DESIGN AND ACCESS STATEMENT

Dated: 4th December 2012

Applicant:	Robert Barraclough
Proposed Development:	Installation of 1 No medium scale 50kW Endurance wind turbine on a 24m monopole mast
Site Address:	Land at Westfield Farm, Royd Moor Road, Thurlstone, S36 7RD

Contents:

1 **Introduction**
2 **Proposal**
3 **Purpose of Development**
4 **Policy Context**
5 **Design Principles**
6 **Development Appraisal**
7 **Consultation**
8 **Access**
9 **Environmental Assessment**

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 medium scale commercial wind turbine on land at Westfield Farm, Royd Moor Road, Thurlstone, S36 7RD, 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 163m trench and the laying of a cable at a depth of 0.6m to connect the turbine to a meter point situated in a barn on Westfield 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 145m south west of Royd Moor Road and approximately 115m from the applicants own dwelling at Westfield Farm. Land ownership of the applicant is outlined in blue on the proposed location plan in figure 2 and 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 generate renewable energy for the National Grid and help meet the Government's renewable energy targets and obligations
- To help support and diversify the farm business and generate income to help manage and improve the farm estate.

3.2 The Endurance 50 will generate approximately 170,000 kWh of renewable electricity per annum at an estimated annual average wind speed of approximately 6 m/s and an estimated 95% of this will be fed into the grid and the remainder used on the farm. The proposed development will also help reduce the carbon footprint of the business.

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 generate sufficient energy to power The Farm and produce an alternative income to support the business and improve the agricultural 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 generate sufficient energy to power The Farm and produce an alternative income to support the business and improve the agricultural 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
- 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 client's requirement to generate renewable energy for the National Grid and produce income to help support and diversify his 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 planning guidance.

6.8 This exercise resulted in a preferred geographical zone being identified. This is illustrated below.



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

6.9 Our preferred site was chosen because it offers an elevated position with an open and unobstructed south-westerly aspect.

6.10 It was decided to opt for a single medium 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.

6.11 For comparison purposes it would take 6 no 10Kw turbines on a 15m mast, each generating a minimum of 28,000kWh per year in the same location to meet the applicant's needs and aspirations. 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. Given the constraints of this site (i.e. land ownership, the close proximity of residential properties, land elevation and wind speed, roads and footpaths it would be difficult to site more than 2 or 3 smaller turbines on this site.

6.12 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.

6.13 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 24m 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	170,000 kWh
Wind speed	6 m/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)

6.9 Stage 3:Micro-siting

A further survey was carried out to examine localised site factors and determine the exact siting of the proposed 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 particularly 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 Environmental Limited (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 Royd Moor Road leading directly to the A628

