DESIGN AND ACCESS STATEMENT

Dated 15th April 2013

Applicant:	Mr L Maw
Proposed Development:	Installation of 1 No medium scale 50Kw Endurance wind turbine on a 25m monopole mast
Site Address:	Land at Westfield House Farm, Brockholes Lane, Penistone, Sheffield, S36 9FB

Contents:

1 Introduction

1.1 This Statement has been prepared and submitted as a requirement of Section 62 of the 1990 Town and Country Planning Act as amended by Section 42 of the 2004 Planning and Compulsory Purchase Act.

1.2 It has been prepared in accordance with "Guidance on the Requirements of Validation" March 2010 published by the Department for Communities and Local Government and incorporates the overarching principles set out in the National Planning Policy Framework (March 2012)

2 Proposal

2.1 Full planning consent is sought to erect and install a single, small to medium scale commercial wind turbine on land at Westfield House Farm, Penistone, Sheffield, S36 9FB, hereafter called' The Farm'. The proposed development will comprise of the following: -

- Construction of a concrete foundation base measuring 36m².
- Erection of an Endurance E-3120 50 Kw turbine (Endurance 50 for short) on a 23.6m monopole mast. This is a horizontal axis type with a rotor consisting of 3 blades approximately 9.6m long resulting in a diameter of 19.2m. The blades will be mounted to a wind turbine hub and nacelle, at a height of 24.6m above ground. The turbine will be fixed to the concrete base and in total it will stand 34.2m from ground to blade tip.
- The digging of a 170m trench and the laying of a cable at a depth of 0.6m to connect the turbine to a meter point at The Farm and provide a connection to the National Grid.

2.2 The Proposed Endurance 50 Wind Turbine will be sited in a field of grazing land approximately 120m south-east of Brockholes Lane. Land ownership of the applicant is outlined in yellow on the proposed location plan in figures 2 & 3 below.

Figure 1: Proposed site and surrounding area. Image courtesy of Google Earth

3 Purpose of Development

3.1 The development is proposed for the following reasons: -

- To provide a cheap and secure electricity supply for the farm
- Generate Renewable Energy for the National Grid and help meet the Government's renewable energy targets and obligations
- To help diversify the farm business and generate income to re-invest and support the farm estate

3.2 The Endurance 50 will generate approximately **195,000 kWh** of renewable electricity per annum at an estimated annual average wind speed of **6.5m/s** and initially an estimated 75% of this will be fed into the grid although this will reduce to almost 50% as the farm shop business grows and it converts all of its heating from oil to electric. The proposed development will reduce the carbon footprint of the farm making it almost carbon neutral.

4 Policy Context

4.1 Consideration has been given to national, regional and local policy guidance in the preparation of our development proposal.

5 Design Principles

5.1 Our **key aim** is to design a wind turbine development that satisfies both technical and environmental factors/ considerations and balances these, making compromises where necessary, to achieve a scheme that optimises the benefits of renewable energy production and minimises potential economic, environmental and social impacts through thoughtful design and careful site selection.

5.2 **Turbine design** has been influenced by the following principles: -

- To choose a product fit for purpose
- To choose a design of elegant and slender proportions
- To select a turbine or turbine (s) of the appropriate height and scale relative to the sensitivity of the landscape, its key characteristics and local site conditions
- To select turbines with colours and finishes that will provide an appropriate contrast with the background landscape and sky and help reduce visual and landscape impact.
- To generate renewable energy for the National Grid
- To develop a proposal that will provide a renewable energy supply for The Farm (including the farm shop) and generate income to support the overall business and help maintain the farm estate.
- To select a reliable turbine that is known to perform well in the unpredictable British climate, is suitable for this site and offers best value for money.

5.3 **Site selection** has been influenced by the following principles: -

- To generate renewable energy for the National Grid
- To develop a proposal that will provide a renewable energy supply for The Farm (including the farm shop) and generate income to support the overall business and help maintain the farm estate.
- To maximise annual average wind speed and minimise interference from obstacles that may affect performance or increase maintenance/repair liabilities
- To mitigate visual and landscape impacts

- To minimise potential impacts on heritage assets, protected species, local footpaths/ bridleways, tourist attractions, residential properties or businesses
- To minimise and/or eliminate noise disturbance and shadow flicker
- To avoid impact or interference with transportation routes, power infrastructure or underground services, aviation systems or communication signals
- To enable a practical and viable connection to The Farm and National Grid.

