



Pennans Land, Grampound, Cornwall

Archaeological assessment of proposed wind turbine



Cornwall Archaeological Unit

Pennans Land, Creed, Cornwall

Archaeological assessment of proposed wind turbine

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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.

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Cover illustration

The centre of Grampond, looking east towards the proposed turbine site on the hill just beyond the village.

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Abbreviations

ADS	Archaeological Data Service
BGS	British Geological Survey
CAU	Cornwall Archaeological Unit
CC	Cornwall Council
DBA	Desk-based Assessment
DTM	Digital Terrain Model
EH	English Heritage
EIA	Environmental Impact Assessment
GIS	Geographical Information Systems
HBSMR	Historic Buildings Sites and Monuments Record
HER	Cornwall and the Isles of Scilly Historic Environment Record
HEPAO	Historic Environment Planning Advice Officer
IfA	Institute for Archaeologists
LB	Listed Building
LPA	Local Planning Authority
MoRPHE	Management of Research Projects in the Historic Environment
NGR	National Grid Reference
NMP	National Mapping Programme
NPPF	National Planning Policy Framework
NRHE	National Records for the Historic Environment
OASIS	Online Access to the Index of Archaeological Investigations
OD	Ordnance Datum
OS	Ordnance Survey
SAM	Scheduled Ancient Monument
WHS	World Heritage Site
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

1 Summary

Cornwall Archaeological Unit (CAU), formerly Historic Environment Projects, Cornwall Council, was approached by Cornwall Council in September 2013 with a request to provide costs for an archaeological assessment of the potential impacts of construction of a wind turbine at Pennans Land, Grampound as part of a proposed planning application by Cornwall Council (ref GCWEP).

The proposal is for a wind turbine with a hub height of 60m and a maximum blade tip height of 100m positioned on agricultural land at Pennans Land, to the northeast of Grampound in the parish of Creed at SW 94371 48744 (NGR). The wind turbine is to be sited at a height of approximately 90m OD to the southeast of the summit of a small hill. The area surrounding the site proposed for the turbine is recorded as Anciently Enclosed Land (Farmland, Medieval) though cropmark and geophysical survey evidence is indicative of prehistoric activity.

The assessment consisted of a desk-based assessment, viewshed analysis out to 10km and consideration of designated sites up to 15km from the proposed turbine location, together with a walkover survey.

Given the location chosen for the wind turbine, it was anticipated that there was some potential for negative impacts on the settings of a number of important Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Conservation Areas within a 15km radius. Visibility of the site at which the turbine is proposed is quite extensive from the ridge-tops that characterise the area, though the intervening valleys are often narrow and substantially vegetated, inhibiting views back to the proposed turbine site. The heritage assets are spread quite equally around the proposed turbine site, although at approximately 10-15km the coastline cuts across from southwest to northeast in the southeasterly sector. A small section of the northern part of the Charlestown World Heritage Site Area is potentially intervisible with the proposed turbine, though the distance from the site at Pennans Land limits the impacts. Cumulative impacts were also assessed as a result of the increasing number of both existing and proposed turbines in the area.

Multiple designated sites are located within 1km of the proposed turbine site whilst there are 43 undesignated sites that in general survive as documentary records only. Pennans Farmhouse is Grade II* Listed and is given a moderate impact rating whilst Grampound Conservation Area is considered likely to experience large impacts due both to its proximity to and intervisibility with the turbine site. There are also significant numbers of Scheduled Monuments and Grade I, II* and II Listed Buildings (predominantly farmhouses, cottages and agricultural buildings) relatively close to the proposed turbine site.

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

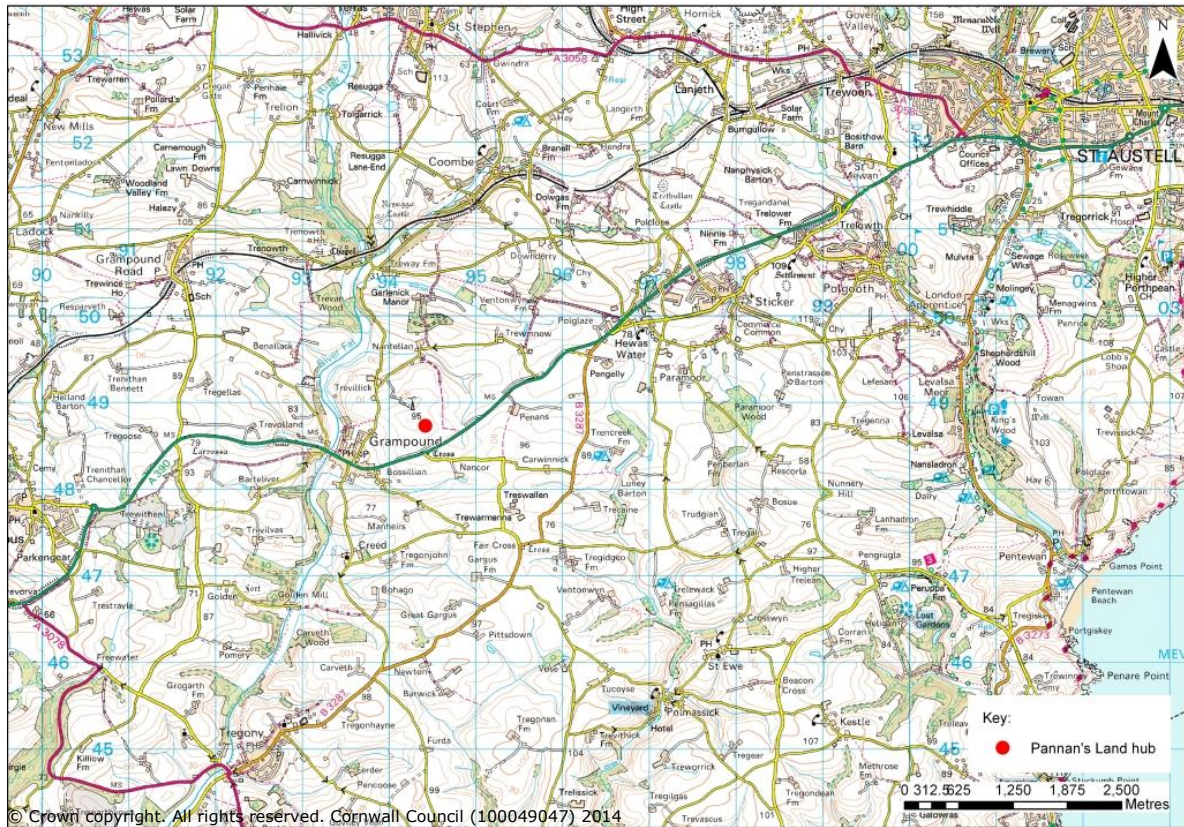


Figure 1: Location of the proposed wind turbine in south central Cornwall.

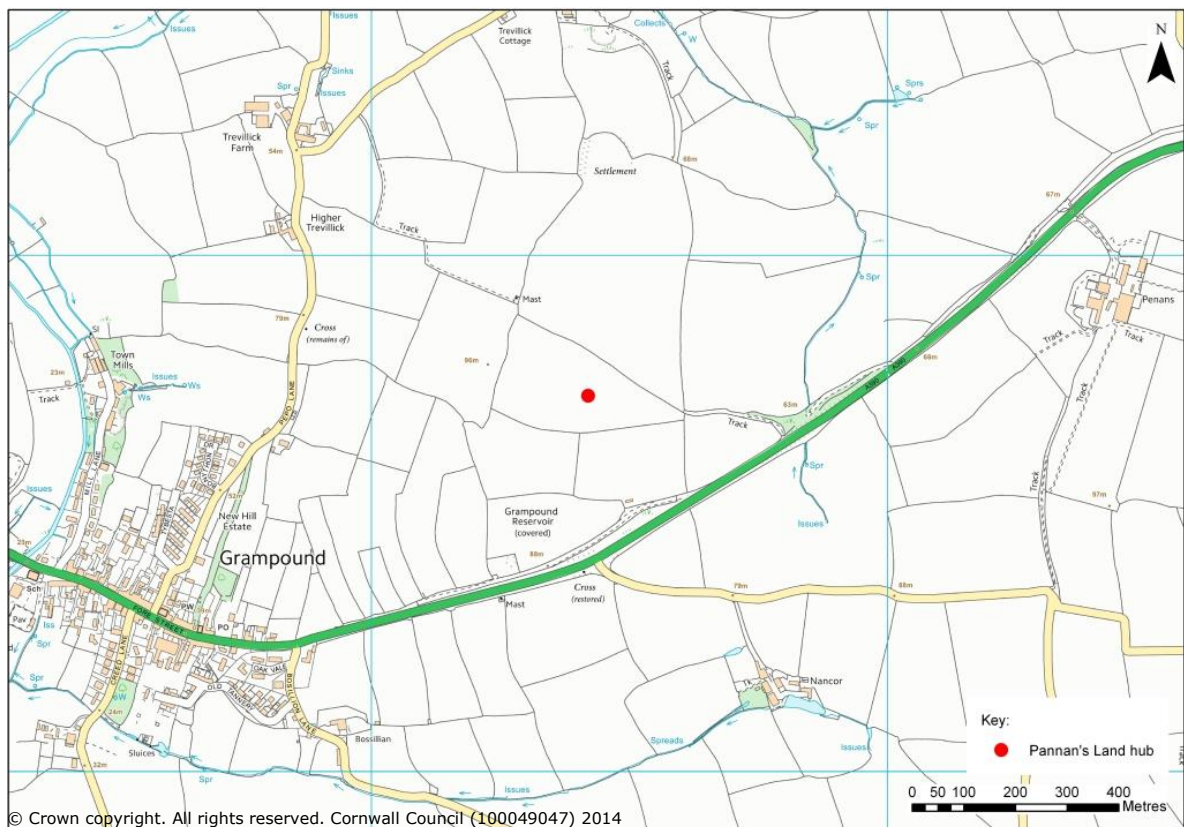


Figure 2: Location of the proposed wind turbine at Pennans Land.

2 Introduction

2.1 Project background

Cornwall Archaeological Unit, Cornwall Council, was approached by Cornwall Council in September 2013 with a request to provide costs for an archaeological assessment of a proposed wind turbine planning application. The proposal is for a wind turbine with a hub height of 60m and a maximum blade tip height of 100m. This proposal is part of the Cornwall Council GCWEP project.

The site chosen for the wind turbine is currently agricultural land at an elevation of approximately 90m OD at SW 94371 48744. The site lies to the southeast of the crest of a small hill in the parish of Creed (Figures 1 and 2). The area surrounding the site proposed for the turbine is recorded as Farmland, Medieval. This forms the agricultural heartlands with farming settlements documented before the 17th Century whose field patterns are morphologically distinct from the generally straight-sided fields formed in the later Enclosure Acts though in many areas this land is likely to have been farmed since late prehistory.

Pre-application screening for the turbine and associated infrastructure has determined that this application is considered an EIA Development within the meaning of the EIA Regulations.

A model brief prepared by the Historic Environment Planning Advice Team, Cornwall Council, was used to guide this archaeological assessment, in conjunction with the advice provided by English Heritage (2011). The brief 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.

Cornwall Council Historic Environment Planning Advice Officer's further advice dated late May 2013 states:

Our current guidance (agreed with EH & Planning) for large-sized (100 to 150m) turbines is:

- All proposals will require an archaeological assessment. Those with HER sites within 500m will also require a geophysical survey.*
- An assessment of the settings of designated heritage assets will be required when Scheduled Monuments, Listed Buildings, Conservation Areas, the World Heritage Site, Registered Battlefields or Registered Parks and Gardens lie within 15km (100m to tip) or 20km (150m to tip).*

The assessment consisted of a desk-based assessment, viewshed analysis out to 10km and consideration of designated sites out to 15km from the turbine location, a walkover survey of the location, geophysical survey within areas where potential direct impacts might occur, and site visits intended to determine setting impacts on designated sites within the surrounding landscape. The potential for cumulative impacts was considered. Given the location of the proposed wind turbine, the potential for negative impacts upon important heritage assets or their settings as a result of erecting the wind turbine was anticipated. Of those identified, the immediately adjacent undesignated Tybesta Round, the Listed Buildings at Grampound, which are within 1km, Pennans Farmhouse

and the four surrounding Registered Parks and Gardens within 10km were of particular interest because of their proximity to the proposed wind turbine location and were thought likely to be subject to the greatest negative impacts (Figures 18, 19 to 21).

2.2 Aims

The principal aim of the study is to gain a better understanding of the archaeological impacts which would result from the construction of a wind turbine at Pennans Land, Creed.

The overall project aims were 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, but including the Outstanding Universal Value of the World Heritage Site) and on undesignated historic assets.
- 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 was 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.

2.3 Methods

2.3.1 Desk-based assessment

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

- Published sources available in the Cornwall and Scilly HER.
- Historic maps including
 - Norden's Map of Cornwall (printed in 1728 but mapped *circa* 1600)
 - Joel Gascoyne's map of Cornwall (1699)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (*circa* 1810)
 - Creed Tithe Map (*circa* 1841),
 - 1st and 2nd Editions of the OS 25 inch maps (*circa* 1880 and *circa* 1907).
- Modern maps.

- National Mapping Programme transcripts from aerial photographs.
- Other aerial photographs in the Cornwall and Scilly HER.
- Historic Landscape Characterisation mapping.
- Cornwall and Scilly Historic Buildings, Sites and Monuments Record (HBSMR).
- Information held as GIS themes as part of the Cornwall and Scilly HER.

The historical and landscape context of the site was also considered during this stage of the assessment in order to establish the nature of the heritage assets which are located within the area surrounding the proposed wind turbine.

2.3.2 Viewshed Analysis

An assessment of the impacts of the proposals was made from the surrounding area using the guidelines and methodological approaches set out in English Heritage's recent consultation draft guidance on the setting of heritage assets. The methodology employs ArcGIS software and a Digital Terrain Model (DTM), which ignores potentially temporary surface features such as buildings, woodland, vegetation, etc. to provide a surface model of potential intervisibility between the proposed wind turbine and key heritage assets within the surrounding landscape. This 'bare earth' modelling provides a clear baseline from which to assess changes and impacts that could occur as a result of the proposed wind turbine. A viewshed or ZTV (Zone of Theoretical Visibility) was generated for an 'observer point' based on the location of the proposed wind turbine.

When performing viewshed analyses, several variables are used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for each observer point. For the proposed wind turbine at Pennans Land, the viewshed was based on an 'overall observer elevation value' made up of the 'elevation value' or height above sea level of the ground at the observer viewpoint, with added to this additional offsets of 60m to represent the height of the turbine hub and 100m to represent that of the blade tips (Figures 13, 14 and 15).

This viewshed was checked on the ground, given that vegetation and other factors may substantially block views to and from key sites, whilst significant heritage assets within the theoretical viewsheds were visited (where access was possible) and the landscape within which they sit considered to determine likely intervisibility with the proposed development site, inclusion within key views, and the natures of their settings, both locally and at a distance. This informed the likely scales and types of any visual impacts which might affect their settings, as required by English Heritage (2011). Viewshed radii of 10km or 5km were used to determine potential impacts on designated heritage assets (as appropriate); a radius of 1km was used for undesignated heritage assets (Figure 17).

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

The site types within these data sets were then analysed to determine their likely sensitivity to impacts on settings. Those site types which have no setting (documented sites) were excluded from further analysis, as were those which by their nature have very localised settings (for example, milestones, wayside crosses and fingerposts) except where in very close proximity to the application site. The resultant site lists were further filtered by close examination of the ZTV data and a 2005 vertical aerial photograph GIS layer to remove from the lists those sites where mature vegetation or proximal buildings would almost certainly block intervisibility and where intrusion into key views would be unlikely. Designated sites with inherently limited settings and those

with local settings which were more than 2km from the application site tended to be excluded from assessment at this stage unless specific reasons, such as wholly unimpeded intervisibility, were identified to justify their retention.

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

2.3.3 Fieldwork

In order to check the validity of the Zone of Theoretical Visibility (ZTV) indicated by the viewshed analysis, and thus the potential setting impacts on key heritage assets within the ZTV, site visits were made to both the site proposed for the wind turbine, and to selected key locations within the surrounding landscape. A visual check and photographic record were made of intervisibility (or the lack of it) between the proposed development site and heritage assets indicated by the ZTV mapping as being likely to be within the viewshed and whose settings were assessed as vulnerable to impacts from the development where public access was available. Where this was not the case, the nearest possible vantage point was utilised, preferably one in which the proposed development site formed the backdrop to a view of the designated heritage site or was within the same view.

A walkover survey of the site proposed for the wind turbine and for its cabling was also undertaken to examine the site for upstanding archaeology and to record the nature of the boundary types which might be impacted upon during the development.

2.3.4 Geophysical Survey

Grid locations

A magnetometer survey of the area surrounding the turbine site and its cabling route was commissioned from Stratascan Ltd (part of the Sumo Group).

The location of the survey grids was plotted together with referencing information. Grids were set out using a Leica 705auto Total Station and referenced to suitable topographic features around the perimeter of the site or by using Leica Smart Rover RTK GPS, (Real-time Kinematic Global Positioning System) which can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. A SmartNet RTK GPS uses Ordnance Survey's network of over 100 fixed base stations to give an accuracy of around 0.01m.

Survey equipment and gradiometer configuration

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTeslas (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The magnetic survey was carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartington Instruments Ltd. The instrument consists of two fluxgates very accurately aligned to nullify the effects of the Earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. The Grad601-2 consists of two high stability fluxgate

gradiometers suspended on a single frame. Each gradiometer has a 1m separation between the sensing elements so enhancing the response to weak anomalies. Readings were taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a 30m x 30m grid. The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m, though strongly magnetic objects may be visible at greater depths. The collection of data at 0.25m centres provides an optimum methodology for the task balancing cost and time with resolution.

The readings are logged consecutively into the data logger which in turn is daily downloaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

2.3.5 Post-fieldwork

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

An archive report (this report) has been produced and supplied to the Client. This report will be lodged with the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation once a planning application for the site has been made. A copy of the report will be supplied to the National Record of the Historic Environment (NRHE) in Swindon, to the Courtney Library of the Royal Cornwall Museum and to the Cornish Studies Library. All digital records will be filed on the Cornwall Council network.

An English Heritage/ADS online access to the index of archaeological investigations (OASIS) record has been made covering this assessment project.

3 Location and setting

The site is located approximately 90m OD at SW 94371 48744 (NGR). It is approximately 12km east-northeast of Truro, 10km southwest of St Austell and less than 1km northeast of the village of Grampond (Figure 1). Topographically the site is on a southeast facing slope slightly below the crest of a hill surrounded by ridge-tops that form a truncated plateau (Figure 11). The site consists of a sub-triangular field bounded by Cornish hedges on all four sides (Figure 23). These hedges were approximately 1-2m in height with vegetation including brambles, hawthorn, blackthorn and grasses extending up to 2.5m, together with sporadic trees.

The topography defines the views to and from the site at ground level, with the greatest intervisibility being to and from the higher ground. Agricultural activities immediately surround the site, whilst pockets of designed landscapes populate the wider area. Pennans Land occupies the higher ground overlooking the busy A390 road.

From ground level at the proposed turbine location the views extended beyond Pennans Farmhouse to the east to the next ridges to the south, and also to the north, although this is quite a distance away. Ground level views from the site are closed off by the rising land within the turbine field to the west (Figure 24). Given the height of the wind turbine, this development is likely to be visible from a considerable distance away in the surrounding landscape (Figures 13 to 15).

The bedrock geology in this location consists of sandstone and mudstone rocks of the Gramscatho Formation. This is a sedimentary bedrock formed approximately 375-398 million years ago in the Devonian Period in a deep sea environment. These rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then redeposited as graded beds. No superficial deposits are recorded (British Geological Survey website).

The Historic Landscape Characterisation of the turbine site is recorded as Farmland, Medieval (Anciently Enclosed Land). This HLC Type forms Cornwall's agricultural heartlands, and contains farming settlements documented before the 17th Century set within morphologically distinct field patterns of Medieval or Prehistoric origins (Figure 10), and is likely to contain archaeological evidence for early settlements.

4 Project Extent

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

The assessment also takes into account and quantifies impacts on the settings of heritage assets (both designated and undesignated) within the viewshed and selected radii of the proposed turbine sites in line with paragraph 129 of the 2012 National Planning Policy Framework (NPPF), sections 16(2) and 66(1) of the Planning (Listed Buildings and Conservations Areas) Act 1990 Chapter 9, and English Heritage guidance relating to the setting of historic assets (2011) and on wind energy and the historic environment (2005). These impacts were assessed out to the following distances:

- Non-designated heritage assets – 1km radius.
- Grade II Listed Buildings and Conservation Areas – 5km radius.
- World Heritage Sites – 10km
- Scheduled Monuments, Grade 1 and Grade II* Listed Buildings and Registered Parks and Gardens – 15km radius.

5 Designations

The table below cross-references the designated and undesignated assets with the radial distance of their locations from the study area (Figure 16). The distances used refer to the English Heritage guidance relating to the setting assessments of potentially impacted heritage assets. Where assets cross over between two distances, the closest distance to the study area has been used to account for that asset. The first number in each box refers to the total number of assets within that radius, the second refers to those which fall within the ZTV. For the 10-15km zone there was only a consideration of sites within it, not a full viewshed analysis, so the single number represents the total number of sites of each designation within the zone.

Designation	Within 1km/ viewshed	1-5km/ viewshed	5-10km/ viewshed	10-15km	Total/ viewshed
Undesignated Sites (Regional/ Local)	43/40	-	-	-	43/40
Conservation Areas (National)	1/1	2/2	-	-	3/3
Registered Parks and Gardens (National)	-	2/2	2/2	4	8/4
Grade II Listed Buildings (National)	72/59	168/65	-	-	240/124
Grade I & II* Listed Buildings (National)	1/1	18/10	46/6	55	118/19
Scheduled Monuments (National)	1/1	10/7	54/12	61	111/26
World Heritage Sites (International)	-	-	1/1	-	1/1

Table 1: Quantification of sites within 15km of the study area and those which fall within the viewsheds.

5.1 Rights of Way

No rights of way traverse the site proposed for the wind turbine, or the remainder of the area required for sub-surface cabling. This area is not registered as open access land under the CROW Act 2005.

6 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.

6.1 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.*

6.2 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.

7 Results of desk-based assessment

The prehistoric remains in this area are concentrated into a series of hilltop enclosures rather than of a scattering of findspots or a clustering of smaller monuments such as barrows as typified by other areas in Cornwall. There are some barrows in elevated locations such those at Carnwinnick, Bodrugan and on the Dodman. These hilltop sites are variously described as 'camps,' 'enclosures,' 'hillforts' or 'cliff castles', and there are additional probable enclosures recorded by NMP mapping immediately around the proposed turbine site (Figure 12). In particular, in the adjacent field to the north, Tybesta Round is recorded by the NMP, its site being partially fossilised in the curved field boundaries that still remain. This appears to have been a 0.75 ha univallate enclosure with a formerly substantial bank and ditch and possible internal and annexe features. Tybesta Round is probably Iron Age or Romano British in date and is part of a wider pattern of activity identifiable from aerial photographs within the surrounding landscape from around these periods. All are located on hill crests, the majority taking advantage of positions overlooking the multiple river and stream valleys throughout this area. Castle Hill is one of the most typical of these, sited at a confluence of three valleys and overlooking a small cove, it also commands good views inland. Resugga, a univallate hillfort, Carvossa, a Romano-British defended enclosure and Golden Camp, another large univallate hillfort all overlook, from west to east, the upper reaches of the Fal River, thought in the past to be navigable as far as Grampound (Figure 28). Dodman Point is the most impressive of the sites of this type within the wider area, the large ramparts enclosing an area of 34ha and a long history of use physically represented by Bronze Age barrows, an Iron Age enclosures and a Medieval field system.

Medieval strip fields are indicative of the characteristic agricultural features still surviving within the wider landscape. Within 1km of the proposed turbine site the narrow strips of land indicative of Medieval burgage plots survive associated with properties of medieval origin in Grampound (Figure 17) and many local place-names have Medieval origins. The earliest record of Pennans Land is not clear though the origin is likely to be Cornish. The derivative 'pen' means 'head,' 'top,' 'end,' or 'promontory' though as a strictly topographical term it should mean 'top end' of any feature. As a result 'pen' is often qualified by other descriptive suffixes, common among them is 'nans' meaning 'valley,' though to which valley around Pennans this refers is not obvious. Grampound is first recorded in 1297 as 'Ponsmur,' Cornish for 'great bridge' and later in 1302 as 'Grauntpoint,' a French expression of the same name, and refers to the bridge at the west end of the village over the River Fal.

The closest recorded Domesday Manor is likely to have been Tybesta, especially given the use of the name around the area to the north of Grampound to refer to fields and latterly roads and houses. Tybesta was held by the Count of Mortain following 1066 and was previously held by Ralph the Constable who paid tax for 1h where there was

actually 3h of land. The Manor holdings were comparatively large with 27 villagers, 20 smallholders, 40 acres of woodland and 160 sheep. It is one of the few manors, though not unusual among the Count's holdings, to increase in value from £12 to £15, 18s and 4d. Tybesta and Grampound were clearly important early medieval centres within Cornwall.

Pennans Land is not depicted on Norden's 17th century map, Gascoyne's 1699 map or Martyn's map of 1748 (Figures 3 - 5). However Grampound is depicted on them all and Pennans or Pennance Farmhouse is depicted on Gascoyne's and Martyn's maps. In some cases Martyn includes the name of the owner next to the farms or settlements. At Pennans Martyn records the name of Hawkins, possibly a link to other family members at Trewithen.

On the 1841 Creed Tithe Map the narrow burgage plots around Grampound are very distinct whilst the wider area shows hints of additional strip fields surviving amongst later alterations. In all probability this area was a relatively small, hilltop area of remnant unenclosed downland flanked by the medieval Great Fields which were fossilised along their strip field boundaries in the early post medieval period (Figure 7). This probably reflects local factors such as the topography and the remains of Tybesta round. The 1840 Tithe Apportionment reflects the apparent significance of 'Pennance,' demonstrating the quantity of land it owned. The turbine field, numbered 145 was arable land called Outer Cragas, Cragas possibly deriving from the Cornish 'Crug' meaning barrow and therefore probably referring to the local archaeology. This field, along with the fields to the south (146-148) and Tybesta (141-143) were all owned by William Carlyon of Pennance and occupied by Nicholas Donnithorne or Richard Couch, who also occupied the house at Tybesta. Pennance itself (173-178) consisted of orchards, meadows, a plantation, mowhay and the house which was occupied by Lewis Croom and again owned by William Carlyon. The field immediately north of the turbine field (274) is, significantly, named 'Castle Field' indicating awareness of Tybesta Round within the field. This arable land was owned and occupied by Thomas Grigg of Nantellan.

The 1875 and 1901 OS maps show few changes to the landscape although they both mark the mapped extent of Tybesta Round and more clearly depict an avenue of trees associated with Pennans Farmhouse (Figures 8 and 9). The avenue probably dates to the 18th century and may have been deliberately aligned with Tybesta Round as part of an ornamental landscape. There was initially a brick bridge that carried the drive over the road to the house though this appears to have been demolished after a short period as it is not depicted on the 1st edition Ordnance Survey Map (Figure 6). The Farmhouse dates back to c1680 with remodelling and the addition of wings to create a 'U' shaped plan dating to c1700-1720 (Figure 25). The interior retains the 17th century stair and plaster ceilings as well as 18-19th century decorative features. By the early 1800s Hitchens recorded that the house and avenue had fallen into decay, probably as a result of the rise of the large post medieval estates such as Trewithen and Trewarthenick. Although there is uncertainty regarding the completion and use of the wings, and the length of the period of decay, Pennans Farmhouse was quite a substantial and originally high status building, and a very significant feature in the surrounding landscape.

The Post Medieval period in Cornwall and elsewhere saw the development of large estates with country houses, designed landscapes and significant collections of plants. Heligan, Caerhays, Trewarthenick and Trewithen are located to the south of Pennans Land (Figures 21 and 22). Heligan was part of the Arundell estate during the 12th Century and was sold to Sampson Tremayne in the late 16th Century. The house was developed from the 17th Century, with the garden undergoing several remodelling phases in the 17th-18th Centuries. In the 19th Century there was extensive planting of exotic species including rhododendrons and bamboo. These gardens have now been restored after they became derelict following World War II.

Caerhays was also part of the Early Medieval estate of the Arundell family, passing by marriage into the Trevanion family c1379. Improvements to the house and garden were made in 1703 and successively throughout the 18th and 19th centuries with input from John Nash and possibly Humphry Repton. The estate was sold to the Williams family in 1853 and c1885 John Charles Williams began the woodland garden that features the camellias and rhododendrons that Caerhays is now noted for.

Trewarthenick was purchased by John Gregor, a wealthy Truro merchant, in 1640. His grandson John 'the giant' Gregor built a new house, almost certainly on the site of an existing one by 1680 in the latest Palladian style. In the late 18th century Francis Gregor invited Humphry Repton to draw up proposals for improvements to the house and landscape, many of which were undertaken. Henry Harrison was then invited to further improve the grounds and house in particular in the early 1800s by Sarah Gregor. Further changes were made in the early 20th century, according to the fashions of the day, by Paul Welman, though the estate was largely broken up following his death and the house was converted into flats in the 1960s.

Trewithen was purchased in 1715 by Philip Hawkins of Pennans, probably the same Pennans as the farmhouse referred to above. Philip made improvements to the existing house and grounds including planting the pleasure grounds and park. In 1766 Sir Christopher Hawkins inherited the estate and extended the property, commissioning the picturesque circuit ride. During World War I the government requisitioned timber from the park, the clearance of which provided space for the establishment of a woodland garden with collections of rhododendrons and camellias. Many of these plants were derived from the nearby gardens at Caerhays and Trengwainton.