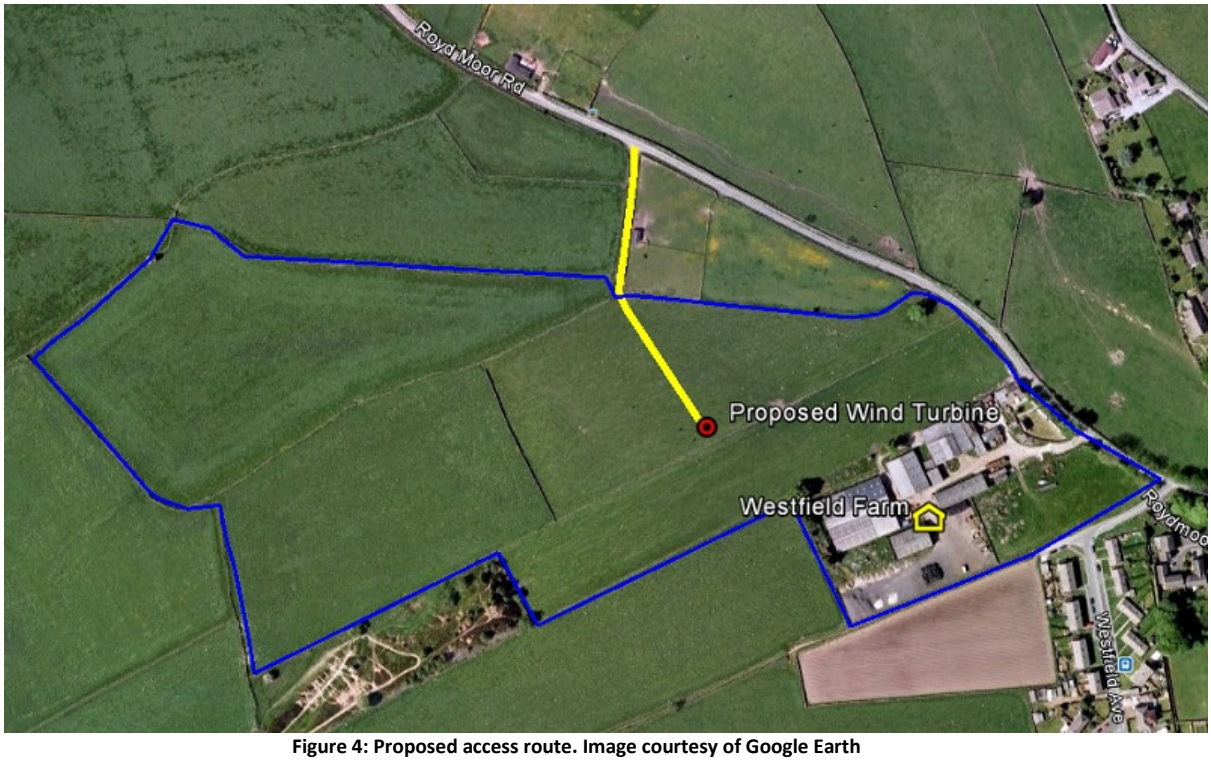


Figure 4: Proposed access route. Image courtesy of Google Earth

8.3 Localised access is gained via a farm track form Royd Moor Road (see figure 5) and along a designated route across a field leading directly to the site. The total route is approximately 185m. 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.



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 to connect the turbine to the Grid. In the case of this proposal the trench will be approximately 165m long and dug to a minimum depth of 600m. Once the cable is laid the trench is back-filled with sub soil and re-instated with top soil.

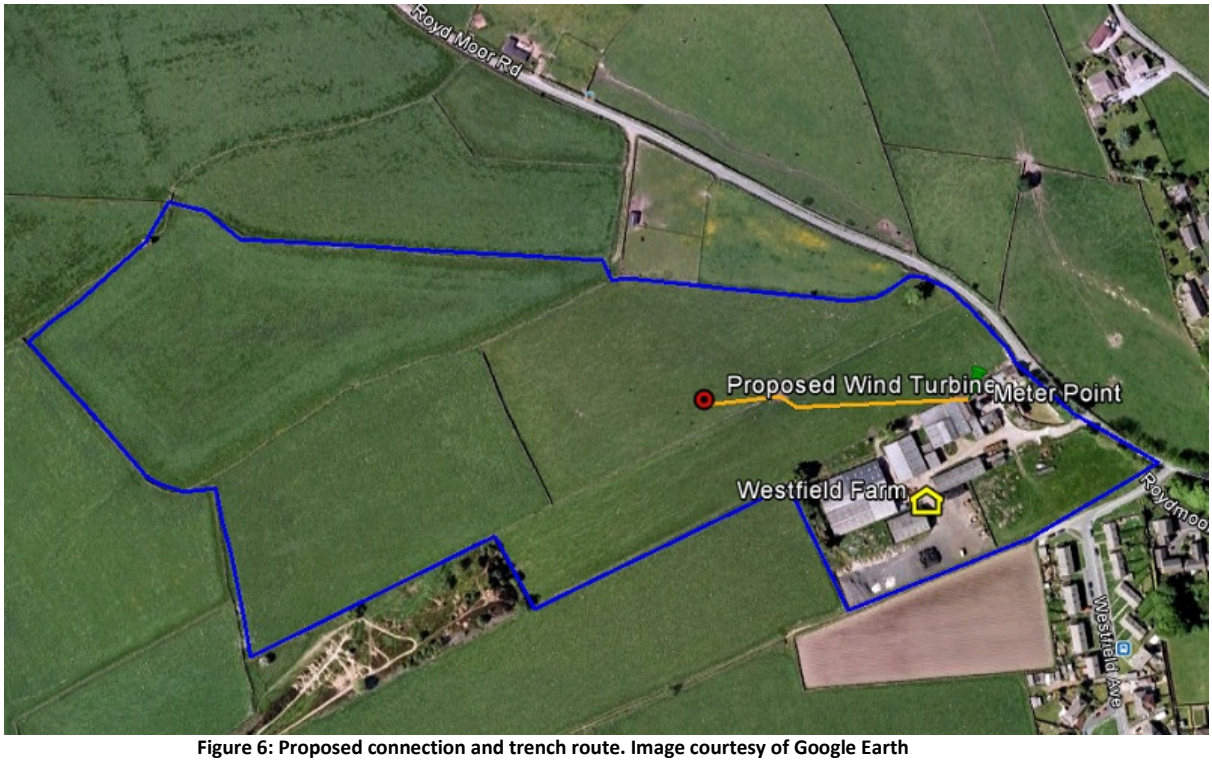


Figure 6: Proposed connection and trench route. Image courtesy of Google Earth

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.

