



CATAMOUNT
ENERGY LIMITED



Mark Hill Windfarm
Environmental Statement
Non Technical Summary

July 2005

Entec



Background

This Non Technical Summary (NTS) forms part of the Environmental Statement (ES) to accompany an application by Catamount Energy Limited to construct and operate a 28 turbine windfarm (Mark Hill Windfarm) to the north of Barrhill in the South Ayrshire Council area.

Interest in renewable energy production (such as that produced by a windfarm) has arisen in response to growing concern about the rise in atmospheric levels of carbon dioxide (CO₂) and other greenhouse gases, and the changes in global climate that this could be causing. Burning fossil fuels (coal, oil and gas) is a major contributor to greenhouse gas emissions, and reducing their use and increasing the proportion of power generated from renewable energy sources is seen as a vital part of reducing these emissions.

In order to meet international obligations the UK government and Scottish Executive are committed to reducing greenhouse gas emissions in an attempt to reduce the effects of climate change that the Executive believes are already being experienced in Scotland. To ensure that UK and Scottish targets are met the Renewables Obligation (Scotland) has been placed on all electricity suppliers. This obliges them to increase the proportion of power that they supply from renewable sources, and includes a system of targets and financial penalties that will be imposed if these targets are not met. The Scottish Executive expects that much of the new power generation capacity required to meet the Renewable Obligation (Scotland) will come from windfarms, and that in the short term these will be primarily on land rather than offshore. Scotland has one of the windiest climates in Europe, giving the country great potential to use this resource to generate electricity.

The Windfarm

The proposed development is described in detail in the ES. A brief description of the proposal is however given below:

- The proposed windfarm site at Mark Hill is located on the shallow south eastern slopes of Garleffin Hill which forms part of the Wilson family interests. The site is located approximately 2km north east of Barrhill, in the South Ayrshire Council area.
- 28 wind turbines, with a maximum height to blade tip of all but one turbine used on site at 110m (one turbine is proposed to have a maximum height to blade tip of 125m to provide a visual focus for the development).
- Associated ancillary development comprising unit transformers, meteorological mast, access routes, substation, borrow pits and temporary site compounds also form part of the application for consent along with deforestation of part of the site.
- Access to the site will be from the A714, on the north side of the Duisk Bridge using lengths of existing upgraded and new track.
- The windfarm will connect into the electricity transmission system via underground cables linking it to existing overhead lines which adjoin the site area to the west. The development will not require any additional overhead lines connecting it to the electricity distribution system.

2 ■ Mark Hill Windfarm Environmental Statement Non Technical Summary

- The electrical output of the proposed windfarm is anticipated to be 56 - 84MW, depending on the turbines specified for the site, sufficient on average to supply the equivalent of the domestic electricity needs of approximately 33,000 – 46,900 homes.
- The proposed windfarm is designed with an operational life of 25 years and permission is sought for this period of operation only.
- Construction of the windfarm is anticipated to take about 24 months, with opportunities for local workforces and companies to be involved.

Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process by which information about the environmental effects of a project is collected, evaluated, and taken into account in its design, the decision as to whether it should be given consent, and if it is given consent, how it is subsequently to be built, operated and dismantled. The developer presents the information on the project and its environmental effects in an Environmental Statement (ES).

Consultation

A key aspect of the Environmental Impact Assessment is consultation, both to agree the scope of the document to be submitted and to understand public perception of the windfarm in order to help in the design process. Organisations consulted included The Scottish Executive, South Ayrshire Council, Barrhill Community Council, Scottish Natural Heritage, Royal Society for the Protection of Birds, Scottish Environment Protection Agency, Historic Scotland and many others.

Public consultation was also undertaken and included a public exhibition, in Barrhill in April 2005 at which members of the public were invited to provide their views and comment on the proposals.

Environmental Effects

Introduction

The following sections provide a brief summary of the main findings of the EIA as set out in the technical sections within the full Environmental Statement

Landscape and Visual

Landscape Assessment

Landscape effects are defined as changes to landscape elements, characteristics, character, and qualities of the landscape as a result of development.

The windfarm lies in an area of landscape character described as 'Plateau Moorland with Forestry'. This type of landscape is recognised as having some capacity for windfarm development due to the character and morphology of the landscape, which is a broad scale, undulating plateau landform that has been man-modified with commercial forestry.

