



Lamonby Wind Farm proposal

Non-technical summary of the Environmental Statement

August 2005

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Background

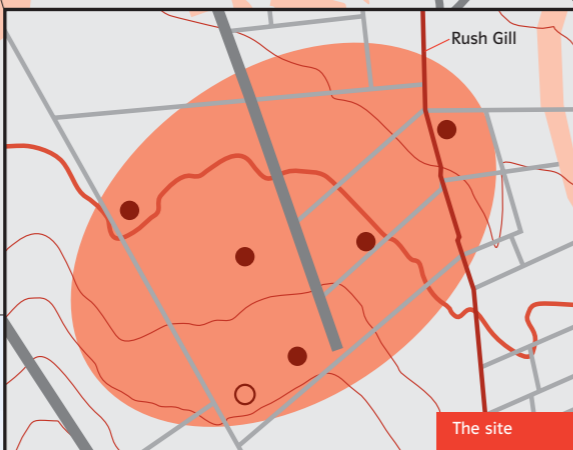
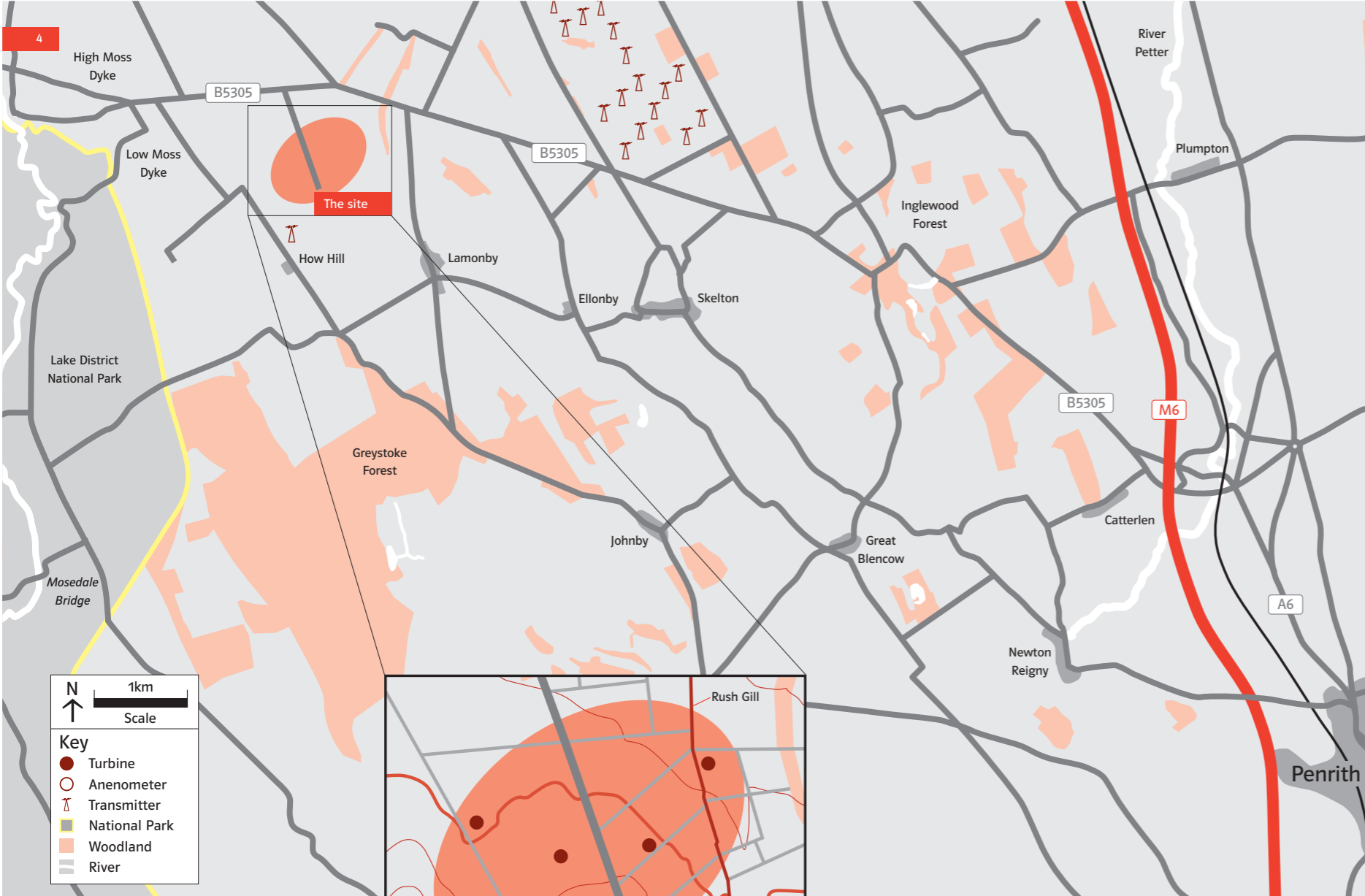
This is a non-technical summary of the Environmental Statement and has been prepared to accompany E.ON UK plc's application to Eden District Council for planning consent to construct a small wind farm at Lamonby in Cumbria.