9 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 adjacent to Royd Moor Road is relatively modest in scale (compared to utility turbines) and it will not be located in an area with a nationally recognised landscape designation and is thus not afforded any special. It lies in Green belt in an open field approximately 0.62km north-west of the centre of Thurlstone and approximately 1.09km to the south west of Scout Dike Reservoir. Nevertheless, 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 upon the Green Belt as well as ensure that potential impacts 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) (England and Wales) Regulations 1999 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. 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

9.7 Subject of a separate report - copy attached

Ecology

9.10 Subject of a separate report - copy attached

Heritage Assets

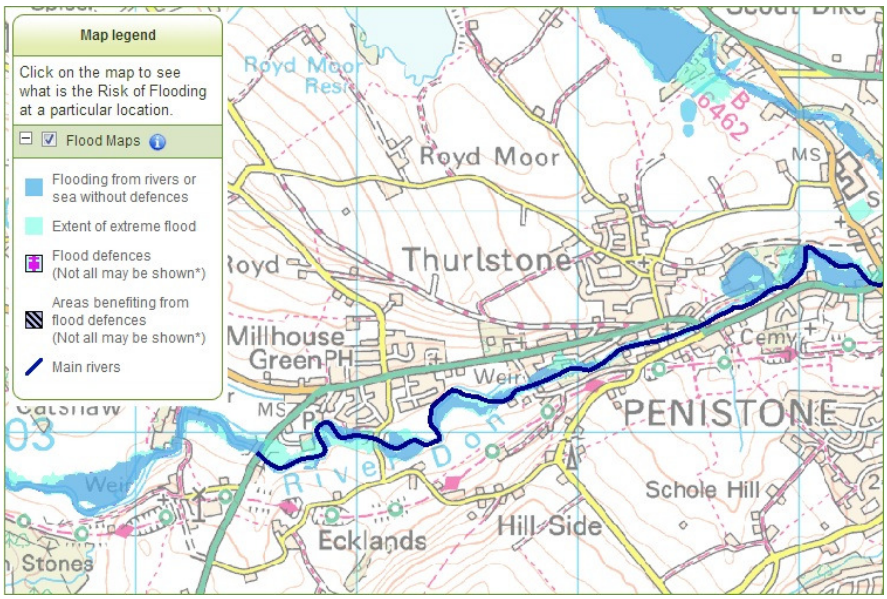
9.12 A desk top survey was conducted to identify potential heritage assets that may be affected by the proposed development. A 0.5km search of the immediate area around the proposed turbine revealed 2 entries on the statutory register and no recorded entries on the local HER register. The 2 entries on the statutory register are all **Grade II l**isted buildings. These are:

- Vicarage to Church of St Saviour, Manchester Road, Thurlstone, Penistone, Barnsley
- Ingbirchworth Road, Thurlstone, Penistone, Barnsley

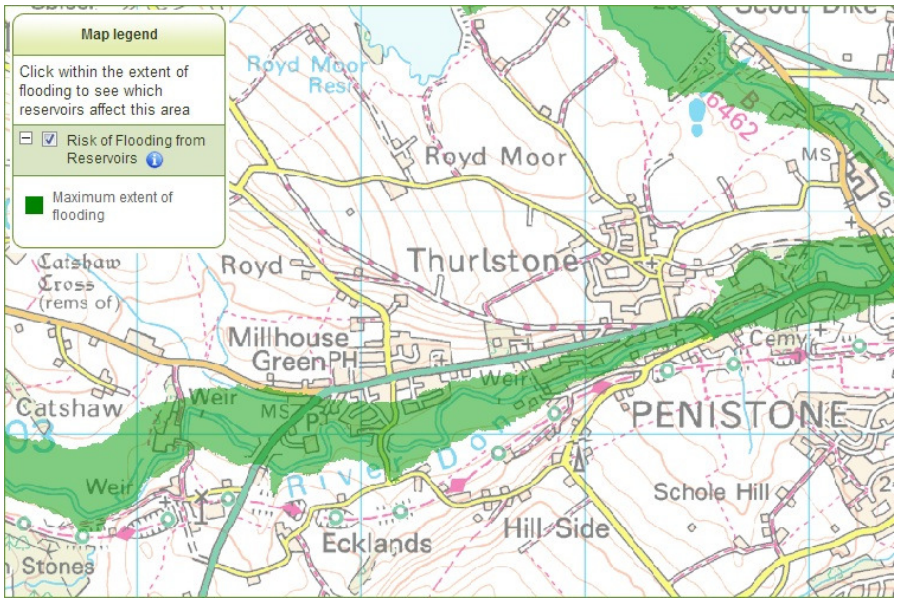
The properties are domestic in nature and located in the built up area that makes up Thurlstone, the nearest (The Vicarage)being 447m south of the turbine and the other (9 Ingbirchworth Road) being 458m to the east. The settings of these buildings are limited to their curtliage and the buildings immediately around them. In the case of the Vicarage this building also has a relationship with the church. Given the distance of separation between the proposed turbine and these buildings, the significance of the listed buildings and taking into account the turbines slender form there will be no adverse effect on the settings of these heritage assets.