The wider landscape to the northeast and east has been considerably altered by china clay extraction, an industry which continues to significantly modify the appearance this part of the landscape. The resultant pits and spoil tips are clearly visible and the ports and coastal villages around St Austell Bay have many related industrial features. Charlestown, a component of the Cornish Mining World Heritage Site, is the prime example (Figure 21). In the modern period few changes have been made to the immediate surroundings of Pennans Land and Grampound; the small farming settlements and fields remain, many structures being protected by Listed Building status, especially those in Grampound which retains its Medieval linear layout; the estates remain largely intact influencing the arrangement of the landscape with the exception of Pennans which had declined to become simply a farmhouse. The A390 road has been upgraded into a major route to St Austell with associated modern infrastructure whilst the surrounding landscape is increasingly being used for renewable energy installations.

8 Results of viewshed analysis

Given the topography of the site, its surroundings and the height of the turbine, the viewshed analysis suggests that it is likely to be visible over a fairly large proportion of the surrounding countryside. In line with the requirements of Cornwall council and English Heritage guidance, a Zone of Theoretical Visibility has been mapped to a distance of 10km from the proposed site, though the ZTV mapping was extended out to 15km in view of the height of the proposed wind turbine. The visibility of the turbine will diminish with distance, and will at some local sites, be blocked by the local terrain, by intervening buildings within settlements or farmsteads, or by high hedgerows and mature groups of trees. However the blocking effects of vegetation, particularly deciduous trees, changes seasonally and trees may be subject to cutting back or complete removal which could significantly change the degree of intervisibility between a historic asset and the proposed turbine site, potentially affecting the degree of setting impact which might occur.

8.1 1km radius ZTV

See Figures 15 to 18

The ZTV suggests that the turbine mast or blades could potentially be visible from almost the entire zone, with the exception of a few steep slopes facing away from the site to the north and west. The zone includes one Scheduled Monument: a wayside cross, and one Grade II* Listed Building: the Manor House, both in Grampound. Grampound is a Conservation Area within which there are multiple Grade II Listed Buildings. An additional five Grade II Listed Buildings and forty undesignated sites are within the 1km ZTV.

8.2 1km to 5km radius ZTV

See Figures 15 to 20

Parts of the wind turbine could potentially be visible from most of the ridge-tops that encircle the proposed site within the 1-5km radius area. The area extends north to the village of St Stephen, east to the village of Polgooth and west to Probus. It is characterised by a series of steep-sided valleys and broader ridge-tops which influence the theoretical intervisibility.

The wind turbine will not be intervisible with some sites, including some properties in the Conservation Areas of Tregony and Probus due to the topography (Figures 15 and 19). The Grade I Listed Church of St Creda and Grade II* Pennans Farmhouse will be intervisible however due to its location on a slope facing away from the proposed turbine site Grade II* Listed Garlenick Manor will not be intervisible (Figures 15, 25 and 30). There will be greater potential intervisibility with the proposed site from features on ridge tops, in particular the prehistoric camps at Resugga and Carvossa (Figure 26).

This zone contains a number of potentially intervisible Scheduled Monuments and Listed Buildings. Notably, there will be partial intervisibility with the Registered Parks and Gardens of Trewithen and Trewarthenick (Figures 21 and 22).

8.3 5km to 10km radius ZTV

See Figure 15, 16, and 21

The wind turbine would potentially be visible from approximately 40% of the 5km to 10km radius area around it, visibility again being significantly constrained by the local topography of ridges and valleys. Equally significantly, approximately 20% of this zone is located over the sea, specifically Mevagissey and Veryan Bays. Whilst the sea does not feature any historic assets, the maritime activities and seaward approaches are significant to the landscape setting and history of the area. They are likely to have a high degree of intervisibility with the proposed site.

Within the ZTV for this radius are a number of notable sites including the Scheduled Monuments of St Stephens Beacon and Black Head and the Registered Parks and Gardens at Heligan and Caerhays. All will be potentially intervisible to some extent with the proposed turbine site.

8.4 10km to 15km radius ZTV

See Figure 16 and 22

This radius extends to St Columb Major in the north, Menabilly in the east, and Truro to the west. The outer edge of the southern sector is approximately 5-8km out to sea from the coastline. The visibility of the proposed wind turbine site within this zone is likely to be low, probably confined to ridge-tops, and will be moderated by the relatively considerable distance of heritage assets from the proposed wind turbine site. The zone contains a number of Grade I and II* Listed Buildings, four Registered Parks and Gardens and clusters of Scheduled Monuments.

8.5 Scheduled Monuments within the 10km ZTV

There are 23 Scheduled Monuments within 10km of the proposed wind turbine site falling within the ZTV, as follows:

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

Reference	Site Name
1020714	Round 450m south of Tregeagle
1010843	Fair Cross, 420m west-northwest of Tregidgeo farm
1020179	Round and annexe 720m west-southwest of Tregear
1016889	Golden Camp hillfort
1019021	Five bowl barrows 480m and 510m north of Hendra Farm
1019064	Three bowl barrows 670m and 775m northwest of Homer Downs
1007952	Medieval wayside cross base 550m west-northwest of Lanhadron Farm
1011994	Sticker Camp later Prehistoric-Roman round
1016284	Nancor Cross, 400m northwest of Nancor
1021003	Market Cross and cross base immediately southwest of St Nun's church
1003269	Longstone at Mount Charles
1007291	Round southwest of St Stephen's Beacon
1016890	Prehistoric and Roman settlement at Carvossa
1004470	Round barrow 950yds (870m) southeast of Bodrugan
1007962	Medieval wayside cross base on Creed Hill, 400m south of Grampound
1003091	St Stephen's Beacon hillfort
1020104	Standing cross 200m south of Trelowthas
1003101	Tregargus stone grinding mill No 2
1020752	Round 330m southeast of Penhale
1020750	Four round barrows 480m north of Besowsa
1017685	Resugga Castle later Prehistoric univallate hillfort
1019743	Castlezens multiple enclosure fort
1020751	Round barrow 530m northwest of Carnwinnick

Table 2: Scheduled Monuments within the 10km radius.

Some of these potentially intervisible Scheduled Monuments consist of structures such as wayside crosses, churchyard crosses and cross bases whose settings are inherently very local. The majority are not close to the site proposed for the wind turbine and in line with English Heritage guidance, no assessment of impacts on their settings therefore needs to be made. No Scheduled Monuments are within a kilometre of the proposed turbine site

Hillforts, barrows, standing stones and stone circles, in contrast, were intended, when constructed, to have far-ranging settings. Many of the Scheduled Monuments within the 10km viewshed consist of monuments of these types, and assessments of impacts on the settings of a number of these were judged to be required where they lay relatively close to the site proposed for the wind turbine, where substantial intervisibility was

likely, where they were judged to have sensitive settings, or where impacts on or intrusion into key views of the sites appeared likely to occur.

8.6 Registered Parks and Gardens within the 15km ZTV

Reference	Site Name	Grade
1000658	Trewarthenick	II
1000538	Heligan	II
1000512	Chyverton Park	II
1000510	Trewithen	II*
1000448	Caerhays Castle	II*
1000545	Tregrehan	II*
1000656	Trelissick	II*
1000655	Tregothnan	II*

Table 3: Registered Parks and Gardens within the 15km radius.

The Grade II Registered Parks and Gardens at Heligan and Trewarthenick and the Grade II* Gardens at Caerhays Castle and Trewithen are within 10km of the proposed turbine site (Figure 21). All are positioned within or incorporate valleys, and as such the potential intervisibility with the turbine will be sporadic across these nationally designated areas. Tregrehan, Trelissick, Chyverton Park and Tregothnan are more than 10km away and both intervisibility and visual impacts are likely to be minimal (Figure 22). The density of vegetation recorded within all of the parks reduces the likelihood of intervisibility, however all are designed landscapes set within natural or agricultural contexts.

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

The north-western edge of the Charlestown Area of the Cornish Mining World Heritage Site is intersected by the 10km radius ZTV (Figure 21). The majority of the area, along with its associated leat lies within a valley and is unlikely to be intervisible with the turbine site at all, significantly reducing the likelihood or severity of any potential impacts.

8.8 Grade I and II* Listed Buildings within the 15km radius

There are 118 Grade I or II* Listed Buildings within 15km of the proposed wind turbine site, 18 of these falling within the ZTV.

Reference	Site Name	Grade
1328913	Pavilion approximately 15m northwest of Trewithen House	I
1141100	Trewithen House	I
1136281	Church of St Crida	I
1327073	Church of St Michael	I
1160827	Pavilion approximately 15m northeast of Trewithen House	I
1144033	Pennans Farmhouse	II*
1141132	Golden Manor	II*

1310504	Barn with gate piers and adjoining building approximately 50m east of Golden Manor house	II*
1141079	Barn and two adjoining engine houses approximately 10m north of Trewithen Farmhouse	II*
1212080	Long stone	II*
1141133	The Keep approximately 50m east of Golden Manor	II*
1136796	Levalsa Farmhouse	II*
1291361	The left Round House and adjoining wall to west side	II*
1291400	The east Round House	II*
1327435	Manor houses	II*
1312571	Treveor Farmhouse with attached front wall and gateway	II*
1291360	The right Round House	II*
1219588	Chyronnd	II*

Table 4: Grade I and II* Listed Buildings within the 15km radius.

The Listed Buildings within Grampound and Pennans are the closest of these at 1km from the proposed site (Figure 18). Golden Manor and Trewithen House and those within are within 5km; the remaining heritage assets are all outside the 5km radius zone around the proposed turbine site (Figure 22). The churches, in particular, are potentially significant landmarks in addition to their inherent historical importance; however many of the sites listed above, such as the barns and pavilions are more locally important and have much more limited landscape settings.

8.9 Grade II Listed Buildings within the 5km radius ZTV

Within the 5km zone there are 240 Grade II Listed Buildings. Of these, 124 are within the ZTV:

Reference	Site Name	Grade
1327448	Garden walls about 100 metres east of Pennans Farmhouse	II
1312606	Railway viaduct over the River Fal	II
1141094	Tregellas Farmhouse	II
1327447	Nantellan	II
1144802	Signpost at SW 982 461	II
1136252	Nancor Farmhouse	II
1136447	Broadhurst	II
1144791	Bosue Farmhouse	II
1312746	Olde walls	II
1160506	Benallack Farmhouse and garden walls with iron gate	II
1252449	Entrance gate with piers approximately 500 metres north west of Trewithen House	II
1328911	Trenowth Miller's House	II
1328910	Trenowth Barton (east) with adjoining garden wall, north	II

1141098	Trenowth Mill	II
1136558	House immediately west of The Cottage restaurant	II
1144007	Drying shed and attached pit shed at the east side of the manor tannery group	II
1160837	Kitchen garden walls adjoining service wing to west of Trewithen House	II
1136433	Bonython	II
1160650	Wall approximately 30m to the southeast of Golden Manor	II
1310365	Treworyan Farmhouse	II
1160689	Parkengear	II
1141101	Gate and bollards approximately 30m to the north and west of Trewithen House	II
1328891	Ice house, wall and ash house 20m north of Golden Manor	II
1136319	Pen y lan and house attached to east	II
1136891	Barn about 50m west of Luney Barton Farmhouse	II
1141130	Bart-liver Farmhouse, garden walls, iron railings and gate to south	II
1144032	Milestone at SW 951 489	II
1160839	Gate with piers approximately 100m northeast of Trewithen House	II
1144031	Guidestone at SW 957 473	II
1312541	Pair of gate piers about 100m southeast of Tregonan Farmhouse	II
1328892	Wall, approximately 5m northwest of Golden Manor	II
1327047	Guidestone at SW 991 471	II
1327451	The Dolphin Inn	II
1327446	House about 60m east of Trecaine Farmhouse with attached front garden walls and gateway	II
1144803	Tregonan Farmhouse	II
1136914	Signpost at SW 961 461	II
1219106	Congregational church and boundary wall	II
1141097	Trenowth Barton (west)	II
1144028	Cross shaft at SW 955 473	II
1327464	Dovecote and pigsties with screen wall attached to east of Resugga Farmhouse	II
1144042	Town hall and clock tower	II
1141103	Entrance gate and piers approximately 500m northeast of Trewithen House	II
1312592	Barn about 15m southeast of Tregascoe Farmhouse	II
1160614	Mounting block and adjoining walling approximately 30m	II

	north of Golden Manor	
1143992	The stack house	II
1141104	Pavilions and implement shed with garden walls adjoining Trewithen Home Farm House	II
1144036	Gates and piers at the east entrance to the churchyard of the church of St Crida	II
1144013	Belmont	II
1144009	Trenance	II
1136569	Hillsboro	II
1144044	House immediately east of Bonython	II
1136361	Springfield	II
1143993	Stable about 10m southeast of Tregascoe Farmhouse	II
1141081	Carbeth Farmhouse and outbuildings around courtyard to northeast	II
1144030	Guidestone at SW 954 473	II
1144794	Guidestone at SW 984 471	II
1327471	Radnor House antiques	II
1312623	Sticker Methodist church and attached Sunday school	II
1327470	Brooklyn	II
1312725	Shell Cottage and Old Hill Cottage	II
1136419	Sunnyside	II
1136836	Resugga Farmhouse	II
1327452	Roskear	II
1327437	The Cottage restaurant	II
1144010	Penwyn House	II
1391499	K6 telephone kiosk	II
1327439	Laurels	II
1144016	Retanning Farmhouse	II
1327436	April Cottage	II
1143994	Barn about 20m southeast of Tregascoe Farmhouse, with attached retaining wall and range of pigsties	II
1144040	Lindley	II
1144801	Stable about 20m south of Luney Barton Farmhouse	II
1144041	Church of St Nun with attached wall, railings and gateway to south	II
1143990	Nanzeath Farmhouse	II
1327443	Creed House	II
1144043	Woodbine Villa	II
1144011	Vine Cottage	II

1327450	Trevillick guest house	II
1136348	Ringmore House	II
1136277	Trevillick Farmhouse	II
1144006	House immediately west of Brooklyn	II
1396215	A390 Milestone approximately 16m east of the weighbridge	II
1144035	Bosillian Farmhouse	II
1312753	House immediately west of Penwyn House	II
1327446	House about 60m east of Trecaine Farmhouse with attached front garden walls and gateway	II
1144045	House immediately west of Broadhurst	II
1144804	Trelewack Farmhouse	II
1312749	House attached to west of April Cottage	II
1143994	Barn about 20m southeast of Tregascoe Farmhouse, with attached retaining wall and range of pigsties	II
1136621	The thatched cottage	II
1141102	Gate with piers approximately 110m northeast of Trewithen House	II
1144038	Vercoe	II
1406818	Cartshed 22m southwest of Barteliver Farmhouse, Grampond, Truro	II
1312785	The Hollies	II
1327449	Stable in the churchyard about 20m southeast of the Church of St Crida	II
1144039	Godfreys	II
1327046	Cross base at SW 989 478	II
1136880	Tregascoe Farmhouse	II
1396162	A390 Milestone approximately 186m south of Telephone Exchange	II
1136332	Trevail	II
1137241	Churchtown Farmhouse	II
1144027	Stable/coach-house about 30m north of Creed House	II
1144005	Sunrise and house attached to east	II
1327052	Rose Cottage	II
1144008	Manor house	II
1136342	Ye Old Post Office and house attached to east	II
1144037	Pendene and Little Pendene	II
1327464	Dovecote and pigsties with screen wall attached to east of Resugga Farmhouse	II
1144041	Church of St Nun with attached wall, railings and gateway to south	II

1144004	Brouard Cottage	II
1136246	Milestone at SW 965 498	II
1312820	Fairman House	II
1327438	Bridge Cottage	II
1327434	Trevrea	II
1136303	Roberts monument in the churchyard about 8m northeast of the chancel of the Church of St Crida	II
1312837	Pair of attached houses immediately west of the Trevillick guest house	II
1136272	Polglaze Farmhouse	II
1406260	Bank barn southwest of Barteliver Farmhouse	II
1396160	Old A390, now by-pass, Milestone approximately 74m southwest of reservoir	II
1327448	Garden walls about 100m east of Pennans Farmhouse	II
1144772	Nantuat	II
1144046	Hollies Stores and Post Office	II
1136383	Market Cross	II
1136264	Stable about 20m south of Pennans Farmhouse	II

Table 5: Grade II Listed Buildings within the 5km radius.

Impacts on the settings of most of these feature types are very unlikely unless they are in very close proximity to the proposed wind turbine. The list includes structures such as guideposts, milestones, gate piers, churchyard features, headstones or chest tombs and crosses, all of which have very localised settings. The majority of the others such as houses, farmhouses, ice houses and manors were originally intended to have rather more extensive settings; however these are still likely to be limited in extent. However the exceptionally high number of buildings deemed of high enough quality to be Grade II Listed is a significant indication of the former wealth and importance of this area in the Medieval and Post Medieval periods. This significance applies to the relative importance of the area in its wider Cornish context and more widely in the degree of survival of these buildings, the number of which is unusual. Few of these structures are likely to have been constructed with the aim of being dominant in the landscape, with the intention to be viewed from a distance, or with designed vistas. On the other hand, several of the assets were probably designed to be 'ornaments' to the adjacent area, often to be viewed from an adjacent approach or were associated with long-established and important estates such as Pennans or Trewithen, accruing a certain degree of significance in the landscape as a result.

8.10 Conservation Areas within the 5km radius ZTV

The three Conservation Areas within 5km of the proposed turbine site are partially within the Zone of Theoretical Visibility (Figure 19). The eastern edges of the Tregony and Probus Conservation Areas fall within the ZTV whilst almost all of the Grampound Area is within the ZTV. This could expose them to some visual and setting impacts from the wind turbine.

Grampound, Probus and Tregony are slightly larger nucleated settlements compared to others in the vicinity and are at least of medieval origin, having once had the status equivalent to towns rather than the villages they are now considered to be. They are quite visible within the landscape and views of them from outside their boundaries are likely to include the proposed wind turbine. In particular views of Grampound from the

high ground surrounding the settlement including from the public rights of way near Benallack, from points along the roads and in particular from the A390, and from the pathway from Carvossa to Grampound may incorporate the proposed turbine. Surrounding Tregony, views from the high ground along the River Fal, along the boundaries of Trewarthenick Park, Grogarth Farm and the pathways around Tregony and Golden may include the turbine. There are many public rights of way leading to Probus, mostly from the west that may incorporate views of Probus, its church tower, and the proposed turbine. Views from public rights of way including the Conservation Areas and the proposed turbine may be especially significant because they are publicly accessible and the views will be those experienced by walkers who are likely to have the time and intention to appreciate the various aspects of the scenery. This is in comparison with the views experienced by drivers on the roads highlighted above whose experience of the landscape is likely to be rapidly changing and mostly focussed on safely arriving at their destinations, rather than the quality or character of the landscapes they are passing through. Whilst both types of viewer may experience a negative impact as a result of the proposed turbine being constructed, the impact on walkers will be enhanced by the extended length of time that they may experience that negative impact.

8.11 Undesignated assets within the 1km radius ZTV

The ZTV mapping suggests that the majority of the landscape within a 1km radius of the site will be intervisible with all or part of the proposed wind turbine (Figure 17). Within this zone, the Cornwall and Scilly Historic Environment Record (HER) records 40 potentially intervisible sites:

Reference	Site Name	Period
MCO21719	NANTELLAN - Undated enclosure	Undated
MCO21068	HIGHER TREVILLICK - Iron Age field system, Romano British field system	Prehistoric
MCO21238	NANCOR - Prehistoric field system	Prehistoric
MCO3159	NANCOR - Bronze Age barrow	Prehistoric
MCO30044	TREVILLICK - Iron Age enclosure, Romano British enclosure	Prehistoric
MCO3157	NANCOR - Bronze Age barrow	Prehistoric
MCO30043	TREVILLICK - Iron Age field system, Romano British field system	Prehistoric
MCO30046	TREVILLICK - Iron Age trackway, Romano British trackway	Prehistoric
MCO3158	NANCOR - Bronze Age barrow	Prehistoric
MCO3834	TREVILLICK - Bronze Age barrow	Prehistoric
MCO55267	TREWINNOW VEAN - Prehistoric/ Medieval field boundary	Prehistoric
MCO8747	TRESWALLEN - Iron Age round, Romano British round	Prehistoric
MCO30045	TREVILLICK - Iron Age enclosure, Romano British enclosure	Prehistoric
MCO8881	TYBESTA - Iron Age round, Romano British round	Prehistoric
MCO21626	HIGHER TREVILLICK - Iron Age enclosure, Romano British enclosure	Prehistoric
MCO13539	BOSSILIAN - Early Medieval settlement, Medieval	Early

	settlement	Medieval
MCO17932	TREVILLICK - Early Medieval settlement, Medieval settlement	Early Medieval
MCO17271	TREGENSA - Early Medieval settlement, Medieval settlement	Early Medieval
MCO11670	TYBESTA - Early Medieval settlement, Medieval manor, Medieval settlement	Early Medieval
MCO16045	PENBETHA - Medieval settlement	Medieval
MCO15858	NANTELLAN - Medieval settlement	Medieval
MCO15812	NANCOR - Medieval settlement	Medieval
MCO10985	TREVILLICK - Medieval house, Post Medieval farmhouse	Medieval
MCO26118	CROGGANS TANNERY - Medieval tannery, Post Medieval tannery	Medieval
MCO26121	TYBESTA - Medieval fulling mill	Medieval
MCO5303	GRAMPOUND - Medieval cross	Medieval
MCO5039	BOSSILLIAN - Medieval cross	Medieval
MCO5300	GRAMPOUND - Medieval cross	Medieval
MCO5301	GRAMPOUND - Medieval cross	Medieval
MCO5302	NANCOR CROSS - Medieval cross	Medieval
MCO26113	TYBESTA - Medieval well	Medieval
MCO6140	TREVILLICK - Medieval cross	Medieval
MCO9954	GRAMPOUND - Medieval chapel	Medieval
MCO11877	BOSSILIAN - Post Medieval mine	Post Medieval
MCO26139	GRAMPOUND - Post Medieval lock up, Post Medieval town hall, Post Medieval clock tower	Post Medieval
MCO29740	TREVILLICK - Post Medieval cider press, Post Medieval cider mill	Post Medieval
MCO48536	PENNANS - Post Medieval milestone	Post Medieval
MCO44365	GRAMPOUND - Post Medieval church	Post Medieval
MCO53981	BOSSILIAN - Post Medieval house	Post Medieval
MCO40755	PENNANS - Post Medieval avenue	Post Medieval

Table 6: Undesignated assets within the 1km radius.

The severity of impacts on undesignated assets will depend on the degree of their survival, the type of monument and the nature of its setting. Many are undesignated because they are no longer upstanding and have only documented records which have no setting. Others such as signposts have very immediate settings and dovecotes or chapels have specific settlement-related settings, likely to be less sensitive to the visual impacts implied by the ZTV. Higher Trevillick and Trevillick field systems and many of

the barrows named above are potentially equivalent in significance with other similar Scheduled Monuments in the area, though are not currently so designated, primarily because most of the examples above are considered to survive primarily as cropmarks. However there remains a strong possibility that these sites will also include significant sub-surface remains.

9 Results of site walkover

A site walkover was undertaken on 2nd and 3rd May 2014. The weather was generally overcast with sunny periods. The proposed turbine field is located close to the crest of a hill and is approximately triangular. The field slopes gently to the southeast (Figure 23) and is currently in very long grass. No upstanding archaeological features were visible within the site due to the length and density of the grass. The field boundaries are approximately one metre high Cornish hedges topped with a further metre of vegetation including hawthorn, blackthorn and brambles. The views to the northwest were quite restricted by the topography of the field but from ground level beyond this boundary they were quite extensive. Views in all other directions were also extensive; the views to the east being most far-reaching, those to the south from ground level reaching only as far as the next ridge (Figure 24). One small turbine is located in the adjacent field to the west and a communications mast is sited to the northwest, whilst there is one additional turbine currently visible to the northeast of the site.

10 Field verification of ZTV

Sites of archaeological significance identified using ZTV analysis and within the 15km radius from the proposed site are located in the fieldwork table (Table 10), and were numbered from 1-22 working from those sites closest to the turbine site outwards in an approximately clockwise order.

The significance of each site is graded as follows:

- WHS- World Heritage Site
- S Scheduled Monument
- L Listed Building
- A Site of National Importance
- B Site of Regional Importance
- C Site of Local Importance
- D Natural Feature or non-antiquity

The condition of each site was assessed where possible during the walkover survey and is graded from 1-4:

- 1 No surviving remains evident above ground
- 2 Poor preservation
- 3 Fair preservation
- 4 Good preservation

The sites have been given one of five Overall Impact grades; from Very Large which approximates to damage and loss of the site's integrity and which represents a key factor in the decision-making process, to neutral which equates to no perceptible effects. The full scale is:

Impact Category	Typical Descriptors of Effect
Very Large	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse effects are considered to be very

	important considerations and are likely to be material in the decision-making process.
Moderate	These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but may be important in influencing the subsequent design of the project.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Table 7: Overall Impact descriptors

In addition to the above descriptors the Overall Impact is determined using the combined result of the Sensitivity rating and the Magnitude of Impact rating (DMRB Vol.11; 2/1-5).

The Sensitivity ratings are:

Sensitivity Rating	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale and limited potential for substitution.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Table 8: Sensitivity Rating descriptors

The Magnitude of Impact ratings are:

Magnitude of Impact rating	Typical Descriptors
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Table 9: Magnitude of Impact Rating descriptors

The viewshed mapping and potential impacts were, where possible (given constraints on public access and the general topography of the area), ground checked from a number of locations. The fieldwork results and impact assessment are detailed in the table below.

