



Kessel Downs Quarry, Mabe, Cornwall

Archaeological assessment of proposed wind turbine



Historic Environment Projects

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The viewshed mapping was carried out by Krystyna 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

Redundant aggregate storage bays occupying the site proposed for the Kessel Downs Quarry wind turbine.

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Abbreviations

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

1 Summary

Historic Environment Projects, Cornwall Council, were approached by Adrian French for AGRenewables on 06 July 2012 with a request to provide costs for the provision of an archaeological assessment of a proposed wind turbine at a site at Kessel Downs Quarry, Longdowns, in the parish of Mabe as part of a proposed screening submission. A cost schedule for this work was approved on 24 July 2012.

The proposal is for a single wind turbine with a hub height of 40m and a maximum blade tip height of 56.5m to be sited within a disused granite quarry at SW 73985 33813. The site chosen for the wind turbines lies within a former granite quarry on a west and south west facing slope in an area of former downland and medieval farmland near Longdowns, Mabe.

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

Despite the elevated site selected for this development and the open nature of the surrounding landscape, it was concluded that very few impacts were likely to result on the settings of designated or undesignated sites within the viewshed of the site except a small group in its immediate vicinity. This is due to a number of factors, including the nature of the monuments concerned, the wooded locales within which some of these key receptors are sited, and distance from the site of the proposed wind turbine.

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

Kessel Downs Quarry, Mabe: archaeological assessment of proposed wind turbine

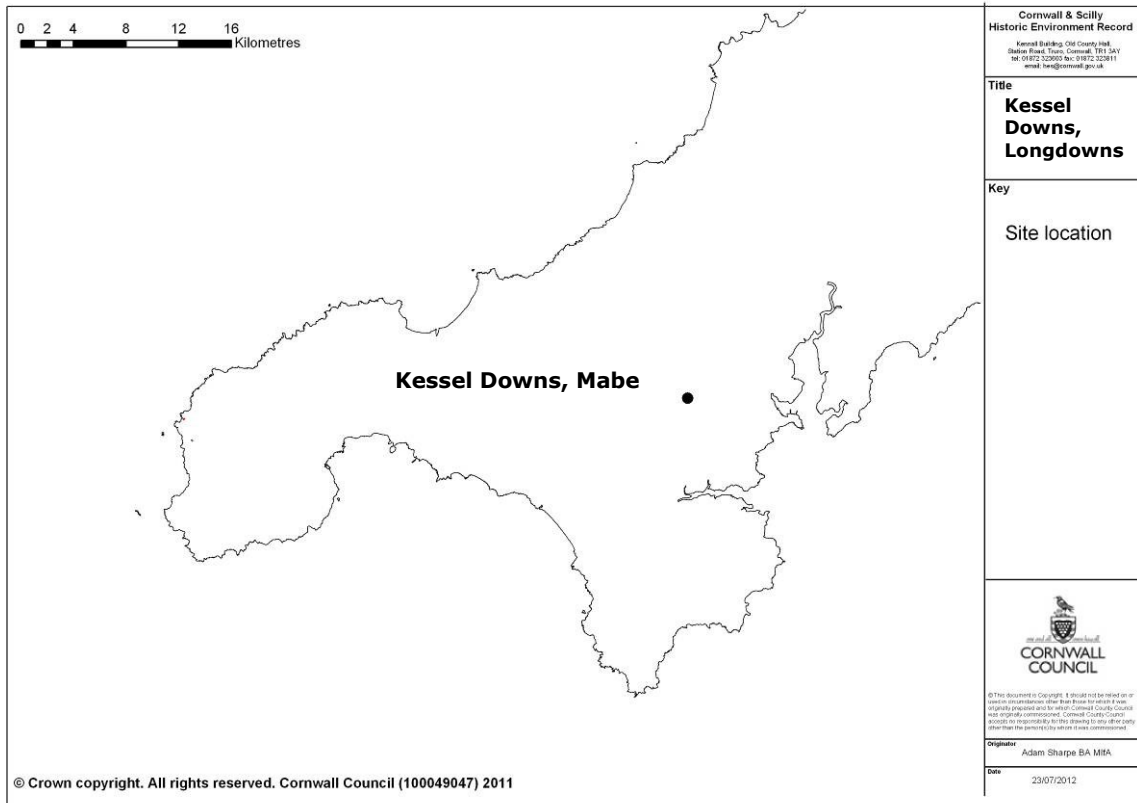


Fig 1. The location of Kessel Downs Quarry, Mabe.

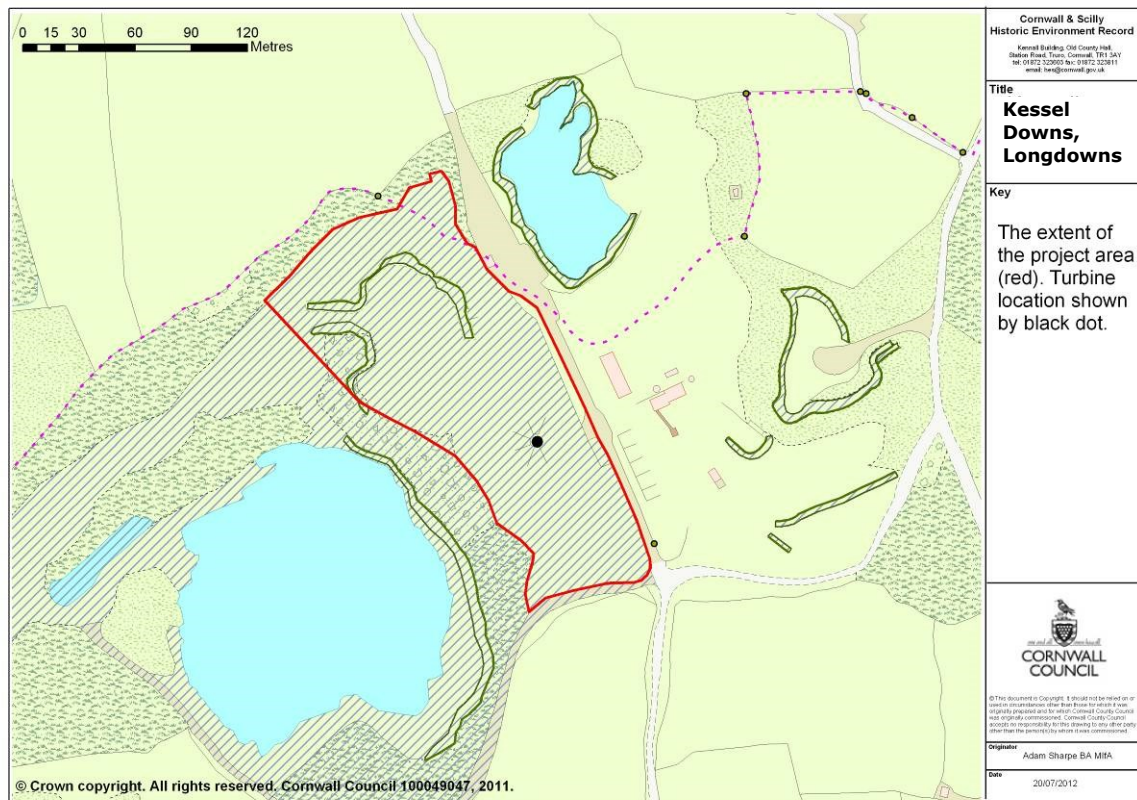


Fig 2. The location proposed for the Kessel Downs Quarry wind turbine.

2 Introduction

2.1 Project background

Historic Environment Projects, Cornwall Council, were approached by Adrian French for AGRenewables on 06 July 2012 with a request to provide costs for the provision of an archaeological assessment of a proposed wind turbine at a site at Kessel Downs Quarry, Longdowns, in the parish of Mabe as part of a proposed screening submission. A cost schedule for this work was approved on 24 July 2012.

The proposal is for a single wind turbine with a hub height of 40m and a maximum blade tip height of 56.5m to be sited within a disused granite quarry at SW 73985 33813.

Given that the proposal was (at the time of writing this report) at a pre-screening stage, no specific brief for the work was available. In this instance a brief prepared by Phil Markham, Historic Environment Planning Advice Officer (West Cornwall) was used as a model, whilst advice on assessing the impacts of such developments on the settings of designated sites provided by English Heritage in 2012 was also taken into consideration.

The walkover survey and viewshed check were undertaken on the 06 August 2012.

2.2 Aims and objectives

The principal aim of the study is to gain a better understanding of the impacts which would result from the construction of a wind turbine in a disused granite quarry at Kessel Downs in the parish of Mabe, Cornwall.

The overall project aims are to:

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

The site specific project aims are to:

- Produce a report containing the desk based assessment and survey in interpreted form.
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains or other mitigation is recommended.
- Provide the Cornwall Environmental Consultants (CEC) Landscape Architect with information on key viewpoints relating to designated sites within the ZTV.

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

2.3 Methods

2.3.1 Desk-based assessment

As part of the desk-based assessment (DBA), historical databases and archives were consulted in order to obtain information about the history of the site and its

surroundings, and the structures and features recorded within the site boundaries. The main sources consulted were as follows:

- Published sources available in the Cornwall and Scilly HER
- Historic maps including
 - Joel Gascoyne's map of Cornwall (1699)
 - Norden's Map of Cornwall (1728)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (*circa* 1810)
 - Mabe Tithe Map (*circa* 1840),
 - 1st and 2nd Editions of the OS 25 inch maps (*circa* 1880 and *circa* 1907).
- Modern maps.
- National Mapping Programme transcripts from aerial photographs.
- Other aerial photographs in the Cornwall and Scilly HER.
- Historic Landscape Characterisation mapping.
- Cornwall and Scilly Historic Buildings, Sites and Monuments Record (HBSMR).
- Information held as GIS themes as part of the Cornwall and Scilly HER.

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

2.3.2 Viewshed analysis

An assessment of the impacts of the proposals was made from the surrounding area using the guidelines and methodological approaches set out in English Heritage's recent consultation draft guidance on the setting of heritage assets. This was based on GIS-based viewshed mapping produced using a model of theoretical inter-visibility between the wind turbines proposed for the site and significant heritage assets within the surrounding landscape; the viewshed (ZTV or Zone of Theoretical Visibility) was generated using ArcGIS software. The methodology employs a Digital Terrain Model (DTM), which ignores potentially temporary surface features such as buildings, woodland, vegetation, etc. to provide a surface model of potential intervisibility between the proposed wind turbine and key heritage assets within the surrounding landscape. A viewshed was generated for a single 'observer point' based on the location of the proposed wind turbine.

When performing a viewshed analysis, several variables are used to limit or adjust the calculation including offset values, limitations on horizontal and vertical viewing angles (azimuth) and distance parameters (radius) for each observer point. For the proposed wind turbine at Kessel Downs Quarry, 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 an additional offset of 56.5m to represent the maximum height of the turbine blades. This viewshed was checked on the ground, given that vegetation and other factors may currently block views to key sites, whilst significant heritage assets within the theoretical viewshed were visited (where access was possible) to determine intervisibility with the proposed development site, and hence the scale and type of any visual impacts which may affect their settings, as required by English Heritage (2011). A viewshed radius of either 10Km or 5Km was used to determine potential impacts on designated heritage assets and a radius of 1Km for undesignated heritage assets (see Figs 16 to 22). High level designated heritage sites within the 10Km and 15Km radius zone of the ZTV were

identified but not assessed for impact. These are listed in tables contained in this report.

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

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

The resultant site list consisted of a mixture of designated landscapes with substantial intervisibility with the proposal site, particularly where these included planned views in the direction of the proposal site, Scheduled Monuments whose original settings were intended to include large areas of the landscape (for example prominent hilltop barrows or hillforts), or which were designed to function as part of intervisible elements of larger groups with landscape settings (for instance barrow cemeteries), other high grade designated historic structures which were intended when built to be highly prominent within the landscape (predominantly church towers), areas of landscape within the Cornish Mining World Heritage Site containing aspects of its Outstanding Universal Value (OUV) which are potentially vulnerable to developments such as wind turbines, and upstanding undesignated sites in close proximity to the development site. This filtered group of sites was assessed to determine impact (see below).

2.3.3 Fieldwork

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

A walkover survey of the site proposed for the wind turbine and for its cabling was also undertaken to examine the site for upstanding archaeology and to record the nature of the boundary types which might be impacted upon during the development. A list of sites visited is contained within Section 9 of this report.

2.3.4 Post-fieldwork

On completion of the project and following review with the HE Project Manager the results of the study were collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006*. The

site archive will initially be stored at ReStore, with the eventual aim of deposition at Cornwall Record Office.

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

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

3 Location and setting

The site proposed for the wind turbine is at SW 73985 33813 adjacent to a disused granite quarry at Kessel Downs, Longdowns at a base height of approximately 190m OD near a hilltop at a location with views out to the west and south (Figs 2 and 14).

The development area is characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Industrial – disused', this being set within a mosaic of former Medieval farmland (Anciently Enclosed Land), former downland (Upland Rough Ground), farmland enclosed within the post-medieval and modern periods (Recently Enclosed Land) and semi-active granite quarries (Industrial – active) (Fig 11). Much of the surrounding landscape is elevated, underlain by granite which outcrops in places and has been quarried since at least the early 19th century. The more elevated parts of this landscape would have, by virtue of their elevation and exposure, been unenclosed downland since prehistory.

The parent bedrock underlying the application site is recorded as granite (BGS data) whilst the local soils are recorded as Moretonhamstead loams over granite.

4 Project extent

The archaeological assessment was focussed on those heritage assets (whether designated or not) which might be physically impacted upon through 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 takes into account and quantifies impacts on the settings of heritage assets (both designated and undesignated) within the viewshed of the proposed turbine site in line with Policy HE6 in PPS5, sections 16(2) and 66(1) of the Planning (Listed Buildings and Conservations Areas) Act 1990 Chapter 9, and English Heritage guidance relating to the setting of historic assets (2011) and on wind energy and the historic environment (2005), namely:

- Non-designated heritage assets – 1Km radius.
- Grade II Listed Buildings, World Heritage Site Areas and Conservation Areas – 5Km radius.
- Scheduled Monuments, Grade I and II* Listed Buildings, Registered Battlefields and Registered Parks and Gardens – 10Km radius (these also being noted out to 15Km).

5 Designations

5.1 International

The 5Km radius viewshed includes much of the Carnmenellis and Wendron Area of the Cornish Mining World Heritage Site to the east, as well as the whole of the Kennal Vale Area and the southern part of the Gwennap Area to the north.