6 Development Appraisal – Our approach and methodology

6.1 Our appraisal was undertaken in three stages. These are outlined as follows: -

Stage 1: Needs Assessment

6.2 This assessment was undertaken to in order to formulate a clear development brief. It was focused on determining the actual energy needs of the applicant and the landowner's requirement to generate renewable energy for the National Grid and produce income to help support and diversify their rural enterprise. The assessment explored alternative forms of electricity generation recommending that wind technology offered the most viable and cost effective solution.

Stage 2: Feasibility Study

6.3 An in-depth feasibility study was carried out to collect and map the necessary background information required to assess the sensitivity and suitability of the area to wind turbine development. This information was then used to help identify the most suitable geographical location for the turbine and influence turbine appearance, size, number and height.

6.4 The following methods were used: -

- Site Survey
- Desk Top Mapping
- Consultation with Experts
- Consultation with Statutory bodies and interested parties

6.5 The following information was considered: -

- The extent of land ownership of the client
- The potential for grid connection
- Areas with wind speeds of 6m/s and above

- Landscape character and appearance
- Green Belt status
- Proximity to visible major transport routes and telecommunications.
- National or international designations such as National Parks, SSSI's, AONB's World Heritage sites
- Proximity to Scheduled ancient monuments, listed buildings, conservation areas and other heritage assets
- Tourist attractions and recreational sites including footpaths and bridleways
- Areas with special local status such as High Landscape Value, Wildlife areas or other protected areas.
- Local planning policy and supplementary

6.6 This exercise resulted in a preferred geographical zones being identified. This is illustrated below.

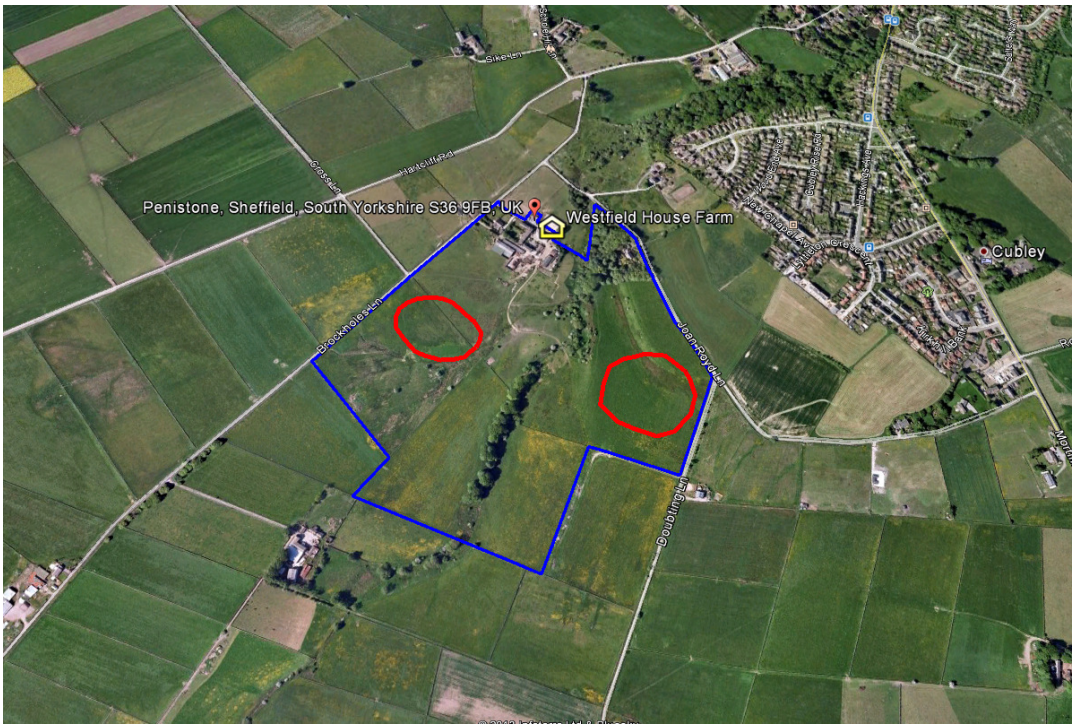


Figure 2: Stage 1 Feasibility – Preferred Geographical Zones. Image courtesy of Google Earth