10.1 Fieldwork results and impact assessment

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
1	Nancor Barrow MCO3159	SW 94340 48500	The barrow is not clearly visible from ground level viewpoints and is located within a field surrounded high Cornish hedges which is not easily accessible. The proposed turbine will be highly visible above the hedgerows. The barrow is set within a highly rural environment although it is adjacent to the A390 road.	Bronze Age	C	2	Low	Moderate	Minor
2	Bossilian Mine and Farmhouse MCO11877 / MCO53981	SW 93939 48028 / SW 93944 44035	The mining remains were not visible however the Medieval settlement and in particular the farmhouse were quite prominently placed along the road. They are set within a mature wooded area including evergreen trees, on a south facing slope, within a wider generally rural setting. The wider area includes Grampound village and a new housing development. Whilst the trees and southerly aspect provide some screening, it is possible that some intermittent views of the turbine will be experienced from these locations.	Post Medieval	C L Grade II	3	High	Minor	Minor
3	Grampound Conservation Area DCO102 (Figure 27)	SW 93648 48252	Grampound village contains a number of Listed Buildings and its character is quite well preserved. However there is an extremely busy road running through its centre with associated modern street furniture. The buildings which make the principal contribution towards its Conservation Area status generally face inwards towards this	Post Medieval	A including L Grade II	3	High	Moderate	Large

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			road. The village is set within a rural environment. Topographically the village is located on a west facing slope and in a valley bottom. A significant quantity of trees and vegetation surrounds the settlement, particularly around the base of the valley, which provides substantial screening from the landscape to the north and south. It is very likely that at least the upper sections of the turbine will be visible from many parts of the village, particularly when viewed from points along the A390, and will intrude into its immediate and wider rural setting.						
4	Trevillick Farmhouse and Cider Press MCO10985 / MCO29740 / 1136277 (Figure 28)	SW 93882 49227 / SW 93867 49219	The farmhouse is well preserved, appearing to retain original features and its relationship to the farm buildings. The cider press building was not easily distinguishable amongst the complex of buildings. Trevillick is located on a northwest facing slope, downhill from the proposed turbine site. The farm is set in a highly rural environment with very minimal modern features with some sparse trees and hedgerows providing a degree of screening. The main aspect of the house is to south and looks out to the hill on which the turbine will be located. It is likely that the turbine will be visible and will intrude upon the wider setting of the farm complex.	Post Medieval	C L Grade II	3	High	Moderate	Moderate

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
5	Tybesta Round MCO8881	SW944 63 49192	The complexity of the round cannot be discerned from ground level, due in part to the crops growing in the field and its size. However its location is clearly indicated by a significantly curving hedgerow that marks the northern extent of the enclosure. It is located in a classic position close to the top of the hill with wide ranging landscape views and is set within a rural environment with minimal intrusion from modern features. Two small turbines and a communications mast are visible from this site whilst the A390 road is audible. The round is within the field immediately adjacent to the proposed turbine field with only one Cornish hedge providing any screening. The round will experience principally setting and visual impacts at all stages of the life of the turbine.	Iron Age/ Romano- British	B	2	Medium	Moderate	Moderate
6	Pennans Avenue MCO40755	SW951 66 49050	The avenue is quite a subtle feature in the landscape and blends in with the hedgerows from many viewpoints. It is also further separated from Pennans Farmhouse (see site 7 below) by the A390 road than at any time in the past. However it is a designed feature within an agricultural landscape setting and is very close to the proposed turbine site with the only screening being provided by the avenue trees themselves and the intervening hedgerows. It is likely that the majority of the turbine will be	Post Medieval probably 18 th century	C	3	Low	Minor	Moderate

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			visible from the avenue and that the two will appear close together from other viewpoints, particularly from the north and east.						
7	Pennans Farmhouse 1144033 (Figure 25)	SW 95460 48967	Although the farmhouse is not easily visible or accessible from locations close to it, from viewpoints to the north it is reasonably prominent within landscape views. The main aspect of the house is to the northwest, almost directly towards the proposed turbine site. There is minimal screening in front of this aspect, only the intervening hedgerows and sporadic trees. With the exception of the A390 road, two small turbines and a communications mast, there is minimal modern intrusion into the agricultural setting of the farmhouse. The proposed turbine will be highly visible from the farmhouse and within the setting of the property.	Post Medieval	L Grade II*	3	High	Moderate	Large
8	Creed House and the Church of St Crida 1327443 / 1136281 (Figure 29)	SW 93490 47222	The house and church are within a slight valley, on a north facing slope, though still occupy quite an elevated position. The hamlet is surrounded by quite dense mixed woodland within a rural setting that includes the Fal River valley. The house is completely screened from publicly accessible areas and the church is not a prominent feature with its tower barely extending above the tree canopy. Views from the hamlet are directed north and west and therefore it is probable that there will	19 th century / 12 th century	L Grade II and I	3	High	Minor	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			be at least intermittent views of the turbine and that it will intrude to some extent in to the rural setting.						
9	Tregony Conservation Area and Congregational Church DCO40 / 1219106	SW 92534 44873	The Tregony Conservation Area also includes many Listed Buildings. The village has a well preserved historic character, though is a busy modern village with a quite well-used road through its centre. The majority of the buildings, including the Congregational church, face in towards this central street. There is no intervisibility with the turbine site from the centre of the village, however from the rear of these properties views of the turbine may be possible. Much of the outskirts of the village appear to be screened by mature deciduous trees, though this is not a substantial block in winter months. The village is set within an agricultural landscape with only one or two small turbines, depending on the viewpoint.	Medieval - modern	A L Grade II	3	Medium High	Negligible	Minor
10	Trewarthenick 1000658	SW 90415 44098	The Registered Park and Garden surrounding the east-facing house is quite open on the east side but densely wooded to the west, north and around much of the perimeter. Trewarthenick is a designed landscape within a woodland and agricultural setting. Although unlikely, it is possible that the turbine will be visible from parts of the gardens, though it will be a very minor feature within such views.	Post Medieval	A Grade II	3	High	Negligible	Neutral

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
11	Trewithen 1000510 (Figure 26)	SW 91172 47510	Trewithen is a Registered Park and Garden which includes Listed barns, farmhouses and other buildings. The majority of the garden is located in a hollow and its perimeter is quite densely wooded. Although a modern visitor attraction, Trewithen is a designed landscape in a highly rural setting. It is probable that at least the upper sections of the turbine may be visible at least intermittently from within the protected area.	Post Medieval	A Grade II* L Grades I and II	4	High	Minor	Minor
12	Carvossa 1016890 (Figure 26)	SW 91879 48266	The prehistoric settlement is located in quite open farmland with some hedgerows and wooded valleys between it and the turbine site. Carvossa is on a hilltop overlooking the Fal river as it passes through Grampound in a rural setting containing sporadic farm settlements. Views from it to the east are quite extensive and it is very likely that turbine will be visible within them.	Prehistoric	S	2	High	Moderate	Moderate
13	Golden Camp and Golden Manor 1016889 / 1141132	SW 92454 46853 / SW 92045 46847	The hillfort is situated on high ground close to the Fal river valley in a rural setting. Its ridge-top location affords it potentially good landscape views however the intervening space to the proposed turbine site includes areas of woodland which may inhibit intervisibility. It is, however, possible that the turbine may be visible from this site.	Prehistoric	S	3	High	Minor	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
14	Probus Conservation Area DCO58 (Figure 31)	SW 89904 47726	Probus is a quite sizeable village with a historic core centred on the church though with modern housing developments surrounding it. It occupies a prominent location in the landscape with the church tower being particularly visible. The village is set within a rural environment. From the historic centre of the village there are no views out and the proposed turbine is unlikely to be visible. From the perimeter of the village the views are more extensive and at least on the east side it is likely that the turbine will be visible as there is minimal screening of any type that would obscure the turbine.	Medieval - Modern	A	3	High	Minor	Minor
15	Railway Viaduct 1312606	SW 93718 50722	The viaduct, although very large, is located within a wooded valley and is not highly visible within the landscape. The mixed woodland provides quite dense screening inhibiting views of the turbine from the viaduct at ground level. Views from the top of the viaduct are likely to be more extensive and may include the proposed turbine, albeit as a fleeting glimpse from a train.	Post Medieval	L Grade II	4	High	Negligible	Neutral
16	Trenowth Mill and Miller's House 1328911 / 1141098	SW 93642 50589	The mill is an impressive building and quite well preserved. It, and the house are within a wooded valley and not visible until quite nearby. The woodland setting includes the Fal River. Views from the sites are obscured by the	19 th century	L Grade II	3	High	Negligible	Neutral

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			quite dense mixed woodland and the intervening undulating topography. It is unlikely that the turbine will be visible from these sites.						
17	Resugga Castle 1017685	SW 93961 51064	Resugga is a later prehistoric univallate hillfort located on the crest of a ridge which is covered in scrub vegetation. It is adjacent to the village of Coombe in a rural setting. To the south the lower parts of the ridge have been developed by the railway with bridges and a nearby viaduct. The views from this location are quite extensive to the south and it is possible that at least the upper parts of the turbine will be visible, but any views may also include the railway infrastructure.	Later prehistoric	S	3	High	Minor	Minor
18	Treveor Farmhouse 1312571	SW 94964 53597	The farmhouse is located in an elevated south facing position that is likely to have good landscape views. There is minimal vegetation or other forms of screening immediately adjacent though the wider rural setting includes Cornish hedges and tree-lined boundaries, main roads, other settlements, and the china clay tips. Small-scale existing turbines are visible and it is likely that the proposed turbine will also be visible, though at a distance.	17 th Century	L Grade II*	3	High	Negligible	Minor
19	Sticker Methodist Church and Sunday School	SW 98082 50107	The church is located on the side of a valley, slightly above the centre of the village in the valley bottom, surrounded by quite a high density of housing. These buildings, the undulating	19 th Century	L Grade II	3	High	Negligible	Neutral

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
	1312623		topography and vegetation screen the church very well, particularly as it is not very prominent within the village setting. It is unlikely that the turbine will be visible from the church though the two maybe visible apparently close together from other viewpoints external to the village.						
20	Heligan 1000538	SX 00316 45854	The gardens of Heligan predominantly occupy a valley and south facing slope, however there are upland areas to the north and northwest, including the main visitor entrance. Heligan is a designed landscape set within a wider agricultural and rural environment with few modern incursions nearby. It is a significant visitor attraction in this area. From the upland areas there are extensive views to the west and northwest, with little intervening vegetation, and it is probable that the upper parts of the turbine will be visible, though at quite a distance. Two small existing turbines are visible to the south.	Post Medieval	A Grade II	4	High	Negligible	Neutral
21	Caerhays Castle 1000448 / 1327073	SW 97160 41109	The grounds of Caerhays are a Registered Park and Garden whilst St Michael's Church and Higher Lodge are high grade Listed Buildings. The main aspect of the Castle is out to sea over the lawns in front of it, however the majority of the garden and protected landscape extends north behind the house. This designed landscape is set	Medieval or Post Medieval	A Grade II* L Grade I	4	High	Negligible	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			within a wider agricultural environment with roads cut into the bedrock or surrounded by woodland, controlling views of the estate. Although the Church is small, it is in a prominent hilltop location and, significantly, is intervisible with Gorran church tower. The Park and Listed Buildings are on high ground with generally good views inland. Due to the 2m high hedges on parts of the western boundary, intervisibility from ground level was severely restricted. However from areas where the hedges are low or absent intervisibility with the turbine site is likely to be possible, though at a fair distance and the undulating topography will probably obscure much of the turbine or allow for intermittent views only. There is very little intervening screening. At least two small existing turbines are visible within these views.						
22	The Round Houses 1291361 / 1291400 / 1291360 / 1219588	SW 92131 40050	The unusual round houses are located close to the village of Veryan in a rural setting. Quite substantial trees and vegetation are found throughout and around the village though not specifically around the houses. Topographically the houses are on a north facing steep slope though the landscape views north towards the proposed turbine site are intermittent and not extensive. It is possible that	c1820	L Grade II*	3	High	Negligible	Neutral

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact	Overall Impact
			the turbine may be visible from these houses, though at quite a distance.						
23	Hendra Farm Barrows 1019021 (Figure 32)	SW 85841 53602 / SW 85890 53651	Many of the barrows in this and neighbouring groups are upstanding and despite modern intrusions, such as roads, retain their rural setting to some extent. They are in an elevated ridge-top position with good landscape views where the 1-2m high Cornish hedges break or are lower. It is probable that the proposed turbine will be visible though at quite a distance.	Bronze Age	S	3	High	Negligible	Minor

Table 10: Fieldwork Impact Assessment Results

At each accessible designated heritage asset listed in the table above, the potential visibility of the proposed wind turbine was considered and views out from the proposed turbine site towards key heritage assets were checked. Though true levels of intervisibility were impossible to determine from ground level given that the proposed turbine has not yet been constructed, the general degree of openness of the views out from the heritage assets could be assessed.

Where possible, photographs were taken from the proposed turbine site towards the filtered list of heritage assets and from the assets back to the proposed site. In practice, this process was somewhat hampered in terms of capturing the historic asset and the view towards the proposed site in the same photograph due to difficulties of access. The practicality of finding both suitable viewpoints and safe places to stop for photographs further constrained attempts to capture ideal viewpoints. However every effort was made to get as close as possible to the historic assets and to take photographs at least representative of the view when the asset itself could not be included. Within settlements, groups of buildings, mature trees and shrubs also blocked many views back to the site. The visibility cut-off imposed by the local topography suggested by the viewshed mapping was confirmed, though from ground level several areas of suggested intervisibility were closed off by woods and hedgerows as well as by topography.

Field verification tended to confirm the viewshed mapping; the turbine will be visible to some extent from many ridge-tops and to a lesser extent as the viewer descends into the valleys. Visual impacts are likely within this area. At distances of around 5km from the proposed site, visual impact may occur but will become weaker. Given the increasing number of wind turbines proposed for this area it will also become harder to distinguish individual turbines and cumulative impact will become increasingly relevant.

11 Geophysical Survey Results

The geophysical survey identified a number of anomalies that have been characterised as being either of a probable or possible archaeological origin.

The difference between probable and possible archaeological origin is based on a confidence rating. Features identified within the dataset that form recognisable archaeological patterns or seem to be related to deliberate historical acts have been interpreted as being of a probable archaeological origin. Features of possible archaeological origin tend to be more amorphous anomalies which may have similar magnetic attributes in terms of strength or polarity but are difficult to classify as being archaeological or natural.

The following list of numbered anomalies refers to numerical labels on the interpretation plots (Figures 33 and 34).

Probable Archaeology

1 A large sub circular positive anomaly, a large number of linear features of varying length and a number of discrete and amorphous positive anomalies. These are all archaeological cut features.

2 A set of negative linear features with adjacent positive anomalies are probably associated with former field boundaries (not visible on historic mapping).

Possible Archaeology

No possible archaeology has been identified within the survey area.

Other Anomalies

3 A negative linear adjacent to the eastern field boundary are indicative of agricultural activity.

4 Areas of magnetic disturbance are the result of substantial nearby ferrous metal objects such as fences and underground services. These effects can mask weaker

archaeological anomalies, but on this site have not affected a significant proportion of the area.

5 A number of magnetic 'spikes' (strong focussed values with associated antipolar response) indicate ferrous metal objects. These are likely to be modern rubbish.

The survey has identified a concentrated area of archaeological activity. This activity is focussed in the centre of the site where a sub circular enclosure is visible. A number of curvilinear and smaller linear and amorphous features are visible inside the enclosure. Significant linear features indicative of ditches and enclosures are also visible surrounding the central enclosure. Large areas of amorphous cut features are also present in the vicinity, and likely form part of a concentrated area of settlement activity. These are indicative of prehistoric activity and may be related to Tybesta Round north of the proposed turbine site.

Former field boundaries (not visible on historic mapping) are also present to the west of these features.

Other features visible are likely modern or agricultural in origin including a series of parallel positive features representing agricultural activity, a small amount of magnetic disturbance along the eastern margin and a number of isolated magnetic spikes.

12 Statements of significance

Many of the sites have already had their significance assessed by Scheduling or Listing. Where sites are Scheduled or Listed they have not been considered under the Sites and Monuments Records category below, even though they usually feature on that list, to avoid duplication. Subsurface and associated remains are likely to be of equal significance to the sites identified below.

12.1 World Heritage Site

These sites are designated and defined by UNESCO (UNESCO website):

The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

Sites inscribed on the World Heritage List benefit from the elaboration and implementation of a comprehensive management plan that sets out adequate preservation measures and monitoring mechanisms. In support of these, experts offer technical training to the local site management team.

The inscription of a site on the World Heritage List brings an increase in public awareness of the site and of its outstanding values, thus also potentially increasing tourist activities at the site. When these are well planned for and organized respecting sustainable tourism principles, they can bring important funds to the site and to the local economy.

12.2 Scheduled Monuments (Sites 12, 13, 17, 23)

Scheduled Monuments have Statutory Protection under the Ancient Monuments and Archaeological Areas Act 1979. These are sites that have been identified by English Heritage, the Government's archaeological advisory body, as being of national importance, and are included in the County Lists maintained by the Secretary of State for Culture, Media and Sport. A schedule has been kept since 1882 of monuments whose preservation is given priority over other land uses. The current legislation, the Ancient Monuments and Archaeological Areas Act 1979, supports a formal system of Scheduled Monument Consent for any work to a designated monument (English Heritage Website).

12.3 Registered Parks and Gardens (Sites 10, 11, 14, 20, 21)

Registered Parks and Gardens are described and defined by English Heritage (English Heritage Website).

The English Heritage 'Register of Historic Parks and Gardens of special historic interest in England', established in 1983, currently identifies over 1,600 sites assessed to be of national importance. The emphasis of the Register is ... *on 'designed' landscapes; ... gardens, grounds and other planned open spaces, such as town squares ... rather than on planting or botanical importance.*

Historic parks and gardens are a fragile and finite resource: they can easily be damaged beyond repair or lost forever ... The main purpose of this Register is to celebrate designed landscapes of note, and encourage appropriate protection. It is hoped that, by drawing attention to sites in this way, English Heritage will increase awareness of their value and encourage those who own them, or who otherwise have a role in their protection and their future, to treat these special places with due care.

Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the landscapes' special character.

12.4 Listed Buildings (Sites 2, 4, 7, 8, 15, 16, 18, 19, 22)

Sites are Listed to mark their special architectural and historical interest; they are protected by law, and Listed Building Consent must be granted for any alterations to a designated building. Some sites, such as Pennans and Treveor Farmhouses, have been given Grade II* status, which means they are considered 'particularly important...of more than special interest.' The remaining sites are designated as Grade II listed and are therefore considered 'nationally important and of special interest' (English Heritage Website).

12.5 Conservation Areas (Sites 3, 9, 14)

Conservation areas are designated for their special architectural and historic interest. They are designated by the local planning authority and comply with national standards. Designations of Conservation Areas were first made in 1967 and typically include town or city centres, fishing and mining villages, historic estates, housing and transport links (English Heritage Website).

12.6 Regional and Local Significance (Sites 1, 2, 4, 5, 6)

These remains are considered of regional significance because of their rarity, setting and upstanding evidence but are otherwise undesignated assets.

13 Likely impacts of the proposed development

13.1 Construction phase impacts

The construction of the wind turbine at Pennans Land will create some minor visual and audible disturbance though this will be temporary and reversible. An assessment of the likely noise impact due to the construction phase of the proposed turbine has been undertaken by an appropriate specialist. The predicted noise levels have been found to be insignificant and unlikely to result in audible impacts on surrounding designated heritage assets.

The construction of the turbine, specifically the excavations for the foundations and cable run will have major direct, physical and irreversible impacts upon any upstanding or sub-surface archaeology in these locations. The geophysical survey results indicate that the construction of the turbine base may have a major negative, physical impact as there are multiple anomalies located in the eastern half of the development area (Figures 33 and 34). Their location and arrangement are suggestive of potentially significant and sensitive prehistoric remains. Provision of the cable route, a works

compound, additional access routes or any widening of the existing gateways could also have a moderate physical and irreversible impact on any archaeology in these locations as the anomalies extend into these areas (Figures 33 and 34). An alternative cable route, to the east and southeast of the proposed turbine field could be utilised. If used, further geophysical survey and analysis will be required to more fully determine the impacts of this route, though they are likely to be similar in type and severity to those identified for the current proposals. The overall impacts on probable sub-surface archaeology are likely to be at least moderately severe.

Construction will also create some minor visual and setting impacts though as these are temporary and reversible they are considered as negligible impacts only.

13.2 Operational phase impacts

During the operational phase only the visual and setting impacts will apply. These will vary according to the weather, season, distance from, and intervisibility with, the proposed site and the sensitivity of individual heritage assets. Such impacts are temporary and potentially reversible (when the turbine is eventually dismantled, as required by the planning conditions applying to such features) and will vary in overall magnitude according to receptor distance from the turbine, degree of intervisibility, intrusion of the turbine within key views of them and the sensitivities of their settings.

An assessment of the likely noise impact during the operational phase of the proposed turbine has been undertaken by an appropriate specialist. The assessment demonstrates that the turbine will operate within the relevant ETSU-R-97 noise limits. However a cumulative noise impact could arise in a worst case scenario from a combination of the noise emissions from the consented wind turbines at Garlenick and Pennans Farm with or without the proposed turbine at Pennans Land. This would potentially impact the closest and downwind heritage assets to these locations, namely Nancor Barrow, Trevillick Farmhouse, Tybesta Round and Pennans Avenue, to a very minimal extent. A mitigation option of reducing the power of the proposed turbine to minimise its noise emission is available, thus lessening or removing the impact from this turbine. The residual noise impacts from this proposed turbine are considered to be insignificant.

13.3 End of use impacts

Assuming the proposed turbine is not re-powered or replaced, the end of use impacts will be as a result of machinery to remove the turbine components. These will be minor visual and setting impacts but temporary. It is anticipated that foundations will be removed to a depth of 1m below grade and the soil profile restored. Access tracks will either be removed or retained, depending on the landowner's preference. The associated noise impacts are considered by the specialist's assessment as likely to be insignificant and there will be negligible but temporary visual impacts resulting from the use of machinery during this phase. The partial removal of the foundations and possibly also the access track and cabling, may result in further physical, irreversible impacts on surrounding subsurface archaeology but this is considered likely to be a minor negative impact and should be capable of mitigation.

13.4 Impacts on the Cornish Mining World Heritage Site

The Charlestown World Heritage Site area is located to a very minimal extent within the viewshed (Figure 21). The area will not be physically impacted upon and there will not be visual impacts resulting from the construction, operation and end of use activities because potentially intervisible areas are substantially obscured by housing and associated vegetation. Current distractions from the significance of the area originate from the conurbation of St Austell slightly to the north of Charlestown. The addition of the proposed turbine has the potential to alter the setting of the World Heritage Site area, though at a distance of approximately 10km this will be to a negligible degree. Any setting impact will only be perceived from a viewpoint out to sea where the turbine

and Charlestown could potentially be seen in the same view. The overall impact is rated as neutral.

13.5 Impacts on Scheduled Monuments

No Scheduled Monuments will be physically impacted upon by the proposal. Resugga and Golden Camp may experience minor visual and setting impacts during all three phases due to their relatively close proximity (Figures 20 and 21). Carvossa, also may experience up to moderate negative visual and setting impacts because it has a clear line of sight towards the proposed turbine site, is located close to a public right of way and may therefore experience a more perceptible impact upon its setting (Figure 26). The wayside cross within Gram-pound, although it has a minimal setting, could be considered to experience at least minor impacts similar to those for the Conservation Area. The settings of those within the viewshed such as Sticker and Hendra Barrows may also be visually impacted to a minor extent, dependant on how much of the proposed turbine will be visible from them, and the degree to which views of them will include the wind turbine as a significant feature, as their prominent settings are vulnerable to intrusion (Figure 32). For example, Golden Camp has a prominent setting over a river valley. Views from the Camp and of it from the surrounding countryside are likely to include the proposed turbine, impacting appreciation of its setting negatively. The promontory fort on Dodman Fort occupies a commanding position over the adjacent land and seascape, the site having significant open views in all directions. Similarly, Veryan Fort has a prominent hilltop location and incorporates the seascape into its setting with views down a narrow valley into Veryan Bay. There will be minor visual and wider setting impacts, particularly during the operational phase. Overall however the impacts on Scheduled Monuments are minor.

13.6 Impacts on Listed Buildings – Grade I and II*

The wind turbine will have a neutral impact on those Listed Buildings which do not fall within the viewshed, except in the cases of those where it will appear as a prominent feature in key views of them, such as the Church of St Probus where the tower is prominent in landscape views (Figure 31). There may be a slight visual impact for all Listed sites closer than 5km from the proposed site during all three phases; this will, however, diminish with increasing distance from the site. The Grade I Church of St Crida in Creed has quite a limited setting within the hamlet. Although it has a very small tower which is not a landmark feature, the church is well preserved with a secluded churchyard. Though the surrounding mature trees provide substantial screening, there remains the potential for the church to experience minor visual impacts on its setting (Figures 29 and 30).

St Michael's Church and Higher Lodge at Caerhays approximately 8km to the south of the proposed site are Grade I Listed, with extensive views northwards. Their settings mainly relate to the formal grounds of Caerhays but they also interact with the wider rural landscape, as the estate farms or farmed much of this land and the church is inter-visible with the church at Gorran to the east. Although the turbine will be distant from features at Caerhays, visual and setting impacts will occur but are rated as minor.

The Grade I and II* buildings in Gram-pound, such as the Manor House, are very likely to experience large negative impacts as they are in very close proximity to the proposed turbine site (Figures 18 and 27). This is in contrast to those located in the centre of Tregony village where most views outwards are obscured by other buildings and the setting already incorporates modern semi-urban features.

Pennans Farmhouse is Grade II* Listed and is within close proximity; the main aspect of the Farmhouse is to the northwest and so there is a direct line of sight to the proposed development field just to one side of the line of its avenue – a deliberately-created vista associated with this originally high status late 17th century house (Figures 24 and 25). The house is also very visible from viewpoints in the landscape to the north and therefore may be seen within the same view as the turbine. The installation of the

turbine may further disrupt the association of the Farmhouse with its designed landscape elements and its wider rural setting. Due to its proximity, intervisibility and impacts to the setting the impacts on Pennans Farmhouse is rated as moderate negative.

The overall impact on Grade I and II* Listed Buildings is assessed as minor, though with several significant exceptions.

13.7 Impacts of Listed Buildings – Grade II

No Grade II Listed Buildings will be physically impacted upon and only those within the viewshed are likely to experience a visual impact during all three phases (Figures 15 and 19). Those within Grampound, a relatively well preserved though busy modern village where the majority of the main street is Grade II Listed, are highly likely to experience visual and setting impacts during the construction, operational and end of use phases to a moderate or large level, though this will be dependent on the extent of intervisibility, the degree of screening afforded by vegetation or topography, and the degree to which the turbine will appear in key views of the settlement. This particularly applies to the approaches to the village which are elevated, where there is only a limited amount of screening provided by mixed sparse woodland and the turbine and Listed Buildings may be visible within the same views (Figure 26).

Trevillick Farmhouse, Grade II Listed, is in close proximity to the proposed development site, and though on a slope facing northwest away from the turbine, the main aspect of the house is to the south towards it. The house is set in a highly rural environment with few modern intrusions. As it is highly likely that the turbine will be visible on the hillcrest above the house and because of the quite considerable intrusion into its setting, the impact on Trevillick is rated as moderate (Figure 28).

Creed House and Golden Manor are set within a rural environment (Figure 30). Although open views from them are limited, they may well include the proposed turbine, as well as the surrounding farmland. There are currently few, if any, turbines visible from these locations. As a result of the restricted and varied views out from these sites and their settings, the impacts on these sites are considered to be minor. The overall impact for Grade II Listed Buildings is assessed as minor, though these impacts will be numerous, especially within Grampound.

13.8 Impacts on Conservation Areas

There are three Conservation Areas within 5km and all will be potentially partially intervisible with the turbine site (Figure 19). Those parts of them falling outside the ZTV will probably not experience any visual impacts. However, there may be minor impacts on their settings when they are viewed from some locations within the landscapes surrounding them, as a modern turbine will be juxtaposed with the historic urban landscapes they consist of and the historic agricultural landscapes within which they are set. The topography and aspect of Probus and Tregony villages greatly restricts intervisibility with the turbine from within the villages (Figure 31). Many of the properties face in towards the centre so any visual impact arising from intervisibility will be to the rear of the buildings. The ground surface of the site will not be visible and as it is highly unlikely the turbine will be visible during any of the three use phases, the impacts are assessed as minor to neutral. Whilst the topography of Grampound village restricts some views of the proposed turbine, the village is in such close proximity that at least intermittent or partial views are likely throughout the settlement. The topography also means that the approaches to the village are elevated with quite open views of the village in the rural landscape and these views will include the turbine and visually impact the setting to a large extent (Figures 26 and 30). The road through the village is a major route between Truro and St Austell and at certain times of the day the village can be busy and noisy with commuter traffic queuing along the main road. The visual intrusion of the wind turbine into the historic setting will thus be noticed by a

substantial number of car drivers. The impact on Grampound is assessed as large. The overall impact on Conservation Areas is therefore assessed as moderate.

13.9 Impacts on Registered Parks and Gardens

The settings of these parks are simultaneously both formal and deliberately natural, within related or unrelated surrounding agricultural land and a number interact with the nearby seascape. Visual impacts may be limited by the density of vegetation making up these designated landscapes; however many views across the parks from the houses or features within the parks were specifically designed and many may now include the proposed turbine (Figures 21 and 22). For example, from parts of Trewarthenick Park there is a clear view of Tregony and the view east from Trewithen includes the church at Creed which may include the proposed turbine slightly to the north. The proposed turbine will theoretically be intervisible to some extent from all eight Registered Parks and Gardens though distance will diminish the impact during the construction, operational and end of use phases.

At 4-5km from the proposed site, Trewithen may experience the greatest impacts. The park is substantially wooded and situated in a slight hollow though the perimeter is more elevated allowing views east towards the proposed turbine (Figure 26). The agricultural setting of Trewithen extends beyond the park boundaries and the proposed wind turbine will impact on this to a negative minor extent.

Caerhays has extensive views and elements of its setting are to the north towards the turbine location. The undulating topography surrounding Caerhays influences the intermittent views north towards the proposed turbine site. However, the main aspect of Caerhays Castle is southwards to the sea and the formal gardens surround it. Nevertheless, the parkland, woodland and agricultural land, including the church and lodge discussed above will be intervisible with the wind turbine though to a varying extent and at a distance of approximately 8km, and views and the setting of the park are not screened by intervening vegetation. They will experience a negative minor impact.

Beyond 5km from the proposed turbine site the effect on Registered Parks and Gardens decreases considerably and will consist of limited setting and visual impacts. The parks at Trewarthenick, Heligan and Caerhays are included in this category. Any views of the turbine will be intermittent, vegetation will provide screening and the turbine will be a very small and distant component within views. The views of the northerly sector towards the proposed turbine from Heligan and Trewarthenick are restricted though the turbine will intrude on the wider setting of these sites, due to distance this will result in negligible or minor impacts.

The remaining Registered Parks and Gardens of Chyverton, Tregrehan, Trelissick and Tregothnan are beyond the 10km radius from the proposed site and are unlikely to experience setting or visual impact. If the turbine is visible it will be an exceptionally small and distant, of not indistinguishable component within views and the impact will be negligible.

The overall impact on Registered Parks and Gardens is assessed as minor.

13.10 Impacts on Undesignated Historic Assets

All sites within the viewshed will be visually impacted to some degree during all three phases; views from other high vantage points in the landscape surrounding Pennans Land are likely to include the turbine and several of the heritage assets (Figures 17 and 26). There is unlikely to be any physical impacts though geophysical survey results suggest prehistoric remains that may be related to Tybesta Round may be directly impacted by construction activities. There will be minor or moderate negative setting and visual impacts, probably at all three use stages and certainly during the operational phase for all such heritage assets.

Many of these heritage assets are located on the same ridge as the proposed site and due to this proximity and as there is little intervening screening apart from 1-2m high hedges they will be exposed to significant visual and setting impacts. Tybesta Round in the adjacent field to the north will be at least moderately negatively affected, possibly more so (Figures 12 and 17). Although not upstanding, the round's location is preserved by the curving field boundary and clearly identifiable from the public right of way to the east. This pathway allows access close to many of the undesignated assets, several of which are potentially of the quality and importance to become Scheduled Monuments. It also allows views to other heritage assets that will incorporate the proposed turbine and is probably part of a heritage asset in its own right as part of Trevillick trackway, likely to be Iron Age or Romano-British in date. It passes Trevillick Iron Age or Roman-British field system, Trevillick Bronze Age barrow, Tybesta Medieval fulling mill, well and settlement. Together these recorded, cropmark and geophysically surveyed sites provide us with a view of a multi-faceted and articulated prehistoric landscape whose elements are significant, both individually and when considered together. The individual assets therefore have an enhanced significance value. They will all be subject to minor or moderate setting and visual impacts.

Pennans Avenue, whilst only partially surviving, is an important ornamental feature linking the Grade II* Listed Pennans Farmhouse to its surrounding farmland and landscape. Although not a highly visible feature within the landscape it is in very close proximity to both the turbine site and with Tybesta Round, with which it may have an indirect visual association as part of its planned and designed route. The proposed wind turbine, a highly modern insertion, will be substantially visible and will distract from and intrude into, the extended setting of the avenue and farmhouse. The impact upon the avenue is therefore considered to be moderate.

