



# **Newhall Manor Farm wind turbine, Delabole, Cornwall**

## **Archaeological Assessment**



**Historic Environment Projects**



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<b>Client</b>	<b>Mr Cian O’Hora</b>
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This study was commissioned by Mr Cian O'Hora and carried out by Historic Environment Projects, Cornwall Council.

Krysia Truscoe carried out the viewshed analysis.

The Project Manager was Andy Jones.

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

## **Freedom of Information Act**

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## **Cover illustration**

Aerial photograph (taken in 2005) showing the project area.

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## Abbreviations

EH	English Heritage
HBSMR	Historic Building, Sites and Monuments Record
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
NGR	National Grid Reference

## Summary

This report presents the results of an archaeological assessment for a single wind turbine, a temporary access track and a permanent access track and is located to the west of Camelford, south-south-west of Delabole.

The project was carried out by Historic Environment Projects, Cornwall Council, for Mr Allingham. This report is the result of a desk-top study and walk-over survey. It identifies and evaluates the archaeological resource in the study area, considers its landscape setting using viewshed analysis, provides initial guidance on potential impacts and recommends further archaeological mitigation work.

The historic character of the land within which the site is located has been classified as Anciently Enclosed. Seven sites have been identified which will be affected by the works; three pre-1840 boundaries, two post-1840 boundaries, part of the disused North Cornwall Railway line, and a water-logged strip of undisturbed land lying down slope and within 50m of the proposed turbine itself, which may contain vulnerable palaeoenvironmental information. Within the intervisible 1km radius of the site are thirty four HBSMR identified sites ranging from prehistoric through to WWII sites and six Listed Buildings, while approximately 1.5kms from the site are two intervisible Scheduled Monuments (a round and an enclosure). None of these sites will be physically affected, but the proposed turbine will be intervisible with most (largely because of its height). However, the area is already overlooked by a wind farm, and there is a single turbine less than 0.5km away.

Historic Landscape Character analysis indicates the potential for additional, as yet unidentified archaeological remains to exist within the immediate vicinity.

A series of recommendations have been made. These may include one or more of the following elements: a geophysical survey of the areas to be affected, a watching brief for all topsoil stripped areas, full excavation of any significant remains (unless works can be shifted), and archaeological recording and finds retrieval as required for cable trenches.





## **1 Introduction**

### **1.1 Project background**

The Projects team of Historic Environment, Cornwall Council (HE, CC), was commissioned by Mr Cian O' Hora, to carry out an archaeological assessment of a proposed wind turbine, access road and 'probable' sub-station location at Newhall Manor Farm, Delabole (development Ref PA12/02450). The site is located to the south-south-west of Delabole and west of Camelford (Fig 1) and is located near to a number of heritage assets.

The outline requirements for the archaeological assessment were set out in a Scoping Opinion document issued by Cornwall Council (dated 17/4/12). The proposed scheme will involve the erection of a single turbine with a total height of 73.5m. The non-permanent access road has a proposed length of c.350m, with an additional permanent secondary access track linking the non-permanent track to the main road of c.250m (Fig 2). In response to the scoping document HE Projects produced a project design. Phil Copleston (Historic Environment Planning Advice Officer, Cornwall Council) was consulted over the requirements for the assessment.

This assessment report considers the impact of the proposed development upon heritage assets.

### **1.2 Aims**

The aims of the assessment were:

- To identify and describe the archaeological resource within the development area.
- Draw together the historical and archaeological information about the site.
- Review and analyse historic map evidence for the site.
- Apply recent draft EH guidance on the assessment of the setting of Heritage Assets.
- Produce 'statements of significance' for all designated historic assets, that are identified as potentially impacted on by the current proposal.
- Identify the construction, use and 'end of life' impacts of the current proposal on the significance of the setting of the monument.
- To assess the impact of the proposal on the importance and integrity of the resource.
- To assess the impact of the proposal in the setting of significant assets beyond the proposal area.
- To identify ways of minimising the impact upon the archaeological resource.
- To make recommendations for further archaeological recording during the development and construction of the development

### **1.3 Methods**

The proposed archaeological assessment is focussed on those heritage assets (whether designated or not) which might be physically impacted upon by activities associated with the erection of the wind turbine. The assessment took into account and quantified impacts on the settings of heritage assets (both designated and undesignated) within the viewshed of the proposed turbine site (1km detailed, 3km buffer zone).

The assessment consisted of the following:

- Desk top study; walkover of the area; analyses of impact on heritage assets; production of an assessment report.

### **1.3.1 Desk top study**

This involved the inspection of the following sources, the plotting of archaeological and historic information onto base maps, and the initial preparation of gazetteers:

- Historic Buildings, Sites and Monuments Record (including secondary sources in HE library) were consulted.
- Historic Mapping was consulted. This included the 1809 First Edition OS map, the 1840 Tithe Map and the 1880 OS map.
- The Structure Plan and Local Plan was consulted for historic designations, for example World Heritage site, Conservation Areas, Areas of Great Historic Value, etc.

### **1.3.2 Walk-over survey**

Archaeological fieldwork comprised a walk-over survey of the site using a composite base map derived from the desk based study. An assessment of the impacts of the proposals was made from the site using the guidelines and methodological approaches set out in English Heritage's recent consultation draft guidance on the setting of heritage assets (following the approach outlined in Section 3 of the English Heritage draft guidance).

Preparation for the walk-over included:

- Preparation of base maps with known sites.
- Liaison to arrange access to the site.
- Risk assessment (carried out with project manager).

The walk-over survey achieved the following:

- Description of the site.
- Assessment of impact that the redevelopment of the site will have on adjacent designated heritage assets.

### **1.3.3 Assessment of impacts on setting of heritage assets**

Heritage assets intervisible with the site of the proposed turbine were identified through the creation of a viewshed using ArcGIS software. The methodology employs a Digital Surface Model (DSM), which takes account of surface features such as buildings, woodland, vegetation, roads etc, and provides a more accurate representation when compared to a 'bare earth' or DTM elevation model. A viewshed was generated for an 'observer point' based on the location of the proposed turbine (Fig 6).

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

This viewshed was checked on the ground, given that vegetation may block views to key sites, whilst significant heritage assets within the theoretical viewshed were checked 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 3Km was used to determine potential impacts on designated heritage assets and a 'buffer zone' or radius of 1Km for undesignated heritage assets (Figs 6 and 7).

## **2 Location and setting**

The project area is located approximately 4km to the west of Camelford, just over 1km to the southwest of Delabole and north of St Teath, at SX06325 82627 (Fig 1). The site lies within the ecclesiastical parish of St Teath, and is positioned within a rectangular field with a curvilinear eastern boundary (shown on the 1840 Tithe map, Fig 3) and the western boundary defined by part of the disused post-medieval North Cornwall Railway cutting, constructed in 1892/99 and closed 1966/67 (Figs 5 and 7), (HBSMR number MCO55658).

