BA MIFA

Senior Archaeologist

14 April 2013

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