It has been identified by a relevant specialist that a cumulative noise impact could arise in a worst case scenario from a combination of the noise emissions from the consented wind turbines at Garlenick and Pennans Farm with or without the proposed turbine at Pennans Land. This could potentially impact the heritage assets of Tybesta Round and Pennans Avenue, to a very minimal extent. A mitigation option of reducing the power of the proposed turbine to minimise its noise emission is available, thus lessening or removing the impact from this turbine. The residual noise impacts from this proposed turbine are considered to be insignificant.

Other heritage assets are adjacent to the A390 road, including Nancor Barrow and Nancor Cross. These are downslope from the turbine and slightly less susceptible to visual impacts, whilst their settings already include the modern infrastructure associated with the road. The impact on these sites is considered minor.

The majority of the remaining undesignated sites are known from documentary sources only or are signposts and crosses with very limited settings.

The overall impact on undesignated assets is assessed as minor though those assets in the immediately adjacent fields may experience moderate impacts, particularly when the elements making up the underlying late prehistoric landscape are assessed collectively.

13.11 Impacts on Historic Landscape Character

The landscape surrounding the proposed wind turbine site is dominated by extensive areas of farmland of Medieval origin interspersed with tracts of post Medieval and modern enclosed land to the north and east (Figure 10). The land has been farmed since at least the Medieval period, in those places where the evidence survives, long before, as is indicated by early place names and numerous prehistoric remains, specifically by the features revealed by the geophysical survey in the proposed turbine field, and by aerial photography of cropmarks in surrounding landscape. Radiating from Grampound the burgage plots and fossilised strip fields survive as boundary features. Some of these long narrow strips of land are still related their village houses whilst

others have been incorporated into farmland adjacent to the A390 road and lack their associated dwellings. Their boundaries are likely to fossilise elements of Medieval Great Fields and previously unenclosed areas of downland. The eight Registered Parks and Gardens in the vicinity also influence the layout and character of the land, as does the presence of the smaller, but nevertheless historically high status Pennans Farmhouse, which had its own avenue approach to its principal elevation. The Post Medieval enclosures preserve much of the original open character of the landscape, with small farming settlements scattered throughout it.

With the exception of the growth of the St Austell conurbation some distance away, the overall character of this landscape has changed very little in many centuries. The elevated nature of the area is clearly ideal for locating the proposed wind turbine and is likely therefore to become increasingly popular for generating electricity from wind power as has been the case in other areas of Cornwall. The insertion of individual wind turbines will erode the coherency and legibility of the former and surviving historic landscape character of this area. The construction of the proposed wind turbine at Pennans Land will materially affect the surviving strong local historic landscape character, given the relatively few wind turbines already operational within it and the lack of similarly modern and highly intrusive infrastructure, resulting in at least a moderate negative impact.

14 Cumulative Impacts

Recent English Heritage and Cornwall Council guidance requires assessments of applications for renewable energy installations to consider the cumulative impacts of wind turbine installations in addition to specific impacts. The area surrounding Pennans Land is not currently populated with wind turbines but there are proposals for a number, and the elevated landscape is ideal for generating energy from wind. This indicates a high potential for future cumulative impacts, should applications for such developments be granted.

From the proposed turbine site at Pennans Land, two operational turbines are currently visible, whilst from the majority of the heritage sites visited, no turbines or occasionally one or two, were visible. A single turbine is located in the adjacent field to the west of the proposed turbine site, and despite being a small example is quite visible from multiple viewpoints (Figures 23 and 26).

Cumulative noise impacts have already been identified as potentially arising in a worst case scenario from the consented turbines at Garlenick and Pennans Farm. The proposed wind turbine at Pennans Land could potentially add to this cumulative effect given a specific set of weather conditions. This would further impact the heritage assets adjacent or directly downwind of these sites, namely Nancor Barrow, Trevillick Farmhouse, Tybesta Round and Pennans Avenue. However mitigation options are available which would minimise the additional noise impacts arising from the proposed wind turbine.

Few of the sites highlighted in this assessment are significant landmarks although many have extensive and sensitive settings, including the multiple Registered Parks and Gardens, Scheduled Monuments and Grampound Conservation Area with its burgage plots and adjacent fossilised strip fields. In particular the prehistoric Scheduled Monuments occupy prominent hilltop locations, command significant landscape views and have a degree of intervisibility with other approximately contemporary sites. They are important features within a landscape which is currently not populated with prominent modern features. From the sea, a wider viewpoint of multiple heritage assets and their relationships can be appreciated, and will incorporate both existing and proposed turbines. The distraction created by the high tower and rotating blades of the proposed wind turbine at Pennans Land and other wind turbines proposed within the area to the south of Hensbarrow, to the east of the Fal Estuary and to the west of St. Austell Bay could be, or at least could become, detrimental to the appreciation and

understanding of the setting of these monuments and of the historic character of the wider landscape, especially if, in the future, this area sites multiple wind turbines.

The majority of the sites considered consist of Listed Buildings within settlements, and although their settings are quite localised, many of these settlements have landscape views and contexts, and a degree of visual prominence within their surrounding agricultural landscape. The setting of some of these, such as sites within Grampound, Tregony and Probus, and those within the Registered Parks and Gardens in particular, may be adversely affected to at least a minor degree by the cumulative impacts arising from the construction of multiple turbines in the landscape within which they are sited, leading to a significant erosion of the coherency of the historic character of this landscape.

It should be noted that assessments of setting refer to the heritage significance and the nature of the landscapes surrounding historic assets. Individuals' perceptions of setting, the associated aesthetics and appreciation and their perception of the impact of one or multiple wind turbines will vary.

Wind farms, where multiple turbines of similar sizes are installed in close proximity, can have a visual coherency which despite their size and quantity may limit the negative impacts they may otherwise impose on their surroundings. The placement of individual wind turbines of varying heights and designs sporadically across the landscape, as may become the case around Pennans Land, particularly with the existing adjacent small turbine, is unlikely to result in a similar degree of coherency and therefore is likely to be potentially more distracting in perceptions of the historic landscape or in the appreciation of the settings of heritage assets (Figures 26 and 28).

Such adverse visual impacts are, given the 25 year lifetime of any specific wind turbine, judged to be temporary in nature (though long-lived) and would be reversed on its dismantling. Therefore, any unmitigated impacts associated with their construction and operation will not be permanent, though they may impact on the settings of designated sites and in the ways in which these sites and this historic landscape are perceived and appreciated for substantial periods. For those sites with local or limited settings having small-scale and/or limited numbers of turbines within the surrounding landscape, impacts are likely to be minor in most cases. For those sites with sensitive settings, where the construction of additional wind turbines is considered likely to result in a significant alteration to the historic character of the surrounding landscape, cumulative impacts may well be significantly greater, at least a minor negative impact, and assessment of them should form an important part of the planning process.

15 Mitigation Strategy

A range of means to mitigate the potential impacts identified in this assessment may be considered by the Historic Environment Planning Advice Officer, who may choose to recommend one or more of the following.

15.1 Noise reduction

The potential for a cumulative noise impact arising in a worst case scenario in combination with the nearby consented wind turbines has been identified by specialists. The implementation of a reduced mode would lessen or remove this impact. This measure is in line with the mitigation options put forward by the noise assessment specialists.

15.2 Micro-relocation of the turbine and cabling

Mitigating any potential impacts on heritage assets might be possible through the relocation of the wind turbine, in particular sub-surface archaeology, potentially substantial and sensitive elements of which have been revealed through geophysical survey within the immediate area surrounding the proposed development at Pennans Land. In addition to careful siting of the turbine base and cabling trench, consideration

of the access route, and its construction, could prevent or avoid direct physical impacts from rutting or compression from heavy vehicles during construction and decommissioning. In relation to indirect (setting) impacts, given the topography, the substantial height of the turbine and the minimal nature of the surrounding vegetation screens, micro-relocation would seem unlikely to be able to result in any substantial diminution of impact. English Heritage may require the production of photomontages demonstrating that any submitted proposal could achieve an aim of minimising setting impacts.

15.3 Archaeological recording

In a case where the finalised site design would seem likely to result in unavoidable physical impacts on likely sub-surface features, a brief for work to mitigate these impacts would need to be prepared by the relevant Cornwall Council Planning Officer, setting out its scope. A Written Scheme of Investigation (WSI) to meet the brief would need to be prepared and agreed to establish and direct a programme of mitigating archaeological work.

In the instance of Pannans Land, where geophysical survey has indicated a high potential for significant below ground remains, the relevant Planning Officer is likely to require further archaeological evaluation or recording to provide a level of information sufficient to determine the potential and scale of the likely sub-surface impacts on archaeological features identified by the geophysics before a recommendation for a grant of planning permission could be made.

Subsequent archaeological recording works may also be required, and could include a watching brief (observation by an archaeologist during mechanical ground reduction activities) or full excavation and recording of some areas of the site prior to construction works. This could target areas where significant features had been identified through geophysical survey, or where the balance of probability suggests that such sub-surface archaeology might survive. This approach provides for preservation by record of buried archaeological features or artefacts and reduces any impacts on the archaeology of the sites to moderate with some benefits in the form of increased knowledge and awareness of the heritage assets.

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

16 Conclusion

Significant archaeological sites and heritage assets have been identified within a 15km radius of the proposed wind turbine. These include Scheduled Monuments, such as those at Carvossa and Resugga, for which the overall impacts have been rated as negative minor, due to their distance from the site and the reversible effects on their settings. Impacts on the Registered Parks and Gardens vary from neutral to negative minor according to distance, intervisibility with the proposed site and extents and natures of their settings. Although the impacts will be reversible, the operational impacts in particular will alter the settings of Trewithen and to an increasingly limited extent the settings of Caerhays, Trewarthenick and Heligan, whilst the impacts will be negligible upon the remaining Registered Parks and Gardens within 15km. Upon the Listed Buildings such as those in Tregony and Probus Conservation Areas and especially those with more limited settings, minor visual impacts may result. However the combination of proximity, visual and setting impacts upon elements of Grampound Conservation Area and Pennans and Trevillick Grade II* Listed farmhouses increases the impact rating to negative moderate for these designated heritage assets.

Although there are currently few wind turbines within this landscape, the cumulative impact arising from the construction of this proposed turbine, taken together with those currently also under consideration within the planning process and any future turbines will become increasingly negative as they erode the historic character of this landscape.

The viewshed mapping includes areas out to sea and some high viewpoints with considerable views of the landscape that combine the World Heritage Site, additional Conservation Areas, Scheduled Monuments and Registered Parks and Gardens, together with their rural setting. The high volume of maritime and leisure pursuits in this area, past and present, mean that views from the sea and other viewpoints are frequently accessed. Although cumulative noise impacts may also arise, impacting the closest heritage assets to a minimal extent, this is a worst case scenario and ought to be capable of successful mitigation. The negative impacts resulting from the construction of one or more turbines within this landscape is an important consideration.

Due to the topography and location of the heritage assets considered and the considerable height of the proposed wind turbine, the adoption of a site redesign mitigation strategy (as suggested above) is unlikely to achieve any positive change in the impacts which have been identified. The geophysical survey identified multiple curvilinear, linear and point anomalies within the development area for the proposed turbine which are likely to represent significant prehistoric activity possibly related to Tybesta Round to the north. Further archaeological investigation into the existence and nature of any subsurface archaeology in the proposed turbine field and along the cable connection route may enhance our understanding of the archaeology of this site and surrounding area and help to mitigate direct impacts on archaeology resulting from the construction of the turbine at Pennans Land.

The impacts of the wind turbine are all reversible, with the exception of those identified through the findings of the geophysical survey which may prove to be incapable of mitigation by redesign, and there will be considerable environmental benefits associated with its installation. However the high level of significance already placed on the designated heritage assets with sensitive settings surrounding the proposed turbine site and the potential moderate or greater impacts on their settings together with the significant geophysical survey results and the likely significance of the sub-surface sites within the vicinity of the proposed development site should certainly be taken into account when considering this application.

17 References

17.1 Primary sources

Cornwall County Council 2005 aerial mapping of Cornwall.

Joel Gascoyne's 1699 Map of Cornwall

Martyn's 1748 Map of Cornwall

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

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

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

Ordnance Survey, 2007. *Mastermap Digital Mapping*

Tithe Map c1841 and Apportionment, c1840. *Parish of Creed* (digital copy available from CRO)

17.2 Publications

Cornwall Council Environment Service. 2013, *The cumulative impact assessment for wind turbines: Summary guide*. Report for Cornwall Council.

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

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

Gover, J.E.B. 1948, *Place-names of Cornwall*

HMSO. 2008. *Design Manual for Roads and Bridges: Volume 11, Environmental Assessment Part 5 HA205/08. Assessment and Management of Environmental Effects*. Highways Agency

Land Use Consultants. 2011, *An assessment of the landscape sensitivity to on-shore wind energy and large-scale photo-voltaic development in Cornwall. Annex 4 Guidance on the cumulative landscape and visual impact assessment of multiple on-shore wind energy developments and solar PV developments*. Report for Cornwall Council

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

Padel, O.J. 1985, *Cornish Place-name Elements*, Penzance

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

Public Space Team. 2013, *An assessment of the landscape sensitivity to on-shore wind energy and large-scale photo-voltaic development in Cornwall. Annex 5 cumulative impact assessment guidance for Cornwall - wind turbines*. Report for Cornwall Council

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

Historic Environment Advice Team, Cornwall Council, 2013, *Brief for Archaeological Assessment of Proposed Wind Turbine at Pennans Land, Creed*. Unpublished report for Cornwall Council.

Sharpe, A. 2013, *Pennans Land, Creed, proposed wind turbine: Written Scheme of Investigation for archaeological assessment*. Unpublished report for Historic Environment Projects, Cornwall Council

Slater, J. 2014, *Five proposed wind turbine sites – Pennans Land. Geophysical survey report*. Stratascan, Worcestershire

17.3 Websites

<http://www.bgsgeologyviewer.ac.uk> British Geological Survey

<http://www.cornish-mining.org.uk> Cornish World Heritage Site

<http://www.english-heritage.org.uk/caring/listing/> English Heritage designation information

<http://www.english-heritage.org.uk/publications> English Heritage guidance

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

<http://www.legislation.gov.uk> Government documents, Acts and legislation

<http://www.oxforddictionaries.com/definition/english/road?q=road> Oxford English Dictionaries Online historic and current definitions

<http://whc.unesco.org/> World Heritage Site information

18 Project archive

The HE project number is **146338**

The project's documentary, photographic and drawn archive is housed at the offices of Cornwall Archaeological Unit, Cornwall Council, Fal Building, New County Hall, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Digital photographs stored in the directory R:\Historic Environment (Images)\SITES.M-P\Pennans Land WT Assessment
3. English Heritage/ADS OASIS online reference: cornwall2-180820
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites P\Pannans Land WT Assessment 2014



Figure 5: The proposed turbine site and its surroundings as depicted on Martyn's Map of Cornwall 1748.



Figure 6: The proposed turbine site as depicted on the 1877 OS 1 inch Map.

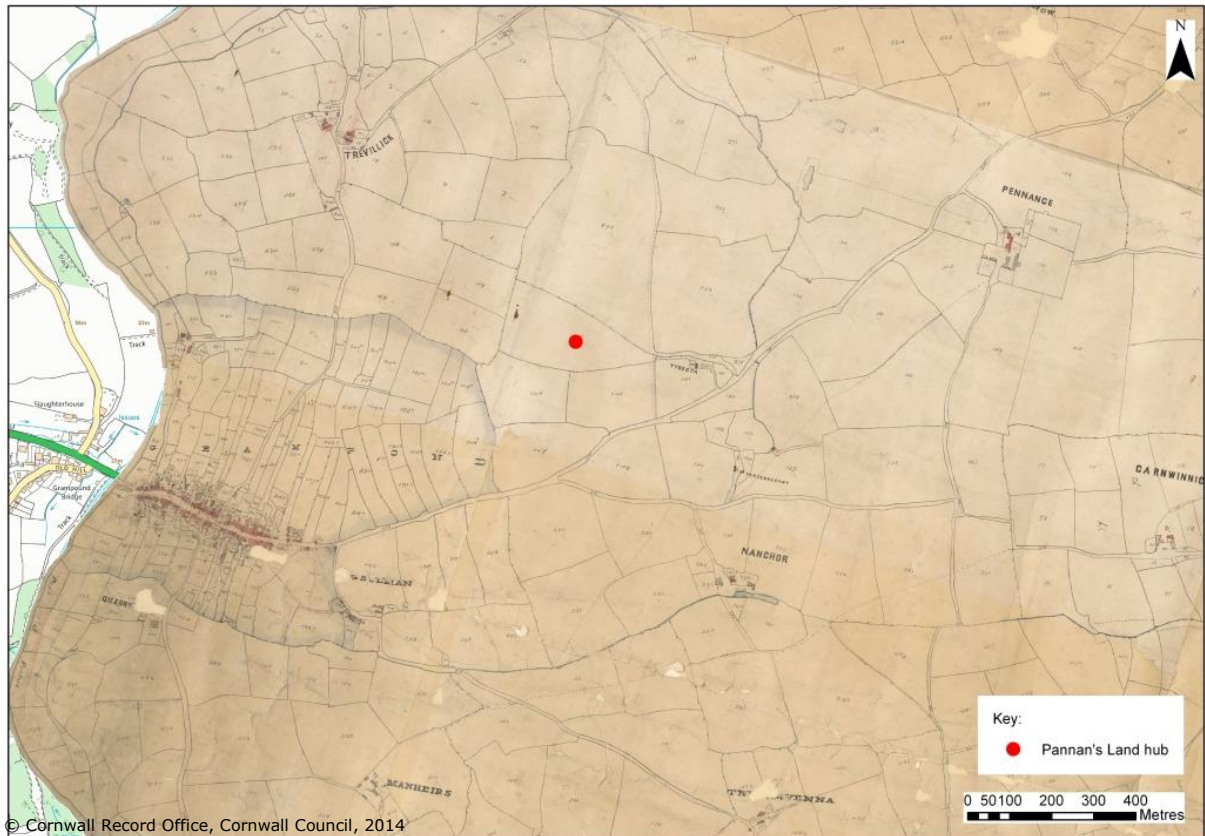


Figure 7: The proposed wind turbine location superimposed on the c1841 Tithe Map for the parish of Creed.

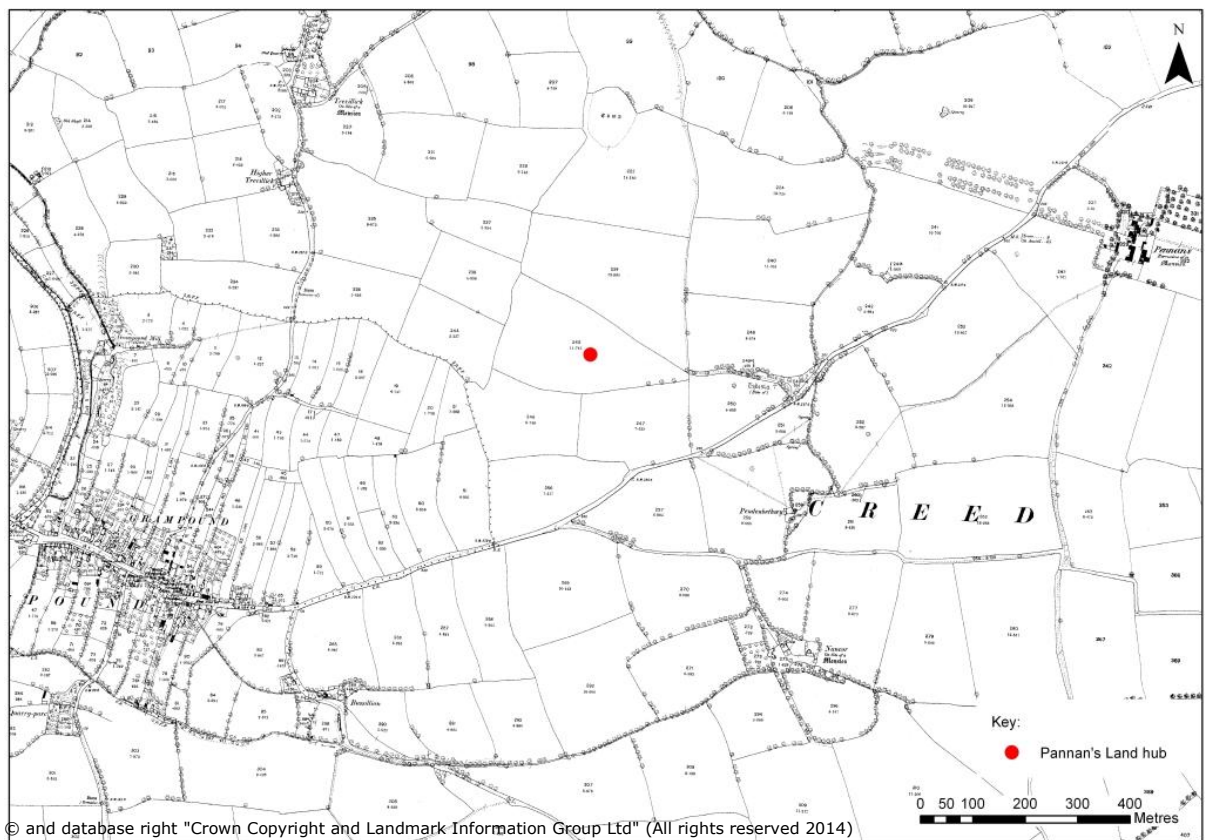


Figure 8: The proposed turbine site superimposed on the OS c1875 25" map.

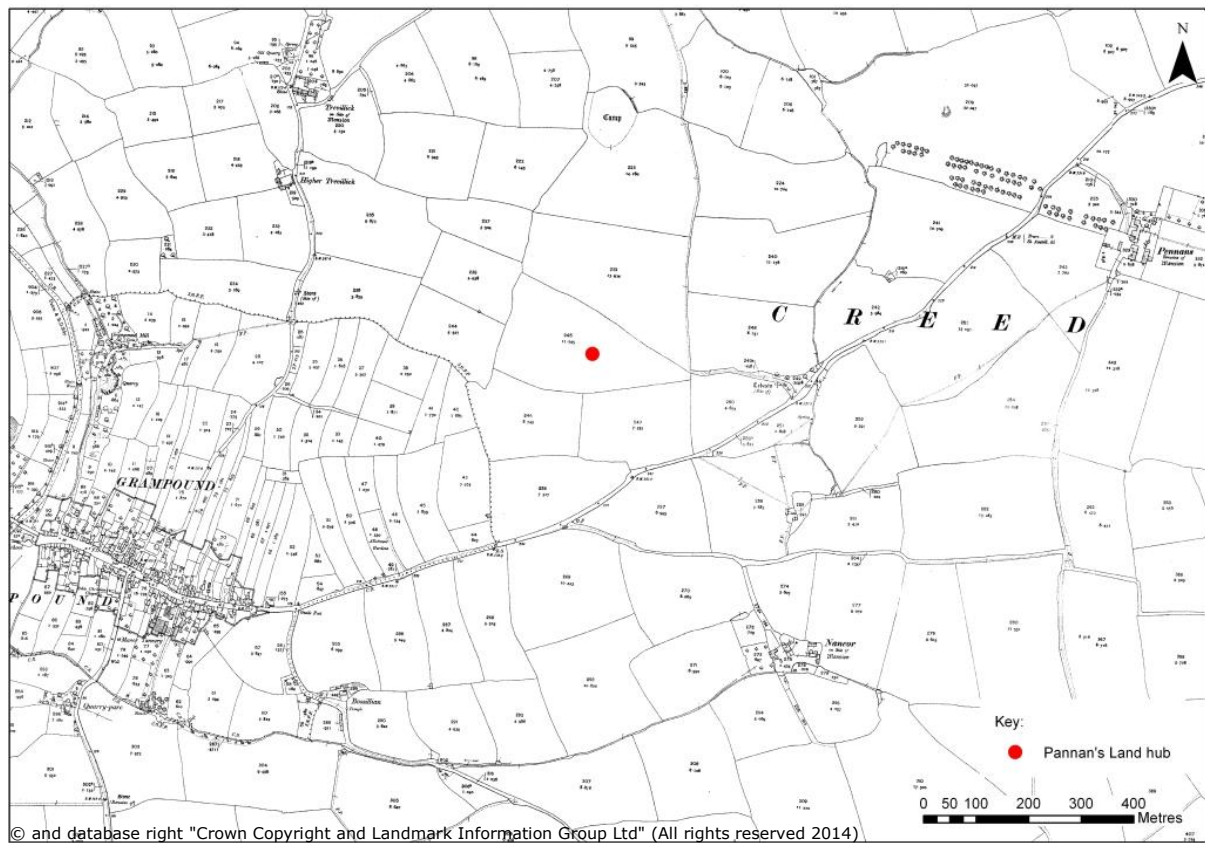


Figure 9: The proposed turbine site located over the OS c1908 25" map.

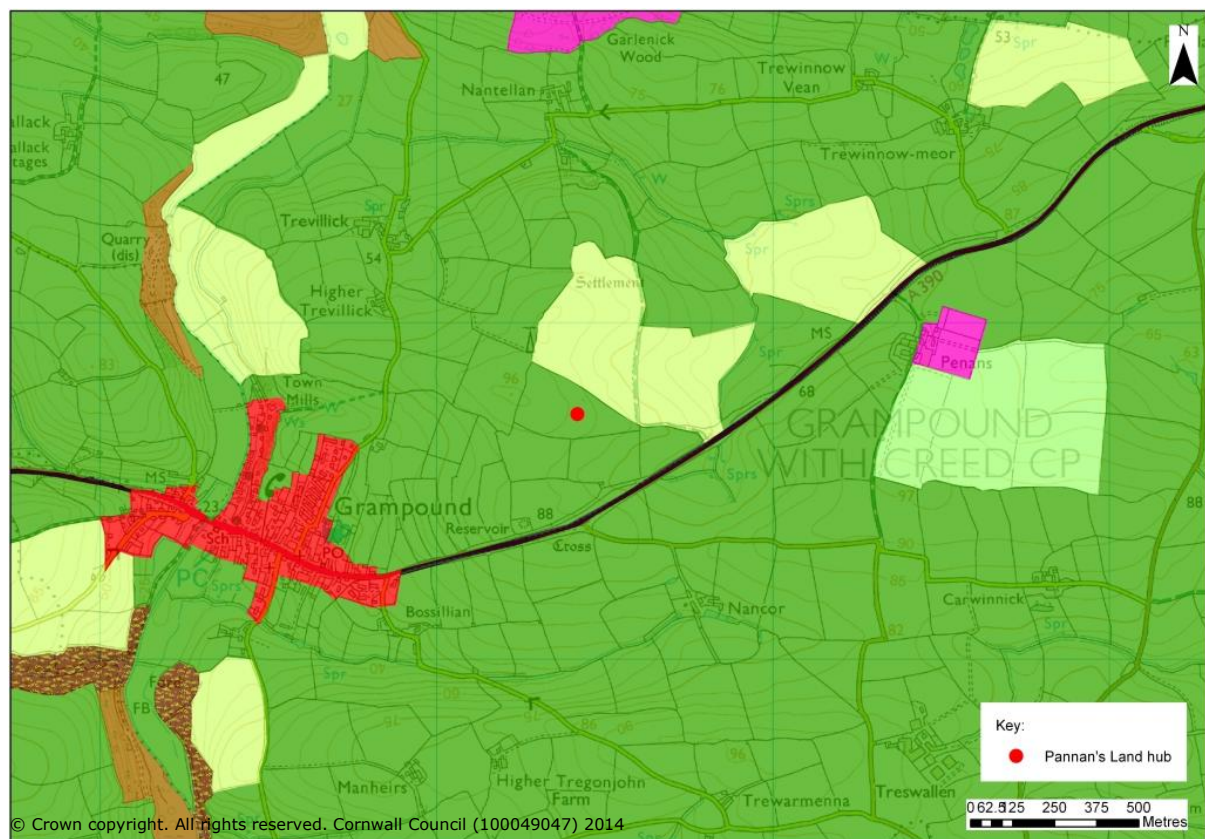


Figure 10: Historic Landscape Characterisation of the area surrounding the proposed turbine site. The green represents the Medieval farmland, the light green is post Medieval enclosed land, cream the modern enclosed land, probably former unenclosed downland, and pink is ornamental whilst red denotes a settlement and brown is woodland.