Topographically the proposed turbine will stand on ground between 170m and 175m above sea level, which drops gently down from west to east. The underlying bedrock consists of Upper Devonian Mudstone, Siltstone and Sandstone, and the overlying soil is of Denbigh 1 type 'loam over shale' (GIS Physical geography layers). Historically the ground has varied between arable as recorded on the Tithe map apportions, through to pastoral as shown on the aerial photograph on the front cover and when visited during this assessment. Surrounding the site is a largely medieval landscape, including curvilinear boundaries, interspersed often small-scale settlements and farming complexes, with post-medieval and more recent alterations (including the railway line, straightened of field boundaries, and the expansion of larger settlements in particular).

## **3 Designations, Planning Policy and Guidance**

### **3.1 Scheduled Monument**

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

Located between 1.5km and 2km to the east of the site, outside the immediate 1km 'buffer zone' are two Scheduled Monuments;

- Newberry Round (Scheduled Monument DCO1604, HBSMR number MCO8282).
- Castle Goff (Scheduled Monument DCO1605, HBSMR number MCO7830).

Both are partially extant bank and ditch defined enclosed settlement sites of Iron Age or Romano-British date (Fig 6).

### **3.2 Listed Buildings**

When a building is listed, it is recognized as being of special architectural or historical interest or both, and its details become part of a public record. Most significantly, the building is immediately protected by law. Listed buildings are graded to show their relative importance: Grade I, Grade II\*, and Grade II (which are of special interest, warranting every effort to preserve them).

Located within the 1km 'buffer zone' are the following Listed Buildings;

- Laurel Cottage (Grade II) at Westdowns (DCO10136).
- Vicarage farm House (Grade II) to the south of the turbine site (DCO8167).
- Well House and Garden Wall to east of Helland Barton (DCO8819).

- Newhall Manor Farmhouse (Grade II) to the southeast of the turbine site (DCO8099).
- Newhall Mill (Grade II) to the southeast of the turbine site (DCO10733).
- House (Grade II) adjoining to the south-west of Antoine Cottage (DCO10713).

All of these Listed Buildings are downslope of the turbine site, with the exception of Vicarage Farmhouse, (which stands at the same 170m above sea level height) and Laurel Cottage (which stands above the site at 190m above sea level). The location of each is marked on Fig 7.

## **4 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.

### **4.1 Planning Policy Statement 5 (PPS5), 'Planning for the Historic Environment'**

#### **4.1.1 Policy HE9.6**

*HE9.6 'There are many heritage assets with archaeological interest that are not currently designated as scheduled monuments, but which are demonstrably of equivalent significance....The absence of designation for such heritage assets does not indicate lower significance and they should be considered subject to the policies in HE9.1 to HE9.4 and HE10.'*

#### **4.1.2 Extracts from Policies HE9.1 to HE9.4 and HE10**

Policies HE9.1 to HE9.4 and HE10, referred to in Policy HE9, include the following;

- HE9.1 *'There should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting.'*
- HE9.2 *'Where the application will lead to substantial harm to or total loss of significance local planning authorities should refuse consent unless it can be demonstrated that: (i) the substantial harm to or loss of significance is necessary in order to deliver substantial public benefits that outweigh that harm or loss....'*
- HE10.1; *'When considering applications for development that affect the setting of a heritage asset, local planning authorities should treat favourably applications that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset. When considering applications that do not do this, local planning authorities should weigh any such harm against the wider benefits of the application....'*

### **4.2 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 guidance on PPS5 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.'*

### **4.3 Former Cornwall Structure Plan 2004**

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

#### **4.3.1 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.'*

#### **4.3.2 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.'*

#### **4.4 Former North Cornwall Local Plan**

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

The North Cornwall Local Plan contains policies designed to protect the archaeological resource, using the following elements of policy framework:

**POLICY ENV12:**

4. *Development proposals for the erection of a new building or other structure, or the use of land, will not be permitted where this would adversely affect the character or appearance of a listed building or its setting.*

**POLICY ENV14:**

1. *Development proposals affecting nationally important remains, whether scheduled or not, and their settings, will not be permitted unless:*

(a) *there will be no significant damage to, or adverse effect on, a site or its setting; and*

(b) *the development can be controlled through the use of conditions or planning obligations to ensure the remains are preserved in-situ.*

2. *Development proposals which adversely affect locally important archaeological sites or remains identified as a result of a prior archaeological investigation will only be permitted where:*

(a) *physical preservation in-situ is not feasible in conjunction with the proposed development and the importance of the development clearly outweighs the case for preservation of the remains; and*

(b) *satisfactory arrangements are made for the investigation and recording of the remains before or during development.*

3. *In areas of great historic value, historic settlements and all other locations where there is evidence to suggest that significant remains may exist on the site of a proposed development the extent and importance of which are unknown, applicants will be requested to carry out an archaeological evaluation of the proposal before the planning application is determined. The areas of great historic value and historic settlements are defined on the proposals map.*

**POLICY ENV15:**

*Development proposals will not be permitted where they would adversely affect the character, appearance or setting of areas of great historic value, historic parks and gardens and historic battlefields.*

*North Cornwall District Council Policy ENV15 3. states: In areas of Great Historic Value, Historic Settlements and all other locations where there is evidence to suggest that significant remains may exist on the site of a proposed development the extent and importance of which are unknown, applicants will be requested to carry out an archaeological evaluation of the proposal before the planning application is determined. The Areas of Great Historic Value and Historic Settlements are defined on the Proposals Map.*

#### **4.5 Wind Energy and the Historic Environment: English Heritage**

The full English Heritage report for Wind Energy and the Historic Environment can be found at [www.helm.org.uk](http://www.helm.org.uk).

The document refers to 'Direct Physical Impacts' and 'Indirect Impacts', which relate to 'Setting and Visual Amenity' (with particular reference to visual dominance, scale,

intervisibility, vistas and sight-lines, movement, sound or light effects and un-altered settings – page 7 and 8).

In terms of the wider landscape the document states that regard should be given to both the immediate landscape impact and those related to secondary development infrastructure – cable trenches, overhead wires, electrical cabinets etc. It also states that the visual impact of turbines is reversible (page 9).

At the back of this document is a 'Best practice Check List' (page 12), which directly refers to Wind Energy and the Historic Environment.

#### 4.6 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). The following extract explains the criteria used to assess the archaeological and historical importance of hedgerows:

For the purposes of Section 97 (hedgerows) of the Environment Act 1995 and these Regulations, a hedgerow is "important" if it, or the hedgerow of which it is a stretch:

- (a) has existed for 30 years or more; and
- (b) satisfies at least one of the criteria listed in Part II of Schedule 1.