This brochure provides a description of the Environmental Impact Assessment in non-technical language. It has been produced in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. It presents an analysis of the implications of the proposal to construct, operate and ultimately decommission the wind farm. Both this and the Environmental Statement have been placed on deposit at the offices of Eden District Council where they may be examined during normal working hours by members of the public.

Copies of the Environmental Statement may be obtained at a cost of £100 for a paper copy or £10 for a CD-ROM by writing to the address below. Further copies of this summary are available free of charge.

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The site

The development site encompasses approximately 1km² of agricultural pasture, lying to the north west of the village of Lamonby. Lamonby is approximately 10km north west of Penrith. The site lies approximately 2km east of the boundary of the Lake District National Park, at its nearest point. The site location is shown on the opposite page.

The project

E.ON UK are proposing to develop a small wind farm on agricultural land to the north west of the village of Lamonby in Cumbria.

The wind farm would consist of five wind turbines, each of which would generate approximately 2.5 megawatts (MW). The wind turbines would have a maximum overall height of 102 metres, measured from the ground to the tip of a blade when in the upright position. The development, which would be connected to the local electricity distribution network by underground cables, would also involve construction of access tracks and a small building to house electrical equipment. The general arrangement of the proposed development is shown on the opposite page.

Subject to the granting of planning consent and following the appointment of contractors, it's anticipated that the construction of the wind farm would take approximately 8 to 12 months to construct. The typical design life of wind turbines is 25 years. At the end of this period, the turbines would be decommissioned and removed, with foundations broken out to below ground level and the turbine sites restored to pasture.



Consents procedure

The project would involve the development of installations for the harnessing of wind power for energy production, and would involve more than two turbines. Consequently, it's classed, under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, as Schedule 2 Development (falling under part 3i of Schedule 2 of the Regulations). Whilst it's not mandatory for planning applications which are for Schedule 2 development to be accompanied by an Environmental Statement (ES), there are a number of circumstances where the production of an ES is required. Given advice in Government Circular 2/99 relating to the scale, nature and location of the proposed development, E.ON UK have elected to produce such a document to accompany this planning application.

A planning application and Environmental Statement have therefore been submitted to Eden District Council.

The need for wind energy

The need for the development of renewable energy in the UK derives from the need to reduce emissions of carbon dioxide and other harmful greenhouse gases, and to move towards more sustainable means of energy production that will help to reduce climate change. Wind energy is a means of generating electricity that does not produce harmful emissions or toxic waste products and is not dependent upon finite reserves of fossil fuels. It is inherently sustainable, and this is explicitly recognised in the Government's support for the deployment of this technology, both onshore and offshore. Renewable energy development also reduces our reliance on imported fuel for power generation.

The potential consequences of climate change are far reaching and could change the whole pattern of the world's weather. In the UK, this could include loss of habitats and rare species, increased likelihood

of summer droughts, and a greater likelihood of severe storms and flooding (such as that witnessed earlier this year in Carlisle). (Source: UK Climate Change Programme DETR 1998).

In response to the threat of climate change, developed countries agreed at Kyoto in December 1997 to legally binding targets that will reduce their emissions of the six main greenhouse gases to 5.2% below 1990 levels over the period 2008 - 2012. The European Union, and its member states, has agreed to an 8% reduction and legislation has subsequently been put in place. In order to achieve this target, each member state has set its own individual target.

As part of its approach to reaching this target, the UK has adopted a policy of working towards 10.4% of electricity generation from renewable sources by 2010 and more recently a 15.4% target by 2015. Given that currently only around 3% of the country's electricity generation is from such sources, there's a clear national need for new renewable energy projects to be built if targets are to be met.

E.ON recognises that renewable energy is just one aspect of the drive to reduce greenhouse gas emissions and continues to be fully committed to encouraging the efficient use of energy. Within our Energy Efficiency Team we create, develop and project manage initiatives to allow all residential customers to play their part in reducing the energy they use. In 2003, we invested over £23 million in energy efficiency.