6.7 Our preferred site was actually chosen because it offers an elevated position with an open and unobstructed south-westerly aspect , is sited as close as possible to the farm complex without compromising performance and output of the turbine and it is in a location that will not affect the noise amenity of adjacent residents. It was felt a location further to the east would not have the same visual link with the host farm and would be more visible in the landscape – particularly by properties on the edge of Penistone.

6.8 It was decided to opt for a single small to medium scale turbine to generate the required energy output rather than a group of smaller turbines sited across the landholding. As well as been more practical and economically viable a single turbine will cause less harm to the open countryside than several smaller turbines. It will also generate significantly less noise than a group of smaller turbines.

6.9 For comparison purposes it would take 7 no. 10Kw turbines, each generating a minimum of 28,000kWh per year at this location in order to meet the applicant's needs. They would have to be sited with a minimum spacing of 5 times blade diameter from tip to tip for turbines stood side by side and 7 times blade diameter when stood behind each other against the prevailing winds. This would cover a large land area and given the number and spread of turbines they would certainly be more visible than a single medium machine.

6.10 Taking all these factors into account it was decided a single medium turbine was best suited to meeting the applicant's energy needs and would be less harmful to the openness of the Green Belt.

6.11 Different types of medium wind turbines were considered before choosing the Endurance E3120 50kWh. This machine was chosen because: -

- It is high quality turbines with a good record of reliability and is widely used in the UK.
- It is aesthetically pleasing with clean following lines and is painted all one colour – dull white
- It is shorter can be installed on a shorter mast height of 25m rather than 30m
- It produces the minimum energy generation required to meet the brief

The table below gives a brief summary of the chosen turbine.

Design &Specification	**Endurance E3120 50kWH Turbine**
Output/ Max Power at 11 m/s	50kW
Estimated Annual Generation	195,000 kWh
Wind speed	6.5m/s
Number of blades	3
Blade sweep (diameter)	19.2m
Mast Height	23.6m
Overall Height	34.2m
Mast colour	Off-White (Matt)
Hub Colour	Off -White (matt)
Blade Colour	Off -White(matt)

6.12 Stage 3: Micro-siting

A further survey was carried out to examine localised site factors and determine the exact siting of the prosed Endurance 50 turbine. The following factors were considered: -

- A close and viable grid connection
- Suitable access for installation and maintenance
- Minimum stand- off distances from trees, hedgerows, watercourses and other potential habitats as recommended by our ecologist
- Localised flooding and ground conditions
- Minimum distances from buildings, trees or other physical obstacles that may affect turbine performance
- Safe fall distances away from footpaths, access ways and power lines.
- Acceptable distances from neighbouring properties to prevent noise disturbance or shadow flicker.
- Local landscape features and conditions that may help to mitigate visual and landscape impacts and where possible help screen the turbine from view, reduce its presence or assimilate into the background view
- To avoid nearby microwave links and NATS radar safeguard zone