5.2 National

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

The 10Km radius viewshed zone includes 39 Scheduled Monuments. Major monuments within this group consist of Pendennis Castle to the east, Kennal Vale gunpowder works to the north east, Carn Brea to the north west, Gear, Caervallack and Helford rounds to the south and Little Dennis promontory fort/Civil War battery to the south east. The other Scheduled Monuments (or groups of monuments) within the 10Km radius viewshed include 35 Bronze Age barrows or cairns, two early Bronze Age standing stones, two late prehistoric rounds (defended farmsteads), eight Medieval crosses and a beam engine house (Fig 21).

The 10Km radius viewshed takes in parts of six Grade II Registered Parks and Gardens at Trelowarren to the south, Trebah, Penjerrick and Falmouth General Cemetery to the south east, Enys and Carclew to the north east (see Fig 20).

The 10Km radius viewshed also includes one Grade I Listed Building at Pendennis Castle to the east and 12 Grade II* Listed Buildings (see Fig 22), the closest of these to the proposed turbine site being at Stithians and Kennal Vale to the north, Merthen to the south and Trewoon to the south east, all of these being within 5Km of the site at Kessel Downs.

The 5Km radius viewshed mapping indicates that the proposed wind turbine would not be intervisible with any Conservation Areas within this zone (see Fig 17).

Within the 5Km radius viewshed, the wind turbine would be theoretically intervisible with 86 Grade II Listed Buildings (or groups of Grade II Listed Buildings) (see Fig 19).

5.3 Regional/county

No regional or county designations relate to the site proposed for the wind turbine.

5.4 Local

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

5.5 Rights of Way

No rights of way traverse the sites proposed for the wind turbine, nor the remainder of the area across which the cabling will be undergrounded. This area is not registered as open access land under the CROW Act 2005 (see Fig 15).

6 Results of desk-based assessment

The site lies near the centre and highest point of a very extensive area of elevated, exposed, upland, underlain by granite, which extends southwards to the Helford, to Mabe Burnthouse on the outskirts of Penryn to the east, to Wendron to the south west, Crowan to the west, Four Lanes to the north and Stithians to the north east.

Given its poor soils and exposure, this area has probably always been sparsely settled. The Cornwall and Scilly Historic Environment Record shows that the surrounding landscape during the Bronze age was characterised by barrows and burial sites, over a dozen being recorded within a 2Km radius of the Kessel Downs site, together with a

pair of early Bronze Age standing stones, clearly indicating that this land was unenclosed upland, used as important summer grazing by transhumant farmers living off the edges of the moors, as sources of fuel in the form of gorse and heather and animal bedding (heather and bracken) and as the sites for communal ceremonial activities. Nevertheless, by late prehistory, settlement had begun to creep up onto the edges of the uplands, there being eight Iron Age/Romano-British rounds or defended farmsteads in the lower-lying areas of the landscape surrounding the Kessel Downs site at Higher Spargo, Turnermere, Carnsew, Carveth, Carnkie, Trewince, Herniss and New Lestraynes.

Those late prehistoric settlements on the more elevated areas of the upland do not seem, in the main, to have been succeeded by early Medieval farmsteads, perhaps a reflection of the poor soils and extreme exposure of the higher land.

Nevertheless, some farms were established during this period, as at Halvasso, Hantertavis, Trenow, Gwendra and Nancrossa, though it may be significant that the majority of these pre-conquest farms were located on the warmer, sunnier land falling to the south from the highest ground. In the more elevated or exposed areas, a substantial number of the place names are in English – Edgcumbe, Longdowns, Rame, Bay View, Greenacre and Cliftures – reflecting the post-Medieval enclosure and settlement of the downs by smallholdings occupied by those working in the quarrying industry or in nearby mines, or by recently-established speculative new farms. Not all were successful, and the survival of smallholdings, in particular, was subject to the vagaries of the mining and quarrying industries. The vast majority in this immediate area have now disappeared, incorporated into modern farmland.

The first mapping depicting this area dates to the 17th century, when Joel Gascoyne produced his map of Cornwall (Fig 3). Gascoyne depicted the surrounding landscape as containing very few settlements or farmsteads, the closest being Halvasso to the south, within whose lands this site probably lay. Tracks and roadways traversed these uplands, one more or less following the boundary between the parishes of Mabe and Stithians.

John Norden's map dating to 1728 (Fig 4) depicting the Hundred of Kirrier, showed this landscape around Longdowns as being sparsely populated and dominated by what a significant area of upland - Longdowns. Thomas Martyn's map drawn up a few decades later shows little change in this landscape (Fig 5).

The 1st Edition of the Ordnance Survey 1" to a mile mapping (Fig 6), dating to the first decade of the 19th century, again shows this landscape as a sparsely-occupied upland area traversed by roads and lanes, with farms established during the medieval period being off the flanks of the downs to the south. The mapping seems to suggest that all of the landscape surrounding the application site was predominantly exposed downland at the beginning of the 19th century, though the better and more sheltered land had been enclosed as farmland.

The *circa* 1840 Mabe Tithe Map (Fig 7) provides a little more detail of this upland landscape at the northern edge of the parish. The area within which the turbine is proposed to be erected was, at that date, an isolated field, whilst much of the surrounding landscape remained as downland, some of which had been enclosed as smallholders fields, as at Longdowns just to the east. The triangular field, now occupied by a quarry, in which the turbine is proposed (Terrier No 1070) was named 'Three Corners' and measured one acre and 39 perches, being at the time in arable cultivation. It was owned by Samuel Stephens Esq. and farmed by James Dunstan as part of Halvasso. The adjoining land (Terrier No 1071) was known as Kestles Higher Downs, extended to eight acres and 29 perches and was described as 'furze' (gorse).

By the late 19th century (Fig 8) it can be seen from the 1st Edition of the Ordnance Survey 25" to a mile mapping that this area to the south west of Longdowns had become a focus for small-scale granite quarrying, there being 13 individual quarries within the immediate area of Kessel Downs. None were marked as disused at this date,

whilst the relatively small-scale of the associated spoil dumps suggests that activity within this area had commenced relatively recently.

In 1907/8 (Fig 9) the 2nd Edition of the Ordnance Survey 25" mapping showed that many of these quarries must have had very short lives. Of the eleven quarries shown, six were shown as disused. However, during the 20th century, the 2005 Cornwall County Council aerial photograph (Fig 10) indicates that many of these smaller quarries must have been taken up and amalgamated into a single, larger scale working represented by two now-disused and flooded quarries and their adjacent re-worked spoil dumps. An operational concrete batching plant occupies a site immediately to the east of the minor road near the site proposed for the wind turbine.

7 Results of site walkover

A site walkover was undertaken on 06 August 2012. The weather was warm, with occasional showers and variable cloud cover. Clear visibility was possible out to in excess of 15Km of the site.

The site proposed for the wind turbine lies immediately adjacent to a disused and partially reworked granite quarry. Vegetation within the immediate area is limited to gorse and scrub trees except in the nearby quarry - this sheltered site allows taller growth of willows and scrub trees. More mature, but generally stunted hedgerow trees are found on field boundaries within the surrounding landscape.

The landscape centred on Kessel Downs is notably open and elevated in character, with few significant watercourses or valleys. The views from the site are open, extending to considerable distances in all directions, terminating on high ground about 8Km away to the north and north west, but extending far further to the north east, east and south.

The site on which the wind turbine will be constructed consists of a concrete surfaced area at whose centre are a series of concrete block-constructed bays 2.0m high, these radiating from a central point, and probably representing a disused storage facility for different grades of aggregate. No features of archaeological significance were found within the area proposed for the turbine, or that which would be trenched for its connecting cables.

8 Results of viewshed analysis

See Figs 16 to 22.

Given the elevated location of the site and the height of the turbine mast, the viewshed analysis suggests that the Zone of Theoretical Visibility (ZTV) will be very far-reaching. In line with the requirements of English Heritage guidance, the ZTV has been mapped to a distance of 15Km from the site, though its visibility will inevitably extend a considerable distance beyond this in some directions. However, the visibility of the turbines will diminish with distance, and will, at some sites, be locally blocked by intervening buildings within settlements or by mature groups of trees (albeit on a temporary basis, should such trees subsequently be felled).

8.1 1 km radius ZTV

See Fig 16.

Given the nature of the local topography and the elevated site selected at Kessel Downs, the wind turbine would be visible from around 95% of this area, the principal exceptions being small areas to the north of Longdowns.

8.2 1Km to 5Km radius ZTV

See Figs 17-19.

This zone largely covers the central part of the granite upland area centred on Longdowns, extending to Porkellis to the west, Constantine to the south, Penryn to the east and just to the south of Lanner to the north. The wind turbine would be visible from approximately 60% of this zone. Given the grain of the landscape, intervisibility would be more predominant to the north west and south east, substantially reduced intervisibility being suggested around Porkellis, Seworgan and Constantine to the south west and Ponsanooth and Penryn to the north east and east. Masking will occur within many stream valleys or in the lee of high ground, whilst visibility will be most ubiquitous on high ground between Porkellis, Penhalurick and Ponsanooth to the north west and Constantine, Budock Water and Penryn to the south east, though at distance, these views will be oblique, and the prominence of the wind turbine substantially reduced.

8.3 5Km to 10Km radius ZTV

See Figs 20-22.

This zone extends to Camborne-Redruth to the north west, Praze-an-Beeble to the west, Helston to the south west, St. Martin to the south, St. Anthony-in-Meneage to the south east, St. Mawes and Carrick Roads to the east, Kea to the north east and Scorrier to the north.

The fall-off of intervisibility between this area and Kessel Downs is considerable, the wind turbine being likely to be visible from less than 30% of this outer zone. The undulating nature of the landscapes surrounding the granite uplands centred on Longdowns determines the nature of the ZTV, such that the turbine is likely to be just visible as a skyline feature from hilltops and north-facing slopes to the north and south of the Helford River, from the higher parts of Falmouth and hilltops above Flushing and Mylor Bridge to the east and from equivalent locations above Perranwell, Devoran and Bissoe to the north east. To the north, intervisibility will occur on the high ground above Baldhu, Carharrack and St. Day, whilst to the north west the high ground at Four Lanes limits the ZTV. To the west, similar topography between Burras and Crowan and at Nancegollan forms the edge of the ZTV in this direction.

8.4 10Km to 15Km radius ZTV

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

The ZTV does not extend into this zone to the west, being blocked by hilltop between Wendron and Burras, whilst to the south west the turbine will be visible only from the northern slopes of Tregonning Hill and from a few coastal hilltops on the coast near Helston. To the north west, the ZTV terminates on the high ground around Four Lanes and does not extend beyond this into the 10Km to 15Km zone.

Given that the Lizard Peninsula is a dissected plateau, the ZTV will extend out to (and beyond) the edge of the 15Km zone to the south, where the Kessel Downs wind turbine will be visible from hilltops and north-facing hillslopes. To the east, the turbine will be visible as a very distant skyline feature from high ground in the Roseland Peninsula out to the edge of the 15Km zone; to the north east and north, where the topography has a north west to south east grain, the turbine will be visible from some areas of high ground around Truro and Shortlanesend, Threemilestone and Blackwater, including land immediately to the south of the A390 from Truro to its junction with the A30 at Chiverton Cross.

Considerable attenuation of the visibility of the turbine will occur with distance, where there will be a greater likelihood of the blocking of intervisibility due to local factors

such as trees, hedge vegetation and buildings. The extremely oblique nature of the views and the effects of intervening features will attenuate the prominence of the wind turbine very considerably.

8.5 Scheduled Monuments within the 10Km radius ZTV

See Fig 21.

Thirty-nine Scheduled Monuments fall within the 10Km radius ZTV for Kessel Downs.

The following sites are within 5Km of the site proposed for the wind turbine:

- DCO1725 – Two barrows 300m east of Nancrossa, 1.03Km to the south west (note that despite the SM description these now appear to be very ploughed down, and were not plotted by the NMP).
- DCO1190 – A cross west of Trevaies Farm, 2.33Km to the north.
- DCO1235 – Two crosses at Stithians, 3.4Km to the north.
- DCO700 – Kennal Vale gunpowder works, 3.75Km to the north north east
- DCO1215 – Three crosses at Bosvathick, 3.9Km to the south east.
- DCO1148 – Basset and Grylls engine house, 4.8Km to the west.
- DCO1190 – Cross west of Trevailes Farm, 4.7Km to the west.
- DCO1235 – Cross in Stithians vicarage garden, 3.4Km north.
- DCO934 – Wayside cross at Stithians Church, 3.4Km north.

With the possible exception of the barrows at Nancrossa, no impacts are considered likely on the settings of any of these monuments, given their particular situations and, at Kennal Vale, the masking effect of dense tree plantings and the topography of the sheltered valley within which all elements of the site are located.

The remainder of the monuments lie within the 5Km to 10Km zone of the ZTV. The majority of these consist of a large number of barrows, a few medieval crosses, two Bronze Age standing stones and two ploughed down late prehistoric rounds, most of which are sited between 7Km and 10Km from Kessel Downs. Although there is likely to be some degree of intervisibility between these sites and the proposed wind turbine, views of it will be distant, in some cases partial and in others locally blocked by nearby vegetation or structures. Negative impacts on their settings are unlikely.

Eight larger monuments were identified in the 5Km to 10Km zone through the viewshed mapping, as follows:

- DCO1602 - Carn Brea Neolithic and Iron Age enclosed hilltop settlement, 8.8Km to the north west. Only a very small area on the summit of the hill falls within the ZTV. No setting impacts are likely to occur.
- DCO184 – Pendennis Castle fortified headland, 8.8Km to the east south east of Kessel Downs. Half Moon Battery and the western part of the headland fall within the ZTV. The setting for Pendennis consists of Carrick Roads and the defended section of the lower Fal Estuary, together with the port of Falmouth. There would be no setting impacts from the construction of a wind turbine at Kessel Downs.
- DCO1207 - Merthen Camp, 7.2Km south south west of Kessel Downs. The northern half of this site falls within the ZTV. The site is open, but fringed by mature trees. The setting for this site is very much the immediate landscape of the Helford, and impacts on the setting of this site would not occur.
- DCO1337 – Gear Camp, 9.3Km to the south south west. The northern fringe of the site falls within the ZTV. The site is open, but fringed by mature trees. Its

setting consists of the immediate landscape of the Helford, and impacts on the setting of this site would not occur.