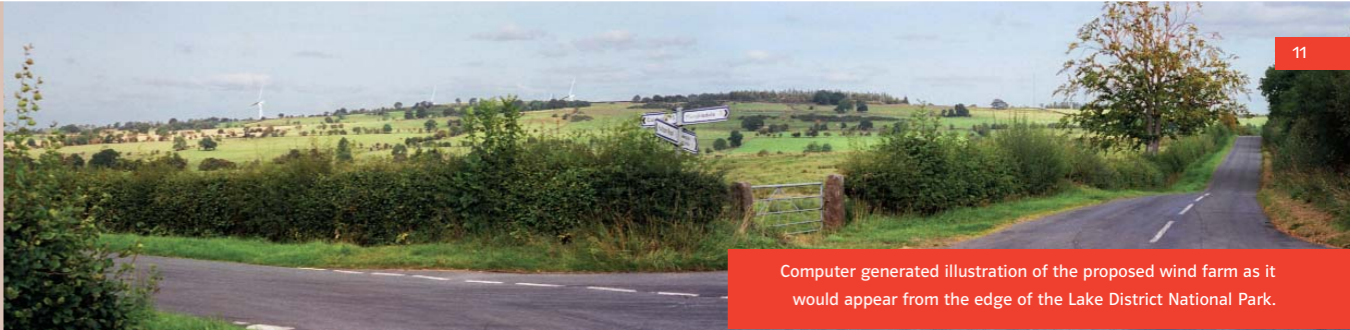


Public attitudes

International, European and National commitment to promoting wind energy generation has been made in the full knowledge of the nature of the technology and its intrinsic features. Wind farms are generally accepted for the recognition of their long-term environmental and economic benefits. However, there are a number of people who disapprove of them, in principle or on a site-specific basis, on the basis of their environmental effects.

Numerous independent public opinion surveys investigating attitudes to wind energy have been carried out over the last 10 years. These have been commissioned by organisations opposed to wind as well as wind energy developers and other interest groups. However, in general, each reaches the same conclusion - people are generally in favour of wind energy in the UK, both in theory as a renewable energy source and in their area. More than eight out of 10 people are in favour of wind energy and less than one in 10 against it. Those who live near operational wind farms and have direct experience of the developments generating electricity, tend to be more positive than those who live further away.

A survey of public opinion was undertaken amongst residents living close to Lambrigg wind farm - a similar development of five turbines that is located east of Kendal, close to junction 37 of the M6. Respondents were asked their views on the effect that they thought the wind farm had had on the local area in terms of the number of people visiting. 71% were of the opinion that Lambrigg wind farm had had no effect on people visiting the area and 14% did not know what the impact had been. Of those who believed that there had been some impact, 11% thought the wind farm had increased visitor numbers while 3% thought visitor numbers had been reduced. The survey indicated 71% of residents were of the view that the wind farm was acceptable in the countryside, including 24% of residents who thought it made the scenery 'more interesting'. Three in 10 respondents (29%) were of the view that the wind farm spoilt the scenery. The survey was undertaken in January 2002, following completion of construction of the wind farm in September 2000.



Computer generated illustration of the proposed wind farm as it would appear from the edge of the Lake District National Park.

The benefits

Lamonby Wind Farm would supply electricity equivalent to the domestic needs of around 6,950 households. This equates to all of the households in Penrith (6,058) plus an additional 892 homes. The development would, in terms of installed generating capacity, be the largest renewable energy scheme within Cumbria at this time. It would increase the total generation capacity of wind farm development within the county by around 30%, but only increase the number of turbines by just over 7%. It would also make a contribution of just over 5% towards Cumbria's 243MW target for additional on-shore capacity by 2010.

The scheme would therefore, in both a regional and Cumbrian context have significant benefits in terms of clean energy production, secure generation capacity, and emissions savings. Annually, Lamonby wind farm would reduce carbon dioxide emissions by up to 28,251 tonnes and would also prevent the release of approximately 328.5 tonnes of sulphur dioxide and nearly 100 tonnes of nitrogen oxides.

In addition to these environmental benefits, there would be specific direct benefits to the local economy including:

- jobs during the construction phase
- the purchase of local construction materials
- hire of plant and equipment during construction and operational phases
- the potential for a local maintenance contract
- the rental income paid by the wind farm operators to two local farming families
- the contribution to local authority funding via business rates.