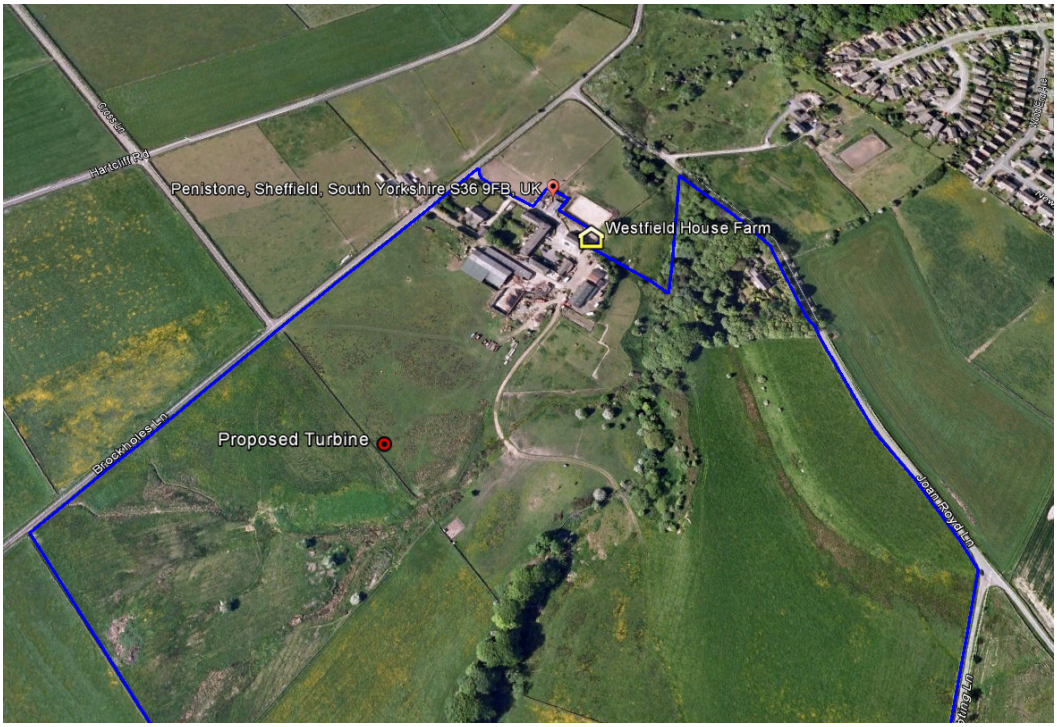


Figure 3: Chosen Site following 'Micro-siting' Exercise

7 Consultation

7.1 There have been no pre-application discussions with the Local Planning Authority regarding this proposal but initial consultation has taken place with our own specialist consultants (as detailed below) to assist the development process, in particular to help determine site selection, turbine design and product choice.

- 3DVS (Landscape and Visual Impact),
- Bradbury PM Limited (Planning Consultants)
- M J Coates Limited (Architect & Design Consultants)
- Quants (Ecological Consultants)
- Newgen Limited (Independent Renewable Energy Consultants and turbine supplier)

7.2 Consultation influenced the design and site selection process and this is discussed in more detail in section 6.

8 Access

8.1 Access is required for construction of the concrete foundation slab, the erection of the wind turbine and its connection to the grid. Access will also be required for routine maintenance once the turbine is operational.