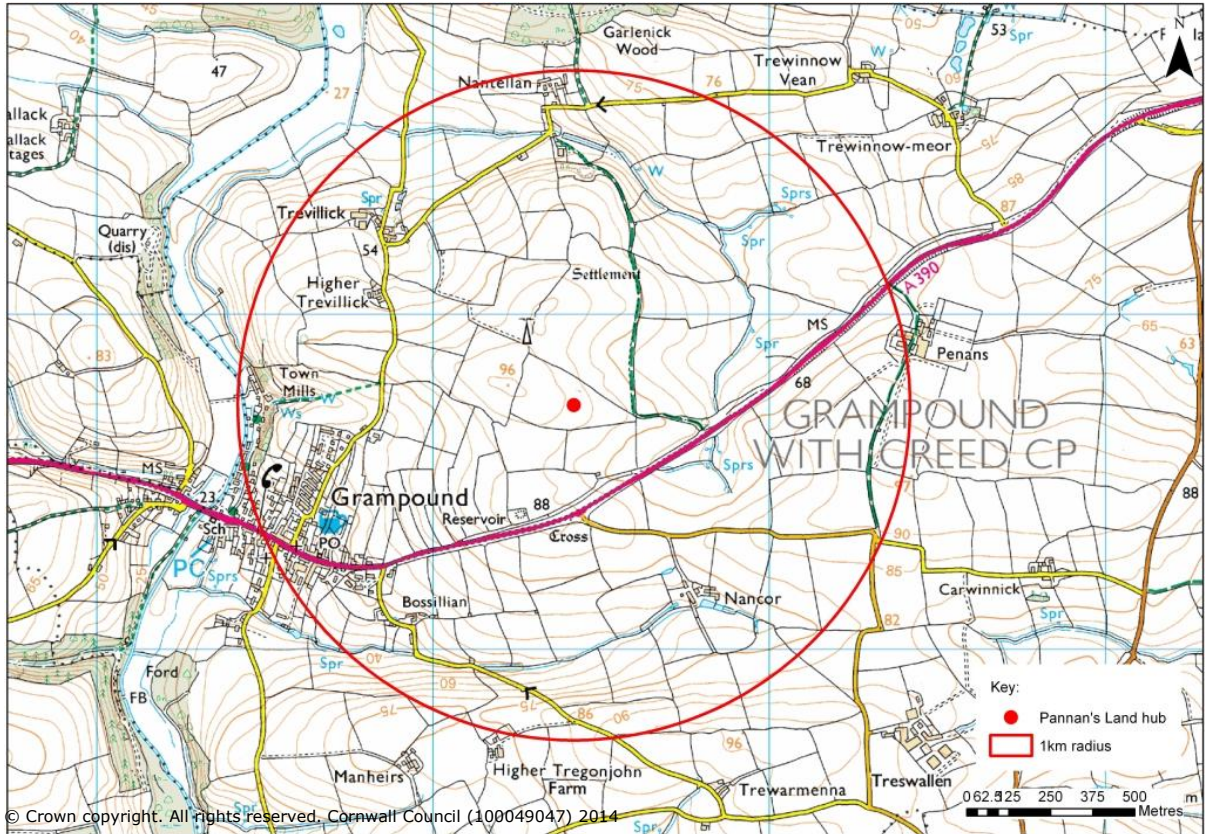


Figure 11: Contour map of the area surrounding the proposed site, note the ridges and steep slopes characterising this landscape.

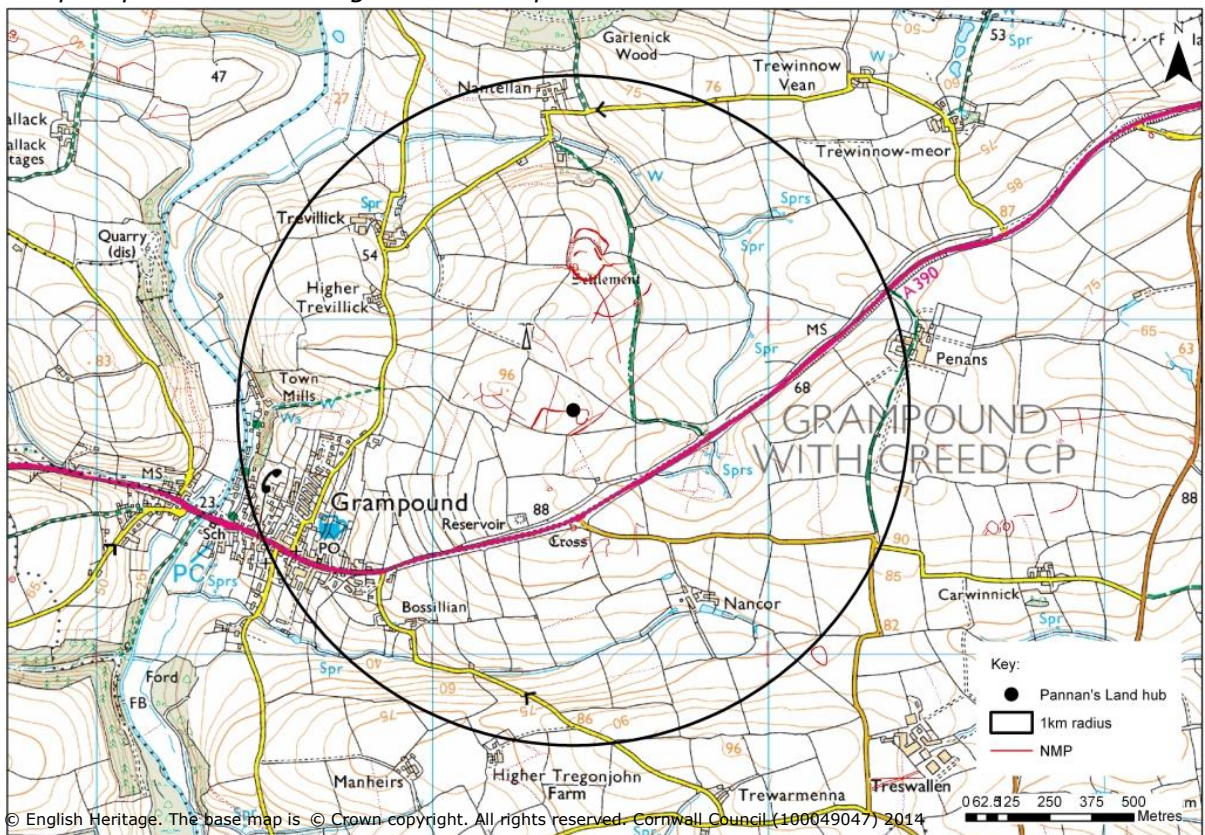


Figure 12: NMP data for the proposed site and surrounding area. Note the scatter of prehistoric enclosures on high ground surrounding the proposed turbine site.

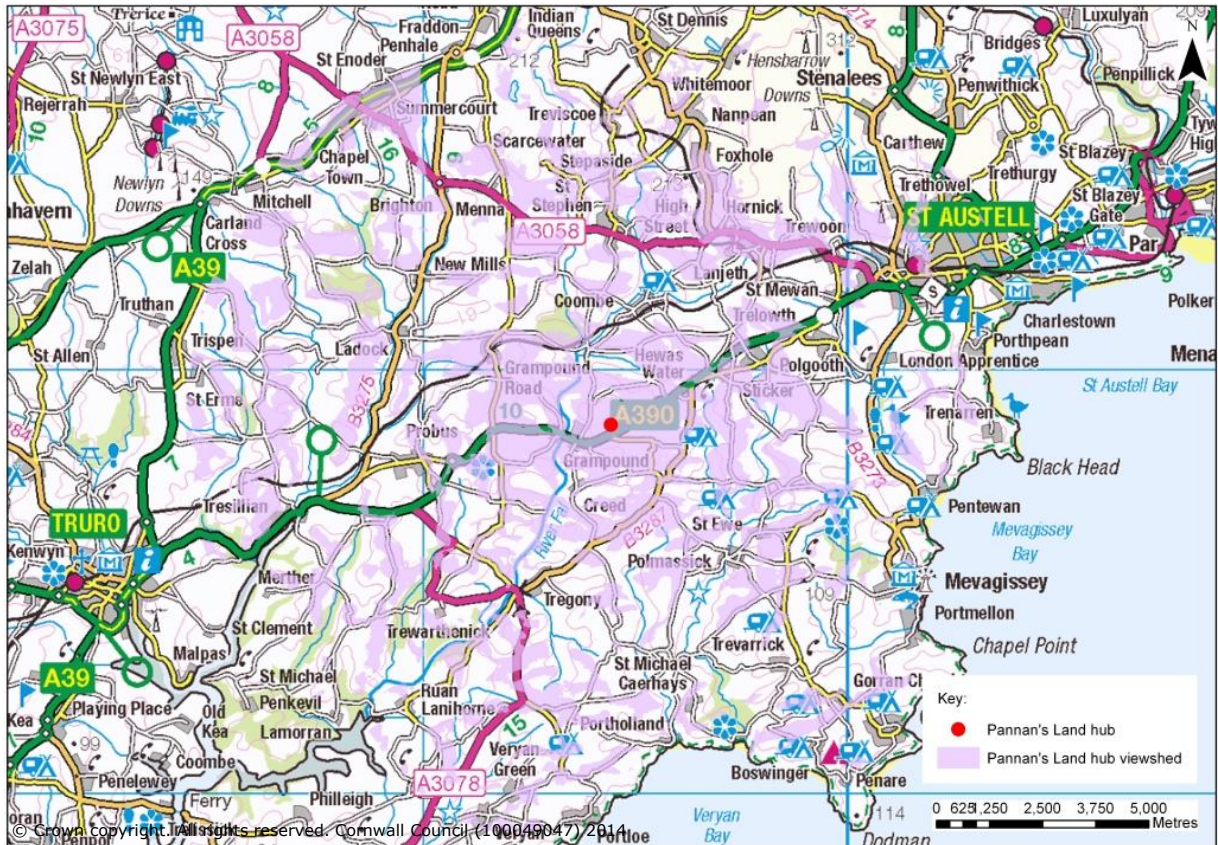


Figure 13: Viewshed for the turbine hub.

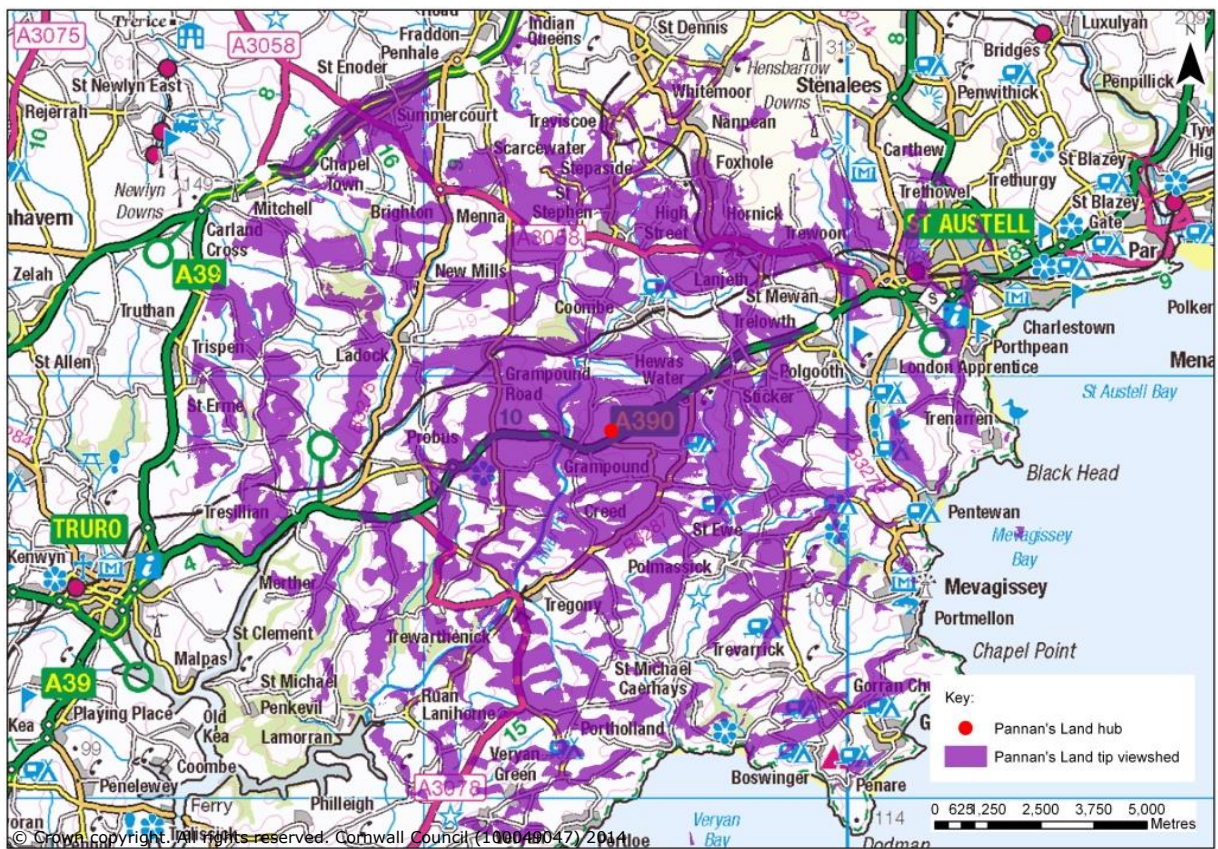


Figure 14: Viewshed for the turbine tip.

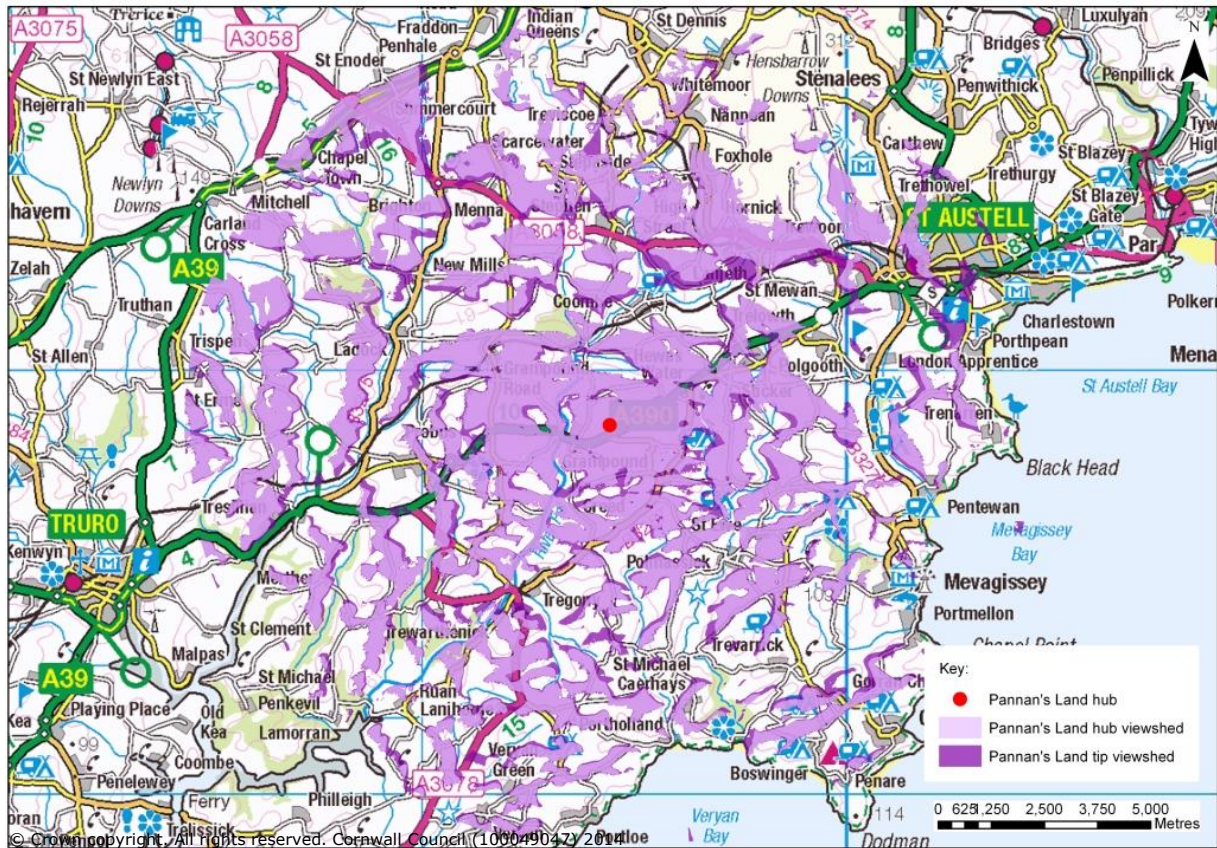


Figure 15: Combined hub and tip viewedshed for the proposed turbine.

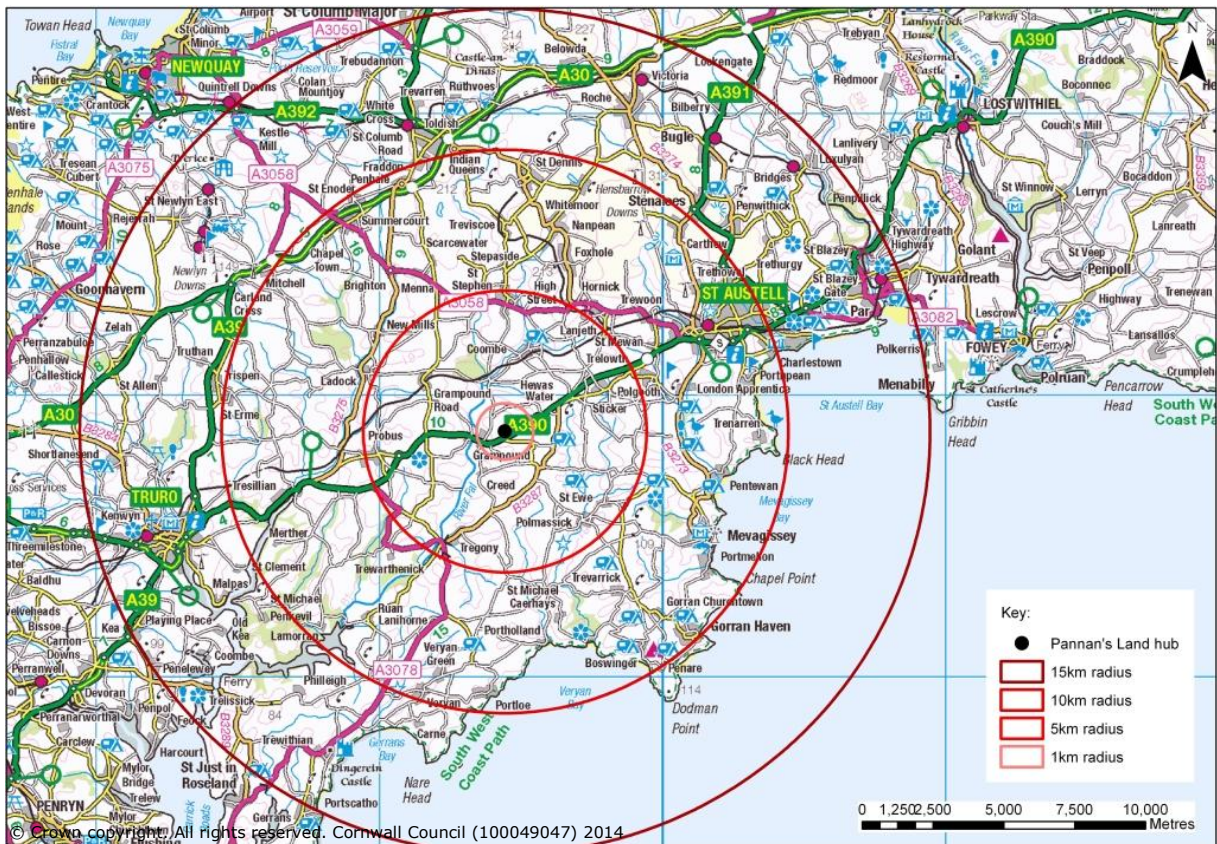


Figure 16: Map showing the radial zones within which each category of heritage asset has been considered.

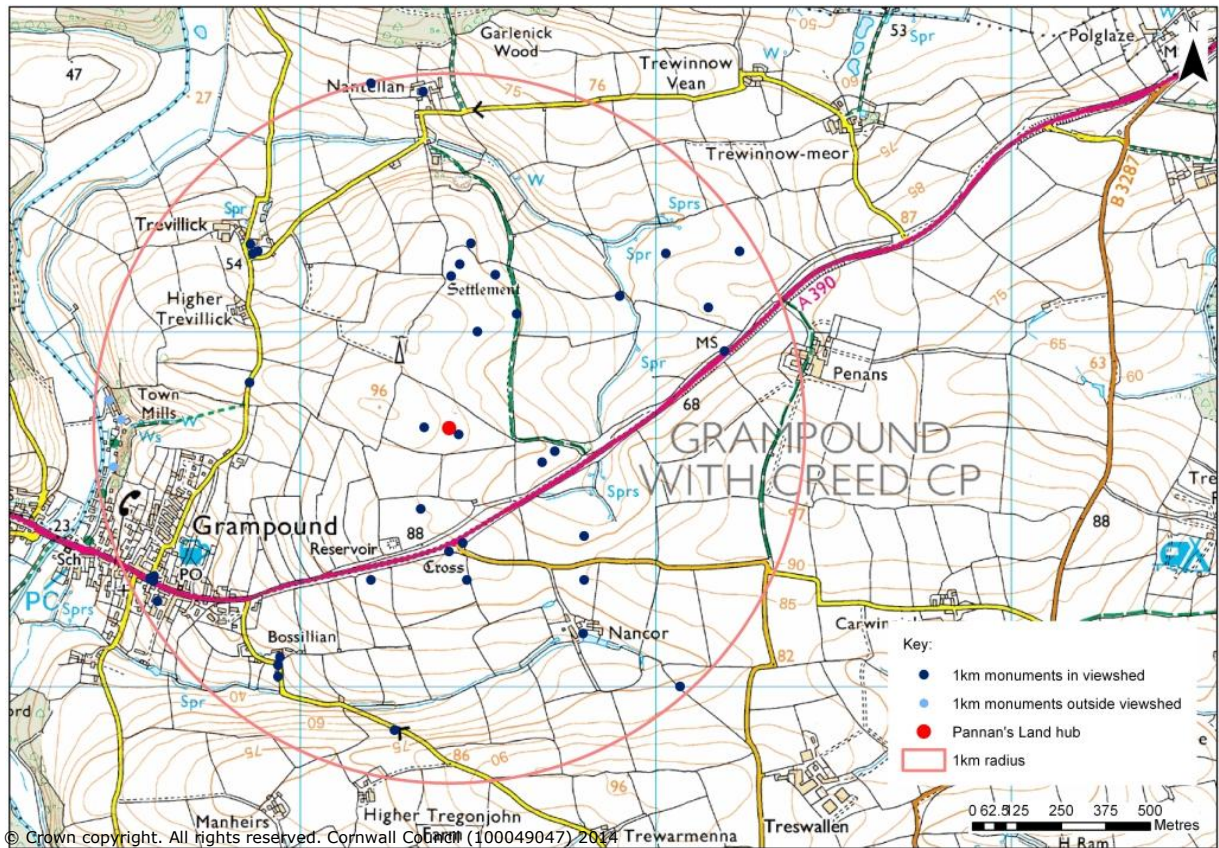


Figure 17: The 1km radius around the proposed site showing undesignated assets within the viewshed.

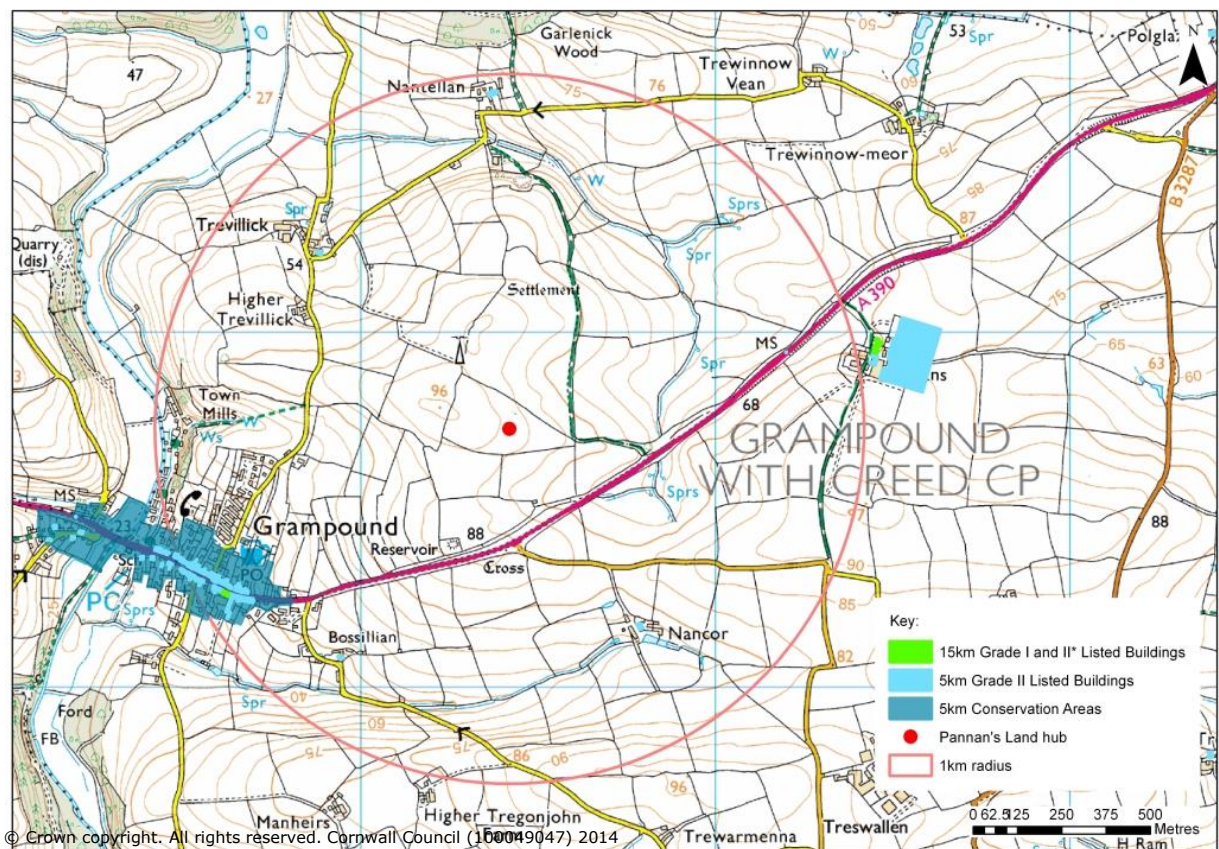


Figure 18: Map showing all designated historic assets within the viewshed and within or close to 1km from the proposed turbine site.

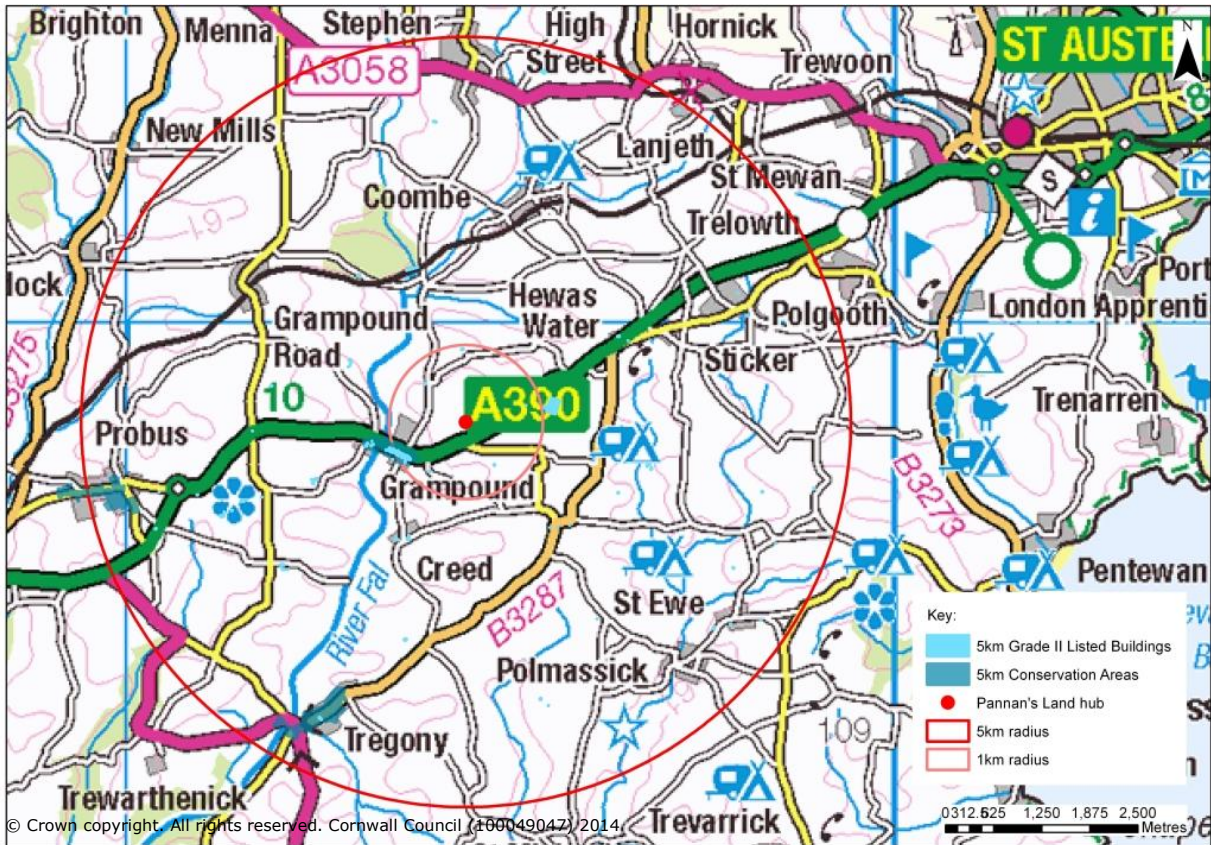


Figure 19: Map illustrating the Grade II Listed Buildings and Conservation areas within a 5km radius and the viewedshed from the proposed turbine site.