- DCO1336 – Caervallack Camp, 9.6Km to the south south west. Most of the site falls within the ZTV. Its setting is composed of the landscape fringing the Helford and whilst its site is open, it is enclosed within mature trees. Impacts on its setting are unlikely.
- DCO1527 – Round 550m west of Helford, 7.7Km to the south. The northern half of the site falls within the ZTV. This cropmark site is set near Helford village. Its setting consists of the immediate landscape of the Helford, and impacts on the setting of this site would not occur.
- DCO1338 – Little Dennis promontory fort and Civil War battery, 9.6Km to the south east. The majority of the interior of the site falls within the ZTV. The site is open and would have uninterrupted views to Kessel Downs, but its setting is made up of the defended southern entrance to Carrick Roads, and no impacts on its setting are likely to occur.

The remaining sites in the 5Km to 10Km zone are:

- DCO1608 – The Long Stone.
- DCO1724 – Two barrows on Crowan Beacon.
- DCO1723 – Hangman’s Barrow.
- DCO1690 – Three barrows south of Four Lanes.
- DCO1734 – Barrow on Buller Downs.
- DCO1074 – Round near Trebowland.
- DCO1050 – Barrow south east of Chapel Farm.
- DCO1039 – Three barrows near Bolotho.
- DCO1047 – Barrow south west of Hilltop Cottage.
- DCO1042 – Barrow south east of Parkwood Hill.
- DCO1043 – Barrow east of Parkwood Hill.
- DCO1048 – Barrow south west of Kiliganoon Manor.
- DCO1044 – Three barrows north east of Devichoys Barton.
- DCO889 – Wayside cross in St. Peter’s churchyard.
- DCO1467 – Barrow east of Gweek.

No impacts were felt likely to result on the settings of these sites.

8.6 Registered Parks and Gardens within the 10Km radius ZTV

See Fig 20.

Six Registered Parks and Gardens (all at Grade II) lie within 10Km of Kessel Downs, these being Carclew and Enys to the north east, Penjerrick and Falmouth General Cemetery to the east, Trebah to the south east and Trelowarren to the south. The ZTV indicates no intervisibility is likely between Kessel Downs and Penjerrick and only very limited intervisibility between the site and Trebah, Carclew, Enys and Falmouth General Cemetery.

No impacts are thought likely to occur on the settings of these designated landscape.

The central part of Trelowarren Park, including Trelowarren House (at 10Km from Kessel Downs) will experience substantial theoretical intervisibility with the wind turbine, though in practice, this will be very much limited by tree cover except in its

open areas with views to the north. No planned views from the house through the park extend in the direction of Kessel Downs and setting impacts on the park and gardens are unlikely to result from the construction of the wind turbine.

8.7 Grade 1 and II* Listed Buildings within the 10Km radius ZTV

See Fig 22.

One Grade I Listed Building falls within the 10Km radius ZTV – Pendennis Castle. For the reasons given above (under scheduled monuments), no impacts on its setting are likely from the construction of a wind turbine at Kessel Downs 8.8Km away to the west north west.

Twelve Grade II* Listed Buildings fall within the 10Km viewshed, some of these being grouped. Within a 5Km radius of Kessel Downs, these are:

- DCO6807 - Kennal Vale House, 3.4Km to the north north east, set within a mature wooded setting associated with Kennal Vale to the east.
- DCO6810 - Stithians Church, 3.45Km to the north, screened to the south by mature churchyard trees.
- DCO6809 – Stithians Methodist Chapel, 6.65Km to the north north west and orientated north.
- DCO7805 – Trewoon, 3.4Km to the south east, within a locally open fieldscape setting.
- DCO6161, DCO6162, DCO7341 – Trewardreva, 3.9Km to the south west. This small country house is orientated to the north east across its gardens (and therefore towards Kessel Downs). Mature wooded elements of the gardens in this direction may well limit intervisibility with the wind turbine.

With exception of Trewardreva and perhaps Trewoon, intervisibility and impacts on settings are unlikely. In both cases, closely-set woodland trees will probably affect intervisibility and significantly limit any impacts on setting.

Between 5Km and 10Km from Kessel Downs are a further six Grade II* Listed Buildings or groups of Grade II* Listed Buildings:

- DCO6151 – Merthen, 7.4Km to the south. Mature tree plantings block views to the north, whilst the setting of the house is made up of the sloping ground out towards the Helford. No impact on setting.
- DCO6796 – Mawnan Church, 8.2Km to the south east. Trees screen views from the church to the north and west, and the setting for the site consists of the ground sloping down to the Helford. No impact on setting.
- DCO5098 - Falmouth Church, 6.4Km to the east. The Church has an urban setting, elements of which will by and large block any views of the wind turbine. No impacts on setting.
- DCO4316, DCO4525 – Carclew House, 6.6Km to the north east. The remains of Carclew are surrounded by mature woodland, whilst its setting consists of the remains of the surrounding parkscape and the present fieldscape, extending out over Perran Creek to the north and the Fal Estuary to the east. No impacts on setting.
- DCO6695 – Carharrack Methodist Church, 7.6Km to the north. The chapel is orientated south east, its setting being the settlement of Carharrack. No setting impacts likely.
- DCO5814 – The Church of St. Michael, Baldhu, 9.9Km to the north east. The church, which has been converted to domestic use, is wholly within a mature woodland setting. No impacts on its setting are likely.

8.8 Areas of the Cornish Mining World Heritage Site within the 5Km radius ZTV

See Fig 18.

Parts of three Areas of the World Heritage Site fall within the 5Km radius ZTV.

- Area A4 – the Wendron Mining District. The northern part of this Area falling within the ZTV is open and elevated, being centred on Carnmenellis and Calvadnack approximately 4Km from the proposed wind turbine site. The landscape is characterised by small-scale mine sites and very extensive miners' smallholdings. There will be clear intervisibility between substantial parts of this upland area of Recently Enclosed Land and Kessel Downs, though the views will include already existing wind turbines. Some limited impacts on the setting of this Area of the WHS will result.
- Area A6iii – Kennal Vale. This Area, centred 4Km from Kessel Downs is compact and wooded. No impacts on the setting of this Area of the WHS will occur as a result.
- Area A6i – Gwennap Mining District. The extreme southern end of this Area around Burncoose house falls within the 5Km zone, but no intervisibility is suggested by the viewshed mapping. The landscape is characterised by partly wooded parkland which closes off views to the south. Given this factor and the distance from the turbine sits, no impacts on its setting will occur.

8.9 Conservation Areas within the 5Km radius ZTV

See Fig 17.

No intervisibility is suggested between the wind turbine proposed at Kessel Downs Quarry and any Conservation Area within a 5Km radius of the site, nor are key views of any Conservations Areas likely to be impacted upon by the inclusion of the Kessel Downs wind turbine.

8.10 Grade II Listed Buildings within the 5Km radius ZTV

See Fig 19.

Eighty-six Grade II Listed Buildings (or groups of buildings) intersect the 5Km radius ZTV, the majority of these being to the north, north west, west, south and south east.

Those within 2Km of the Kessel Downs site are:

- DCO6841 – Milestone 1.4Km north west.
- DCO6663 – Guide post 1.3Km north west.
- DCO6019 – Guide post 1.28Km west.
- DCO7219 – Milestone 1.37Km west.
- DCO6070 – Bound stone 2.08Km north east.

Impacts on the settings of this group of site types are considered very unlikely unless they are in very close proximity to and clearly intervisible with a wind turbine.

- DCO7619 – Rame Farm 1.43Km west. Full intervisibility likely, but setting restricted to immediate locality.
- DCO6061 – Edgcumbe Methodist Chapel 2Km west south west. Orientated north east. The wind turbine will appear in views of the chapel from the road to the south west, and may have some impacts on its setting.
- DCO6577 – Callevan Farm 1.94Km south. Some potential minor impacts on setting.

- DCO6570 – Goose house 1.4Km south south east. Restricted setting, so no impacts.
- DCO7105 – Goose house 1.8Km east. Restricted setting so no impacts.
- DCO6621, DCO6163, DCO7578, DCO7340 – Treworvack 1.94Km south west. Some minor impacts on setting possible.
- DCO6056, DCO7600 – Trevalles House 2.08Km north north east. Partial intervisibility; impacts on setting unlikely.

Within the zone from 2Km to 5Km, impacts on Listed Buildings at Trewardreva and Trewoon are discussed above. Other Grade II Listed structures in the landscape to the south east of Kessel Downs are:

- DCO7344, DCO7576 – Tresahor Veor, 3.3Km south.
- DCO7551, DCO6574 – Bosvathick Lodge, 4Km south south east.
- DCO6180 – Bosvarren House, 4.13Km south east.
- DCO7345, DCO6158, DCO6157 – Trecombe, 4.6Km south east.
- DCO7548 – Bosawsack, 3.75Km south east.
- DCO6582 – Roscollas pigsty, 3.15Km south east.
- DCO6468 – Treverva Methodist Chapel, 2.7Km south east.
- DCO6473, DCO6472, DCO6470 – Trewoon Manor, 3.5Km south east.
- DCO6088 – Penwarne gateposts, 4.6Km south east.
- DCO6488 – Milestone, 3.15Km south east.
- DCO7637 – Argal Manor, 2.9Km south east.

Bosvathick, Bosvarren, Bosawsack, Argal Manor and Roscollas are all set within mature trees. Trecombe and Treverva Chapel have seen significant alterations to their settings by virtue of modern development. Penwarne gatepost and the milestone have very local settings.

Only one Grade II Listed Building is to the east of Kessel Downs:

- DCO4598 – Gate piers near Tranquillity, 4.49Km east north east. No impacts on the setting of this structure will occur.

Another cluster of Grade II Listed Buildings are within the ZTV to the north of Kessel Downs around Stithians:

- DCO6057 – Trevalles, 2.3KM north.
- DCO6812, DCO6078, DCO7611, DCO6811 – Kennal farmhouse, 3.25Km north.
- DCO6072 – Guidepost 3.3Km north.
- DCO7120 – Milestone, 3.4Km north.
- DCO6052 – Guidepost, 2.98Km north.
- DCO6803 – Guidepost, 3.7Km north.
- DCO7252 – Seauragh Mill, 3.7Km north.
- DCO15053 – Milestone, 2.7Km north.
- DCO6055, DCO6227 – Tretheague, 2.65Km north.
- DCO4816, DCO6820, DCO4816, DCO6827, DCO7615, DCO7616, DCO6083, DCO6823, DCO6049, DCO6048 – Tombs, walls, cross, headstones and war memorial at Stithians Church, 3.8Km north.

- DCO6077 – Hendra and Mabel’s Cottages, 3.8Km north.
- DCO6810 – Hendra Farm, 3.8Km north.
- DCO6809 – Hendra House, 3.6Km north north east.
- DCO6076 – Old Forge, 3.6Km north north east.
- DCO7609 - Gateposts and walls, 3.6Km north north east.
- DCO7610 – Stithians Chapel, 3.6Km north north east.
- DCO5538 – Cascadden Farm, 4.6Km north north east.
- DCO6075, DCO7249 – Treweege Barton, 4.9Km north north east.

Few impacts on the settings of these designated sites are anticipated given their limited local settings and their distances from Kessel Downs.

A further group of Grade II Listed Buildings are found in the landscape around Stithians Reservoir and Carnkie to the north west of Kessel Downs:

- DCO6028 – Menherion House, 4.6Km north west.
- DCO15896 – Milestone, 4.6Km north west.
- DCO7121 – Milestone 4.4Km north west.
- DCO6035 – Storage chamber/goose houses, 3/4Km north west.
- DCO7234 – Bridge, 4Km north west.
- DCO6836 – Guidepost, 4Km west north west.
- DCO6062 – Guidepost, 4.1Km west north west.
- DCO6060 – Cross, 4.1Km west north west.
- DCO6034 – Milestone, 3.9Km west north west.
- DCO16461 – Milestone, 4.56Km west north west.

Given these site types, the restricted natures of their settings and their distance from Kessel Downs, no impacts on their settings are anticipated.

The final group of Grade II Listed Buildings are to the west and south west of Kessel Downs:

- DCO7627 – Milestone, 2.4Km west south west.
- DCO7601 – Mine chimney, 2.6Km west south west.
- DCO6045 – East Wheal Lovell engine house, 4.62Km south west.
- DCO7606 – Laity Farmhouse, 5Km south west.

Impacts on the settings of these structures are unlikely given their distance from Kessel Downs and their natures.

8.11 Undesignated sites within the 1Km ZTV

See Fig 16.

Most of the landscape within a 1km radius of the Kessel Downs Quarry site will be intervisible with all or part of the proposed wind turbine. Twenty-nine sites are listed in the Cornwall and Scilly Historic Environment Record within this zone.

Prehistoric

- MCO8044 – Herniss ‘round’ field name.
- MCO8280 – New Lestraynes ‘round’ field name.

Medieval

- MCO13691 – Calamankey medieval settlement.
- MCO13841 – Carnwidden medieval settlement.
- MCO34192 – Herniss early medieval field boundary.
- MCO5359 – Herniss 'cross' field name.
- MCO14872 – Herniss medieval settlement.
- MCO34205 – Little Lestraynes medieval field boundary.
- MCO34204 – Little Lestraynes medieval extractive pit.
- MCO34196 – Little Lestraynes medieval field boundary.
- MCO34175 – Lower Halvasso medieval extractive pit.
- MCO34176 – Lower Halvasso medieval field system.
- MCO14725 – Halvasso medieval settlement.
- MCO34194 – Longdowns medieval field boundary.
- MCO14743 – Hantertavis medieval settlement.

Post-medieval/modern

- MCO34188 – Rosemanowas Quarry.
- MCO34186 – Polkanuggo Quarry.
- MCO34189 – Higher Trolvis Quarry.
- MCO34193 – Herniss Quarry.
- MCO9094 – Herniss forge.
- MCO34191 – Herniss Quarry.
- MCO9095 – Herniss forge.
- MCO54091 – Milestone.
- MCO52541 – Longdowns tollhouse.
- MCO34190 – Longdowns field system.
- MCO34195 – Kessel Downs Quarry.
- MCO34177 – New Lestraynes Quarry.
- MCO55821 – Herniss Quarry.
- MCO9079 – Halvasso forge.

Given the nature of the majority of these sites, the proposal for a wind turbine at Kessel Downs Quarry would have no significant impact on their settings. Some impacts on settings would be expected, however, on farms with medieval origins which are close to the Kessel Downs Quarry site.