8.2 Access to the proposed site is via Brockholes Lane. (Highlighted in yellow)

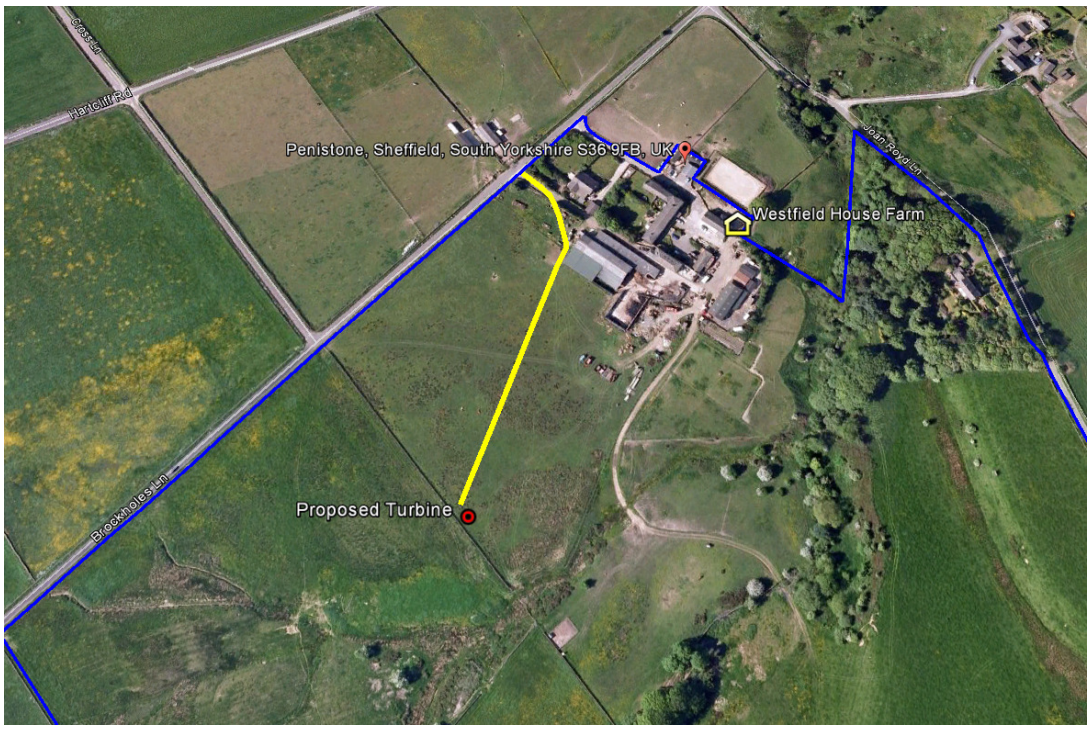


Figure 4: Proposed access route. Image courtesy of Google Earth

8.3 Localised access is gained directly from Brockholes Lane via a farm track and then a designated route across on open field. This route has been identified in conjunction with the landowner and having regard to the size and frequency of transport and construction vehicles required and giving due regard to health and safety regulations. The proposed access route is identified above in blue.

Figure 5: Photograph showing localised access point. Courtesy of Google Street View

8.4 The construction period for a single, relatively small turbine such as the proposed Endurance 50 is short, normally 7-10 working days, spread over a period of 3-4 weeks. Firstly, a trench is dug using a standard excavator to carry the cable at a depth of 600mm to connect the turbine to the Grid. The trench in this instance is approx. 170m. Once the cable is laid the trench is back-filled with sub soil and re-instated with top soil. Proposed trench is identified below in orange.