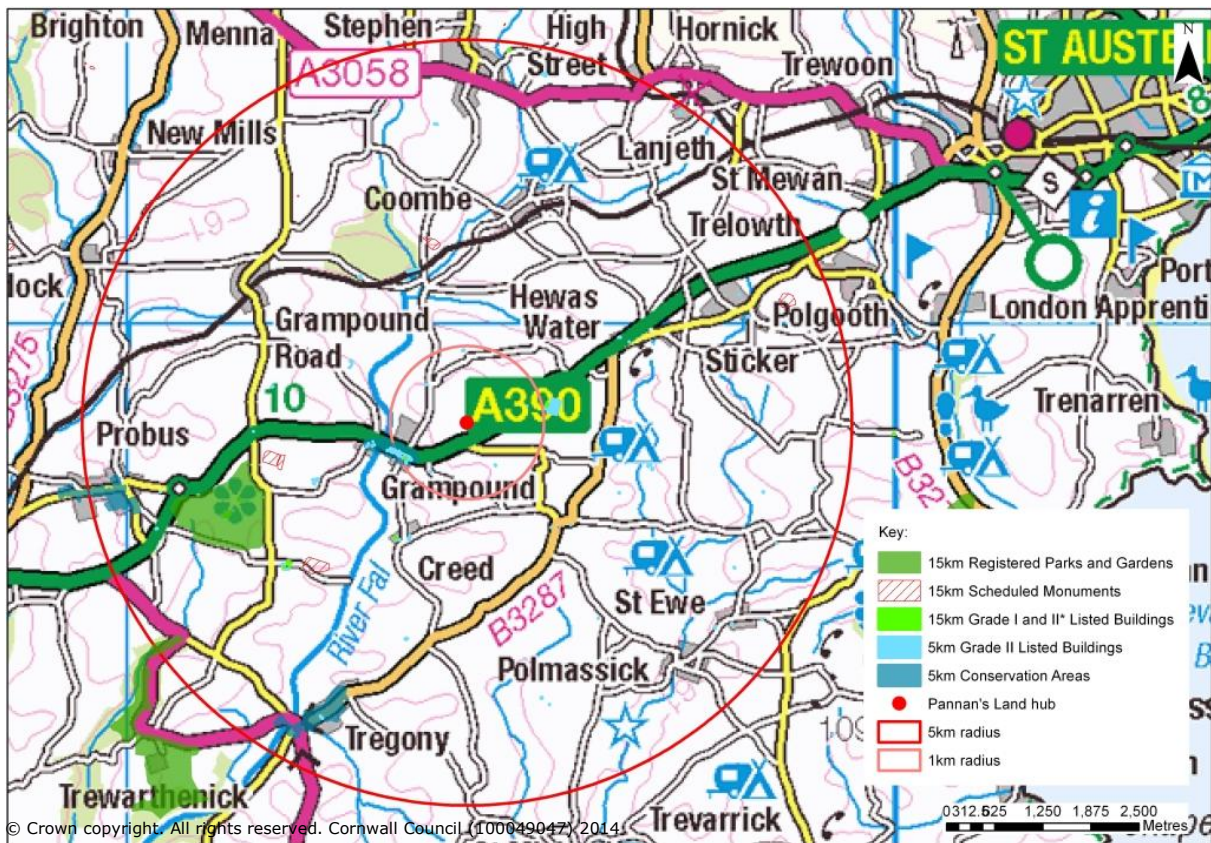


Figure 20: The 5km radius zone showing all designated assets within the viewedshed.

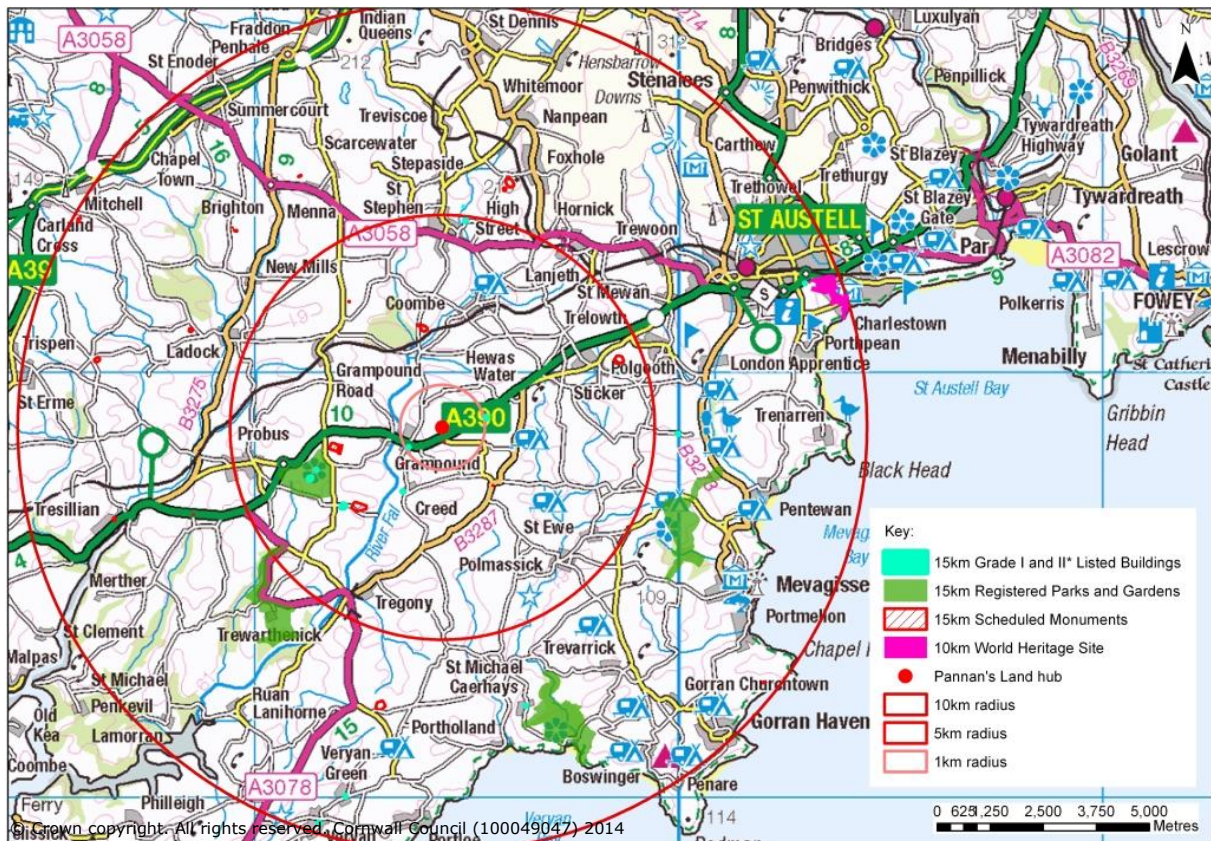


Figure 21: The 10km radius zone showing the Grade I and II* Listed Buildings, Scheduled Monuments, World Heritage Site and Registered Parks and Gardens within the viewed.

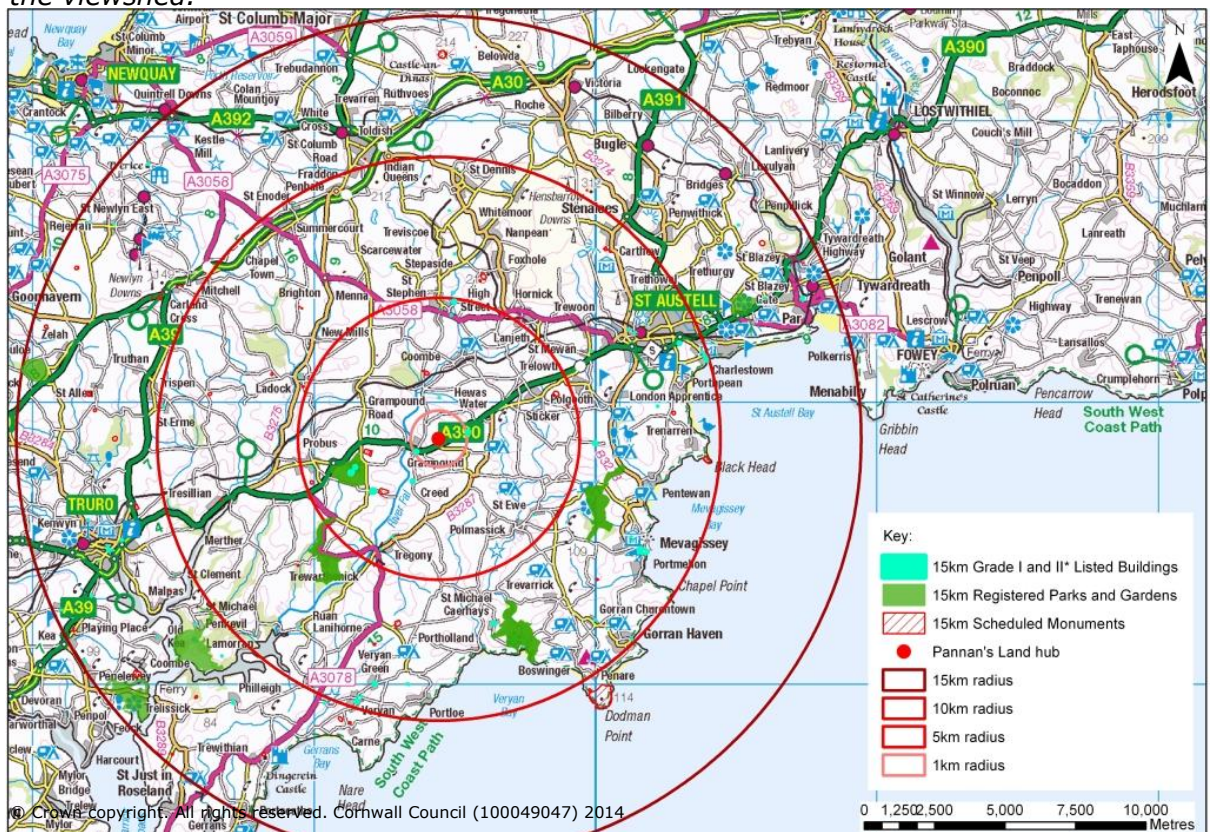


Figure 22: The Registered Parks and Gardens, Scheduled Monuments and Grade I and II* Listed Buildings within a 15km radius of the proposed turbine site.



Figure 23: Looking northwest across the proposed turbine field, note the existing small turbine to the left and the communications mast on the right of the image.



Figure 24: The view east from the proposed turbine field was the most extensive from ground level than views in other directions.



Figure 25: The view southeast from adjacent to the proposed turbine field directly towards the high status front elevation of Pennans Farmhouse.



Figure 26: The view east from adjacent to Carvossa and Trewithen showing the ridges and valleys that characterise the area. The proposed turbine will be close to the existing turbine. Grampound village, obscured by the hedge here, is in the intervening valley, the A390 approach road can be seen right of centre.



Figure 27: The view northeast from Grampound Conservation Area. The turbine will likely become visible on the horizon overlooking the village in the approximate centre of the village.



Figure 28: The view southeast from fields associated with Trevillick Farmhouse, which are located north of this viewpoint. The proposed turbine will be located in the centre of this image over the ridgetop.



Figure 29: The Church of St Creda from the centre of Creed indicating that the topography and vegetation result in the tower not being a prominent landscape feature.



Figure 30: The view north towards Grampound from Creed. The proposed turbine may be visible from parts of the hamlet and would appear on the far right of this image.



Figure 31: Probus church in the centre of Probus Conservation Area. The vegetation and dwellings prevent views out of the village though the church tower is relatively tall in comparison and may be visible in landscape views with the proposed turbine.



Figure 32: The view southeast from Hendra barrow cemetery approximately 10km away. The turbine will be a very small component of views where it may be visible.

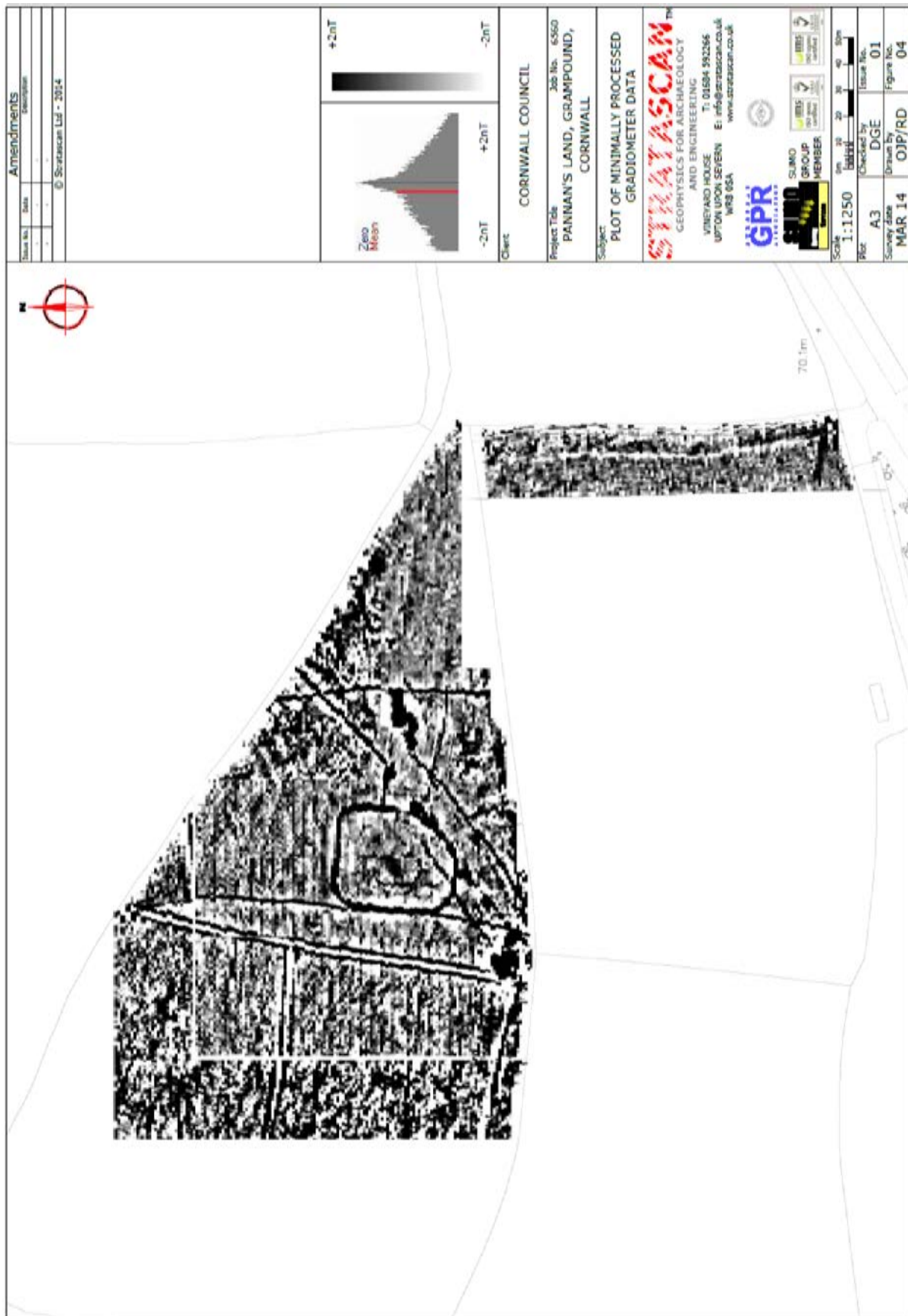


Figure 33: The geophysical survey plot of the raw data. The wind turbine is currently proposed to be sited at the centre of the square area covered by the survey.

9.0 ARCHAEOLOGY AND THE HISTORIC ENVIRONMENT ASSESSMENT

Introduction

- 9.1 Cornwall Archaeological Unit (formerly Historic Environment Projects Cornwall Council) was commissioned to provide an assessment of the potential impacts of a proposed development for a single wind turbine on land at Pennans Land in respect of archaeology and the historic environment. The assessment considers designated and undesignated heritage assets within a 15km radius of the application site together with sub surface archaeology within the application area.
- 9.2 The Chapter provides a baseline description of heritage assets and assesses the potential impacts of the proposed development during construction and operation. Cumulative impacts of the proposed development are assessed together with mitigation measures to reduce the significance of any adverse direct and indirect impact on heritage assets.
- 9.3 Direct impacts are considered to constitute physical damage or removal of the asset. Indirect impacts are those that affect its setting (the area within which the asset is experienced or within which it influences the character of its surrounding landscape), including the visual, audible or contextual appreciation of the asset.

Planning Policy Context

- 9.4 The section provides an overview of the statutory and non-statutory planning legislation and policies relevant to the archaeology and historic environment.

National Planning Policy Framework

- 9.5 Paragraph 128 of the NPPF states that; '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'.
- 9.6 Paragraph 129 of the NPPF states that; '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'.

- 9.7 Paragraph 132 of the NPPF states that; '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'.
- 9.8 Paragraph 133 of the NPPF states that; '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;
 - no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;
 - conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible;
 - the harm or loss is outweighed by the benefit of bringing the site back into use'.
- 9.9 Paragraph 134 of the NPPF states that; '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'.
- 9.10 Paragraph 135 of the NPPF states that; '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'.
- 9.11 Paragraph 139 of the NPPF states that; '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’.

Planning Practice Guidance – Covering the Historic Environment (March 2014)

9.12 Relevant guidance in Policy Practice Guidance (PPG) considered relevant to the proposed development is provided as follows:-

In Section 3, paragraph 2, of the PPG Decision Taking – Historic Environment it asks the question:-

- Why is ‘significance’ important in decision-taking?

9.13 Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset, and the contribution of its setting, is very important to understanding the potential impact and acceptability of development proposals.

In section 3, paragraph 6, of the PPG it asks the question:-

- What is the setting of a heritage asset and how should it be taken into account?

9.14 A thorough assessment of the impact on setting needs to take into account, and be proportionate to, the significance of the heritage asset under consideration and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

9.15 Setting is the surroundings in which an asset is experienced, and may therefore be more extensive than its curtilage. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not.

9.16 The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. For example, buildings that are in close proximity but are not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each.

9.17 The contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting. This will vary over time and according to circumstance.

9.18 When assessing any application for development which may affect the setting of a heritage asset, local planning authorities may need to consider the implications of cumulative change. They may also need to consider the fact that developments which materially detract from the asset's significance may also damage its economic viability now, or in the future, thereby threatening its ongoing conservation. In section 3, paragraph 12, of the PPG it asks the question:-

- How can proposals avoid or minimise harm to the significance of a heritage asset?

9.19 A clear understanding of the significance of a heritage asset and its setting is necessary to develop proposals which avoid or minimise harm. Early appraisals, a conservation plan or targeted specialist investigation can help to identify constraints and opportunities arising from the asset at an early stage. Such studies can reveal alternative development options, for example more sensitive designs or different orientations, that will deliver public benefits in a more sustainable and appropriate way.

Hedgerow Regulations

9.20 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.

9.21 Cornwall Council Historic Environment Planning Advice Officer's further advice dated late May 2013 states the current guidance for medium-sized wind turbines (61- 99m) is:-

- All proposals will require an archaeological assessment. Those in 'Anciently Enclosed Land' with HER sites within 500m will also require a geophysical survey.
- An assessment of the settings of designated heritage assets will be required when Scheduled Monuments, Listed Buildings, Conservation Areas, the World Heritage Site, Registered Battlefields or Registered Parks and Gardens lie within 10km (for wind turbines measuring 60m to tip) or 15km (for turbines measuring 100m to tip).

Designations and Their Significance

World Heritage Site

These sites are designated and defined by UNESCO (UNESCO website).

9.22 The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection and preservation

of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

- 9.23 Sites inscribed on the World Heritage List benefit from the elaboration and implementation of a comprehensive management plan that sets out adequate preservation measures and monitoring mechanisms. In support of these, experts offer technical training to the local site management team.
- 9.24 The inscription of a site on the World Heritage List brings an increase in public awareness of the site and of its outstanding values, thus also potentially increasing tourist activities at the site. When these are well planned for and organized respecting sustainable tourism principles, they can bring important funds to the site and to the local economy.

Scheduled Monuments

- 9.25 Scheduled Monuments have Statutory Protection under the Ancient Monuments and Archaeological Areas Act 1979. These are sites that have been identified by English Heritage, the Government's archaeological advisory body, as being of national importance, and are included in the County Lists maintained by the Secretary of State for Culture, Media and Sport. A schedule has been kept since 1882 of monuments whose preservation is given priority over other land uses. The current legislation, the Ancient Monuments and Archaeological Areas Act 1979, supports a formal system of Scheduled Monument Consent for any work to a designated monument (English Heritage Website).

Registered Parks and Gardens

- 9.26 Registered Parks and Gardens are described and defined by English Heritage (English Heritage Website). The English Heritage 'Register of Historic Parks and Gardens of special historic interest in England', established in 1983, currently identifies over 1,600 sites assessed to be of national importance. The emphasis of the Register is ... on 'designed' landscapes; ... gardens, grounds and other planned open spaces, such as town squares ... rather than on planting or botanical importance.
- 9.27 Historic parks and gardens are a fragile and finite resource: they can easily be damaged beyond repair or lost forever ... The main purpose of this Register is to celebrate designed landscapes of note, and encourage appropriate protection. It is hoped that, by drawing attention to sites in this way, English Heritage will increase awareness of their value and encourage those who own them, or who otherwise have a role in their protection and their future, to treat these special places with due care.
- 9.28 Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the landscapes' special character.

Listed Buildings

- 9.29 Sites are listed to mark their special architectural and historical interest; they are protected by law, and Listed Building Consent must be granted for any alterations to a designated building. Grade I Listed Buildings are considered to be of exceptional interest whilst some sites, such as the Pennans Farmhouse, have been given Grade II* status, which means they are considered 'particularly important...of more than special interest.' The remaining sites are designated as Grade II listed and are therefore considered 'nationally important and of special interest' (English Heritage Website).

Conservation Areas

- 9.30 Conservation areas are designated for their special architectural and historic interest. They are designated by the local planning authority and comply with national standards. Designations of Conservation Areas were first made in 1967 and typically include town or city centres, fishing and mining villages, historic estates, housing and transport links (English Heritage Website).

Regional and Local Significance

- 9.31 These remains are considered of regional significance because of their rarity, setting and upstanding evidence but are otherwise undesignated assets.

Consultation

- 9.32 To inform the Environmental Statement a pre-application consultation process has been undertaken. This included:-
- A Scoping Opinion, received April 2014, including responses from English Heritage and the Cornwall Council Historic Environment Advice team.
 - English Heritage, in their response of 23rd April 2014, recognised the need for wind energy but expressed concerns regarding cumulative impact and required an Environmental Impact Assessment and a study area of a 15km radius from the site for the assessment of heritage assets and impacts in line with their published guidance.
 - The response from the Cornwall Council Historic Environment Advice team, dated 29th April 2014, supported and emphasised the English Heritage advice.
 - An archaeological assessment was undertaken by Historic Environment Projects, Cornwall Council in May 2014 of the proposed development site and surrounding area (Appendix 9.1). The impacts identified from the results of the assessment are described below.

- An initial geophysical survey of the development area was undertaken by Stratascan Ltd in April 2014. Further geophysical survey of an extended area was undertaken in June 2014. The results are included in the Archaeological Assessment (Appendix 9.1) and the impacts identified from the results are discussed below.
- Further consultation with other specialists contributing to the Environmental Statement was undertaken on a formal and informal basis.

Methodology

9.33 A detailed methodology for the Archaeological Assessment and Geophysical Survey can be found in Appendix 9.1. In summary the Assessment included:-

- Desk-based assessment – a consultation of historical databases, published sources, archives, maps and databases to obtain information about the history of the site, its surroundings and any features or structures of historical or archaeological interest within the assessment area boundaries.
- The historical and landscape context of the site were also considered during the desk-based stage in order to establish the nature of the heritage assets, the Historic Landscape Character of the area and the nature of any existing or planned power generation infrastructure within the landscape in which the development is proposed.
- Viewshed analysis – Using ArcGIS software and a Digital Terrain Model, a surface model of potential intervisibility between the proposed wind turbine and key heritage assets within the surrounding landscape was created. This provided the baseline 3D mapping from which setting impacts which might result from the construction of the proposed wind turbine could be quantified. Viewsheds or Zones of Theoretical Visibility were generated for an ‘observer point’ based on the location of the proposed wind turbine (Figure 1).
- Heritage assets were identified using intersections between this digital model and Historic Environment Record GIS layers; these were filtered to produce data sub-sets based on likely sensitivity, setting, intervisibility between heritage assets and the proposed turbine and other factors. This filtered group of sites was assessed to determine the nature and extent of any potential impacts (Figures 2 and 3).
- Fieldwork – In order to check the validity of the Zone of Theoretical Visibility and to field check the extent and nature of potential impacts on the identified heritage assets, site visits were made to selected key locations and heritage assets within the landscape surrounding the proposed development (Table 4). A visual check and photographic record were made.

- A walkover survey of the proposed wind turbine site and cabling route was undertaken to examine the site for upstanding archaeology and to record the nature of the boundary types which might be impacted upon during the development.
- Geophysical Survey – Magnetometer surveys were carried out using a dual sensor Bartington Grad601-2 Magnetic Gradiometer. Readings were taken at 0.25m centres along traverses 1m apart to identify potential sub-surface archaeological features. A further geophysical survey was subsequently undertaken on an extended area surrounding the site.

Assessment of Significance

- 9.34 Two general types of archaeological impact, direct and indirect, are associated with development and are relevant during both the construction and operational phase of the development. Direct impacts are those which physically remove or damage an historic asset whilst indirect are those which alter key characteristics of the asset without affecting its physical integrity. The impacts of a development on archaeology and the historic environment may be either positive or negative. For the purposes of this assessment the significance of the impacts is set out in Tables 9.1, 9.2 and 9.3.
- 9.35 The assessment also distinguishes where possible between ‘permanent’ or ‘temporary’ and between ‘reversible’ or ‘irreversible’ as appropriate, in the determination of the scale of impacts. From the data collected above, the potential impacts and significance of effects upon the identified heritage assets were assessed taking into account the nature and significance of each asset. Significance and impact were determined using the following criteria:

The significance of each historic asset is graded as follows:

- WHS - World Heritage Site
- S - Scheduled Monument
- L - Listed Building
- A - Site of National Importance
- B - Site of Regional Importance
- C - Site of Local Importance
- D - Natural Feature or non-antiquity

The condition of each historic asset was assessed where possible during the walkover survey and was graded from 1-4:

- 1 - No surviving remains evident above ground
- 2 - Poor preservation
- 3 - Fair preservation
- 4 - Good preservation

The sites have been given one of four Overall Impact grades; from Major, which (where negative) approximates to damage and loss of the site's integrity and which represents a key factor in the decision-making process, to negligible, which equates to no perceptible effects. The full scale is:

Impact Category	Typical Descriptors of Effect
Major	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Moderate	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Minor	These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Negligible	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but may be important in influencing the subsequent design of the project.

Table 9.1: Overall Impact descriptors

In addition to the above descriptors the Overall Impact is determined using the combined result of the Sensitivity rating and the Magnitude of Impact rating (DMRB Vol.11; 2/1-5).

The Sensitivity ratings are:

Sensitivity Rating	Typical Descriptors
High	High or very high importance and rarity, national or international scale and very limited potential for substitution. Equates to World Heritage Sites, Scheduled Monuments, Listed Buildings and other Sites of National or International Importance.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution. Equates to Sites of Regional Importance and selected undesignated heritage assets.
Low	Low or medium importance and rarity, local scale. Equates to Sites of Local Importance and undesignated heritage assets.

Table 9.2: Sensitivity Rating descriptors

The Magnitude of Impact ratings are:

Magnitude of Impact rating	Typical Descriptors
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements.

Table 9.3: Magnitude of Impact Rating descriptors

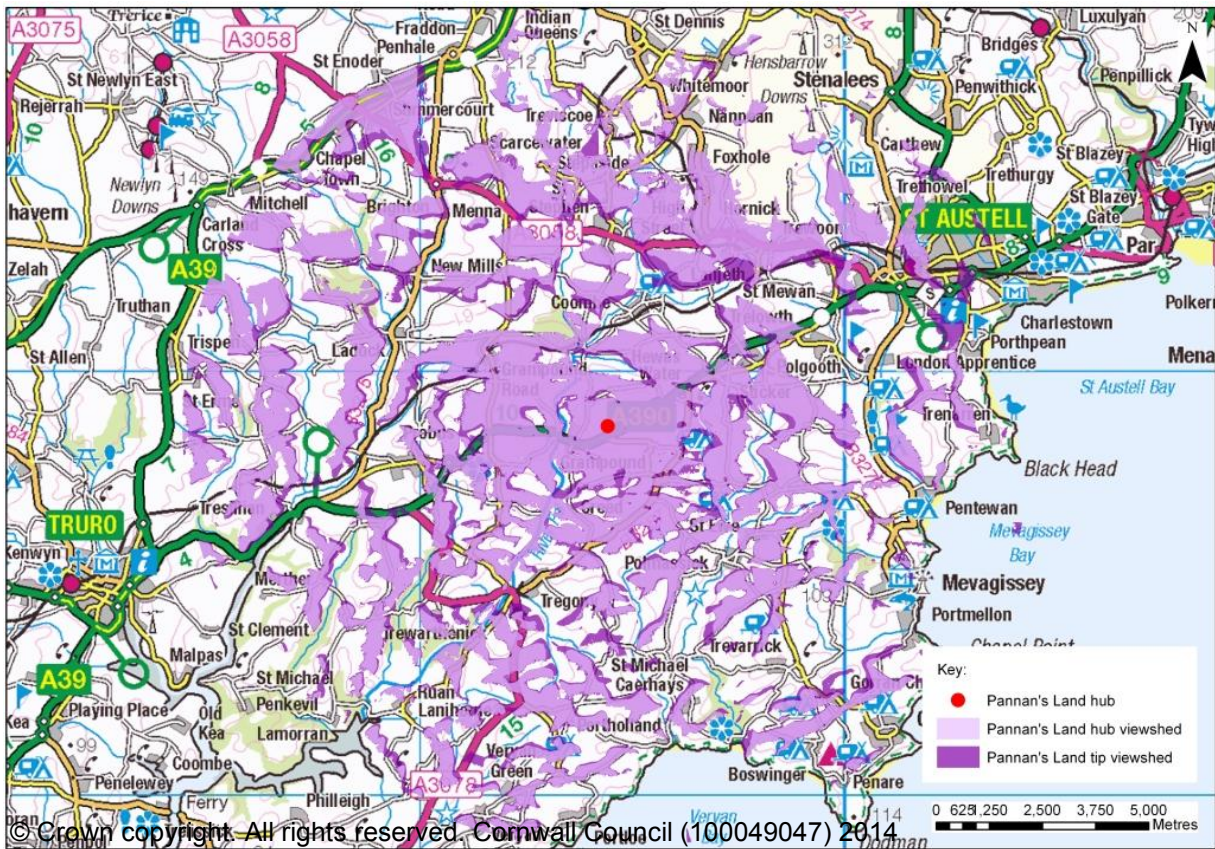


Figure 9.1: Combined tip and hub viewshed for the proposed wind turbine.