Part II of Schedule 1 provides the following 'historic' criteria:

1. The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township; and for this purpose "historic" means existing before 1850.
2. The hedgerow incorporates an archaeological feature which is included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or recorded at the relevant date in a Sites and Monuments Record.
3. The hedgerow is situated wholly or partly within an archaeological site included or recorded as mentioned in paragraph 2 or on land adjacent to and associated with such a site; and is associated with any monument or feature on that site.
4. The hedgerow marks the boundary of a pre-1600 AD estate or manor recorded at the relevant date in a Sites and Monuments Record or in a document held at that date at a Record Office; or is visibly related to any building or other feature of such an estate or manor.
5. The hedgerow is recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Enclosure Acts; or is part of, or visibly related to, any building or other feature associated with such a system, and that system is substantially complete; or is of a pattern which is recorded in a document prepared before the relevant date by a local planning authority, within the meaning of the 1990 Act, for the purposes of development control within the authority's area, as a key landscape characteristic.

**NOTE:** Boundary features are the most abundant archaeological feature to be found in Cornwall. Whilst some may be of recent origin, many have older origins and are thus of considerable importance in telling the story of the development of agriculture in the rural landscape, their layout, inter-relationships and phasing allowing sequences of land clearance and enclosure for agriculture to be read. They are thus important not only visually (as landscape features), but also archaeologically.

- Hedgerows affected by the Hedgerow Regulations are boundary **Sites 1, 2 and 3.**

## **5 Landscape character and history**

In 1996 Cornwall's historic landscape character (HLC) was classified as a series of types, each the result of a different set of historical influences, and each highly distinctive (Cornwall County Council 1996). These different types are shown as layers on the GIS. The study area is located within 'Anciently Enclosed Land' of 'Medieval Farmland' Type.

Historic Landscape Characterisation is one of the major factors which inform decisions relating to archaeology made by planning advice archaeologists in Cornwall, and landscape characterisation would be expected to be taken in to account.

### **5.1 Medieval Farmland**

The proposed turbine falls within land which has been classified as 'Medieval Farmland' (Cornwall County council 1996).

This is Cornwall's agricultural heartland, with farming settlements documented before the 17th century AD and whose field patterns are morphologically distinct from the generally straight-sided fields of later enclosure. Most of the land was cleared and improved in later prehistory but was re-organised in the medieval period into extensive 'strip' field systems worked by small groups of farmers.

Field boundaries vary: most have medieval or earlier origins but present forms are the products of several hundreds of years of refurbishment and repair, stripping down and rebuilding. Most are broadly curvilinear earth and stone banks with quarry ditches along one or both sides and a stone-facing, particularly at vulnerable points like gateways. Most of the boundaries from this period were built to be stock-proof. Most are covered with dense and varied vegetation. Medieval farmland tends to be relatively sheltered, not too steep and not too poorly drained, but can extend onto the edges of high downs. Networks of winding lanes and roads, often deeply cut by the passage of people, animals and vehicles over centuries or thousands of years, run through it, connecting farming settlements.

Two or three thousand years of agriculture has taken its toll on earlier features. The main early survivors visible at the surface tend to be the relatively robust Bronze Age barrows and Iron Age/Romano-British rounds (farming hamlets enclosed by banks and ditches). However, buried archaeological features from prehistoric, medieval and post-medieval periods, including settlements, fields, ceremonial and ritual monuments and industrial remains can be expected virtually anywhere in this landscape Type.

Many archaeological sites, such as rounds survive as ploughed out or partially extant earthworks. There may have been as many unenclosed or 'open' prehistoric and Romano-British settlements as there were rounds, but open settlements, with houses more loosely scattered through fields tend to be less easy to detect. However, increasing numbers of earlier prehistoric houses, fields and ceremonial/ritual monuments are being discovered within Cornwall's Medieval Farmland as archaeological fieldwork in the form of geophysical survey, watching briefs, and trial excavations takes place. For example, at Scarcewater, in an area characterised as AEL, but with no previously known archaeological sites a wealth of sites of all dates were found (Jones and Taylor, 2010). The potential for below ground remains to survive in the area of the proposed turbine and access road does as a result exist.



## 6 Assessment results

### 6.1 Assessment sites (Figs 2, 6 and 7)

The desk top assessment has not identified any designated or non-designated sites of major archaeological significance within the immediate area of the proposed works. However, three pre-1840 earth and stone boundaries (Sites 1, 2 and 3) will be directly impacted upon by construction of the temporary access track, while the disused North Cornwall Railway line (Site 5, Fig 13) will be breached by the proposed permanent access track at a point where it has already been significantly altered/infilled. The nineteenth century boundary (Site 6) will be breached by the proposed permanent access track. In addition, it is assumed that Site 4, a boundary shown on the 1880 OS map will be breached to gain access to a steep, totally overgrown track just visible from the lane.

Site 7 is a low-lying waterlogged strip of ground measuring 10-15m wide running along the northern lower side of the turbine field. A stream runs through this reedy, overgrown area, which is fed by a spring which runs from the edge of the railway embankment (Fig 12). It has the potential to contain palaeoenvironmental deposits, and is potentially vulnerable, although it will not be directly impacted upon by the proposed development.

In the wider vicinity, viewshed analysis has identified a significant number of sites, designated and non-designated, within a 1km radius of the site. These will not be physically impacted upon, although the 73.5m high propellers of the proposed turbine will be visible from almost all sites. However, the whole viewshed area is already overlooked by a wind farm to the north-east of Delabole (just visible in Fig 9) on the horizon, and by a further single turbine (clearly visible on Fig 9). Beyond the 1km buffer zone are two Scheduled Monuments (shown on Fig 6) to the east of the turbine. The turbine will be visible from these sites. It will also be visible from many of the other designated and undesignated sites which fall between 1 and 3km from the site.

### 6.2 Inventory of sites

The following definitions are used in the Cornwall and Isles of Scilly Historic Environment (HE) to determine the grade/value of sites and features within the historic environment:

- SM Scheduled Monuments
- LB Listed Buildings
- A Site of National / potential National significance
- B Site of Regional Importance
- C Site of Local Importance
- D Modern/removed feature

Each site in the gazetteer has been assigned one of these grades. NGRs reflect centred points, except for Sites 1 to 6 which have grid references for the points at which they will be physically affected by the proposed works.

In the table below the sites directly affected by the proposed works only have been given site numbers (their locations are shown on Fig 2).

All other non-numbered sites including non-designated, Listed Building and Scheduled Monument sites fall within the 1km buffer zone and will not be physically affected (and are shown as MCO and DCO numbers on Fig 7).

Two Scheduled Monuments, located within the 1km to 3km radius of the site are shown on Fig 7 (along with all other HBSMR identified sites).