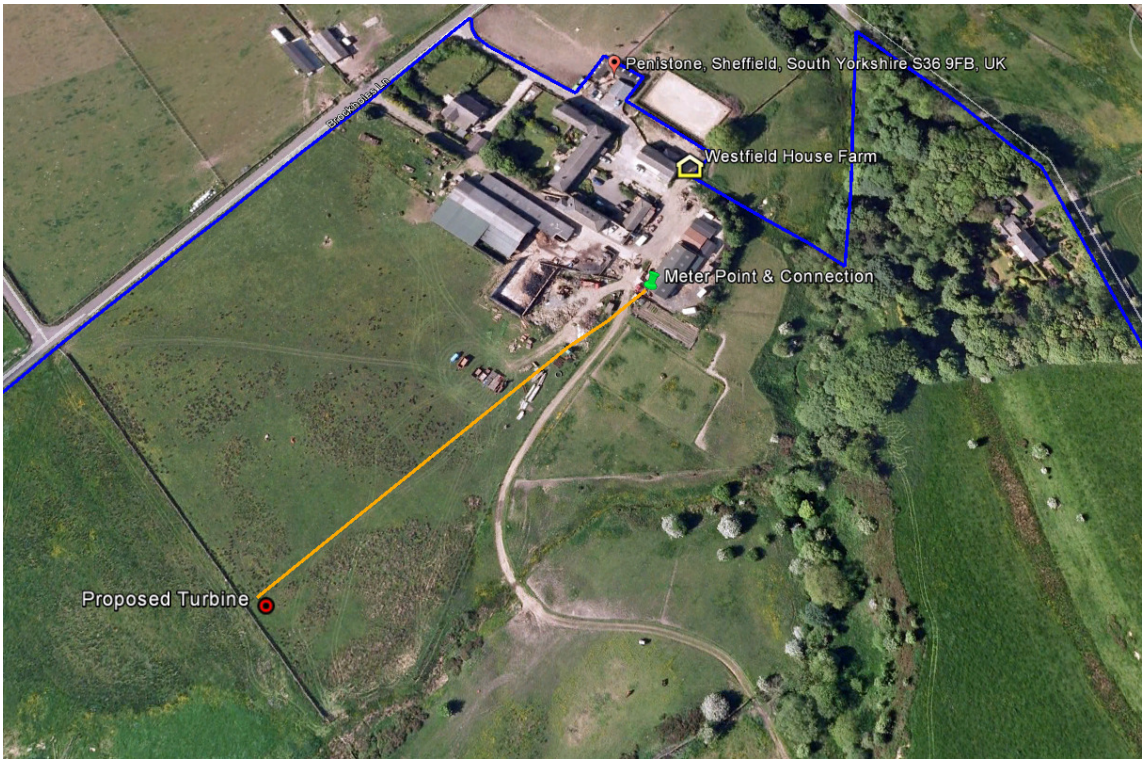


Figure 6: Photograph showing proposed trench in orange. Courtesy of Google Earth.

On the following week the concrete foundation will be constructed and in week 3 the turbine mast, hub, nacelle and rotor will be delivered to site in on the back of a low loader. The mast sections will be fitted together, the blades and rotor installed and the bolted firmly to its concrete base. The foundations will be backfilled with subsoil and topsoil and the electrical installations completed in week 4.

The installation will require the use of an excavator and tele-handler and the turbine will be delivered to site on the back of a HGV trailer. It is estimated the plant will generate a maximum of 12 vehicle movements and the delivery 2 (one access and 1 egress). Light commercial vehicles will be required by the electrical and ground works contractors. This will generate an estimated 28 movements over a 3-4 week period.

It is proposed to erect the turbine during the spring in dry weather conditions.

Environmental Assessment

Background

9.1 Renewable Energy developments should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic and social impacts can be addressed satisfactorily. Developers should give

careful consideration to the effects of landscape and visual impact and this will vary according to the type of development, its location and landscape setting. Effects may be minimised through appropriate siting, design and landscape schemes, depending on the size and type of development proposed and it local authorities, when assessing planning applications, should recognise that the impact of turbines will vary according to the size and number of turbines and the type and sensitivity of landscape involved.

9.2 The development proposed on land owned by Westfield House Farm is relatively modest in scale (compared to utility turbines) and it will not be located in an area with a nationally recognised designation. It lies in green belt in an open field accessed off Brockholes Lane. Special care has been taken to ensure the turbine is correctly sited and designed to balance both technical factors and environmental considerations and to mitigate potential impact to landscape character, local ecology, the historic environment and visual amenity are minimised. This process has been carried out with due consideration to the advice and guidance contained in the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 and in accordance with the Guidelines for Landscape and Visual Impact Assessment published by the Landscape Institute and Institute of Environmental Management and Assessment 2002 and with due regard to the relevant local policies and guidance outlined in the attached Appendix.

EIA Screening Opinion

9.3 A formal Screening Opinion has not been requested from the Local Planning Authority despite it being above the height threshold of 15m to hub height as detailed in Schedule 2 of the Regulations 2011. Given the scale of the development proposed and after assessing potential environmental impacts it is our opinion, based on previous experience, that this is not an EIA Development.

Landscape Impact

9.4 Subject of a separate report - copy attached

Visual Impact

9.5 Subject of a separate report - copy attached

Ecology

9.6 Subject of a separate report - copy attached

Heritage Assets

9.7 A desk top survey was conducted to identify potential heritage assets that may be affected by the proposed development. A 0.5km search of the immediate area around the proposed turbine revealed 1 entry.