During the construction period, there would be significant level of disturbance and change, however all of the construction areas would be cleared up and restored upon completion. During operation of the windfarm, the site area would regain a more settled composure and the careful design and compositional arrangement of the turbines would allow the new windfarm to be reasonably accommodated within the plateau landscape in a manner that would be suitable for this type of development. The detailed assessment has concluded that there would be no significant landscape effects remaining after operation.

Visual Assessment

Visual effects are concerned wholly with the effects of the development on views, and general visual amenity, and also the visual effects of this windfarm in combination with other windfarm development. Potential visibility, as indicated by the computer generated 'Zone of Visual Influence' (ZVI) and site surveys, would be relatively limited for this type of development, especially when tree cover in the area is taken account of.

Visibility of construction activity will be limited, with most of this occurring on the upper plateau moorland. The windfarm includes opportunities for localised enhancement, for example at the site access where new dry-stone walling and tree planting would be provided.

Great care has been taken as part of the design process in the compositional arrangement of turbines in order to reduce visibility and achieve an acceptable design that would present a simple and coherent image from most viewpoints. Significant visual ef-



Photomontage produced for illustrative purposes only

ffects on the views from a small number of residential properties are unfortunately unavoidable, but are relatively low for this type and scale of development. The result of the detailed visual assessment is however, that there would be no significant visual effects on landscapes, which are designated for their protection and value, towns and villages, including Barrhill, roads, rail routes and most of the popular footpaths and hilltops within the area.

Noise
Construction Noise

During the construction period a range of different activities would take place within the site, but those with greatest potential to cause noise will be during the track laying stage and excavating and laying the turbine foundations.

While construction noise may be perceptible at the closest residential receptors, given the distances between the site and the receptors and the expected construction activities, it is considered unlikely that construction noise breach guideline limits.

Construction noise will be limited by restricting working hours to between 0700 – 1900 Monday to Sunday in order to meet limits to be agreed with the construction contractor and local authority as part of a Section 61 agreement. Work and deliveries outside these hours are not expected, though if required to meet specific demands, permission will be sought in advance from South Ayrshire Council.

It is assumed that decommissioning noise will be generally less, or at worst realistic case, similar to that experienced during the construction period. It can therefore be assumed that noise relating to the decommissioning of the windfarm may also be perceptible at the receptors, but will be limited by restricting working hours and transport routes.

Operational Noise

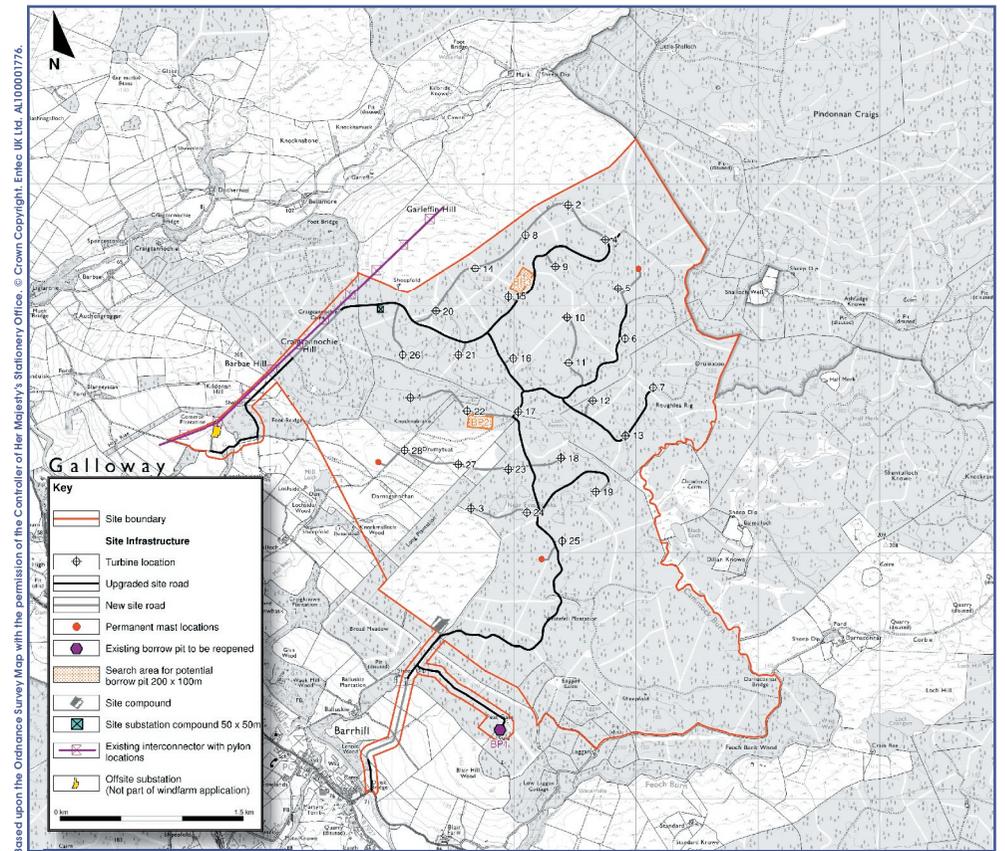
Careful attention to the number and layout of turbines has established a scheme that achieves compliance with noise the criterion proposed in line with the guidance established by the Working Group on Noise from Wind Turbines ETSU-R-97. The manufacturer of the turbine selected for this site will be contractually required to guarantee noise emission levels from turbines installed on the site. The operator of the windfarm site will be required to comply with the noise criterion levels which have been established for this site regardless of any tonal components which the turbines might emit, by condition attached to the grant of any development consent.