Site no.	NGR (SX)	HBSMR /MCO ref	LB/SM ref & HBSMR grade	Site type	Description
1	06353 82560	-	C - shown on all maps since 1840	Extant boundary	Not recently maintained. Main eastern boundary around turbine field. It is assumed that the temporary access track would make use of the recent-looking gateway breach at its northern end. Figure 9 shows the boundary in the foreground and Figure 10 looks east across the top of the current gate. The main body of the boundary drops south and was recorded as being of earth and stone construction, c.1m high and 2.5m wide, topped by gorse and hawthorn. Severely burrowed.
2	06359 82547	-	C - shown on all maps since 1840	Extant boundary	Not recently maintained. Main southern boundary around turbine field. Figure 11 shows a 2.5m wide gateway defined by slate slabs located c.10m to the north of the proposed temporary access trackway breach. The main body of the boundary is of earth and stone construction, 0.5-1.5m high and 2-3m wide, severely burrowed, and shows repair work. It has partially collapsed and is topped by a range of vegetation including gorse and hawthorn.
3	06312 82435	-	C - shown on all maps since 1840	Extant boundary	Not recently maintained. North-east to south-west running boundary that will be breached at its eastern end by the proposed temporary access track. This earth and stone boundary, 0.3-1.2m max. high, 2.5m wide is heavily burrowed. A long central portion has collapsed and provides machine access between fields. Covered by a range of vegetation including gorse and hawthorn.
4	06236 82314	-	C - shown on all maps since 1880?	Extant boundary	Not recently maintained. This whole area is very densely overgrown and steeply drops down towards the road. The boundary is shown on the 1880 OS mapping, but was altered during the construction of the railway and bridge at this point. A steep track entrance can be seen from the road, running up towards the junction between the temporary and the permanent tracks, affording access to the temporary track from the lane. This boundary was not visible during the field assessment due to the density of the vegetation.
5	06164 82353	MCO55658	C/B - shown on all maps since 1907	North Cornwall Railway line	The line of the disused North Cornwall Railway, which runs through the study area, marks the western side of the proposed turbine field and will be cut through by the permanent access track. It runs from SX 06303 82702 in the north to SX 06143 82327 in the south. The line at its northern end, closest to the turbine is within a huge slate-based c.4-5m high embankment (Fig 12). This lessens to the south. At the point where it will be breach by the access track it has already been significantly altered, via infilling

					and apparent levelling close to the lane (Fig 13).
<b>6</b>	06111 82363	-	D/C - shown on all maps since 1880	Extant boundary	Not maintained. This boundary is very patchy and fragmentary, covered with short grazed grass and almost no bushy growth. It has been heavily burrowed and partially flattened, possibly by a combination of livestock and wheeled vehicles. It has a maximum height of c.0.5m and a width of some 1.5m. The access track will run through an area where there is a gateway breach.
<b>7</b>	06329 82693	-	C - shown on all maps since 1840	Potentially vulnerable site of palaeoenvir- onmental potential	This 10-15m wide zone runs along the northern, lower edge of the field. It consists of a c.2m high earth and stone faced boundary, with a stream running along its southern edge, which is fed by a spring which issues from beneath the lower edge of the railway embankment. It is marked by a partially supportative slate slab (Fig 12), close to its junction with the boundary. To the south of the stream is a 10-15m wide, low-lying, waterlogged area which is partially overgrown with fallen scrubby growth, brambles and reeds.
<b>HBSMR identified un-designated sites located within the 1km buffer zone.</b>					
-	05543 82611	MCO38355	C	Extractive pit	Medieval (early medieval?), visible as a crop mark.
-	05613 82653	MCO38354	C	Trackway	Medieval/post-medieval trackway, visible as a crop mark.
-	05953 82851	MCO9437	C	Blacksmith	Documented post-medieval blacksmiths shop.
-	06018 82861	MCO38374	C	Military camp	Modern, extant cluster of structures, visible from aerial photographs.
-	06147 82778	MCO38353	C	Boundary	Crop mark boundary of probable medieval/post-medieval date.
-	06431 83073	MCO53642	C	Delamere Bridge	Post-medieval accommodation bridge carrying the former North Cornwall Railway.
-	06435 83049	MCO14248	C/B	Medieval settlement	Documented medieval settlement of Delamere, first recorded in 1284 as 'Delioner'.
-	06475 83035	MCO38309	C	Medieval boundaries	Medieval linear boundaries/ banks, probably marking properties in Delamere.
-	06492 83131	MCO38357	C	Medieval trackway / field system	Medieval trackway and field system associated with Delamere.
-	06521 82935	MCO38356	C	Medieval trackway / field system	Medieval track way or boundaries visible as low earthworks on aerial photographs.
-	06771 83276	MCO7914	C (B if a round)	Delamere Round	The name 'Round Field' on the Tithe map suggests an Iron Age/Romano-British round site.
-	06845 83205	MCO38358	C	Quarry pit	Probable quarry and spoil heap crop mark, medieval or later date.
-	07027 82867	MCO14796	C/B	Medieval settlement	Medieval settlement of Helland, first recorded in 1345 as 'Haylond'
-	07061	MCO38373	C	Pillow	Small oval mound visible as a low earthwork at

	82708			mound	Helland Barton
-	07027 82611	MCO38310	C	Medieval trackway / field system	Field boundaries and possible trackway to south of Helland Barton, visible as partially extant low earthworks.
-	06836 82557	MCO38350	C	Extractive pits	Three crop mark pits or hollows at Newhall Manor, medieval or later date, visible as low earthworks.
-	06643 82688	MCO38380	C/B	Ditch or enclosure	Sharply angled, linear ditch measuring 20m across is visible as a crop mark, of potential Late prehistoric or later date.
-	06640 82622	MCO38351	C	Ditch or path	Narrow linear, crop mark ditch or path of medieval or later date.
-	06627 82679	MCO38352	C	Curvilinear ditch	Curvilinear ditch identified as a crop-mark enclosure of potential prehistoric date. Measures 49m across.
-	06774 82534	MCO38344	C	Boundary	Crop mark and low earthwork boundary, medieval or later date.
-	06580 82284	MCO38343	C	Trackway and field boundary	Trackway and boundary visible as a crop mark and low earthwork of medieval or later date.
-	06959 82301	MCO15887	C/B	Medieval settlement	Medieval settlement of Newhall, first recorded in 1305 as 'Niwalle'.
-	06964 82267	MCO10874	B	House	Early 17 <sup>th</sup> century post-medieval house.
-	07010 82278	MCO29545	C/B	Newhall corn mill & water wheel	Extant post-medieval corn mill and water wheel, first recorded on c.1880 1 <sup>st</sup> Edition OS map.
-	07195 82307	MCO38345	C	Field boundary	Boundary visible as earthwork located at Newhall Green.
-	06933 81909	MCO38339	C	Field boundary	Field boundary at Lanagan, visible as low earthwork.
-	06745 81752	MCO15228	C/B	Medieval settlement	Lanagan medieval settlement, first recorded as 'Lynagan' in the mid 13 <sup>th</sup> century.
-	06396 81664	MCO38341	C	Trackway	Plough-levelled ditches marking a probable track way of medieval or later date at Lanagan.
-	06268 81880	MCO38342	C	Track or path	Trackway of possible medieval or later date visible as low earthwork and crop marks.
-	06037 81695	MCO38340	C	Boundary	Medieval or later crop mark boundary.
-	06012 81809	MCO53635	C	St Teath Road bridge	Post-medieval bridge spanning former line of the North Cornwall Railway.
-	05915 81985	MCO38348	C	Prisoner of War camp	Woodside Farm modern/WW2 Prisoner of War camp
-	06108 82258	MCO53639	C	Vicarage Farm Bridge	Accommodation bridge carrying farm track over line of the former North Cornwall Railway bridge.