8.12 Designated sites within the 10Km to 15Km zone

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

Registered Parks and Gardens

- Trelassick (Grade II*).
- Tregothnan (Grade II*).

Scheduled Monuments

- DCO1066 – Coosewartha Round.
- DCO901 – Two Burrows.
- DCO899 – Barrow north of Mongoose.
- DCO896 – Barrow 125m north of Mithian Church.
- DCO895 – Three Burrows.
- DCO893 – Four Burrows.
- DCO893 – Two barrows at Ashgrove Farm.
- DCO907 – Bosvisack hillfort.
- DCO1077 – Polstein Round.
- DCO1056 – Goodern Barrow.
- DCO1057 – Carrine barrow and round.
- DCO1137 – Barrow at Gew Farm.
- DCO1037 – Barrow 250m SE of Gew Farm.
- DCO1059 – Two rounds at Playing Place.
- DCO1064 – Dingerein Castle.
- DCO865 – Wayside cross at St. Gerrans Church.
- DCO589 – St. Mawes Castle.
- DCO1528 – Roscruse Beacon barrow.
- DCO1453 – Tremenheer Longstone.
- DCO1394 – Crousa Common standing stones.
- DCO1301 – Two barrows on Crousa Common.
- DCO1311 – The Three Brothers of Grugith.
- DCO1519 – Chapel enclosure at Trease Farm.
- DCO1335 – Earthwork near Carplight.
- DCO1508 – Three barrows near Polkerth.
- DCO1426 – Two barrows west of Polkerth.
- DCO1427 – Three barrows west of Traboe.
- DCO1505 – Barrow north west of Traboe.
- DCO1431 – Barrow on Resuse Common.
- DCO1430 – Two barrows north west of Fox Covert.
- DCO1433 – Earthwork south east of Trelan.
- DCO1434 – Barrow east of Trelan.
- DCO1432 – Earthwork west of Trelan.
- DCO1428 – Barrow south west of Croft Pascoe Pool.
- DCO1429 – Two barrows south west of Croft Pascoe Pool.
- DCO1458 – Six barrows north of Dry Tree.
- DCO1459 – Barrow south west of Dry Tree.

- DCO1328 – Three barrows west north west of Croft Noweth.
- DCO1460 – Three barrows south of Dobnas Plantation.
- DCO1461 – Five barrows on Goonhilly Downs.
- DCO1595 – Three barrows east of Burnoon.
- DCO583 – Halliggye fogou and round.
- DCO1597 – Barrow on Tregonning Hill.
- DCO1153 – Castle Pencaire hillfort, two rounds and field system.

Grade I Listed Buildings

- DCO4011 – Church of St. Michael Penkivel.
- DCO4016 – Tregothnan House.
- DCO5747 – Gerrans Church.
- DCO4403 – St. Mawes Castle.
- DCO7366 – St. Keverne Church.
- DCO6618 – Trelowarren House.

Grade II* Listed Buildings

- DCO5829 – Wheal Busy Chapel.
- DCO4505 – Killiow coach house.
- DCO4812 – St. Keyne Church.
- DCO4017 – Tregothnan clock tower.
- DCO4943 – Penkival farmhouse.
- DCO4500 – Trelissick.
- DCO5763 – The Rectory.
- DCO7711, DCO5844 – Roskruge Barton.
- DCO7729 – Goonhilly satellite station.

9 Field verification of ZTV

The viewshed mapping and potential impacts were, wherever possible (given constraints on public access) ground checked from a number of locations, including at or near settlements of medieval origin within the 1Km viewshed (Carnwidden, Herniss, Great and Lower Halvasso and Hantertavis) and from near Listed Buildings at Rame, Edgcumbe, Trewoon, Treworvack, Calleva and Trewardreva. It did not prove possible to check intervisibility from the scheduled barrows at Nancrossa, but visits were made to Trelowarren Registered Park and Garden, parts of the Wendron Area of the Cornish Mining World Heritage Site, Stithians settlement, and accessible locations at Mawgan adjacent to the Scheduled late prehistoric enclosures at Merthen, Gear and Caervallack.

At each accessible designated heritage site the potential visibility (and proportional visibility) of the proposed wind turbine was considered. Views out from the site towards key heritage assets were checked from a location adjacent to Kessel Downs Quarry. Though true levels of intervisibility were impossible to determine from ground level given the proposed height for the turbine masts, the general degree of openness of the views out from the site could be assessed. Existing wind turbines within the vicinity of Kessel Downs allowed the likely impacts of the proposed turbine on the settings of key heritage sites to be assessed.

Where possible, photographs were taken from key locations within the surrounding landscape and from the quarry location at Kessel Downs back to these sites. In the absence of the turbine mast, the site proposed for it was not particularly evident within the landscape from a distance, despite its location on high ground. In practice, field hedges, woods and other tree plantings blocked views in many of the rural areas off the Downs; within settlements, groups of buildings and mature garden trees and shrubs also blocked many views back to the site, whilst the topography and wooded nature of much of the Trelowarren parkscape very considerably reduced intervisibility between this site (and its house) and the proposed turbine. The visibility cut-off imposed by the local topography which was suggested by the viewshed mapping was confirmed.

The viewshed from the site was found to extend well beyond the 15Km zone, it terminating on the ridge followed by the A30 from Carland Cross to Chiverton Cross, taking in large areas of the Gwennap Area of the Cornish Mining World Heritage Site including the Chasewater mines and extending as far as the Hensbarrow Moors to the east. Glimpses of the higher hills on Bodmin Moor can be seen to the north east.

Whilst the ridgetop site proposed for the wind turbine formed the skyline from many of the sites and areas assessed, intervening ridges and hills greatly reduced its visual prominence, particularly from the south, whilst the mature trees and incised landscape to the south east and south west of the high ground often blocked intervisibility completely, particularly from many of the Grade II* Listed Buildings within these areas.

10 Cumulative impacts

Recent English Heritage guidance requires assessments of renewables applications to take account of cumulative impacts, as well as those relating to specific proposals. Five wind turbines of heights varying from 25m to 70m in height are already consented or operational within this immediate area, whilst within the broader local landscape another dozen are currently at the screening stage. From the A394 at Herniss, immediately to the north of the site, 39 wind turbines can be seen. The view forms an arc from the wind farm and individual turbines near Chiverton Cross and at Four Burrows to the north through the Chiverton Cross wind farm just to the east of north round to the large (75m to tip) pair nearby at Mabe Burnthouse and others in the far distance near the western side of Hensbarrow. A relatively newly-erected medium-sized twin blade turbine is sited at Carnkie about 2Km away. Few wind turbines can be seen in the landscape to the south of the Downs, though the re-powered set of six 107m to tip turbines at Goonhilly roughly 15Km away are clearly visible as distant skyline features.

However, a number of medium sized individual wind turbines are currently proposed in the landscape between Wendron, Constantine and Budock Water in a zone between 1Km and 5Km from the Kessel Downs Quarry site and others are proposed to the north of the ridge, and to the east around Mabe Burnthouse. This is, therefore, a part of the Cornish landscape within which small, medium and occasional large wind turbines already have a visible presence and within which more are likely to be constructed.

High voltage power lines carried on tall pylons also cross the landscape from two directions to the north of Rame, one line running in from the north west, the other from the north. These converge at a prominent hilltop transformer site just to the south of Rame 1.4Km to the south west of Kessel Downs Quarry.

The television aerial mast on Carnmenellis 4.5Km to the north is a skyline feature from much of the surrounding landscape, as are the tall concrete batching plant in the eastern part of the Kessel Downs Quarry site, a number of mobile phone and communications masts (as, for example, at RNAS Culdrose) and the remaining Goonhilly Downs Satellite dishes to the south.

In summary, therefore, the landscape surrounding the proposed wind turbine site already contains a number of often visually-prominent 21st century features, though remains essentially open and agricultural in character.

11 Synthesis

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

Impacts on both designated and undesignated heritage assets within the local landscape resulting from the construction of wind turbines on land to the south west of Kessel Downs Quarry will vary with their distance from the turbine site, their state of preservation, their nature, and the effects of reduced or blocked intervisibility due to local topography, vegetation (including hedge plantings), the presence of other buildings or the proximity of already-existing wind turbines. In some cases, even where intervisibility will be present, topography will limit views of the Kessel Downs Quarry wind turbine from archaeological sites in the local landscape to the upper sections of the turbine mast or to the upper parts of its blades, especially in more distant areas to the south around the Helford.

There will be moderate impact within the immediately local landscape out to one to two kilometres from the site, though with the exception of the Nancrossa barrows, this zone contains few sensitive sites other than post medieval farmsteads with medieval origins. The setting of the scheduled Nancrossa barrows has already been compromised to some degree by the prominent electricity sub-station 400m to their north west and the operational landfill site 600m to their north east.

In the wider landscape, although the wind turbine is to be sited on a prominent ridge top with far-ranging views across the landscape of mid west Cornwall, it is unlikely to have an impact on the settings of designated heritage assets, other than to a limited degree on the open, upland landscapes of the Wendron Area of the Cornish Mining World Heritage Site.

12 Policies and guidance

The following section brings together policies and guidance (or extracts from these) used in the development of the assessment and its methodology.

12.1 National Planning Policy Framework 2012

The following paragraphs within the above document frame planning policy relating to the Historic Environment and are germane to this assessment:

128. *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

129. *Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and*

any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

132. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.

133. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site; and
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and
- the harm or loss is outweighed by the benefit of bringing the site back into use.

134. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

135. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

139. Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

12.2 PPS5 English Heritage guidance

The English Heritage and DCMS (Department for Culture, Media and Sport) document 'PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide' provides current guidance on PPS5 (and its successor the NPPF) and its application.

This refers to the need, for decision-making in response to an application for change that affects the historic environment, of providing and assessing, at a level appropriate to the relative importance of the asset affected, information on the asset and its extent, on its setting, and on the significance of both of these aspects. Section 5, 54 states that '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...'

Section 5 on Policies HE6 to HE 12, 58, notes among appropriate actions (in point 5) 'Seek[ing] advice on the best means of assessing the nature and extent of any

archaeological interest e.g. geophysical survey, physical appraisal of visible structures and/or trial trenching for buried remains.'

The section on Policy HE10 defines setting as follows:

'113. Setting is the surroundings in which an asset is experienced. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.'

'114. 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; by spatial associations; and, by our understanding of the historic relationship between places. For example, buildings that are in close proximity but not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each. They would be considered to be within one another's setting.'

12.3 Former Cornwall Structure Plan

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

12.3.1 Policy 1

'Development should be compatible with:

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

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

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

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

12.3.2 Policy 2

'Throughout Cornwall, development must respect local character and:

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

12.4 Former Kerrier Local Plan

Although now part of Cornwall Council, Kerrier District Council's policies listed in its local plan continue to be relevant. Policies concerning the historic environment are listed below.

Policy B.EN1: Historic Heritage – Archaeology

Development that would significantly harm sites, buildings and other remains of archaeological and historic importance, or their setting, will not be permitted unless there is a need for the development and the benefits for the community outweigh the archaeological importance. Where it affects archaeology that is found to be of national importance, development will only be permitted if the remains can be preserved in-situ without significant harm to them and to their setting; where it affects other sites and on-site preservation is impracticable or unnecessary, the development should include excavation and recording of significant remains and a planning obligation to secure this will be sought.

Policy B.EN2: Historic Heritage – Scheduled Ancient Monuments

Development that would significantly harm a Scheduled Ancient Monument, its setting or archaeological interest will not be permitted.

Policy B.En3: Historic Heritage - Areas of Great Historic Value

Development within the Areas of Great Historic Value that would significantly harm their historic character or the preservation of archaeological or historic remains and their setting will not be permitted.

Policy B.En7: Historic Heritage – Registered Parks and Gardens of Special Historic Interest

Development that would significantly harm the form or character of important historic features of the buildings, structures or gardens of a registered park and garden of special historic interest or its setting in the landscape will not be permitted.

Policy B.En8: Historic Heritage – Houses and Gardens of Local Historic Interest

Development within or adjoining houses and gardens of local historic interest will be permitted where there is no significant harm to:

- (I) The preservation of the significant historic and architectural features of interest, layout and ornamentation of the house and grounds;*
- (II) The conservation of the historic character of the house within its parkland or garden setting; and*
- (III) The conservation of the historic character, landscape and setting of the parkland, including its trees and woodland.*

B.En9: Listed Buildings – Preservation, Alteration, Extension and Change of Use

Development involving the alteration, extension or the change of use of a listed building will be permitted where it has special regard to the desirability of its preservation, the preservation of its appearance, character, setting and any features of special architectural or historic interest which contribute to its listing and it is compatible with the fabric and interior of the building. Development which would not preserve the listed building, its setting or any features of special or historic interest will not be permitted unless it can be demonstrated to be the only way in which the building can be retained.

12.5 Hedgerow Regulations

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

13 Likely impacts of the proposed development

13.1 Types and scale of impact

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

13.1.1 Types of impact, construction phase

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

13.1.2 Types of impact, operational phase

This wind turbine might be expected to have a visual impact on the settings of some key heritage assets within its viewshed during the operational phase, given the height of its mast (40 metres), the elevation of the site and the open nature of the local landscape. Such factors also make it likely that the development would have an impact on Historic Landscape Character. These impacts would be **temporary** and **reversible** should the turbine subsequently be dismantled and not re-powered or replaced.

13.1.3 Scale and duration of impact

The impacts of the wind turbine on the historic environment may include positive as well as adverse effects. For the purposes of assessment these are evaluated on a seven-point scale:

positive/substantial

positive/moderate

positive/minor

neutral

negative/minor

negative/moderate

negative/ substantial

Negative/unknown is used where an adverse impact is predicted but where, at the present state of knowledge, its degree cannot be evaluated satisfactorily.

The assessment also distinguishes where possible between **permanent** and **temporary** effects, or between those that are **reversible** or **irreversible**, as appropriate, in the application of the scale of impacts.

13.1.4 Potential and residual impacts

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. In the assessments forming Section 13.2, where appropriate, both 'potential' and 'residual' impacts are given; that is, expected impacts 'before' and 'after' such work, principally in relation to the development phase. A proposed mitigation strategy is outlined below in Section 14.

13.2 Assessment of impact

Overall, the impacts of the proposed wind turbine on the archaeological resource are assessed as having a potential scored as **negative/minor**, principally dependant on proximity to the proposed turbine sites and intervisibility with them.