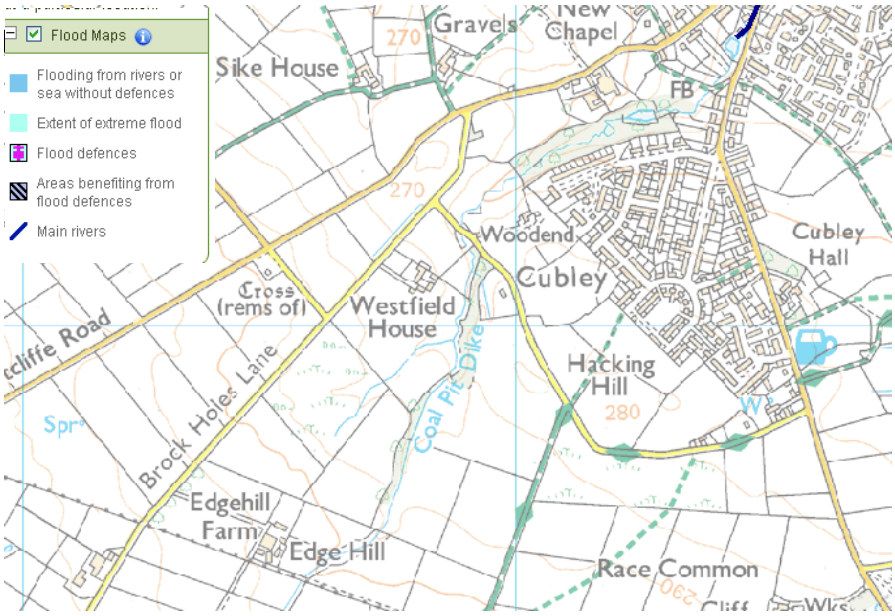
- A wayside Cross which is recorded as both a Grade II Listed Building (1286904) and a Scheduled Ancient Monument (1012156)

The cross is visible at close range from the road (i.e. from 40m as shown in the photo below) but not beyond much beyond 100m. The proposed turbine is sited some 320m away to the south-east. Its relationship is with the medieval highway of Hartcliife lane and as well as its religious associations the cross would have acted as a waymarker for travellers in remote locations. The turbine is sited quite a distance from Hartcliffe Road and it does not interfere with the view of the cross by current travellers or walkers using the old lane. Therefore given the significance and nature of the heritage asset, the scale and location of the proposed development and the distance of separation it will not adversely affect the historic character, appearance or setting of this listed structure.

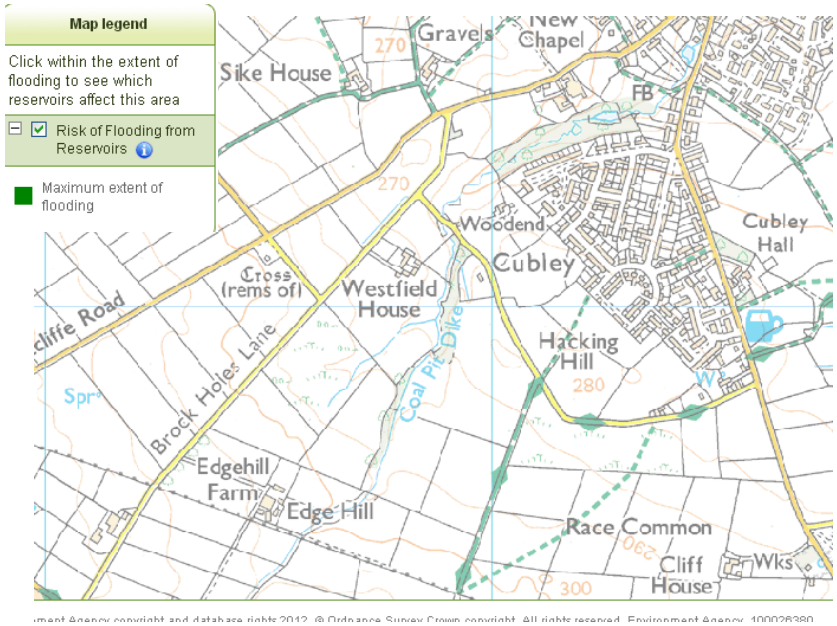
Figure 7: Wayside Cross from Hartcliffe Road – just visible in centre of the photo.

Flood Risk

9.8 The site does not fall in a river flood zone as identified on the Environment Agencies register. See Flood Map extract below (not to scale).



9.9 The Flood Map also shows that the site does not fall in a reservoir flood zone as indicated on the map below (not to scale).



Ground Conditions and Contamination

9.10 There applicant has no knowledge of any ground contamination, any quarrying or mine workings at the immediate site. Nothing is recorded on the Environment Agency's landfill register or register of pollution and contamination.