-	06142 82324	MCO53640	C	Newell Lane Bridge	Bridge carrying former North Cornwall Railway over the public lane to Newhall.
<b>Listed Buildings located within the 1km buffer zone.</b>					
-	05871 82746	DCO10136	Grade II A	Laurel Cottage	Located upslope and to the west of the site at Westdowns.
-	06140 82250	DCO8167	Grade II A	Vicarage Farm house	Located to south of the secondary permanent access track
-	07069 82868	DCO8819	Grade II A	Well House & Garden Wall	Located slightly down slope to the north-east of the site at Helland.
-	06959 82269	DCO8099	Grade II A	Newhall Manor Farm house	Located down slope to the south-east of the site
-	07012 82272	DCO10733	Grade II A	Newhall Mill	Located down slope to the south-east of the site
-	07057 82181	DCO10713	Grade II A	House	Located down slope to the south-east of the site
<b>Scheduled Monuments located between 1km and 3km from the turbine site.</b>					
-	07259 82833	MCO8282	DCO1604 Scheduled Monument A	Newberry Round	An extant, multivallate Iron Age/Romano-British enclosure located to the east of the proposed turbine site, within the 3km surrounding circuit, to the north of Castle Goff.
-	08312 82611	MCO7830	DCO1605 Scheduled Monument A	Castle Goff	A single, sub-circular ditch and bank enclosure of Iron Age/Romano-British date. It is located to the east of the proposed turbine site and to the south of Newberry Round.

## 7 Likely impacts of the proposed development

### 7.1 Types and scale of impact

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

#### 7.1.1 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**.

#### 7.1.2 Types of impact, operational phase

A 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 propellers above ground level (73.5 metres). Such factors also make it likely that the

development would have an impact on Historic Landscape Character. These impacts would be **temporary** and **reversible**.

### 7.1.3 Scale and duration of impact

The impacts of a 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.

### 7.1.4 Potential and residual impacts

Potential adverse impacts may be capable of mitigation through archaeological recording or other interventions. A proposed mitigation strategy is outlined below.

## 7.2 Assessment of impact

### 7.2.1 Construction Phase - Physical impacts within the development area

Ground disturbance associated with the installation of supports 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 topsoil levels, might affect buried cut features.

Scales of impact will vary with the degree of significance of individual site, and with the proportion of the whole site which would be affected. Notably, buried features could be disturbed, truncated or removed. In the absence of detailed information regarding the survival of sub-surface archaeology within the development area the impact is considered to be **negative/unknown**, with a residual impact of **negative/minor** provided that appropriate mitigating work is carried out. These impacts would be **permanent** and **irreversible**.

- The only site recorded in the immediate vicinity of the proposed wind turbine and its associated works is Site 5, the railway line, which will be sliced through by the proposed permanent access track. This is viewed as a **negative/ minor** (given the tiny proportion of the full length affected). To the immediate north of the breach it has already been removed altogether.
- Boundary Site 6 would be affected by the permanent access track, but this is post-medieval and the track is likely to pass through existent breach anyway. A **Neutral** impact.
- The temporary access road will cut through boundary Sites 1, 2, 3 and possibly 4. In the case of Site 1 the existent gateway is likely to be used. With reinstatement after removal of the access track this would have **negative/minor** impact –

particularly given that much of the length of the temporary access way would be on the upslope, less visible side of an unaffected boundary.

### **7.2.2 Operational Phase - Visual impacts on the setting of surrounding heritage assets**

Once the development has been completed, no further physical impact should be involved during the sites operation. However, the turbine has 50m high mast with a 73.5m maximum blade height and there will be an ongoing visual impact on the landscape and its historic landscape character.

- Scheduled Monuments. There are two scheduled monuments (Newberry Round and Castle Goff) within the 3Km radius of the proposed wind turbine. When constructed, these monuments were intended to be prominent features within the local landscape. The construction of a 73.5m high wind turbine mast at this location will introduce a visible feature into this former landscape, and will affect views from these sites towards the west. However, a second turbine located some 500m to the north-east of this proposed turbine site would also be visible. The impact on these sites during the construction of the turbine (and associated elements) has been calculated as **negative/minor** on the basis of distance and **temporary/reversible**.
- Listed Buildings. There are six Listed Buildings located within the 1km buffer zone. During the operational phase the wind turbine is not likely to impact significantly on their setting, given the relatively large distances and occasional trees between the wind turbine and these designated structures. Listed Buildings at Newhall and Helland Barton will largely be able to see the full turbine, while at Westdowns and Vicarage Farm the top at least of the turbine will be clearly visible. The impact on these sites during the operational phase of the turbine (and associated elements) has been calculated as **negative/minor** on the basis of distance and **temporary/reversible**.

The impact on Listed Buildings beyond the 1km radius of the site has been calculated as **neutral** on the basis of; 1) the distance, and 2) the presence of both a single turbine and a wind farm in the local 3-4km surroundings.

- Un-designated heritage assets. During its operational phase the proposed wind turbine is felt likely to have some degree of impact on the settings of undesignated heritage assets within the 1Km viewshed. Sites include extant and below ground sites, and include a possible round NMCO7914 (based on field name evidence), possible prehistoric enclosure earthworks MCO38352 and MCO38380, medieval and later field system elements (including extant and crop mark tracks and boundaries), medieval settlements and a pillow mound, medieval/post-medieval extractive features, a post-medieval blacksmiths, bridges associated with the former rail line, and a WWII military camp and prisoner of war camp.

Whilst the construction of the wind turbine would introduce a highly visible, modern feature within the landscape occupied by these and other sites, it is not considered that it would be close enough to them have a substantial negative impact on their settings. The potential impacts on these particular sites are therefore assessed as **negative/moderate** for those within an approximate 500m radius and **negative/minor** for those positioned between 500m and 1km from the site. The potential impacts on those at a greater distance than 1km from the site have been assessed as **neutral**.