There would also be secondary benefits to other areas of the local economy (local hotels, retailers and other businesses) arising from the temporary concentration of labour resources.

Wind energy offers a range of potential benefits to the local, regional and national economies. There is considerable employment potential. A recent report by the Department of Trade and Industry suggests that by 2020, the UK renewables industry could support up to 35,000 jobs, of which, onshore wind is likely to be the most significant single technology.

Community benefits

As part of the wind farm development it's proposed that a community fund would be established. The developer has a good track record of working closely with communities to support local causes and has been keen to foster a 'good neighbour' policy within the areas where it has sited wind farms to date.

The principle behind providing support for a local community is that whilst a wind farm brings some local benefits, the most significant benefits, such as reductions in carbon dioxide and other harmful emissions, are more strategic in nature and may be less tangible.

It's proposed that the fund would be set up and held in trust and the monies managed and distributed by a committee made up of representatives from the Parish Councils, the District Council and other local enterprise groups or relevant parties, for example local wildlife groups. The developer and Fund Committee would agree what criteria should be adopted for applications in order for such community funds to be released. The types of projects that could be considered include:

- local landscape management initiatives such as improvement of unmanaged or ecologically poor hedgerows, repairs to dry stone walls or enhanced survey and management of the ecologically diverse verges that occur along some local highways
- establishment and management of small community based nature reserves
- improved energy efficiency in local schools and other public buildings, for example village halls.

Ecology and nature conservation

Breeding bird and habitat surveys have been undertaken to provide information on the ornithological and ecological interest of the proposed wind farm site, and how this may be affected by such a development.

The study area did not hold any bird species protected under Schedule 1 of the Wildlife and Countryside Act, nor any listed on Annex 1 of the EU Birds Directive. The only species of conservation interest that it did support were species typical of the wider countryside in the region, and no notable concentrations of any of these were found. No significant effects on any of these would be likely to result from the proposed development.

In terms of habitats and plant species, the highest nature conservation interest related to a Site of Special Scientific Interest lies adjacent to the study area to the south (but over a kilometre from the nearest proposed wind turbine). This would be unaffected by the development. Semi-natural woodlands and species-rich hedgerows would also be avoided altogether. A very small part of the regionally important 'Special Verge' designation would be lost at the site entrance, but this impact would not be significant.

The only protected species noted during the surveys were badgers, though no setts were close enough to any of the nearest proposed wind turbine locations or access tracks to be of concern. This species can, however, develop new setts over a short period of time, and therefore the site would be checked again prior to construction.

The possibility of impacts on birds migrating through the area would be very unlikely to be significant, as (a) this area has not been documented as a major migration flyway and (b) the local topography would not concentrate the birds flying through the area generally into the wind farm site. Birds migrating over-land though terrain such as this would be much more likely to move over a broad front, and most would be at altitudes much higher than the wind turbines. Sites where problems with bird collisions have occurred have generally been in situations where many tens/hundreds of thousands of bird flights have occurred through the wind farm and where there have been hundreds/thousands wind turbines.





Landscape and visual impact

Landscape and visual assessments are separate, although linked procedures. Landscape effects derive from changes in the physical landscape that may give rise to changes in its character and how this is experienced. Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape.

The assessments were undertaken with reference to guidelines published by the Landscape Institute and Institute of Environmental Management and Assessment.

Landscape assessment

The site lies approximately 2km outside the Lake District National Park and is located within, but close to the boundary of an area designated as a 'Landscape of County Importance' by Cumbria County Council. The start point for the assessment was to gain a detailed appreciation of the existing landscape. This was achieved by undertaking a landscape character assessment with reference to guidance published by the Countryside Agency. The landscape character assessment subdivided the landscape surrounding the site into areas sharing similar characteristics (character areas). Once this detailed breakdown of the landscape had been completed, the effects of the proposed wind farm on each of the character areas was assessed.

The landscape assessment also included consideration of effects upon the physical components of the landscape such as trees, hedges and footpaths.

The assessment concluded that the wind farm would impart a major change to landscape character at a very localised level, restricted to the areas around Lamonby Village and How Hill. This change would relate to the introduction of large scaled structures with moving components into what is at present a fairly static environment. Other key elements of character including the scale and openness of the landscape and views out of the area to the high fells would remain intact, as the turbines

would not have any significant bulk. The scale and openness of the landscape is such that the scale of the turbines whilst clearly a prominent feature, would not dominate the landscape.