Impacts on the settings of the designated heritage sites within 10Km of the proposed turbine site has been assessed as **negative/minor**. Impacts on potential sub-surface archaeology within the development site are unlikely to occur, given the extensive previous disturbance which has taken place through quarrying operations.

The assessments supporting this general statement are outlined in the following sub-sections. To comply with current policies and guidance (Section 12) these provide assessments of impact in terms of different aspects of the archaeological resource - its individual sites, the settings of sites, Historic Landscape Character, and field boundaries. There are inevitably areas of overlap between these categories of impact; the assessment is adjusted accordingly to avoid 'double counting' of impacts.

13.2.1 Impacts on archaeological sites within the development area

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

Scales of impact will vary with the degree of significance of individual sites, and with the proportion of the whole site which would be affected. On the basis of the documented history of the site, no such impacts are likely to take place.

13.2.2 Impacts on the settings of surrounding key heritage assets

The proposed wind turbine is considered likely to have an impact on the setting of key surrounding heritage assets, this being summarised as **negative/minor to neutral** and **temporary/reversible** overall should the wind turbine be dismantled in the future:

- Two Scheduled barrows are sited just over 1Km from the site proposed for the wind turbine. These would have been intended, when constructed, to be highly visible focal points within the local landscape. There will be substantial intervisibility between the easternmost of these sites and the proposed wind turbine. However, at Herniss Farm lying between these two locations sites a prominent, recently created open-air recycling facility and small-scale landfill site has already impacted on their setting as seen from the north east. Other wind turbines are already visible from the barrow site, whilst less than 1.5Km to the north west is a highly visible electricity transformer station with its associated high voltage pylon lines.
- Additionally, as a result of the process of enclosure within the surrounding countryside during the medieval period, together with granite quarrying in the 19th and 20th centuries, the character and appearance of the landscape within which these prehistoric monuments now sit has changed considerably from those within which they were originally designed to be seen and understood.
- Other Scheduled Monuments within the 10Km viewshed are either of types which have only limited settings or are at distances from the proposed wind turbine where their settings are unlikely to be impacted upon.
- Whilst additional wind turbines can be seen at some distance at several points in the wider landscape surrounding this site, the Kessel Downs wind turbine would be one of the first in this immediate area.
- During the operational phase the wind turbine is unlikely to impact to any significant degree on the setting of the majority of the Listed Buildings within its viewshed, given the relatively large distances between the wind turbine and these designated structures and the constraints on intervisibility.
- The Trelowarren Grade II Registered Park and Garden lies within the 10Km radius viewshed of the proposed wind turbine. Intervisibility between it and the

turbines will occur, but the construction of the wind turbine is unlikely to negatively affect its setting, given the distance between the wind turbine and the Park. The wind turbine will be on the northern skyline seen from the Park and House but will form an insignificant element within the views from them.

- There are no Registered Battlefields within the 10Km radius viewshed of the proposed wind turbine.
- There are no Conservation Areas within the 5Km radius viewshed of the proposed wind turbine.
- The most significant impacts will be on undesignated farmsteads of medieval origin within 1Km of the proposed Kessel Downs Quarry site. These will have uninterrupted views of the turbine; most of its mast and all of its blades will be clearly visible from them, as also from the settlements of Herniss, Rame and Longdowns along the A394 just to the north of the site.
- Any impacts on heritage assets within the landscape surrounding the proposed wind turbine would be **temporary** and **reversible** should the wind turbines be dismantled in the future.

13.2.3 Designated heritage assets within the 10Km radius viewshed

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

Scheduled Monuments (SM) – see Fig 21.

Identifier	Site	NGR	Impact
DCO1725	Two barrows 300m east of Nancrossa	SW 73073 33249	Negative moderate

Registered Parks and Gardens - see Fig 20.

Identifier	Site	NGR (centre)	Impact
DCO32	Trelowarren (II)	SW 71353 23744	Neutral

Grade II* Listed Buildings (LBs) - see Fig 22.

Identifier	Site	NGR	Impact
DCO6810	Stithians Methodist Chapel	SW 72411 37055	Neutral
DCO7805	Trewoon	SW 76217 31228	Neutral
DCO6161, DCO6162, DCO7341	Trewardreva	SW 72568 30097	Neutral

13.2.4 Designated heritage assets within the 5Km radius viewshed.

Grade II Listed Buildings – see Fig 19.

Identifier	Site	NGR	Impact
DCO7619	Rame Farm	SW 72568 33721	Negative minor
DCO601	Edgcumbe Methodist Chapel	SW 72060 33162	Neutral
DCO6577	Callevan Farm	SW 73770 31892	Neutral
DCO6621, DCO6163, DCO7578, DCO7740	Treworvack	SW 73181 32055	Neutral

World Heritage Site Areas – see 18.

Identifier	Site	NGR (centre)	Impact
Area 4	Wendron	SW 70298 35110	Negative minor

13.2.5 Undesignated heritage assets within the 1Km radius viewshed

See Fig 16.

Identifier	Site	NGR	Impact
MCO13841	Carnwidden	SW 74130 34063	Negative moderate
MCO14872	Herniss	SW 73446 34333	Negative moderate
MCO14725	Great Halvasso	SW 74305 33314	Negative moderate
MCO14723	Hantertavis	SW 74289 33709	Negative moderate
MCO34176	Lower Halvasso	SW 73932 33185	Negative moderate

13.2.6 Impacts on Historic Landscape Character

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

- The land-take for the proposed development is small in comparison with the area of the HLC Units of former industrial land within the surrounding landscape.
- There would be no impacts in terms of physical loss during the construction phase of features which form the visible components of this type of HLC.
- Some visual impact throughout the operational phase would occur, affecting the integrity of this area as former industrial land, in particular through the introduction of a highly visible modern feature into this open landscape.
- However, this area has had a history of industrial activity from the 19th century to the present day, including quarrying, which introduced highly visible features such as cranes and waste dumps into the landscape. In addition, the site lies close to Rosemanowas Quarry, which was the site for the pilot Hot Rocks project, which, whilst operational, sited a pair of prominent (but now dismantled) drill towers.
- There are already a number of wind turbines and other tall modern features such as pylons and aerials within the landscape to the north of this site.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the wind turbine be dismantled in the future.

14 Mitigation Strategy

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

14.1 Archaeological recording

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

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

In the instance of Kessel Downs Quarry, no above or below ground archaeological sites would be directly impacted upon by the proposal to construct a wind turbine at this location and no mitigation of this type would be required.

15 References

15.1 Primary sources

Cornwall County Council 2005 aerial mapping of Cornwall.

Joel Gascoyne's 1699 Map of Cornwall

Martyn's 1748 Map of Cornwall

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

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

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

Ordnance Survey, 2007. *Mastermap Digital Mapping*

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

15.2 Publications

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

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

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

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

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

15.3 Websites

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

16 Project archive

The HE project number is **PR146168**

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

1. A project file containing site records and notes, project correspondence and administration.
2. Digital photographs stored in the directory R:\Historic Environment (Images)\SITES.I-L\Kessel Downs Quarry wind turbine assessment
3. English Heritage/ADS OASIS online reference: cornwall2-131958
4. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites K \Kessel Downs Quarry wind turbine assessment 2012\Kessel Downs Quarry wind turbine assessment.doc

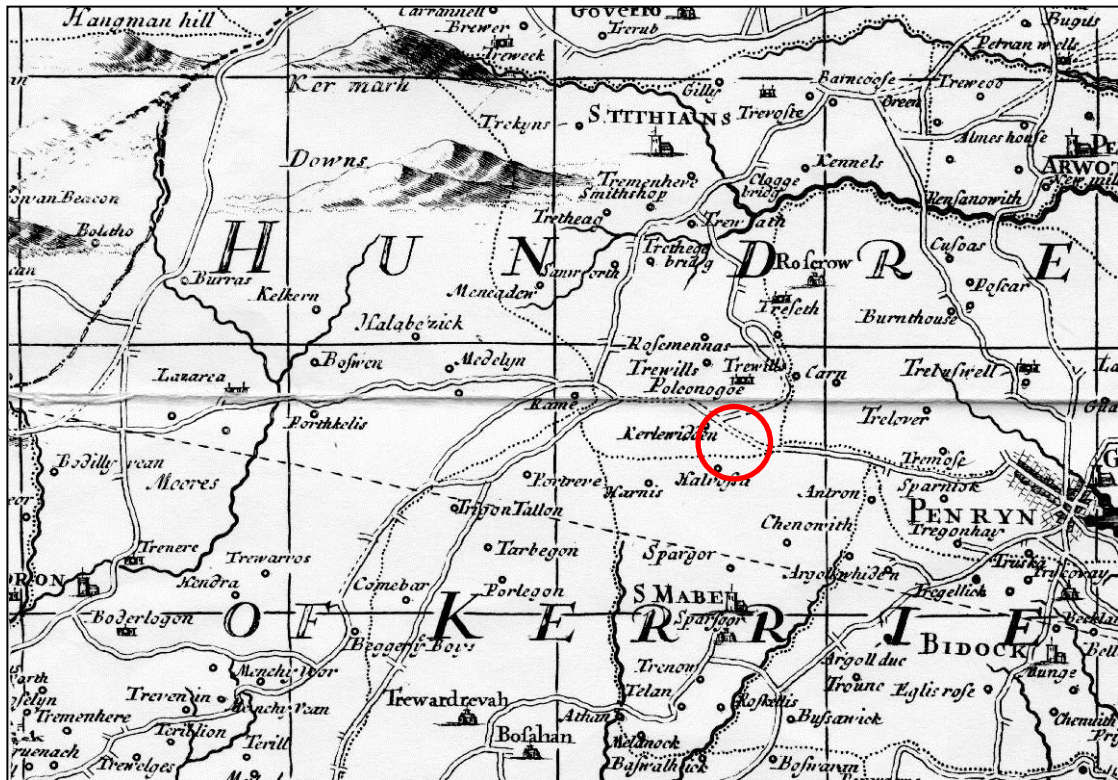


Fig 3. The project area and its surroundings, shown on Joel Gascoyne's 1699 Map of Cornwall. The project area is circled in red.



Fig 4. The proposed turbine site and its surroundings, as shown on John Norden's 1724 Map of Cornwall. The project area is circled in red.

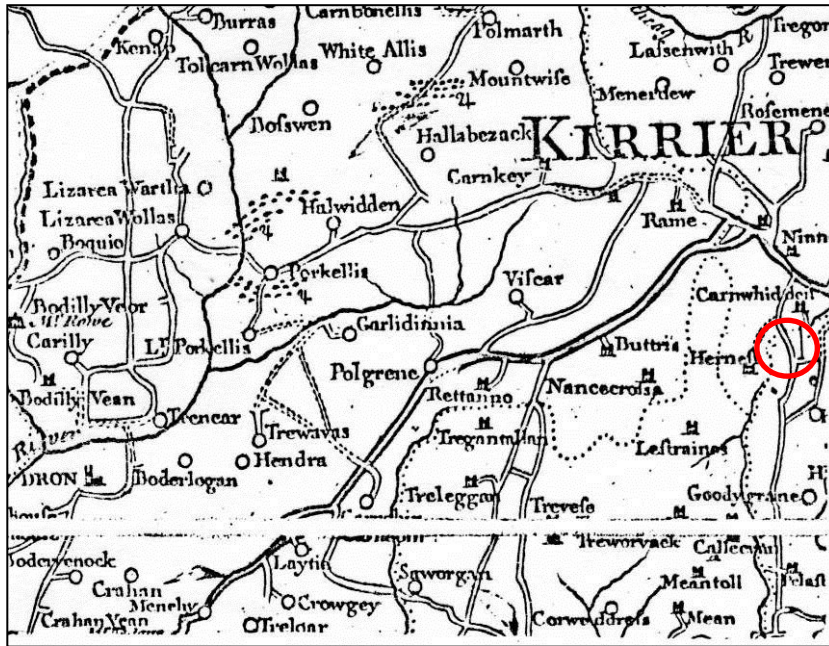


Fig 5. The proposed turbine site and its surroundings, as shown on Martyn's 1748 Map of Cornwall. The project area is circled in red.



Fig 6. The project area and its surroundings as shown on the circa 1809 1st Edition OS mapping. The turbine project area is slightly offset because of the differing projections used by the 19th century OS surveyors and modern mapping.



Fig 7. The project area as shown on the circa 1840 Mabe Tithe Map. The turbine is proposed for Three Corners, 1070 and Kestles Higher Downs, 1071 (area circled).

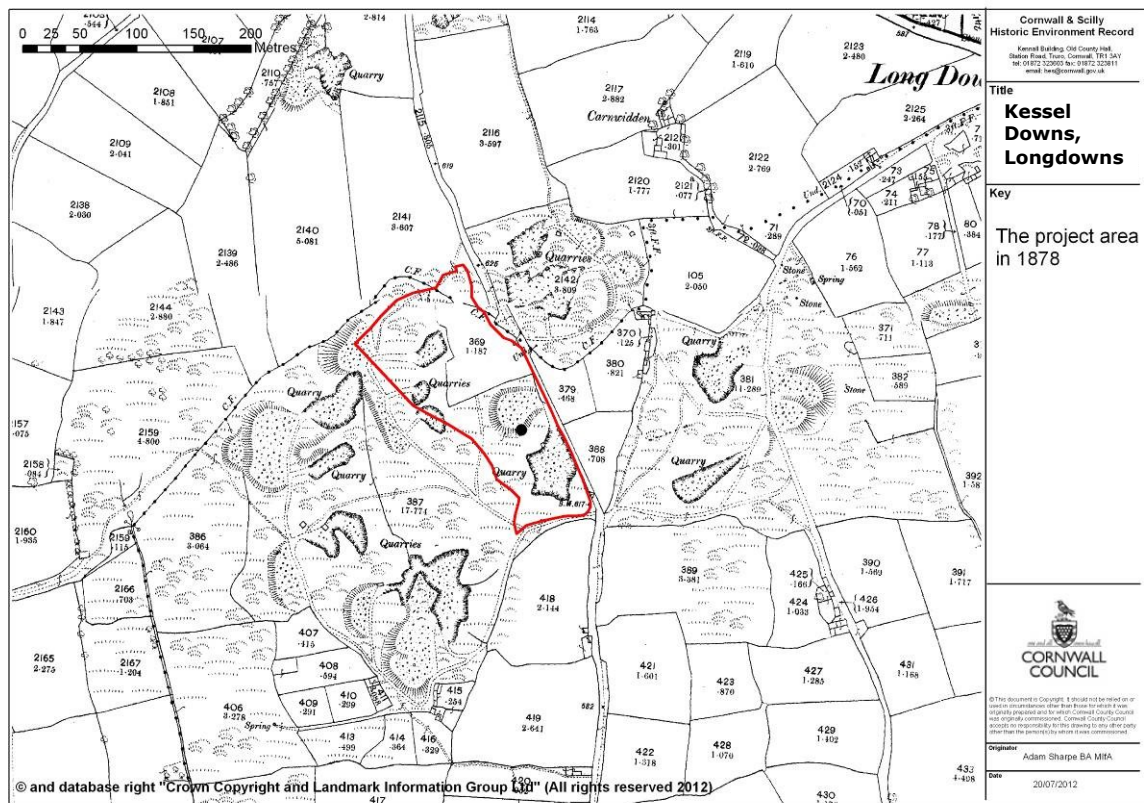


Fig 8. The project area as shown on the circa 1877 1st Edition OS 25" to the mile mapping.