### **7.2.3 Impacts on Historic Landscape Character**

The expected effect on HLC has been assessed as **negative/moderate** to **negative/minor**. Factors contributing to this assessment are as follows;

- The small-scale, in terms of plan, of the proposed development. However, this is not a small turbine and it will be visually dominant modern feature within the immediate surrounding landscape.
- The neighbouring landscape includes an extensive and visually dominant wind farm to the north-east. The effects of cumulative impact are real, and should be taken into consideration, but this landscape does already contain a near-by, visually intrusive single turbine.
- Any impacts on the legibility of HLC would be **temporary** and **reversible** should the wind turbine be dismantled in the future.

#### **7.2.4 Other archaeological impacts**

Any ground disturbing works on this site could encounter buried prehistoric or medieval remains, resulting in permanent, irreversible loss of these, or elements of them. This potential impact is assessed as **negative/unknown** as specific evidence for the nature and extent of any such remains is not known. The presence of the stream and springs, the easterly facing, naturally terraced slope of the field and the relative proximity of rounds and enclosures within the 3km radius of the site, combine to suggest a potentially attractive site for past human activity. The apparent lack of evidence should not be taken as inferring evidence for absence.

#### **7.2.5 End of use phase**

When the proposed turbine is decommissioned, the entire visual element of its impact during use will be reversed. English Heritage point out in their 'Wind Energy and the Historic Environment' guidance paper (page 9), that provision should be made for the long term protection of the landscape by requiring 'remediation and restoration' of the site, that is the removal of standing remains, including the turbine itself and the electrical cabinet.

The physical impact on known and potential archaeological remains is not reversible. It is as a result important that these sites and remains are adequately mitigated for – see below.

## **8 Recommendations**

In light of the findings of the assessment, the following recommendations have been put forward. However, any future programme of archaeological recording would need to be approved by the Local Planning Authority. The scope of any subsequent archaeological recording should be developed under the guidance of, or to a brief set by, the Cornwall Council Historic Environment Planning Advice Officer. This programme of recording is likely to include one or more of the following elements:

### **8.1 Geophysical survey**

A geophysical survey may need to be carried out across the proposed turbine field and along the access routes dependent upon where ground will be disturbed. The size of any area to undergo geophysical survey would be determined by Historic Environment Planning Advice Officer, Cornwall Council. Geophysical survey would help target any further stages of archaeological recording.

### **8.2 Watching brief**

It is recommended that an archaeological watching brief should be undertaken during the excavation of the main turbine footprint, the temporary (if soil is to be disturbed) and the permanent access tracks to the site, since any archaeological features, finds, deposits encountered beneath the ground will be permanently impacted upon. These areas should be stripped of topsoil, using a toothless grading bucket. The depth of topsoil should be decided by the attendant archaeologist, in order to avoid damage to



any sub-surface remains. Adequate provision should be made for the archaeologist to collect any disturbed finds, photograph and/or draw, record and measure any contexts revealed. Any small scale remains, for example a discrete, truncated pit or ditch, should be dealt with as a part of the watching brief. For more complex, larger or well preserved early remains larger-scale excavation may be required.

### **8.3 Excavation**

It is recommended that in the event of significant archaeological features being identified during the topsoil strip, full excavation of the remains should be undertaken, unless the option to re-locate site works is undertaken. Hand excavation would entail sampling of material suitable for scientific dating, finds retrieval, recording all contexts, the production of measured drawings and detailed photography. The results would then require analysis and publication.

It should be noted that there are no suspected significant remains within the area of works, but this should not be taken as proof of absence.

### **8.4 Archaeological recording and/or finds retrieval**

It is recommended that any associated electrical cable trenches should be walked after excavation, allowing the archaeologist to search for and selectively retain/record the presence of significant finds. It is unlikely that the trench will be wide enough to allow for the identification of any features crossed, but a rapid inspection should take place in conjunction with the finds retrieval in case additional information can be gleaned.

### **8.5 Recording of field boundaries**

A very small number of field boundaries will be breached. Although this is unlikely to involve any good opportunities for recording, where damage does occur to the built structure of the boundary, provision should be made for its reinstatement.

## **9 References**

### **9.1 Primary sources**

Ordnance Survey, c1809. *1 inch to 1 mile map* First Edition (licensed digital copy at HE)

Tithe Map and Apportionment, c1840. *Parish of St Teath*

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*

### **9.2 Publications**

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

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

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

Jones, A. and Taylor, SR., 2010. *Scarcewater, Pannance, Cornwall, Archaeological Excavation of a Bronze Age and Roman Landscape*, BAR British Series 516

### **9.3 Websites**

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

## 10 Project archive

The HE project number is **HEXQPR146148**

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. Electronic drawings stored in the directory :

L:\Historic Environment (Data)\HE\_Information\Viewsheds\Delabole\_Newhall Farm

3. Digital photographs stored in the directory

R:\Historic Environment (Images)\SITES.A-D\Delabole-Newhall Manor farm wind turbine

4. English Heritage/ADS OASIS online reference: cornwall2-125839

5. Report text held in digital form as:

G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites D\Delabole wind turbine assessment