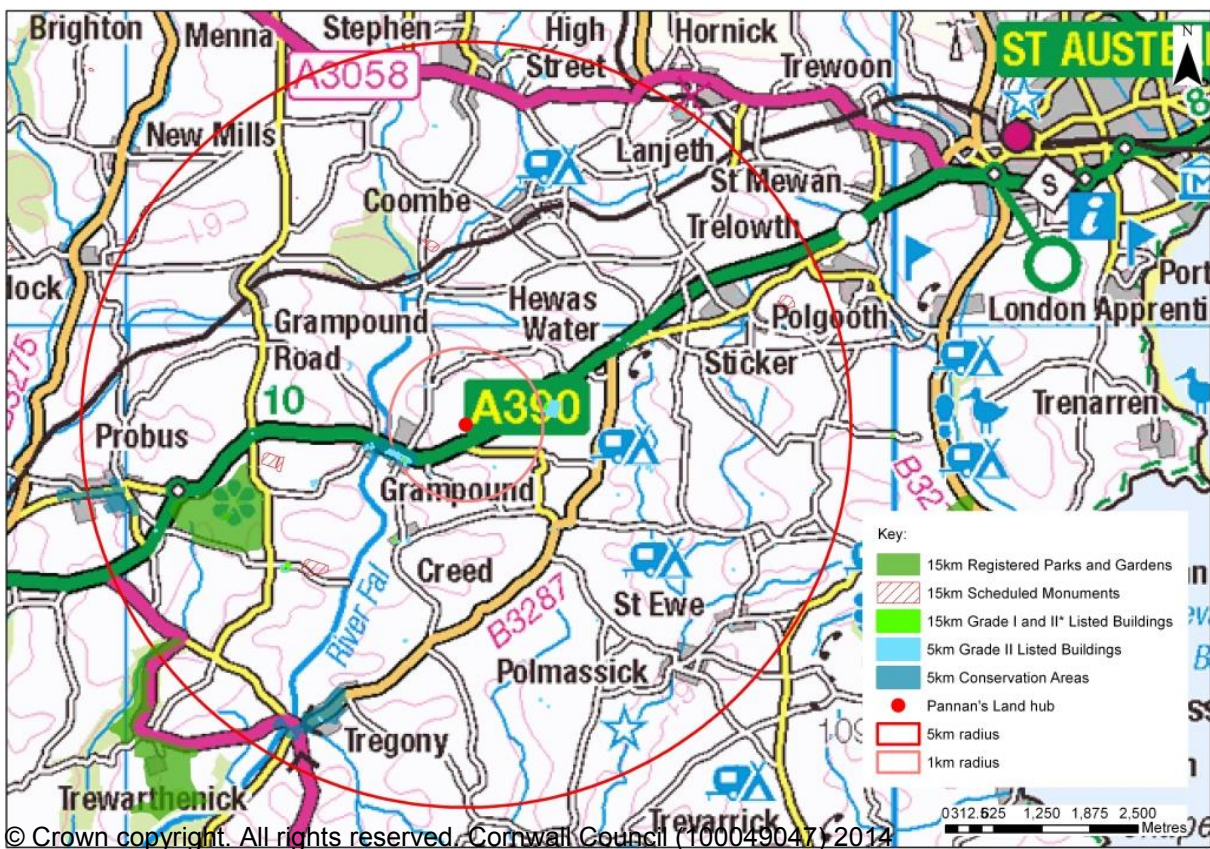


Figure 9.2: Heritage assets within the viewshed and within 5km of the proposed turbine site.

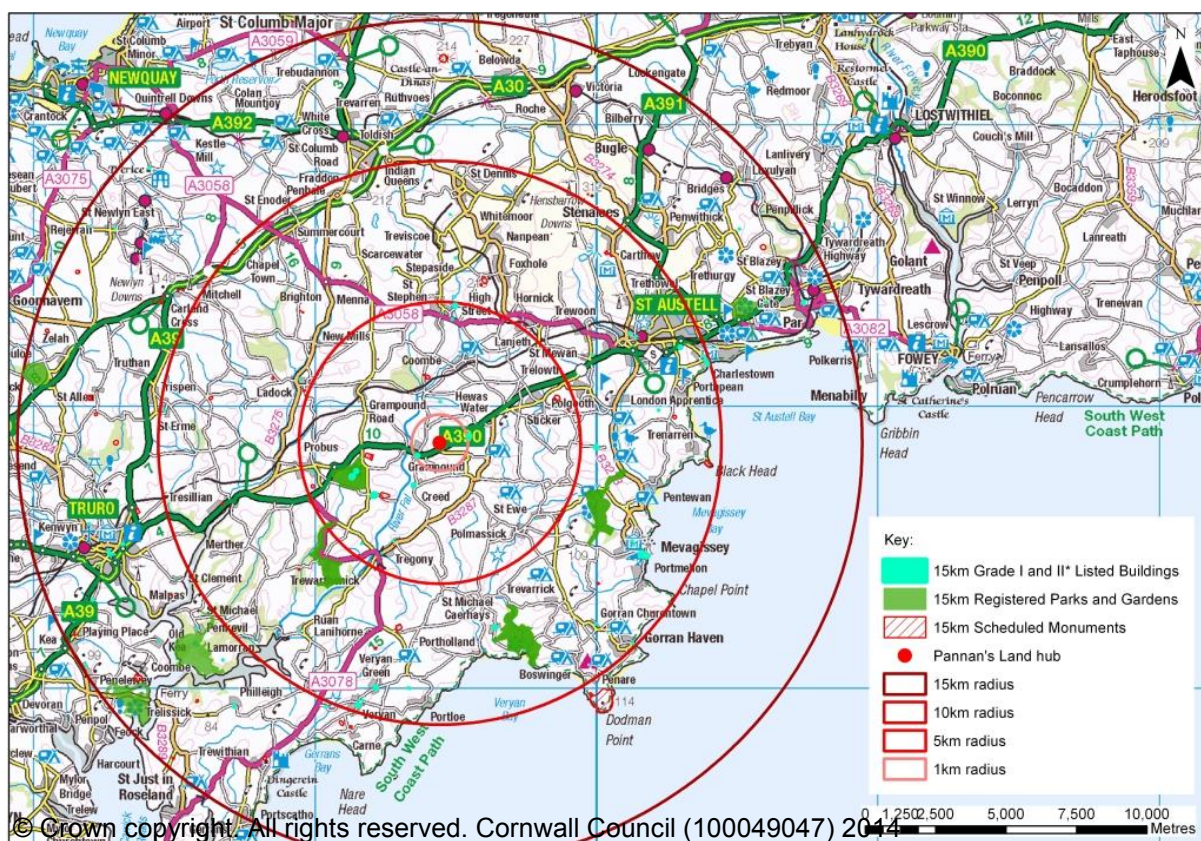


Figure 9.3: Heritage assets within the viewshed and within 15km of the proposed turbine site.

Baseline Conditions

Location and Topography

9.36 The proposed wind turbine is located at approximately 90m above Ordnance Datum (OD) at SW 94371 48744 (NGR). The application site is approximately 12km east-northeast of Truro, 10km southwest of St Austell and less than 1km northeast of the village of Grampound. Topographically the site is on a southeast facing slope slightly below the crest of a hill surrounded by ridge-tops that form a truncated plateau. Given the height of the wind turbine, this development is likely to be visible from a considerable distance away in the surrounding landscape.

Geology

9.37 The bedrock geology in this location consists of sandstone and mudstone rocks of the Gramscatho Formation. This is a sedimentary bedrock formed approximately 375-398 million years ago in the Devonian Period in a deep sea environment. These rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then redeposited as graded beds. No superficial deposits are recorded (British Geological Survey website).

Historic Landscape Characterisation

- 9.38 The Historic Landscape Characterisation (HLC) of the turbine site is recorded as Farmland, Medieval (Anciently Enclosed Land). This HLC Type forms Cornwall's agricultural heartlands, and contains farming settlements documented before the 17th Century set within morphologically distinct field patterns of Medieval or Prehistoric origins, and is likely to contain archaeological evidence for early settlements and associated features. The farmland is interspersed with tracts of post medieval and modern enclosed land to the north and east.

Site Description

- 9.39 The proposed turbine field is located close to the crest of a hill and is approximately triangular, sloping gently to the southeast. No upstanding archaeological features were visible within the site though this may have been due to the length and density of the grass at the time of the assessment. The field boundaries are approximately one metre high Cornish hedges topped with a further metre of vegetation including hawthorn, blackthorn and brambles. The views to the north-west were quite restricted by the topography of the field but from ground level beyond the north-western boundary they were quite extensive. Views in all other directions were also extensive, the views to the east being most far-reaching, those to the south from ground level reaching only as far as the next ridge (Figure 9.4). One small turbine is located in the adjacent field to the west and a communications mast is sited to the north-west, whilst there is one additional turbine currently visible to the northeast of the site. Subsequent to the fieldwork being undertaken, two turbines at Garlenick have been constructed near to the site; these will be visible in views to the north from the proposed Pennans site, and in views of the Pennans turbine.



Figure 9.4: The wide-ranging view east from the proposed turbine field taken at ground level highlighting the degree of intervisibility likely between the proposed turbine and sites in the surrounding landscape.

Archaeological and Historical Context

Prehistoric

- 9.40 The prehistoric remains in this area are concentrated into a series of hilltop enclosures overlooking river valleys though there are some barrows in elevated locations, such as those at Carnwinnick, Bodrugan and on the Dodman. Additional cropmark enclosures are recorded by the NMP mapping in locations immediately around the proposed turbine site. In particular, in the adjacent field to the north, Tybesta Round is recorded by the NMP, its site being partially fossilised in the curved field boundaries that still remain. This appears to have been a 0.75ha univallate enclosure with a formerly substantial bank and ditch and possible internal and annexe features. Tybesta Round is probably Iron Age or Romano-British in date and is part of a wider pattern of activity identifiable from aerial photographs and geophysical survey.
- 9.41 Castle Hill is one of the most typical of the enclosures, sited at a confluence of three valleys and overlooking a small cove, it also commands good views inland. Resugga, a univallate hillfort, Carvossa, a Romano-British defended enclosure and Golden Camp, another large univallate hillfort all overlook, from

west to east, the upper reaches of the Fal River, thought in the past to be navigable as far as Grampound. Dodman Point is the most impressive of the sites of this type within the wider area, the large ramparts enclosing an area of 34ha.

Medieval

- 9.42 Within 1km of the proposed turbine site the narrow strips of land indicative of medieval burgage plots and strip field cultivation survive associated with the properties of medieval origin in Grampound and many local place-names have medieval origins. The earliest record of Pennans Land is not clear though the origin is likely to be Cornish deriving from the elements 'pen' meaning 'top' and 'nans' meaning valley. Grampound is first recorded in 1297 as 'Ponsmur,' Cornish for 'great bridge' and the current name is derived from the Norman French translation of the name for the bridge at the west end of the village over the River Fal.
- 9.43 The closest recorded Domesday Manor is likely to have been Tybesta, especially given the use of the name around the area to the north of Grampound to refer to fields and latterly roads and houses. Tybesta was comparatively large, and along with Grampound was clearly an important early medieval centre within Cornwall.

Post Medieval

- 9.44 Grampound and Pennans or 'Pennance' Farmhouse, to the south-east of the proposed site, are depicted on Gascoyne's 1699 and Martyn's 1748 maps, Martyn recording the name of Hawkins at Pennans, indicating a familial link to the nearby Trewithen estate.
- 9.45 On the 1841 Creed Tithe Map the narrow burgage plots around Grampound are very distinct whilst the wider area shows clear indications of former strip fields associated with the settlement and with neighbouring farms. In all probability Pennans Land was a relatively small, hilltop area of remnant unenclosed downland flanked by the medieval Great Fields which were fossilised along their strip field boundaries in the early post medieval period. The 1840 Tithe Apportionment records the proposed turbine field as part of the 'Pennance' holding and as arable land called Outer Cragas. The field was owned by William Carlyon of Pennance and occupied by Nicholas Donnithorne. 'Crug,' similar to Cragas, is the Cornish name for a barrow and may indicate the location of such a site nearby. The field immediately to the north of the proposed turbine field is, significantly, named 'Castle Field' indicating awareness of Tybesta Round within the field.
- 9.46 The 1875 and 1901 OS maps show few changes to the landscape although they both mark the mapped extent of Tybesta Round and more clearly depict an avenue of trees associated with Pennans Farmhouse extending in the direction of Pennans Land.

- 9.47 The post medieval in Cornwall and elsewhere saw the development of large estates with country houses, designed landscapes and significant collections of plants. 'Pennans' farmhouse was one of the earliest of these, though the current farmhouse dates to c1680. The estate included an avenue with a bridge over the road that may have been aligned with Tybesta Round as part of an ornamental landscape. By the early 1800s Pennans was described as having fallen into decay, probably as a result of the continued rise of the larger estates nearby such as Trewithen, Heligan, Caerhays and Trewarthenick, all located to the south of Pennans Land.
- 9.48 Trewithen was purchased in 1715 by Philip Hawkins of Pennans who made improvements to the existing house and grounds. In 1766 Sir Christopher Hawkins inherited the estate and extended the property, commissioning its picturesque circuit ride. During World War I the government requisitioned timber from the park opening up space within which the current collections of rhododendrons and camellias were planted.
- 9.49 The wider landscape to the northeast and east has been considerably altered by china clay extraction; the resultant pits and spoil tips are clearly visible and the ports and coastal villages around St. Austell Bay have many related industrial features. Charlestown was a major component of the industry and now part of the Cornish Mining World Heritage Site.

Modern

- 9.50 In the modern period few changes have been made to the immediate surroundings of Pennans Land and Grampound; the small farming settlements and fields remain, and Grampound retains its medieval linear layout and much of its historic character. The A390 road has been upgraded into a major route to St. Austell with associated modern infrastructure.

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
1	Nancor Barrow MCO3159	SW 94340 48500	The barrow is not clearly visible from ground level viewpoints and is located within a field surrounded high Cornish hedges which is not easily accessible. The proposed turbine will be highly visible above the hedgerows and possibly audible, depending on the wind direction. The barrow is set within a highly rural environment although it is adjacent to the A390 road.	Bronze Age	C	2	Low	Moderate
2	Bossilian Mine and Farmhouse MCO11877 / MCO53981	SW 93939 48028 / SW 93944 44035	The mining remains were not visible however the Medieval settlement and in particular the farmhouse were quite prominently placed along the road. They are set within a mature wooded area including evergreen trees, on a south facing slope, within a wider generally rural setting. The wider area includes Grampound village and a new housing development. Whilst the trees and southerly aspect provide some screening, it is possible that some intermittent views of the turbine will be experienced from these locations.	Post Medieval	C L Grade II	3	High	Minor
3	Grampound Conservation Area DCO102	SW 93648 48252	Grampound village contains a number of Listed Buildings and its character is quite well preserved. However there is an extremely busy road running through its centre with associated modern street furniture. The buildings which make the principal contribution towards its Conservation Area status generally face inwards towards this road. The village is set within a rural	Post Medieval	A including L Grade II	3	High	Moderate

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			environment. Topographically the village is located on a west facing slope and in a valley bottom. A significant quantity of trees and vegetation surrounds the settlement, particularly around the base of the valley, which provides substantial screening from the landscape to the north and south. It is very likely that at least the upper sections of the turbine will be visible from many parts of the village, particularly when viewed from points along the A390, and will intrude into its immediate and wider rural setting.					
4	Trevillick Farmhouse and Cider Press MCO10985 / MCO29740 / 1136277	SW 93882 49227 / SW 93867 49219	The farmhouse is well preserved, appearing to retain original features and its relationship to the farm buildings. The cider press building was not easily distinguishable amongst the complex of buildings. Trevillick is located on a northwest facing slope, downhill from the proposed turbine site. The farm is set in a highly rural environment with very minimal modern features with some sparse trees and hedgerows providing a degree of screening. The main aspect of the house is to the south and looks out to the hill on which the turbine will be located. It is likely that the turbine will be visible and will intrude upon the wider setting of the farm complex.	Post Medieval	C L Grade II	3	High	Moderate
5	Tybesta Round	SW944 63	The complexity of the round cannot be discerned from ground level, due in	Iron Age/Romano-	B	2	Medium	Moderate

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
	MCO8881	49192	part to the crops growing in the field and its size. However its location is clearly indicated by a significantly curving hedgerow that marks the northern extent of the enclosure. It is located in a classic position close to the top of the hill with wide ranging landscape views and is set within a rural environment with minimal intrusion from modern features. Two small turbines and a communications mast are visible from this site whilst the A390 road is audible. The round is within the field immediately adjacent to the proposed turbine field with only one Cornish hedge providing any screening. The round will experience principally setting and visual impacts at all stages of the life of the turbine.	British				
6	Pennans Avenue MCO40755	SW951 66 49050	The avenue is quite a subtle feature in the landscape and blends in with the surrounding hedgerows from many viewpoints. It is also further separated from Pennans Farmhouse (see site 7 below) by the A390 road than at any time in the past. However it is a designed feature within an agricultural landscape setting and is very close to the proposed turbine site with the only screening being provided by the avenue trees themselves and the intervening hedgerows. It is likely that the majority of the turbine will be visible from the avenue and that the two will appear	Post Medieval probably 18 th century	C	3	Low	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			close together from other viewpoints, particularly from the north and east.					
7	Pennans Farmhouse 1144033	SW 95460 48967	Although the farmhouse is not easily visible or accessible from locations close to it, from viewpoints to the north it is reasonably prominent within landscape views. The main aspect of the house is to the northwest, almost directly towards the proposed turbine site. There is minimal screening in front of this aspect, only the intervening hedgerows and sporadic trees. With the exception of the A390 road, two small turbines and a communications mast, there is minimal modern intrusion into the agricultural setting of the farmhouse. The proposed turbine will be highly visible from the farmhouse and within the setting of the property.	Post Medieval	L Grade II*	3	High	Moderate
8	Creed House and the Church of St Crida 1327443 / 1136281	SW 93490 47222	The house and church are within a slight valley, on a north facing slope, though still occupy quite an elevated position. The hamlet is surrounded by quite dense mixed woodland within a rural setting that includes the Fal River valley. The house is completely screened from publicly accessible areas and the church is not a prominent feature with its tower barely extending above the tree canopy. Views from the hamlet are directed north and west and therefore it is probable that there will be at least intermittent views of the turbine and that it will intrude to some	19 th century / 12 th century	L Grade II and I	3	High	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			extent in to its rural setting.					
9	Tregony Conservation Area and Congregational Church DCO40 / 1219106	SW 92534 44873	The Tregony Conservation Area also includes many Listed Buildings. The village has a well preserved historic character, though is a busy modern village with a quite well-used road through its centre. The majority of the buildings, including the Congregational church, face in towards this central street. There is no intervisibility with the turbine site from the centre of the village, however from the rear of these properties views of the turbine may be possible. Much of the outskirts of the village appear to be screened by mature deciduous trees, though this is not a substantial block in winter months. The village is set within an agricultural landscape containing only one or two small turbines, depending on the viewpoint.	Medieval - modern	A L Grade II	3	Medium High	Negligible
10	Trewarthenick 1000658	SW 90415 44098	The Registered Park and Garden surrounding the east-facing house is quite open on the east side but densely wooded to the west, north and around much of the perimeter. Trewarthenick is a designed landscape within a woodland and agricultural setting. Although unlikely, it is possible that the turbine will be visible from parts of the gardens, though it will be a very minor feature within such views.	Post Medieval	A Grade II	3	High	Negligible

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
11	Trewithen 1000510	SW 91172 47510	Trewithen is a Registered Park and Garden which includes Listed barns, farmhouses and other buildings. The majority of the garden is located in a hollow and its perimeter is quite densely wooded. Although a modern visitor attraction, Trewithen is a designed landscape in a highly rural setting. It is probable that at least the upper sections of the turbine may be visible at least intermittently from within the protected area.	Post Medieval	A Grade II* L Grades I and II	4	High	Minor
12	Carvossa 1016890	SW 91879 48266	The prehistoric settlement is located in quite open farmland with some hedgerows and wooded valleys between it and the turbine site. Carvossa is on a hilltop overlooking the Fal river as it passes through Grampond in a rural setting containing sporadic farm settlements. Views from it to the east are quite extensive and it is very likely that turbine will be visible within them.	Prehistoric	S	2	High	Moderate
13	Golden Camp and Golden Manor 1016889 / 1141132	SW 92454 46853 / SW 92045 46847	The hillfort is situated on high ground close to the Fal river valley in a rural setting. Its ridge-top location affords it potentially good landscape views however the intervening space to the proposed turbine site includes areas of woodland which may inhibit intervisibility. It is, however, possible that the turbine may be visible from this site.	Prehistoric	S	3	High	Minor

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
14	Probus Conservation Area DCO58	SW 89904 47726	Probus is a quite sizeable village with a historic core centred on the church though with modern housing developments surrounding it. It occupies a prominent location in the landscape with the church tower being particularly visible. The village is set within a rural environment. From the historic centre of the village there are no views out and the proposed turbine is unlikely to be visible. From the perimeter of the village the views are more extensive and at least on the east side it is likely that the turbine will be visible as there is minimal screening of any type that would obscure the turbine.	Medieval - Modern	A	3	High	Minor
15	Railway Viaduct 1312606	SW 93718 50722	The viaduct, although very large, is located within a wooded valley and is not highly visible within the landscape. The mixed woodland provides quite dense screening inhibiting views of the turbine from the viaduct at ground level. Views from the top of the viaduct are likely to be more extensive and may include the proposed turbine, albeit as a fleeting glimpse from a train.	Post Medieval	L Grade II	4	High	Negligible
16	Trenowth Mill and Miller's House 1328911 / 1141098	SW 93642 50589	The mill is an impressive building and quite well preserved. It, and the house are within a wooded valley and not visible until quite nearby. The woodland setting includes the Fal River. Views from the sites are obscured by the	19 th century	L Grade II	3	High	Negligible

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			quite dense mixed woodland and the intervening undulating topography. It is unlikely that the turbine will be visible from these sites.					
17	Resugga Castle 1017685	SW 93961 51064	Resugga is a later prehistoric univallate hillfort located on the crest of a ridge which is covered in scrub vegetation. It is adjacent to the village of Coombe in a rural setting. To the south the lower parts of the ridge have been developed by the railway with bridges and a nearby viaduct. The views from this location are quite extensive to the south and it is possible that at least the upper parts of the turbine will be visible, but any views may also include the railway infrastructure.	Later prehistoric	S	3	High	Minor
18	Treveor Farmhouse 1312571	SW 94964 53597	The farmhouse is located in an elevated south facing position that is likely to have good landscape views. There is minimal vegetation or other forms of screening immediately adjacent though the wider rural setting includes Cornish hedges and tree-lined boundaries, main roads, other settlements, and the china clay tips. Small-scale existing turbines are visible and it is likely that the proposed turbine will also be visible, though at a distance.	17 th Century	L Grade II*	3	High	Negligible
19	Sticker Methodist Church and Sunday School	SW 98082 50107	The church is located on the side of a valley, slightly above the centre of the village in the valley bottom, surrounded by quite a high density of housing. These buildings, the undulating	19 th Century	L Grade II	3	High	Negligible

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
	1312623		topography and vegetation screen the church very well, particularly as it is not very prominent within the village setting. It is unlikely that the turbine will be visible from the church though the two may be visible apparently close together from other viewpoints external to the village.					
20	Heligan 1000538	SX 00316 45854	The gardens of Heligan predominantly occupy a valley and south facing slope, however there are upland areas to the north and northwest, including the main visitor entrance. Heligan is a designed landscape set within a wider agricultural and rural environment with few modern incursions nearby. It is a significant visitor attraction in this area. From the upland areas there are extensive views to the west and northwest, with little intervening vegetation, and it is probable that the upper parts of the turbine will be visible, though at quite a distance. Two small existing turbines are visible to the south.	Post Medieval	A Grade II	4	High	Negligible
21	Caerhays Castle 1000448 / 1327073	SW 97160 41109	The grounds of Caerhays are a Registered Park and Garden whilst St Michael's Church and Higher Lodge are high grade Listed Buildings. The main aspect of the Castle is out to sea over the lawns in front of it, however the majority of the garden and protected landscape extends north behind the house. This designed landscape is set	Medieval or Post Medieval	A Grade II* L Grade I	4	High	Negligible

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			<p>within a wider agricultural environment with roads cut into the bedrock or surrounded by woodland, controlling views of the estate. Although the Church is small, it is in a prominent hilltop location and, significantly, is intervisible with Gorran church tower. The Park and Listed Buildings are on high ground with generally good views inland. Due to the 2m high hedges on parts of the western boundary, intervisibility from ground level was severely restricted. However from areas where the hedges are low or absent intervisibility with the turbine site is likely to be possible, though at a fair distance and the undulating topography will probably obscure much of the turbine or allow for intermittent views only. There is very little intervening screening. At least two small existing turbines are visible within these views.</p>					
22	<p>The Round Houses 1291361 / 1291400 / 1291360 / 1219588</p>	<p>SW 92131 40050</p>	<p>The unusual round houses are located close to the village of Veryan in a rural setting. Quite substantial trees and vegetation are found throughout and around the village though not specifically around the houses. Topographically the houses are on a north facing steep slope though the landscape views north towards the proposed turbine site are intermittent and not extensive. It is possible that</p>	c1820	L Grade II*	3	High	Negligible

No	Site Name & Reference	Grid Ref. SW/SX	Description	Probable Date	Significance	Condition	Sensitivity	Magnitude of Impact
			the turbine may be visible from these houses, though at quite a distance.					
23	Hendra Farm Barrows 1019021	SW 85841 53602 / SW 85890 53651	Many of the barrows in this and neighbouring groups are upstanding and despite modern intrusions, such as roads, retain their rural setting to some extent. They are in an elevated ridge-top position with good landscape views where the 1-2m high Cornish hedges break or are lower. It is probable that the proposed turbine will be visible though at quite a distance.	Bronze Age	S	3	High	Negligible

Table 9.4: Fieldwork Impact Assessment Results

Impact Assessment during construction

Indirect Impacts

- 9.51 The construction of the wind turbine at Pennans Land will create some minor setting impacts to surrounding heritage assets, though as these impacts will be temporary and reversible they are assessed as **negligible negative** in scale.
- 9.52 An assessment of the likely noise impact due to the construction phase of the proposed turbine has been undertaken by an appropriate specialist. The predicted noise levels have been found to be insignificant and unlikely to result in audible impacts on surrounding designated heritage assets.

Direct Impacts

- 9.53 The construction of the wind turbine, specifically the excavations for the foundations and the cable route, has the potential to cause irreversible physical impacts upon any surviving upstanding and sub-surface archaeology in these locations.
- 9.54 It is difficult to assess the significance or sensitivity on unknown or potential archaeology; however the density of anomalies revealed by the geophysical survey results indicate substantial and potentially significant remains within the area immediately surrounding the turbine location and adjacent to its cabling route. Even in the areas not shown to have geophysical anomalies there is the potential for associated small, ephemeral or artefactual remains not detectable by this type of survey. If such archaeology is found it is likely to be considered as having at least regional importance, though national or greater significance remains a possibility. Direct impacts on such archaeology would probably mean at least partial loss or alteration resulting in at least a moderately negative impact in such a scenario. Dependant on the extent, survival and significance of any archaeological remains, the geophysical survey results indicate that the overall direct and irreversible impacts are most likely to be **moderate negative**.
- 9.55 The passage of exceptionally large, heavy or tracked vehicles is likely to have a moderately negative impact through extensive rutting or compression on the sub-surface archaeology which it is likely to have to pass over. The location of the turbine base, route of the cable trench and access tracks have been designed to avoid where possible areas shown on the geophysical survey results to have high quantities of anomalies. Provision of a works compound and additional access requirements have also been sympathetically sited where possible but are likely to have scales of impact similar to those identified above. Whilst this may reduce the likelihood of direct impacts, where these do occur, the severity is likely to remain **moderate negative**.