Moving away from the immediate vicinity of the development, changes to landscape character would be very limited. This is because visibility of the development would be restricted due to screening by topography and vegetation. Another factor would be the existing influence of the large telecommunication complex at Skelton. Further afield, including within parts of the National Park, the influence of the development would be reduced by distance.

There would be negligible effects on the physical components of the landscape, with no footpaths or common land directly affected, and only very small amounts of common place components such as grassland and wire fences lost as a result of the development.

Visual assessment

The visual assessment identified the areas of the surrounding landscape from which the proposed development would be theoretically visible, using computer based techniques. These areas of theoretical visibility were tested in the field. The assessment examined the changes that would occur in views from representative settlements, properties, roads, footpaths and cycle routes.

The conclusion of the assessment was that the Lamonby wind farm would form a simple composition within an appropriately scaled simple, open landscape. The wind farm would be prominent in some views from very close to the site and would be visible from certain long distance vantage points. However, in the majority of views from the first few kilometres in all directions, the wind farm would be partially to fully screened by existing topography and vegetation.

The finite lifetime of the proposed wind farm (consent is sought for a period of 25 years) is such that the duration of any effects would be limited and reversible as opposed to permanent.



Ground conditions and geology

The underlying geology of the site comprises of limestones and subordinate sandstones formed during the Lower to Middle Carboniferous Period. These strata dip from west to east at a low angle.

The assessment found that an area of coal bearing rocks occurs approximately 1km north of the proposed development site, and that swallow holes, associated with solution hollows in the limestone, occur to the south and west of the site. Further investigation found that the chance of subsidence occurring on the site related to historic mining operations is extremely low due to the nature of the geological succession. In relation to swallow holes, reference to the British Geological Survey database revealed that there is only a low risk of occurrence on the site.

Overall it was concluded that the ground conditions and geology at the site are suitable for the proposed development and that other than localised excavations for foundations there would be no impact to the general geological environment. It should be noted that, as a matter of routine, geophysical and borehole surveys would be undertaken to provide confirmation of the detailed subsurface geology at each turbine location prior to detailed design and construction.

Noise

Noise is created by wind turbines as they rotate to generate power. The principal sources of noise are the turbine blades passing through the air and internal machinery, such as the gearbox and generator. Modern wind turbine blades are carefully designed to minimise noise. The nacelle (the housing for mechanical equipment at the top of the tower) is insulated to minimise noise radiation from the gearbox, generator and other components.

The potential noise effects of the proposed wind farm on the surrounding area and in particular on nearby residential properties have been assessed in accordance with the recommendations of ETSU-R-97, 'The Assessment and Rating of Noise from Wind Turbines'. This is the accepted methodology for assessment of wind turbine noise, as set out in Government planning guidance. Background noise levels were measured at a number of residential properties representative of the closest dwellings to the proposed development site, following discussions with the Environmental Health Department at Eden District Council. Predictions of worst-case noise levels were carried out, based on the proposed site layout and the maximum warranted noise levels emitted by turbines of the type proposed. These predicted noise levels were then compared with the noise limits defined in ETSU-R-97 over a range of wind speeds. The assessment concluded that noise emitted by the wind farm would be quieter than the defined noise limits at all of the neighbouring properties and that there would therefore be no significant effect on occupiers of properties in the area.



Shadow flicker

Potential for shadow flicker has been computer modelled by simulating the passage of the sun through the sky through the year in relation to a computer model of the site. This revealed that there was potential for the effect to occur at several properties for up to 20 hours per year and that a single property would be exposed to just over 40 hours per year. It should be noted that even this low quantity of effect has been derived from a model that assumes all year round clear skies, that blades would always be rotating, and that blades would always be perpendicular to the direction of the sun. In reality, the duration of effect would therefore be considerably less than indicated by the model.

Shadow flicker has rarely been a problem in relation to wind farms and as a consequence, no guidelines have been developed to determine acceptable degrees of exposure.

Transportation

Potential impacts resulting from additional traffic associated with the development during the construction, operational and decommissioning stages of the development have been assessed. During the construction phase there would be an increase in traffic movements on the local road network due to lorries carrying stone, concrete, the turbine components and other building materials. Once completed, traffic associated with the wind farm would be minimal and would consist of small maintenance vehicles attending on an intermittent basis.

The assessment concluded that the development would generate a low number of vehicles relative to the numbers already using the B5305 on a day to day basis and that the local transport network would readily be able to absorb the traffic movements associated with the construction of the wind farm.