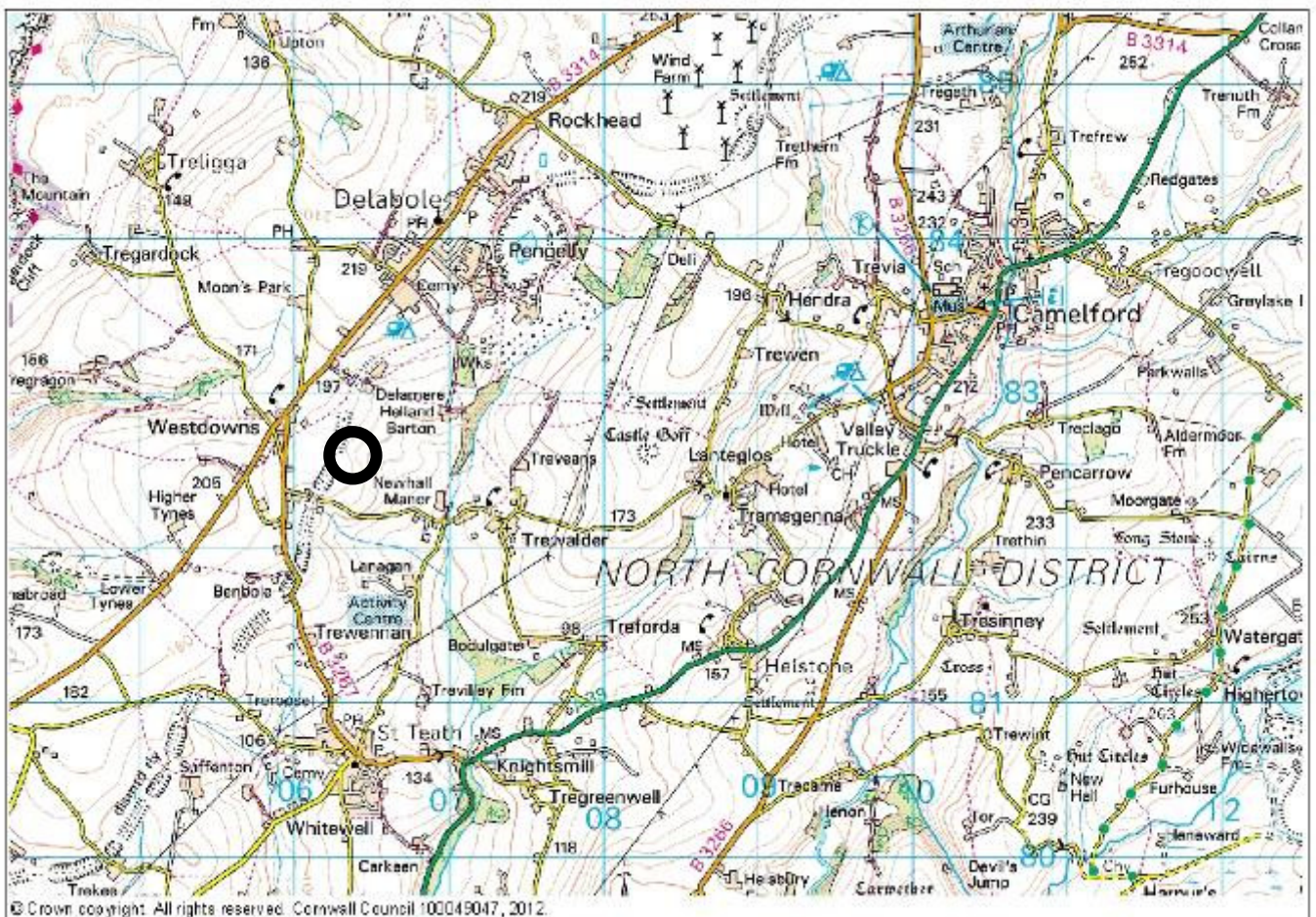


Fig 1 Map showing location of the project area and the position of the proposed wind turbine site.





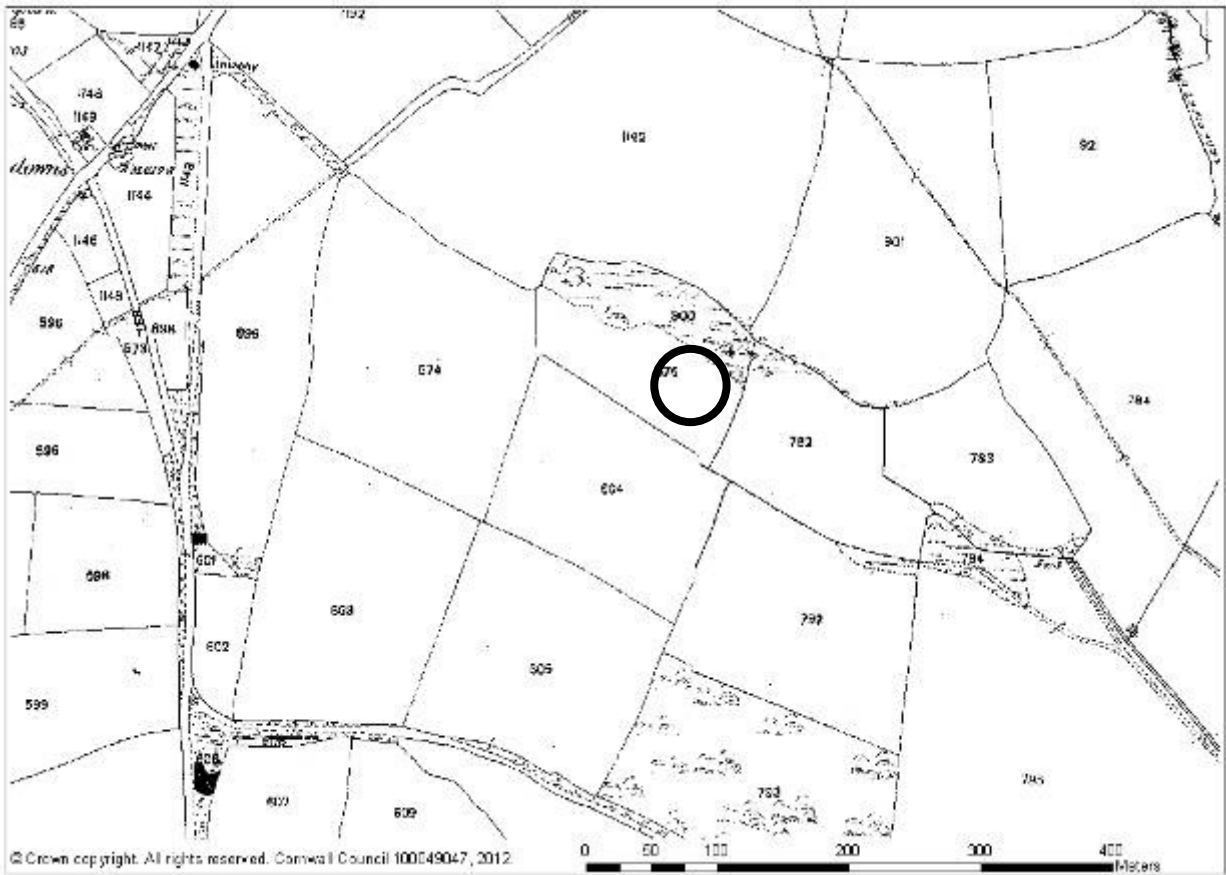


Fig 4 First Edition of the Ordnance Survey 25 Inch Map, c1880 showing the site.