Noise Disturbance

9.11 The proposed turbine has been sited approx. 290m south-west from the nearest existing residential property not owned by the applicant at Joan Royd Lane. At this distance there will be no noise disturbance to local residents.

Transport

9.12 There are no classified roads or trunk roads in the vicinity of the site and there are no railways lines nearby.

Communications/ Services

9.13 There are no overhead power lines crossing or near the site and no mobile phone masts. Microwave links and NATS radar have been considered in the site selection.

Shadow Flicker

9.14 This is a small to medium size turbine with a relatively small blade diameter of 19.2m. Shadow flicker is more likely to occur in much larger turbines (with a significant blade sweep) when the sun is low in the sky – i.e. either early in the morning or in the evening as the sun sets and rises – and in a flat landscape with no obstructions. The PPS22 Annex and subsequent guidance from the Department of Energy and Climate Change require a minimum separation distance equivalent to 10 diameters from the nearest occupied property. In this case this is 192m. The nearest residential property lies approximately 290m to the north-east and thus falls outside the minimum distance.

Footpaths and Bridleways

9.15 The Penistone Boundary Walk runs about 420m to the east along Doubting Lane and a local footpath from Sike House to Cross Lane 520m to the north-west. Although the turbine will be visible from the Penistone Boundary Walk, given its nature and scale and the distance of separation between it and the path it will not have an adverse effect on the recreational use or enjoyment of this route. The turbine will be visible from Hacking Hill but a change in topography as the land dips towards Coal Pit Dike and a stretch of linear woodland help obscure/ partially obscure the turbine – particularly along Doubting Lane.

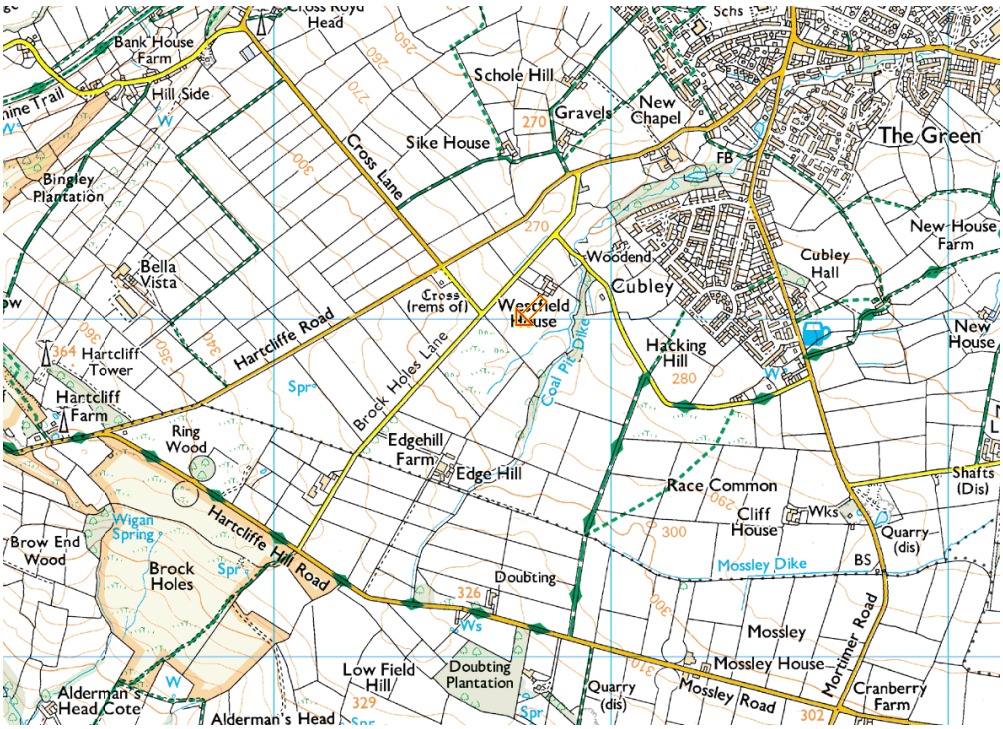


Figure 7: Google Earth image indicating routes of footpaths and bridleways