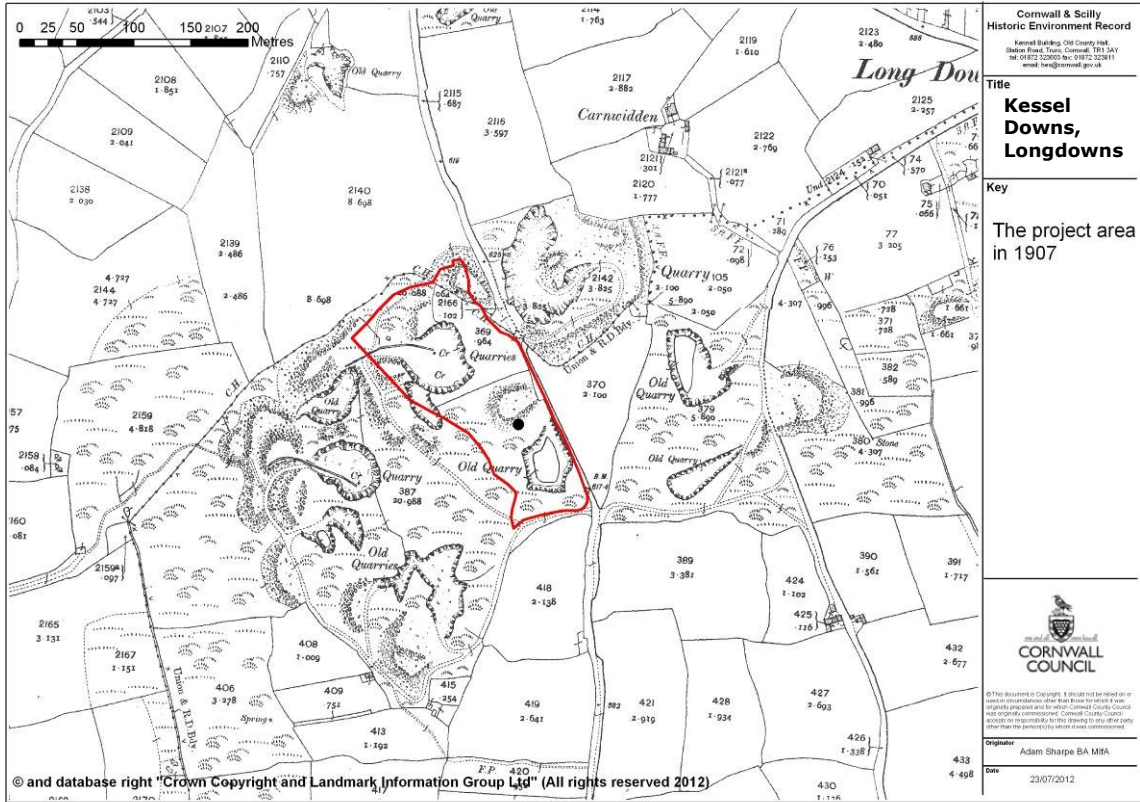


Fig 9. The project area as shown on the circa 1908 OS 25" to the mile mapping.



Fig 10. The project area as shown on a 2005 CCC aerial photograph, showing the expansion of the modern quarry on the site.

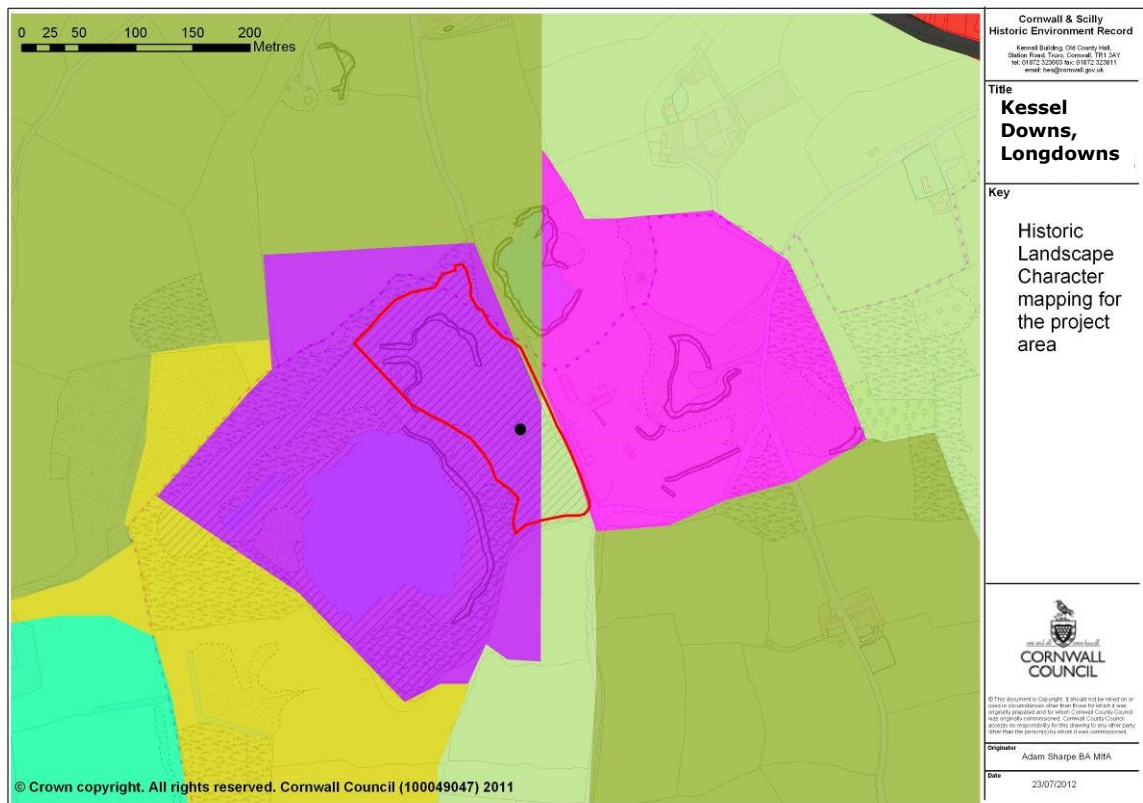


Fig 11. Historic Landscape Character mapping showing how this area of countryside is derived from industrial activity (purple and pink) set within a patchwork of upland rough ground (yellow), Medieval farmland (khaki) and post-medieval farmland (pale green and turquoise).

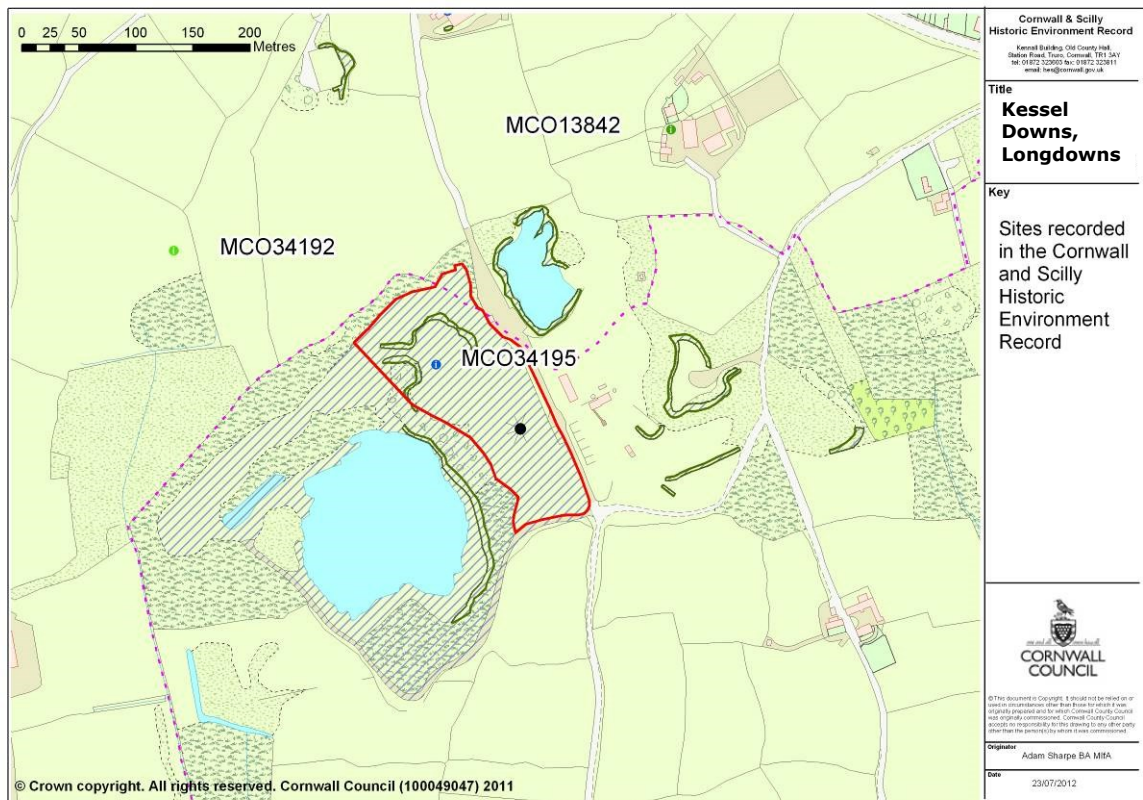


Fig 12. Sites recorded in the Cornwall and Scilly Historic Environment Record in the immediate vicinity of the proposed turbine site. MCO34192 – early medieval field boundary, MCO13842 – Carnwydden Medieval settlement, MCO34195 – Kessel Downs Quarry complex.

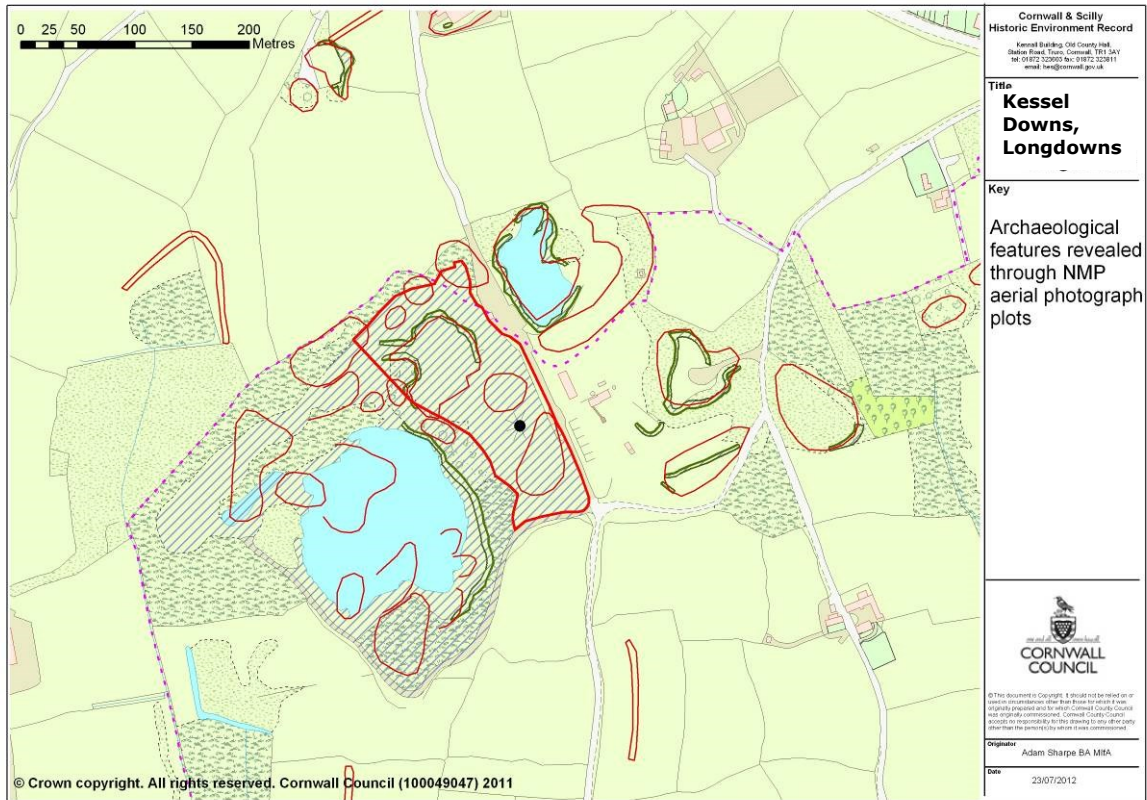


Fig 13. Archaeological sites recorded from aerial photographs by the National Mapping Programme consist largely of features related to former quarrying, though Medieval boundaries were recorded in the surrounding landscape.