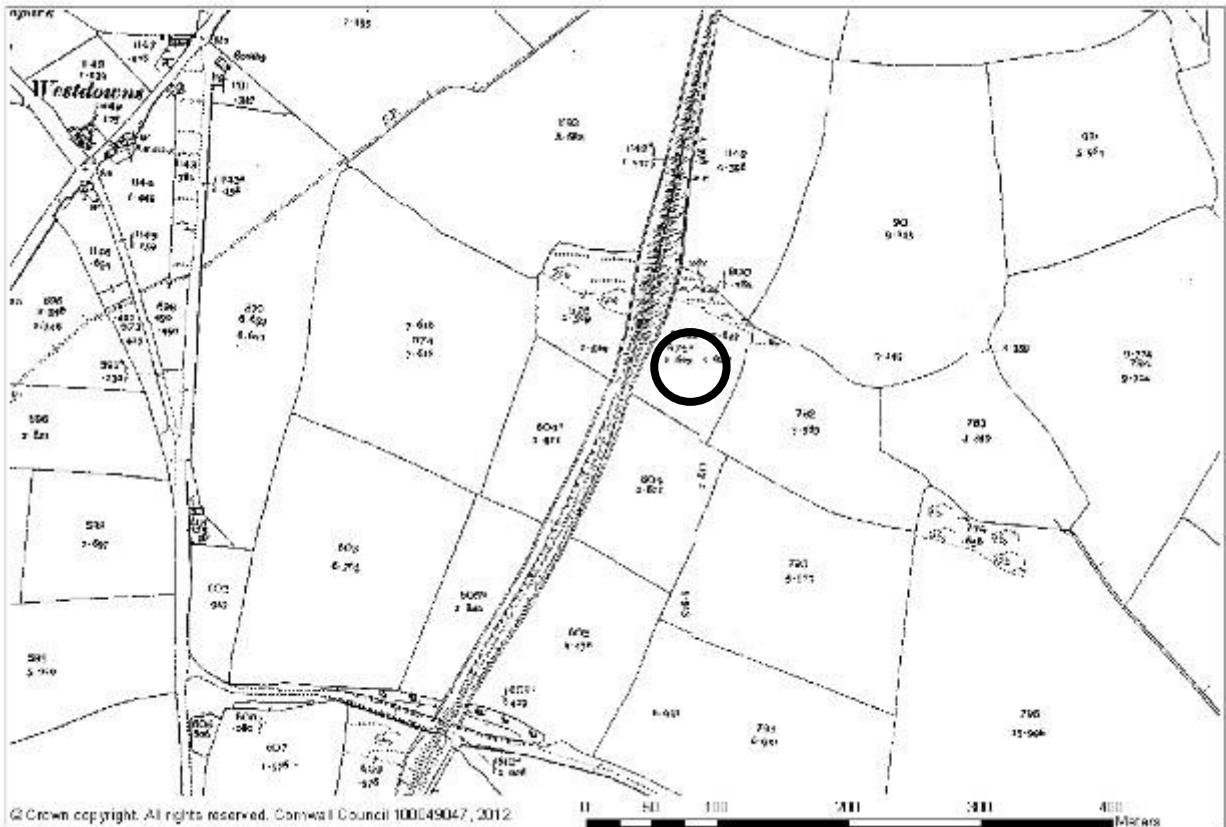


Fig 5 Second Edition of the Ordnance Survey 25 Inch Map, c1907 showing the site.



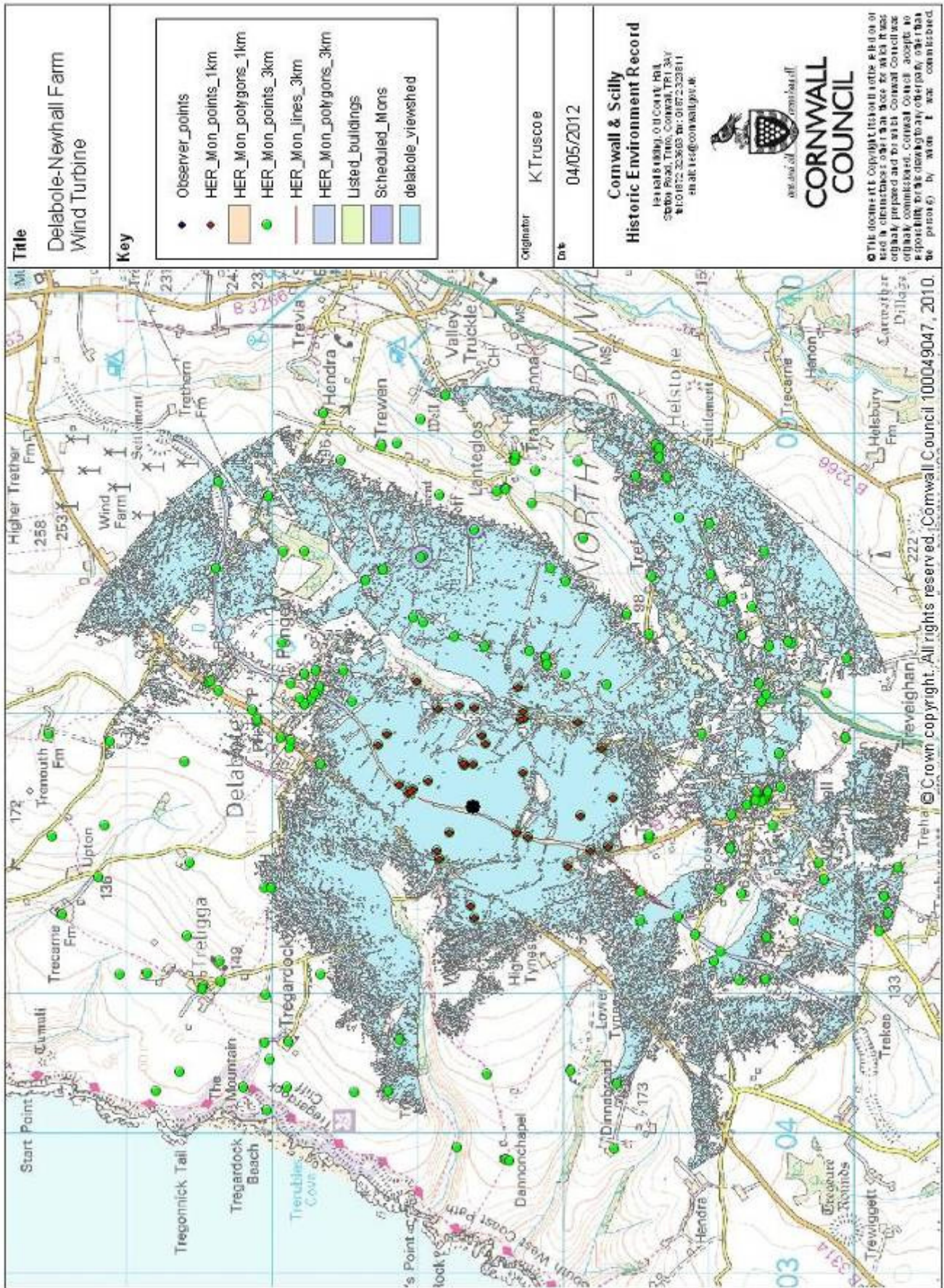


Fig 6 Ordnance Survey digital mapping showing the site and its environs (2009).









*Fig 8 Looking north across the proposed turbine site showing the waterlogged lower northern side of the field and view north along the hill.*

*Fig 9 Looking north-east from the upper south-east corner of the field showing the nearby turbine and the wind farm above Delabole, on the north-eastern horizon.*



*Fig 10 Looking south east from the upper south-eastern corner of the turbine field showing Newhall in the foreground.*

*Fig 11 Looking south from the south-east corner of the turbine field showing a slate slab gateway and the southern part of the proposed access track.*







*Fig 12 Views from the north-west corner of the turbine field showing the slate embankment of the disused north Cornwall railway and springs feeding the stream running from beneath the embankment.*



*Fig 13 Looking south along the largely in filled railway line from where the proposed secondary permanent access track would cut through, and looking south from the same spot.*