Flood Risk

9.13 The site does not fall in a river flood zone as identified on the Environment Agencies register. See Flood Map extract below (scale 1:20,000).



9.14 The Flood Map also shows that the site does not fall in a reservoir flood zone as indicated in green on the 1:20,000 scale map below.



Ground Conditions and Contamination

9.14 There is no record and no knowledge of any ground contamination, any quarrying or mine workings in the immediate vicinity of the site.

Noise Disturbance

9.15 The proposed turbine has been sited approximately 235m from the nearest existing residential property at 77 Westfield Avenue. Given the type of turbine, the position and orientation of the property, proximity to the main road and likely background noise at this location there is expected to be no noise disturbance.

Transport

9.16 There are no major roads or railway lines close to the site. There have been no specific consultations with the MOD or NATS.

Communications/ Services

9.17 Microwave links and NATS radar have been considered in the site selection.

Shadow Flicker

9.18 This is a 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 Companion Guide 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 235m to the south east. It lies in a position where shadow flicker may potentially be an issue but these properties at Westfield Avenue do not have a direct line of sight to the turbine and are screened by the farm buildings. Properties at Windsor Avenue are 360m east from the turbine and do have a direct line of sight but these properties fall comfortably outside of the minimum distance required.

Footpaths and Bridleways

9.19 There is one public rights of way/ byways to the south boundary of the farm yard. This connects Royd Moor Road to High Bank Lane. The turbine has been sited a safe fall distance (i.e. total height plus 10%) from these byways and although it will be visible by pedestrians using them it is not considered the turbine will adversely affect their functional or recreational use.

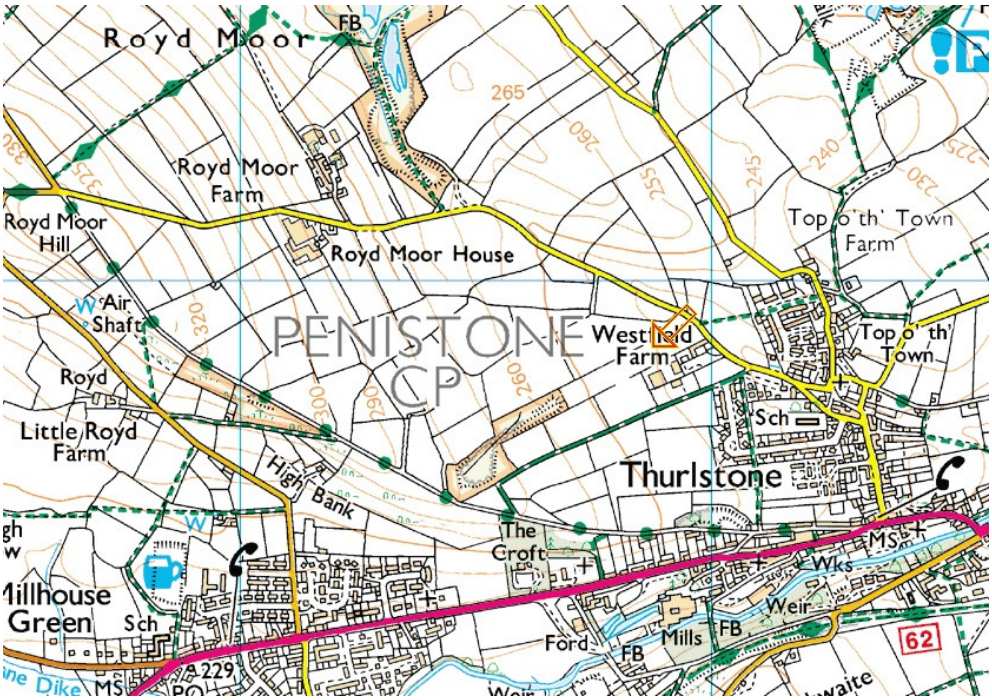


Figure 7: Streetmap indicating routes of footpaths and bridleways