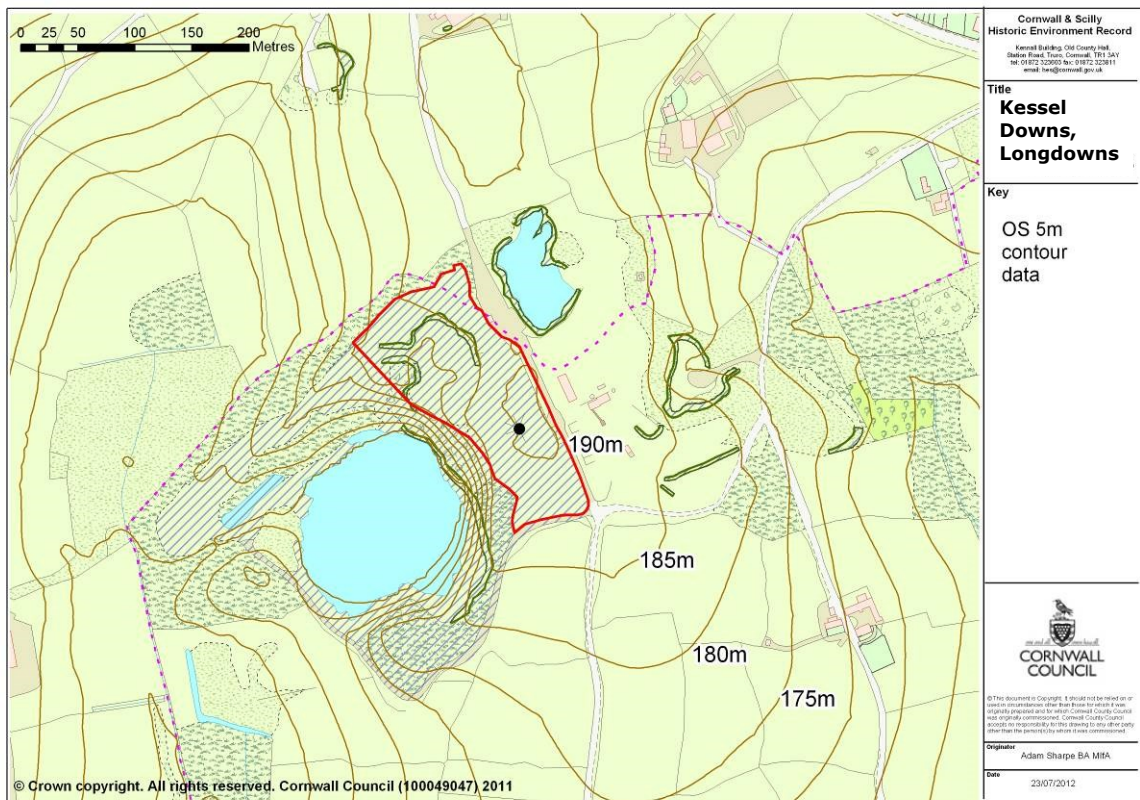


Fig 14. OS contour data for the area immediately surrounding the proposed wind turbine shows the site located near a hilltop on land falling to the west and south.

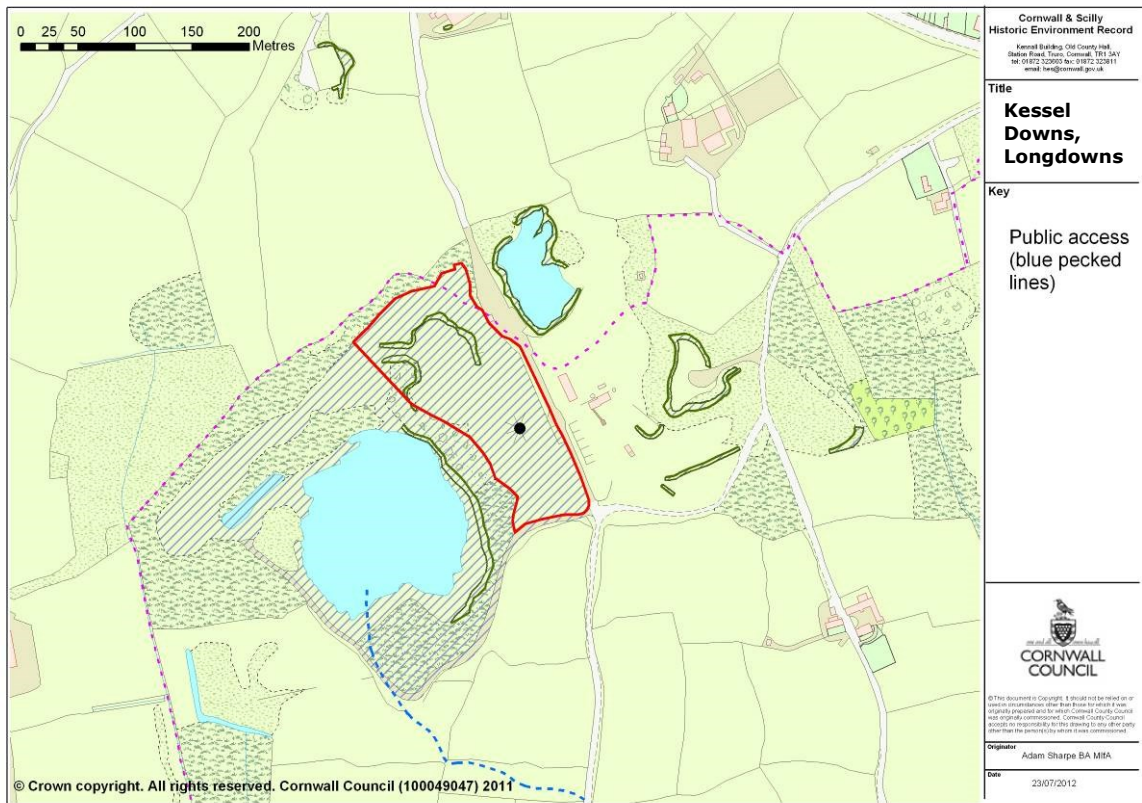


Fig 15. Public access routes in the vicinity of the proposed wind turbine (blue dash) consists of a footpath which apparently terminates in the flooded quarry. Pink dash – parish boundary.

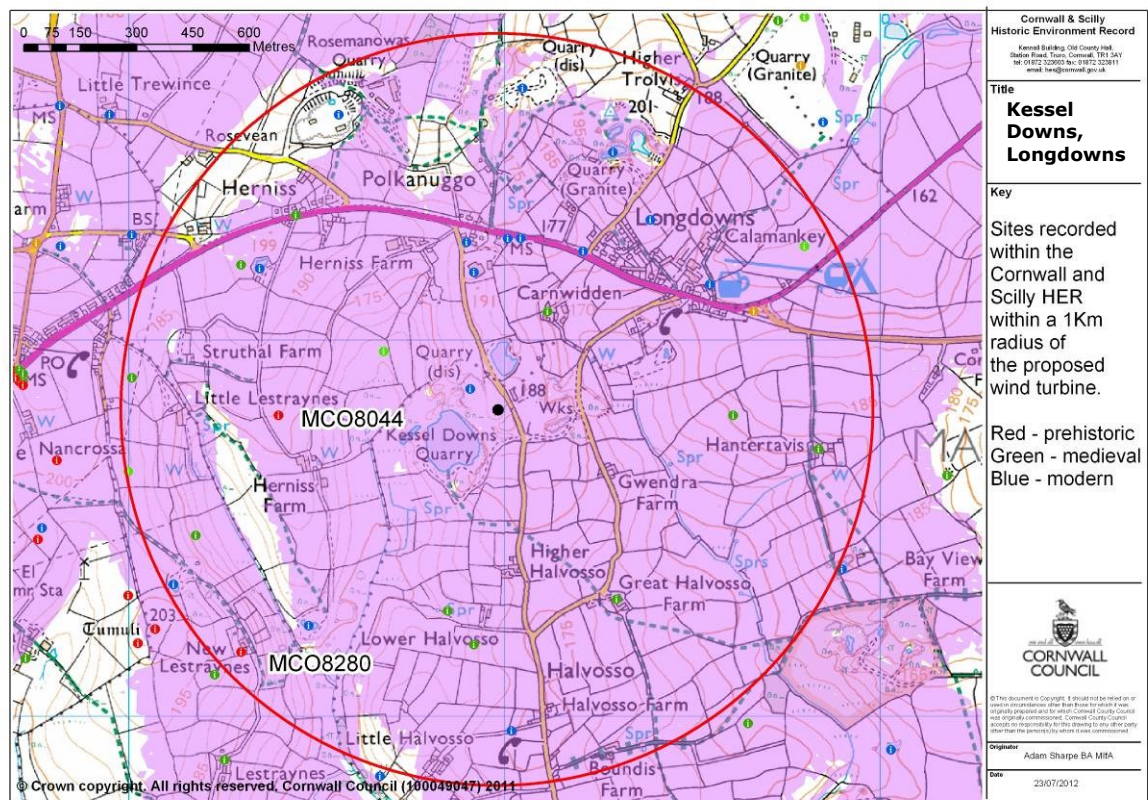


Fig 16. Mapping showing the ZTV within a 1km radius of the site proposed for the wind turbines, showing potentially intervisible sites recorded in the HER. MCO8044 – Herniss Round, MCO8280 – New Lestraynes Round.

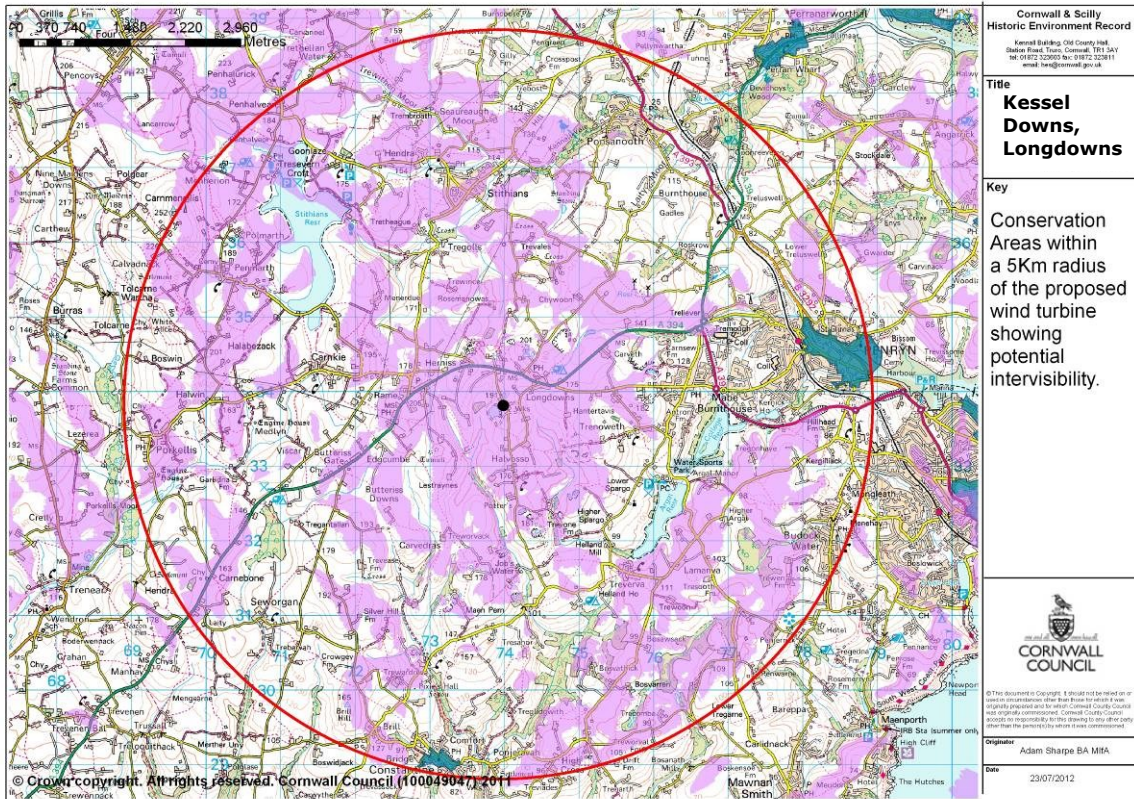


Fig 17. Mapping showing Conservation Areas (in blue) within the 5Km radius ZTV of the site proposed for the wind turbines showing potential intervisibility.

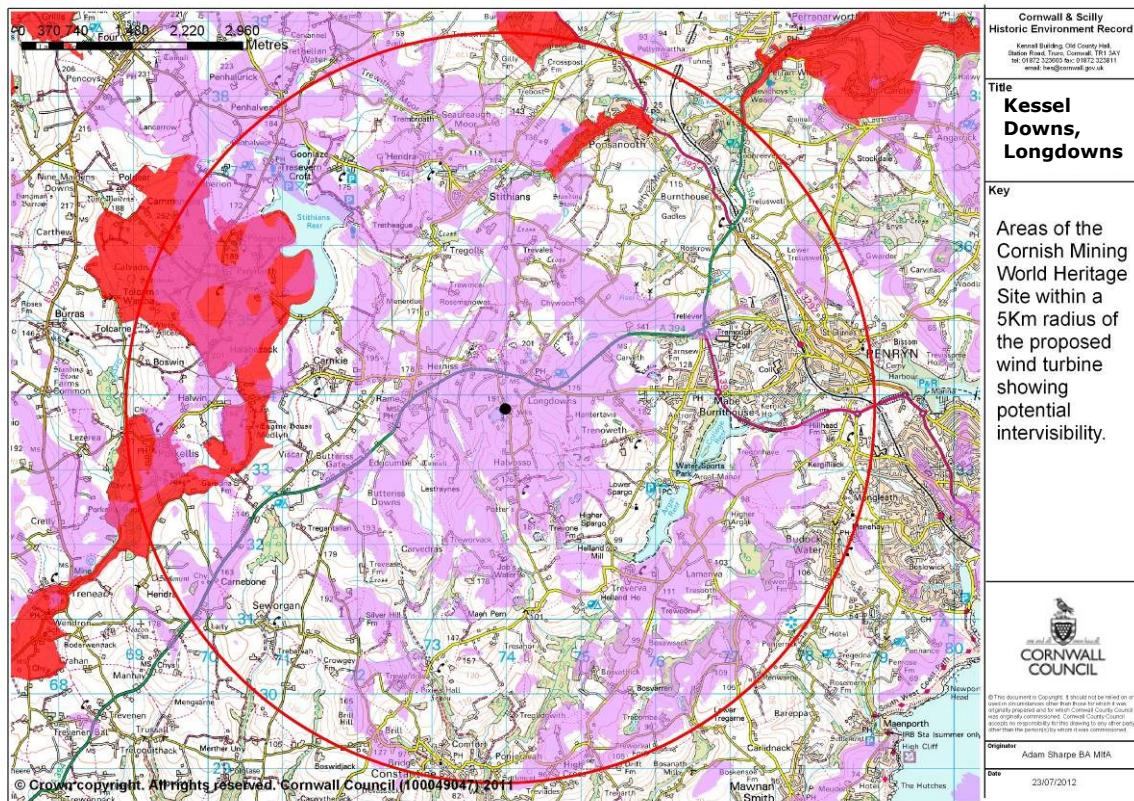


Fig 18. Mapping showing areas of the Cornish Mining World Heritage Site (in red) within the 5Km radius ZTV of the site proposed for the wind turbines showing potential intervisibility.