- 9.56 Despite sympathetic design, the excavation of the cable route still has the potential to reveal archaeology related to the high density of anomalies recorded by the geophysical survey. If an alternative cable route, to the east and southeast of the proposed turbine field, is used, further geophysical survey and analysis will be required to more fully determine the impacts of this route, though they are likely to be similar to the impacts identified for the current proposals. This is highlighted by the survey of a small area at the western end of the route which shows some possible linear and discrete anomalies. The unquantifiable significance of any such archaeology and the direct and irreversible impacts of excavating the cable route have a high potential for significant negative impacts and the overall impact of the cable route is therefore assessed as **moderate negative**.
- 9.57 Provision of a works compound or additional access routes have the potential to have scales of impact similar to those identified in paragraphs 9.54 to 9.56 above. The widening of existing gateways and the removal of existing hedgerows has the potential to expose archaeological remains which may be of at least local significance. The alteration of a historic hedgerow will also result in a change to attributes which contribute to its sensitivity as a locally important historic asset. Given the low sensitivity of such features and the localised though direct impacts from widening or removal, impacts on hedgerows are likely to be **minor negative** overall.

Impact Assessment during operation

- 9.58 During the operational phase, setting impacts will arise. These will vary in scale of impact according to weather, season, distance from the turbine, intervisibility between the proposed wind turbine site and key heritage assets, the degree to which the wind turbine intrudes into views of them and the sensitivity and significance of the heritage assets. Such impacts will be temporary, though long-lasting, and would continue until the turbine is eventually dismantled, as required by the planning conditions applying to such installations.
- 9.59 An assessment of the likely noise impact during the operational phase of the proposed turbine has been undertaken by an appropriate specialist. The assessment demonstrates that the turbine will operate within the relevant ETSU-R-97 noise limits. However a cumulative noise impact could arise in a worst case scenario from a combination of the noise emissions from the consented wind turbines at Garlenick and Pennans Farm with or without the proposed turbine at Pennans Land. This would potentially impact the closest and downwind heritage assets to these locations, namely Nancor Barrow, Trevillick Farmhouse, Tybesta Round and Pennans Avenue, to a very minimal extent. In addition, a mitigation option of reducing the power of the proposed turbine to minimise its noise emission is available, thus lessening or removing the impact from this turbine. The residual noise impacts from this proposed turbine are considered to be **insignificant**.

Impacts on the Cornish Mining World Heritage Site

- 9.60 The Charlestown World Heritage Site (WHS) area is located to a very minimal extent within the viewshed. The area will not be physically impacted upon and there will not be any visual impacts at any of the three phases as potentially intervisible areas are obscured by housing and vegetation, including the conurbation of St Austell. Any setting impact will only be perceived from a viewpoint out to sea where the turbine and Charlestown could be seen in the same view, though there is considerable separation between them. The overall impact on this WHS is rated as **negligible negative**.

Impacts on Scheduled Monuments

- 9.61 No Scheduled Monuments will be physically impacted upon by the proposal.
- 9.62 Carvossa has a clear line of sight towards the proposed turbine site and as a prehistoric hilltop settlement has an extensive landscape setting. The adjacent public right of way provides a degree of public access and therefore increased perceptibility of setting impacts to the heritage asset. As a result the impacts to Carvossa are considered **moderate negative**.
- 9.63 Other prehistoric sites such as Golden Camp, Resugga and Sticker are all within the viewshed and have prominent locations and extensive settings. These are vulnerable to intrusion from the proposed wind turbine, but given their distance from Pennans Land the impact to these sites is considered **minor negative**.
- 9.64 The wayside cross within Grampound has a minimal setting though this includes the historic core of the village and the modern amenities associated with the main road. It is located in very close proximity to the proposed turbine and intervisibility is most likely to occur on approaches to the cross. The impacts on the cross are rated as at least **minor negative**.
- 9.65 All Scheduled Monuments within the viewshed are vulnerable to visual intrusion and setting impacts depending on their distance from the proposed site. The overall impact to Scheduled Monuments is assessed as **minor negative**.

Impacts on Listed Buildings – Grade I and II*

- 9.66 The wind turbine will almost certainly have no impact on the settings of those Listed Buildings which do not fall within the viewshed, though there may be exceptional cases where key views of Listed Buildings not in the viewshed will also prominently feature the proposed wind turbine. Any such negative visual impact will attenuate with distance.
- 9.67 The Grade I and II* Listed Buildings in Grampound, such as the Manor House, are likely to experience significant negative impacts due to their

very close proximity to the proposed turbine site. The individual settings of the buildings are quite localised but collectively their setting includes the village, its approaches and surroundings. From the approaches the modern turbine and these historic Listed Buildings will be within the same view. The impact to these Listed Buildings is assessed as **moderate negative**.



Figure 9.5: The view southeast from immediately adjacent to the proposed turbine field looking directly towards the high status front elevation of Pennans Farmhouse.

9.68 Pennans Farmhouse is Grade II* Listed, in very close proximity and features a main aspect to the northwest that provides a direct line of sight via the associated avenue to the turbine site (Figure 9.5). The house has an extensive rural setting and views northward into which the turbine will intrude. The views and approach via the avenue indicate the historical association between Pennans farmhouse and Pennans Land as part of an ornamental landscape that included these designed views to and from the hilltop. In this respect, Pennans Land is an integral part of the setting of the farmhouse. The impact upon the farmhouse is rated as **moderate negative**.

9.69 St Michael's Church and Higher Lodge are Grade I Listed. They have extensive views northwards and whilst their rural settings are predominantly related to the Caerhays Estate, they also interact with the

wider landscape. The turbine will be a distant but intrusive feature and therefore the impacts are rated as **minor negative**.

- 9.70 The overall impact on Grade I and II* Listed Buildings is assessed as **minor negative**.

Impacts on Listed Buildings – Grade II

- 9.71 No Grade II Listed Buildings will be physically impacted upon and only those within the viewshed are likely to experience a setting impact during all three phases.

- 9.72 Those Grade II Listed Buildings within Grampound, which includes the majority of properties along the main street, are likely to experience the same negative setting impacts as the Grade I and II* Listed Buildings detailed above (see 9.66). The impact on these buildings is therefore **moderate negative**.

- 9.73 Although located on a northwest facing slope, the main aspect of Trevillick Farmhouse faces southeast towards the proposed turbine which will be visible on the hillcrest above the property. The turbine will intrude considerably into the rural setting of the farmhouse and the impact upon it is therefore rated as **moderate negative**.

- 9.74 The settings of many of the Grade II Listed Buildings are exceptionally rural and views of and from them do not contain many, if any, turbines or modern infrastructure. The overall impact on Grade II Listed Buildings is assessed as **minor negative**.

Impacts on Conservation Areas

- 9.75 There are three Conservation Areas within 5km of the proposed turbine site and all will be potentially partially intervisible with it. The majority of Probus and Tregony are unlikely to be intervisible with the wind turbine due to the topography of the villages and their surroundings. However Probus Church is a landmark which highlights the Conservation Area at the centre of the village and its setting and views of it may include the turbine. Tregony is less visible within the landscape and although it has a very rural setting in which small turbines are visible from its periphery, there are few viewpoints out from the centre of the Conservation Area. The impact on Probus is considered to be **minor negative** whilst for Tregony it is assessed as **negligible negative**.



Figure 9.6: The view northeast from Grampound Conservation Area. The turbine will likely become visible on the horizon overlooking the village in the approximate centre of this view.

9.76 Whilst the topography of Grampound village restricts some views of the proposed turbine, the village is in such close proximity that at least intermittent or partial views are likely throughout the settlement (Figure 9.6). The topography also means that the approaches to the village are elevated with quite open views of the settlement within the surrounding rural landscape and these views will include the turbine and visually impact the setting of Grampound to a significant extent. The road through the village is a major route between Truro and St Austell and at certain times of the day the village can be busy and noisy with commuter traffic queuing along the main road. The visual intrusion of the wind turbine into the historic setting will thus be noticed by a substantial number of car drivers. The impact on Grampound is assessed as **moderate negative**.

9.77 The overall impact on Conservation Areas is assessed as **moderate negative**.

Impacts on Registered Parks and Gardens

9.78 The settings of these parks are simultaneously formal and deliberately natural and include historically related and unrelated surrounding agricultural land. Setting impacts are likely to be limited by the density of vegetation making up these designated landscapes; however many views across the parks from the often high grade Listed houses or from features

within the parks were deliberately designed elements of the parks and gardens. The RPGs of Tregrehan, Tregothnan, Trelissick and Chyverton have various formalised views or elements facing towards the proposed turbine and intervisibility remains a possibility. However any such impacts on these RPGs are likely to be minor or negligible negative as their distances from the proposed site will significantly diminish the prominence of the turbine within views from them, but they are within the 15km radius study area and therefore the potential for setting impacts has been considered in line with English Heritage and Cornwall Council guidance.



Figure 9.7: The view eastwards from adjacent to Trewithen and indicative of the view from the gardens towards the proposed turbine, which will appear in the middle distance in the above photograph.

9.79 At 3km from the proposed turbine site Trewithen is likely to experience the greatest setting impacts. Whilst the principle entrance is to the north and the main aspect to the south, the ground drops away to the east allowing views across the landscape. The garden includes lawns on the east facing slope, an east terrace walk, a secondary entrance drive from the eastern boundary and an area of pasture beyond the formal garden. All of these are designed to create or reveal views east across the park which are likely to include the proposed wind turbine in the distance (Figure 9.7). The impact on Trewithen is assessed as **minor negative**.

9.80 Trewarthenick is just beyond the 5km zone but has good views eastwards. The principal aspect of the house is to the east where the lawn falls gently

away into pasture allowing wide-ranging views to Tregony and across mixed agricultural land. The circuit walk around the park features deliberately designed 'burst' views inwards to the house and out to the surrounding landscape. It is probable that the proposed turbine will be visible in at least some of these views though at quite a distance. The impact on Trewarthenick is therefore considered to be **negligible negative**.

9.81 Heligan is 6km from the proposed turbine site and is likely to experience some setting impacts. The formal areas of the RPG and Listed house are located in a valley facing south-east and away from the proposed turbine site. However the former and current entrances to the RPG are located on higher ground to the north-west adjacent to the wider parkland that is predominantly wooded. Whilst there seems to be few walks through the woodland and none with a clear focus on westward views, intervisibility is possible. The RPG has an extensive setting including the surrounding agricultural and coastal environments. The impact on Heligan is therefore considered to be **negligible negative**.

9.82 Caerhays is approximately 8km from the proposed site though its northern extents include the main entrance drive and a network of walks and drives through the woodland that makes up its parkland. These are on north-facing slopes with extensive views north and it is very likely that the proposed turbine will be a component within these views when operational. The main aspect of the Listed house and formal gardens is to the south and east and unlikely to experience setting impacts although the higher ground on the headlands will experience similar views and setting impacts as the northern parts of the RPG. The impact on Caerhays is therefore assessed as **minor negative**.

9.83 The overall impact on Registered Parks and Gardens is assessed as **minor negative**.

Impacts on Undesignated Historic Assets

9.84 The settings of all sites within the viewshed will be visually impacted to some degree during all three phases, many being in very close proximity and having no substantial vegetation or other screening from the proposed turbine. Although not upstanding, the location of Tybesta Round is clearly identifiable from the preserved curved field boundary and the remains are potentially of the quality and importance to be designated as a Scheduled Monument. It has good landscape views and an extensive setting which will include the turbine and is associated with four additional prehistoric assets. Together these recorded, cropmark and geophysically surveyed sites provide us with a view of a multi-faceted and articulated prehistoric landscape whose elements are significant, both individually and when considered together. The individual assets therefore have an enhanced significance value. They will all be subject to **moderate negative** setting and visual impacts.

- 9.85 It has been identified by a relevant specialist that a cumulative noise impact could arise in a worst case scenario from a combination of the noise emissions from the consented wind turbines at Garlenick and Pennans Farm with or without the proposed turbine at Pennans Land. This could potentially impact the heritage assets of Tybesta Round and Pennans Avenue, to a very minimal extent. A mitigation option of reducing the power of the proposed turbine to minimise its noise emission is available, thus lessening or removing the impact from this turbine. The residual noise impacts from this proposed turbine are considered to be insignificant.
- 9.86 Pennans Avenue, whilst only partially surviving, is an important designed feature which linked the Grade II* Listed Pennans Farmhouse to its surrounding farmland and landscape. Although now not a highly visible feature within the landscape it is in very close proximity to both the turbine site and Tybesta Round, with which it probably had a direct visual association. The proposed wind turbine will be substantially visible and will distract from and intrude into, the extended setting of the avenue and farmhouse. The impact upon the avenue is therefore considered to be **moderate negative**.
- 9.87 The majority of the remaining undesignated sites are known from documentary sources only or are signposts and crosses with very limited settings and are considered to experience only **minor negative** impacts at worst. Those assets in the immediately adjacent fields may experience **moderate negative** impacts, particularly when assessed collectively. The overall impact on undesignated assets is assessed as **minor negative**.

Impacts on Historic Landscape Character

- 9.88 The landscape surrounding the proposed wind turbine site is dominated by extensive areas of farmland characterised as Farmland Medieval interspersed with tracts of post medieval and modern enclosed land to the north and east. This is predominantly land which has been farmed since at least the medieval period as indicated by the early place names and in many places long before, as shown by the presence of prehistoric settlement sites, including those features revealed by geophysical survey within the proposed turbine field.
- 9.89 The burgage plots and strip fields radiating from Grampond make a significant contribution to the overall character of the landscape. In many examples the plots preserve their relationship with their village houses whilst the boundaries fossilise elements of the medieval Great Fields and formerly unenclosed areas of downland. The post medieval enclosures preserve much of the original open character of the landscape, with small farming settlements scattered throughout it.
- 9.90 The eight Registered Parks and Gardens in the vicinity also influence the layout and character of the land, as does the presence of the smaller, but nevertheless historically high status Pennans Farmhouse, which had an

extensive avenue approach to its principal elevation through an ornamental landscape.

- 9.91 The overall character of this landscape has changed little in many centuries. The elevated nature of the area is clearly ideal for locating the proposed wind turbine and is likely to become increasingly popular for generating electricity from wind power as has been the case in other areas of Cornwall. The construction of individual wind turbines will erode the coherency and legibility of the surviving historic landscape character of this area. The construction of the proposed wind turbine at Pennans Land will materially affect the surviving strong local historic landscape character, given the relatively few wind turbines already operational within it and the general lack of similarly modern intrusive infrastructure relative to many other parts of Cornwall.
- 9.92 Overall the impact of the proposed turbine on the HLC is assessed as **moderate negative**.

Mitigation Measures

- 9.93 A range of means to mitigate the impacts of this wind turbine are proposed within the environmental assessment. The mitigation measures are aimed at reducing any adverse impacts of the proposal during the construction and operation stages. A summary of likely mitigation measures is provided below.

Noise reduction

- 9.94 The potential for a cumulative noise impact has been identified by noise specialists. This is considered in detail in Chapter 11.

Micrositing

- 9.95 Mitigating the potential impacts on heritage assets can be possible through the micrositing of the wind turbine and the relocation of cabling routes to reduce direct physical impacts on those sub-surface archaeological remains within the proposal site which have been revealed through geophysical survey. Proposals have already been made to avoid such direct impacts by redesigning the original site layout, though the potential remains for impacts on so far undetected sub-surface archaeological features. In some circumstances, micrositing can reduce setting impacts on sensitive assets within the landscape surrounding the proposed turbine site. However given the nature of the local topography at Pennans Land, the substantial height of the turbine and the minimal nature of the surrounding vegetation screens, such an approach would seem unlikely to be able to achieve the diminution of any setting impacts in this instance.

Archaeological recording

- 9.96 Further archaeological evaluation to provide a level of information sufficient to determine the potential and scale of sub-surface impacts on archaeological features identified by the geophysics may be required or might be subject to a condition within a grant of planning permission.
- 9.97 In a case where a finalised site design would seem likely to result in unavoidable physical impacts on sub-surface archaeology, a brief for work to mitigate these impacts would need to be produced. 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 as part of a condition within a grant of planning permission.
- 9.98 Further archaeological recording works could comprise a watching brief (observation by an archaeologist during mechanical ground reduction activities) or full excavation and recording of some areas of the site prior to construction works. This would target areas all areas where sub-surface works are proposed and would aim to locate the features identified through geophysical survey, or the archaeological potential for their survival. This approach provides for preservation by record of buried archaeological features or artefacts, reduces any impacts on the archaeology of the sites to minor, and provides positive benefits from the development in the form of increased knowledge and understanding of Cornwall's archaeological heritage.
- 9.99 Mitigation measures may require a multi-stage process. The Senior Development Officer (Archaeology) may require more information as a result of the conclusions of the archaeological assessment (Appendix 9.1), or possibly resulting from evaluation trenching to determine the nature, sensitivity and significance of features revealed by the geophysical surveys which, on the basis of the present site design, are likely to be impacted upon by the proposals. Further or other mitigation measures may be required in the form of planning conditions after permission has been granted.

Cumulative Impacts

- 9.100 The brief for this Impact Assessment requires the inclusion of an assessment of cumulative impacts of the development proposal.
- 9.101 Two operational wind turbines are currently visible in the surrounding landscape from the Pennans Land site. From the majority of the historic assets visited no turbines, or at most two, were visible. Additional wind turbines proposed or granted planning permission within a 10km radius of Pennans Land are likely to raise the potential for further cumulative impacts to be experienced by individual heritage assets and the historic landscape character.
- 9.102 Cumulative noise impacts have already been identified as potentially arising in a worst case scenario from the consented turbines at Garlenick and Pennans Farm. The proposed wind turbine at Pennans Land could

potentially add to this cumulative effect given a specific set of weather conditions. This would further impact the heritage assets adjacent or directly downwind of these sites, namely Nancor Barrow, Trevillick Farmhouse, Tybesta Round and Pennans Avenue. However mitigation options are available which would minimise the additional noise impacts arising from the proposed wind turbine.

- 9.103 Wind farms, where multiple turbines of similar sizes are installed in close proximity, can have a visual coherency which, despite the size and quantity of the wind turbines making them up, may limit the severity of the negative impacts they might otherwise impose on their surroundings. Conversely the placement of individual wind turbines, such as at Pennans Land, of varying heights and designs sporadically across the landscape will not result in a similar degree of coherency, and is therefore likely to be potentially more distracting to the appreciation of the historic landscape or of the settings of heritage assets.
- 9.104 Few of the heritage assets highlighted in this assessment are significant landmarks, although many have extensive and sensitive settings, most specifically the multiple Scheduled Monuments and Registered Parks and Gardens. The prehistoric Scheduled Monuments deliberately occupy prominent hilltop or ridge-top locations, command significant landscape views and have a degree of intervisibility with other approximately contemporary sites. They are important features that are often still clearly visible within a historic landscape which is only gradually becoming populated with modern features and infrastructure.
- 9.105 Some cumulative effects already result from the existing wind turbines, affecting the Registered Parks and Gardens to varying degrees within the assessment area. The relatively large distances between Pennans Land and the majority of the RPGs is likely to result in a minimal cumulative impact on them, as the addition of one turbine to those already constructed, although a negative change, will not be readily perceptible. However for the RPGs in much closer proximity, most pertinently Trewithen but also Heligan and Caerhays, cumulative impacts will be much more readily perceptible as a result of the addition of the consented Garlenick and Pennan's Farm wind turbines and will increase if the proposed Pennans Land wind turbine is constructed.
- 9.106 The Listed Buildings within settlements have relatively localised settings, though many of the settlements have landscape views and a degree of visual prominence with the surrounding agricultural countryside. The settings of some individual or grouped buildings may well be adversely affected to some degree by the visual distraction resulting from the construction of multiple turbines in the landscape surrounding them. The Listed Buildings within Grampound, including their setting and views of them from the surrounding high ground are particularly vulnerable to cumulative impacts from the existing and consented wind turbines in the immediate vicinity and these will increase if the Pennans Land turbine is constructed.

9.107 Such adverse visual impacts are, given the 25 year lifetime of any specific wind turbines, judged to be temporary in nature, though long-lived, and would be reversed on their decommissioning, removing any visual or setting impacts. Although 25 years is a fraction of the lifetime of a heritage asset, it constitutes a far greater part of an individual's lifetime. For sites with limited settings, alterations to historic landscape character will not be particularly noticeable to the observer; for sites with extensive or sensitive settings the changes resulting from cumulative impacts are likely to be greater. Given the small number of existing wind turbines within this part of the landscape of Cornwall, the potential overall cumulative impact which would result from the development of wind power installations is considered as **moderate negative**.

Residual Effects

9.108 The residual effects of the proposal on archaeology are summarised in Table 9.5 below. The potential impacts and significances are based on those identified in the assessment and summarised in the results table above. It should be noted that the form of any mitigation applied to the site would be determined by the Senior Development Officer (Archaeology) and the LPA, who may choose to recommend one or more of the options as part of a planning condition and may also require further investigation in order to gather more detailed information to inform the planning decision.

Feature	Potential Impacts	Significance before mitigation	Mitigation	Significance of residual impact	Overall impact
Sub-surface archaeology (construction)	Loss of buried archaeology on application site (including anomalies identified by geophysical survey and undetected features)	Major negative. Permanent.	Evaluation to assess archaeological potential and/or watching brief to preserve archaeology by record and the implementation of a CEMP.	Moderate negative dependent on the significance of the archaeology identified and the degree to which is capable being recorded. Permanent	Moderate negative
Identified heritage assets (construction and end of life)	Setting impacts from machinery and infrastructure	Minor negative though this will be is dependent on the distance from and intervisibility with the turbine site and the significance and sensitivity of each asset. Temporary	None possible given location and height of turbine	Minor negative. Temporary	Minor negative
Sub-surface archaeology (operational)	None unless additional infrastructure or maintenance is required	Negligible negative though potentially greater if additional infrastructure required. Permanent	None unless additional infrastructure required in which case a watching brief may be required.	Negligible or minor negative if further work is required. Permanent	Negligible to minor negative
Identified heritage assets (operational)	Setting impacts	Negligible to moderate negative though this would be dependent on the distance from and intervisibility with the turbine site and the significance and sensitivity of each asset. Temporary	Micro relocation to reduce setting impacts unlikely to be feasible on this site.	Negligible to moderate negative though this will be dependent on the distance from and intervisibility with the turbine site and the significance and sensitivity of each asset. Temporary	Negligible to moderate negative
Identified heritage assets (operational)	Cumulative setting and noise impacts	Minor to moderate negative though this is dependent on the distance from and intervisibility with the turbine site and the	None available for setting impacts. Implementation of a reduced power mode to minimise noise impacts.	Minor to moderate negative though this will be dependent on the distance from and intervisibility with the turbine site, the significance and sensitivity	Minor to moderate negative

Feature	Potential Impacts	Significance before mitigation	Mitigation	Significance of residual impact	Overall impact
		significance and sensitivity of each asset. Temporary		of each asset and the success of noise mitigation options. Temporary	
Historic Landscape Character	Erosion of the setting, coherency and legibility of surviving prehistoric, medieval and designed landscape features	Moderate negative. Temporary	Retention of historic hedgerows. Relocation not possible.	Moderate negative. Temporary	Moderate negative
Sub-surface archaeology (end of life)	Loss of buried archaeology if there are sub-surface works to remove infrastructure. Permanent	Minor to major negative dependent on archaeology identified	Avoidance of sub-surface works Watching brief to record any archaeology	Minor to moderate negative dependent on archaeology identified and the degree to which these impacts can be archaeologically mitigated. Permanent	Minor to moderate negative

Table 9.5: Summary of impacts upon archaeology and identified heritage assets.

- 9.109 The implementation of the mitigation measures detailed above should ensure the preservation by record of any sub-surface archaeology. However as archaeology is a finite resource and cannot be replaced, a residual moderate negative direct impact will remain. For the linear, curvilinear and point anomalies, which are suggested by the geophysical survey to be complex and substantial, the archaeological features and sites are likely to be of at least moderate significance given that they clearly represent evidence for prehistoric activity. A residual moderate negative impact will be dependent on their degree of preservation and survival, and the degree to which the preservation of this archaeological potential can be successfully mitigated through micro-siting, archaeological investigation and implementation of a CEMP. Given the height, prominent location and high degree of visibility of the wind turbine, micro-siting is not available as a means to mitigate setting impacts.
- 9.110 Assuming that the proposed turbine is not re-powered or replaced, the end of life impacts will be as a result of excavation activity to remove the turbine components. It is anticipated that foundations will be removed to a depth of 1m below grade and the soil profile restored. Access tracks will either be removed or retained, depending on the landowner's preference. The associated noise impacts are considered by the specialist's assessment to as likely to be insignificant and there will be negligible but temporary visual impacts resulting from the use of machinery during this phase. The partial removal of the foundations and possibly also the access track and cabling, may result in further physical, irreversible impacts on surrounding subsurface archaeology but as this should be capable of mitigation this is considered likely to be a **minor negative** impact.

Summary

- 9.111 An assessment of archaeological sites and heritage assets has been undertaken within a 15km radius of the proposed wind turbine for which the overall impacts vary from negligible to moderate negative according to distance from and likely intervisibility with the turbine and the degree of impact on their settings. The overall impact on Scheduled Monuments is considered to be moderate negative. A similar range of impacts will affect Registered Parks and Gardens, though Trewithen, the closest, will be impacted to a minor negative extent; those beyond 10km will experience negligible impacts. For Listed Buildings and the Conservation Areas at Tregony and Probus some minor negative setting impacts may occur. However the combination of proximity, prominence and intervisibility between the turbine and the Conservation Area of Grampound, including its Listed Buildings, as with Pennans Farmhouse will increase the impact rating to at least moderate negative for these designated assets.
- 9.112 There will be a cumulative impact on Historic Landscape Character arising from the construction of this proposed turbine. The historic landscape character of this area, including its burgage plots, strip fields and larger estates, is still clearly apparent. The cumulative impact arising from this proposal in conjunction with existing and proposed wind turbines will

become increasingly negative as the historic character of the landscape will become increasingly eroded. Although cumulative noise impacts may arise, impacting the closest heritage assets to a minimal extent, this is a worst case scenario and ought to be capable of successful mitigation.

- 9.113 Due to the topography and the locations of the heritage assets considered in this assessment, the adoption of a micro-siting mitigation strategy is unlikely to achieve any positive change in the negative setting impacts which have been identified. The geophysical survey identified multiple linear, curvilinear and point anomalies within the development area, direct impacts to some of which could be avoided or minimised by careful micro-siting of the turbine and cable routes. Further archaeological investigation into the existence and nature of the possible subsurface archaeology in the development area and its recording could enhance our understanding of the archaeology of this site and surrounding area and would help to mitigate direct impacts on the archaeology of the site.
- 9.114 Residual effects will occur despite any mitigation measures. These would include the potential for the permanent loss of any subsurface archaeology at the application site during the construction and decommissioning phases. This could be mitigated to an extent by archaeological recording but a potential minor or moderate negative impact would remain due to the loss of the physical resource. Impacts to the heritage assets and the HLC such as setting and cumulative effects are considered temporary and generally minor negative but will remain throughout the operation of the turbine.
- 9.115 The impacts of the construction, operation and decommissioning activities of the wind turbine are all reversible, with the exception of those on the sub-surface archaeology of the site; these could be mitigated through a planning condition requiring archaeological recording either prior to or during the construction phase, and possibly also during decommissioning activities.

Appendices

9.1 – Pennans Land, Creed, Cornwall. Archaeological assessment of proposed wind turbine

References

Primary sources

Cornwall County Council 2005 aerial mapping of Cornwall.

Joel Gascoyne's 1699 Map of Cornwall

Martyn's 1748 Map of Cornwall

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

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

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

Ordnance Survey, 2007. Mastermap Digital Mapping

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

Publications

Cornwall Council Environment Service. 2013, The cumulative impact assessment for wind turbines: Summary guide. Report for Cornwall Council.

English Heritage 2005, Wind energy and the Historic Environment

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

Gover, J.E.B. 1948, Place-names of Cornwall

Historic Environment Advice Team, Cornwall Council, 2013, Brief for Archaeological Assessment of Proposed Wind Turbine at Pannan's Land, Creed. Unpublished report for Cornwall Council.

HMSO. 2008. Design Manual for Roads and Bridges: Volume 11, Environmental Assessment Part 5 HA205/08. Assessment and Management of Environmental Effects. Highways Agency

Land Use Consultants. 2011, An assessment of the landscape sensitivity to on-shore wind energy and large-scale photo-voltaic development in Cornwall. Annex 4 Guidance on the cumulative landscape and visual impact assessment of multiple on-shore wind energy developments and solar PV developments. Report for Cornwall Council

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

Padel, O.J. 1985, Cornish Place-name Elements, Penzance

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

Public Space Team. 2013, An assessment of the landscape sensitivity to on-shore wind energy and large-scale photo-voltaic development in Cornwall. Annex 5 cumulative impact assessment guidance for Cornwall - wind turbines. Report for Cornwall Council

Richardson, T. 2014, Pennans Land, Cornwall, Geophysical Survey Report. Stratascan, Worcestershire

Sharpe, A. 2013, Pennans Land, Creed, proposed wind turbine: Written Scheme of Investigation for archaeological assessment. Unpublished report for Historic Environment Projects, Cornwall Council

Slater, J. 2014, Five proposed wind turbine sites – Pennans Land. Geophysical survey report. Stratascan, Worcestershire

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

Websites

<http://www.bgsgeologyviewer.ac.uk> British Geological Survey

<http://www.cornish-mining.org.uk> Cornish World Heritage Site

<http://www.english-heritage.org.uk/caring/listing/> English Heritage designation information

<http://www.english-heritage.org.uk/publications> English Heritage guidance

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

<http://www.legislation.gov.uk> Government documents, Acts and legislation

<http://www.oxforddictionaries.com/definition/english/road?q=road> Oxford English Dictionaries Online historic and current definitions

<http://whc.unesco.org/> World Heritage Site information