A small number of abnormal loads would be required to carry long, wide and heavy turbine components to the site. The assessment, undertaken in consultation with Cumbria County Highways concluded that the public roads that would form the route would be suitable, subject to localised minor verge strengthening work at one location, to safely accommodate this traffic.

In terms of safety during the operational life of the wind farm, views to the turbines from local roads are considered to be sufficiently distant as not to create a distraction to drivers and would not cause a reduction in highway safety.

Hydrology and water quality

The Lamonby site lies in an area of low groundwater vulnerability and does not lie within an existing flood risk area. The site does not contain any significant water courses. It generally drains in a north-easterly direction towards Rush Gill by a combination of surface flow and manmade field drains and ditches.

The main potential hydrological impacts of the proposed wind farm would occur during construction, with construction of access roads and excavation of turbine foundations having the potential to introduce pollutants and sediment load. However, the employment of routine, good engineering practice would reduce this risk to a minimum. The integrity of a watercourse at the eastern edge of the development, which would be crossed by an access track, would be maintained by providing a short culvert, the detailed design of which would be agreed with the Environment Agency. As such there would be no material impacts on either the hydrological characteristics of the site or upon water quality.

Tourism

The Lamonby site is located approximately 2km from the boundary of the Lake District National Park, which attracts large numbers of tourists from both the UK and abroad. Whilst the north east lakes area is popular with fell walkers and cyclists, the area immediately around the development site has not been developed significantly for tourism and there are no known defined tourist attractions within the immediate area of the site. There are however a small number of holiday accommodation businesses and it's likely that a proportion of the residential properties in the area are second homes.

The effects of the wind farm on tourism are difficult to predict. The most important effect would seem to be whether the presence of the wind farm would discourage or encourage visits to the area. Research conducted at existing wind farm developments into public attitudes to wind turbines seems to indicate that whilst some people are against wind farms and believe that they 'spoil the scenery', others are either neutral or positive in their views (see also 'Public Attitudes').



Electromagnetic interference

Wind farms have the potential to have an adverse effect on communication systems that rely on electromagnetic waves as a transmission medium. Examples of these include telecommunications, television reception and civil and military aviation activity such as RADAR.

A review was made of organisations operational in the local and wider area whose activities had potential to be affected by the proposed development. A number of radio links had the potential to be affected by the proposals, including those using the How Hill mast.

Following detailed consultation with all of the relevant organisations, the wind farm layout and turbine specification has been developed such that there would be no interference with any radio links.

A desk study was also undertaken to evaluate potential effects on the television network. The work has been conducted in accordance with guidance on potential electromagnetic effects as documented in government planning guidance.

The study revealed that signal strengths in the area are exceptionally good, and that the separation distances between the turbines and residential properties are such that effects are unlikely. In the event that television signal problems did occur as a result of the wind farm, the developer would take steps to rectify the problem at their own cost.

Aviation

National Air Traffic Services (NATS) Ltd. have carried out a preliminary assessment, which concluded that the wind farm would be visible to their radar at Lowther Hill, in Scotland and Great Dun fell, approximately 10 miles east of Penrith. NATS will only undertake a full assessment of any effects on radar following submission of the planning application. E.ON UK has however commissioned an independent study, which indicates that the wind farm would not have significant effects on the NATS radar facilities.

Consultation with Defence Estates has indicated that the wind farm should not have an effect on military aviation. However, they have asked to be kept informed of the progress of the scheme and have reserved the right to recommend against development at full planning state if details then available indicate that this is appropriate.

Archaeology and cultural heritage

An assessment of the archaeological and cultural heritage context of the site has been undertaken through a combination of field study and reference to resources held in local and national record offices.

The proposed wind farm is located in an area with a relatively rich medieval and post medieval landscape heritage. The landscape around the site consists of open fields that were enclosed by eighteenth century enclosure. There are faint traces of ridge and furrow over parts of the area with little sign of any other archaeological features. The main activity that has taken place not directly associated with agriculture is the quarrying of limestone, evidence for which is seen in the large numbers of small quarry pits scattered around the area.

The development would have no impact on any known archaeological features, although it's possible that there are unknown features within the areas that would be disturbed to enable installation of turbines, tracks or underground cables.

Impacts on the settings of four listed buildings that occur in the wider area surrounding the proposed development would be negligible.

An important hedgerow as defined by the Hedgerow Regulations 1997 would be breached in order to install an access track. These operations would however be classed as permitted works under the regulations.

Any potential impacts on unknown archaeological features could be mitigated, should the local planning authority feel it necessary, through the adoption of an archaeological watching brief during excavation activities.





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