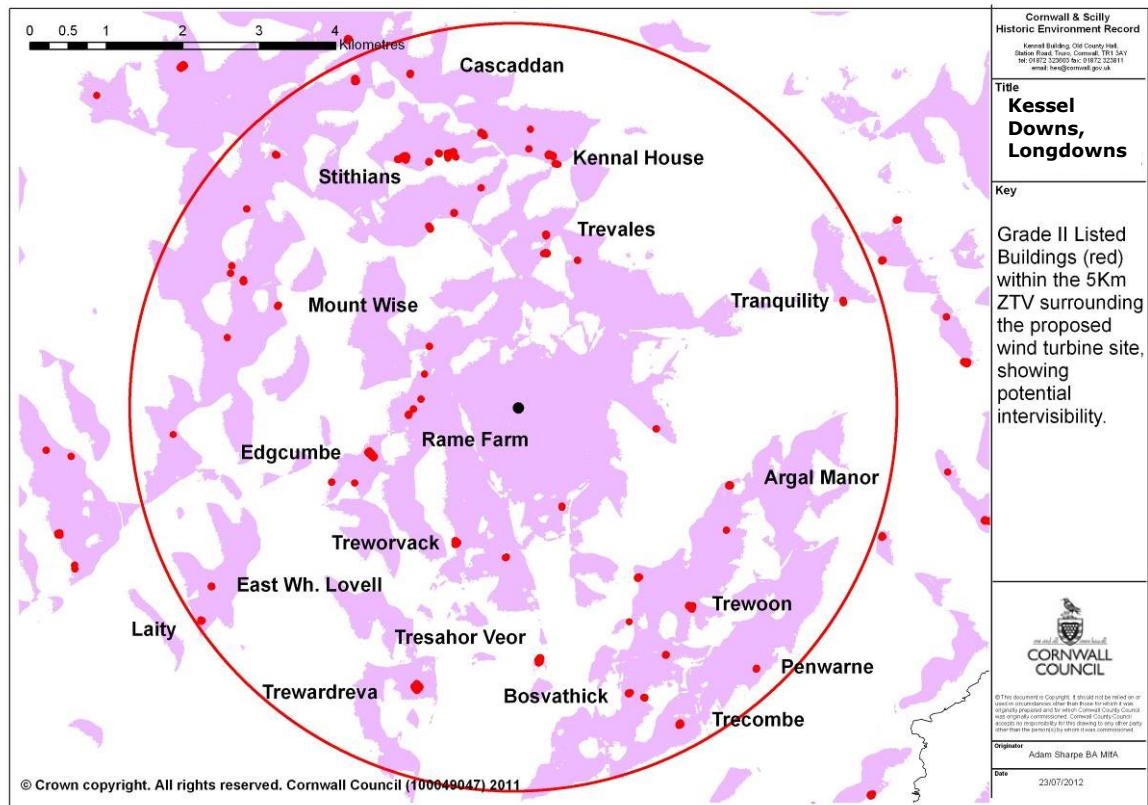


Fig 19. Mapping showing potentially intervisible Grade II Listed Buildings (in red) within the 5Km radius ZTV of the site proposed for the wind turbine.

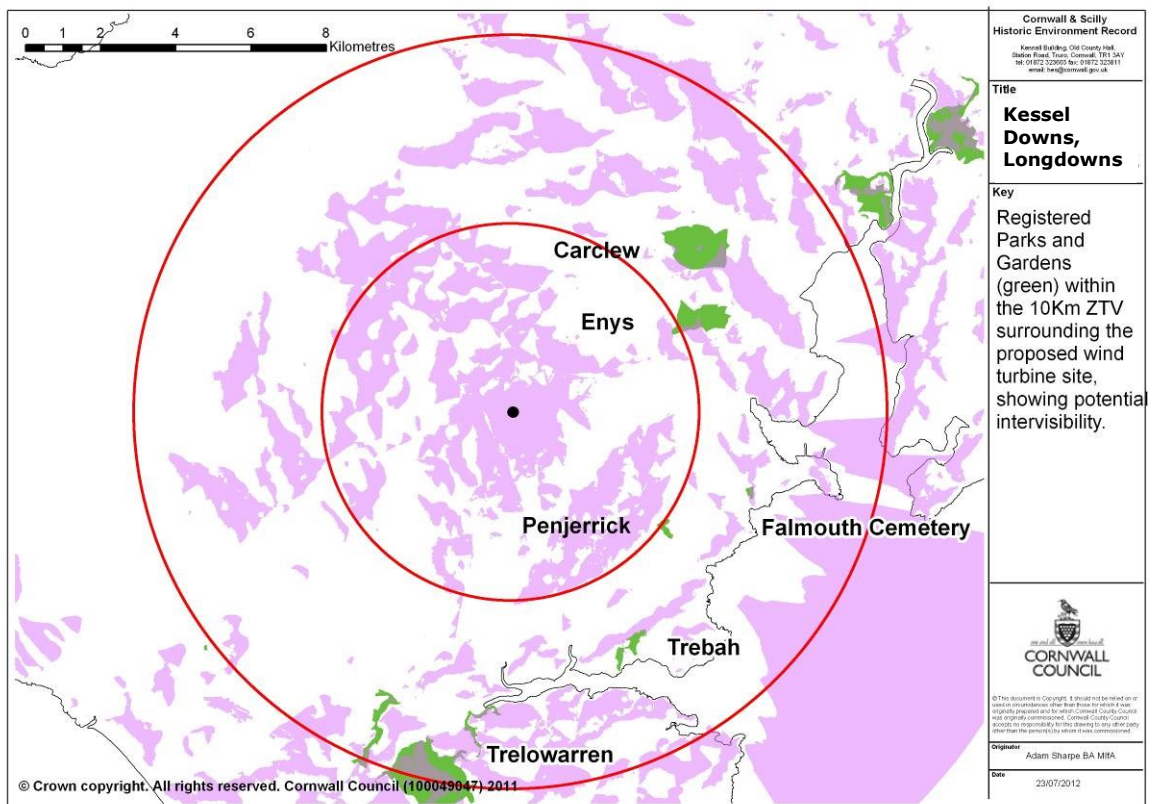


Fig 20. Mapping showing potentially intervisible Registered Parks and Gardens (green) within the 10Km ZTV of the site proposed for the wind turbine.

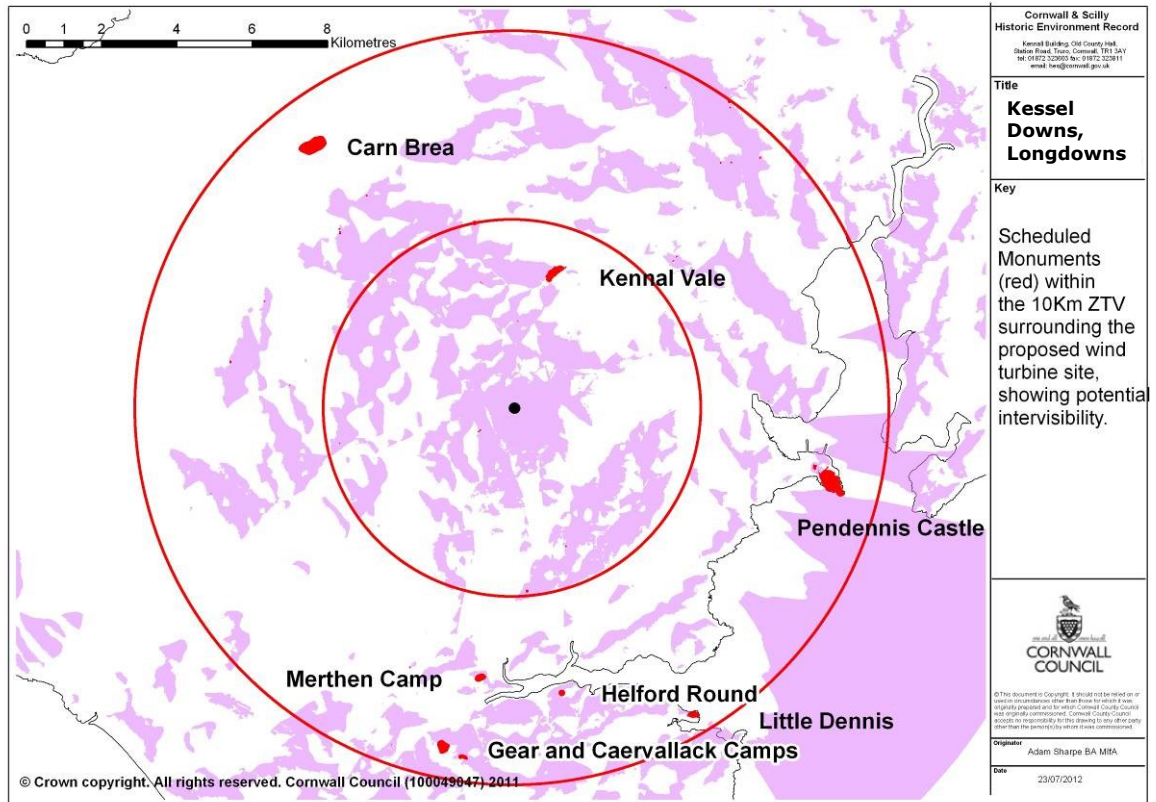


Fig 21. Mapping showing potentially intervisible Scheduled Monuments (red) within the 10Km ZTV of the site proposed for the wind turbine.

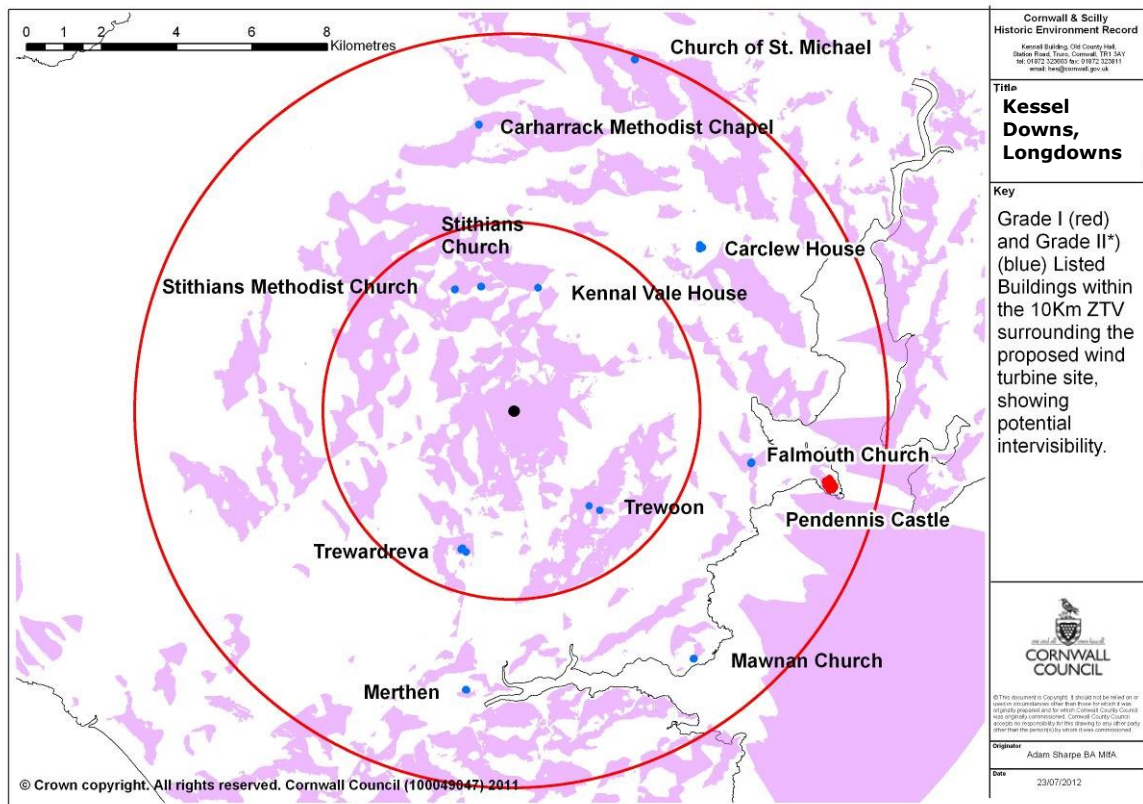


Fig 22. Mapping showing potentially intervisible Grade I and Grade II* Listed Buildings within the 10Km ZTV of the site proposed for the wind turbine.



Fig 23. The location proposed for the Kessel Downs Quarry wind turbine equates with these disused concrete block constructed storage bays. The prominent concrete batching plant is sited just to the east of the road.



Fig 24. Looking north across the flooded disused quarry at Kessel Downs. The wind turbine would be sited just beyond the lip of the quarry near the centre of this view.



Fig 25. Looking south west from the proposed turbine site towards Nancrossa scheduled barrows (skyline centre 1Km away). A disused granite quarry is on the hillslope, whilst Herniss Farm tip is in the middle distance.



Fig 26. Looking east south east from Kessel Downs quarry towards Herniss Farm with the Rame transformer station on the skyline.



Fig 27. Looking north north east from Kessel Downs Quarry across the edge of the concrete batching plant towards the prominent wind turbines near Mabe Burnthouse. The Hensbarrow moors are in the far distance.



Fig 28. The view due south from Kessel Downs Quarry, with Great Halvasso in the mid distance and the Goonhilly wind farm in the far distance (right).



Fig 29. Looking south east from Kessel Downs Quarry across Budock Water towards Mawnan Smith.



Fig 30. The view west north west from Kessel Downs quarry towards Carnmenellis and Calvadnack in Area 4 of the Cornish Mining World Heritage Site (skylining).



Fig 31. Looking west from the site towards Rame, with its chapel skylining at centre.



Fig 32. Looking east from the site with Little Dennis headland on the coast far right.



Fig 33. The view north west from Herniss towards Mabe Burnthouse with its prominent wind turbines.



Fig 34. The open nature of the views to the north west of Herniss, extending to Hensbarrow to the right.



Fig 35. Open views to the north of Herniss looking across Stithians (centre) with the Four Burrows wind farm skylining to the right.



Fig 36. Looking south east from Calvadnack towards Herniss. The proposed wind turbine would skyline near the centre of this view.



Fig 37. Looking north from Trelowarren Park towards Kessel Downs on the skyline.



Fig 38. Looking north towards Longdowns and the Mabe Burnthouse turbines from Bosvathick 5Km to the south.