Ecology and Nature Conservation

The work to understand what effects the proposed windfarm would have on animals and plant communities on the site involved a desk study to gather existing information about the site and survey work to understand what animals used and plants colonised the site.

Plant communities of value found on the site include blanket bog, wet heath, and standing open water. The best quality bog vegetation is to the east of Long Plantation and has been avoided in the windfarm design. Other bog areas and plant communities on the site are of local or less than local importance.

The site supports a number of protected mammal species including water vole and potentially otters.



Proposed Site layout

Anticipated negative effects when building the windfarm relate to the disturbance of wet heath adjacent to access tracks and turbine bases/crane pads and the potential impact on water voles. The operation of the site will also result in the permanent loss of approximately 16.8ha of plant communities the majority of which is conifer plantation of less than local value. The areas affected however will be small and have already been affected by land management such as grazing, drainage, and afforestation. The overall significance of any negative effects are therefore predicted to be minor.

There were lots of water vole signs within the site, but the access track crossing points will be re-surveyed immediately prior to construction and if water vole are present design will ensure these species are not adversely affected. Fisheries interest will be protected by good site working practices.

The production of a habitat management plan and the restoration of almost 616ha of conifer plantation to blanket bog and wet heath will be a positive enhancement potentially providing habitat of greater ecological value than the conifer plantation which it is replacing. Restructuring of the remaining conifer plantations on the site will also bring ecological benefits.



Birds

The birds found on Mark Hill during the summer are typical of the types of habitats on site, the most abundant in the open habitats being skylark and meadow pipits, while in the plantation the most frequently recorded species are coal tit, chaffinch, robin, wren and siskin. The site supports populations of regional importance of water rail and teal. The only notable bird species seen through summer was a hen harrier on one day.

The key finding of the wintering bird survey was a flock of twenty whooper swans recorded using Loch Farroch during March. It is assumed that these were passage birds, and local

records show that 4-7 birds use the loch on occasion during most winters. If the windfarm is built the swans may winter elsewhere but there are other suitable waterbodies such as Black Loch and Loch Crongart in the wider area which are well placed to accommodate them.

Other species recorded during the winter included hen harrier, which was using open areas of farmland and heath to the south and west of the site for foraging. Should wintering hen harrier(s) be disturbed and move away from the site, they will be able to find alternative habitat within the region because there is lots of winter foraging habitat of a similar nature in the area.

As a result of the habitat management plan the site is likely to become attractive to a range of ground nesting species including some of medium conservation importance such as skylark and reed bunting. It is also likely that, there will be further potential around the edges of the site for foraging birds of prey. The habitat may also be potentially suitable for re-colonisation by black grouse should the wider recovery plan prove effective.

Traffic and Transport

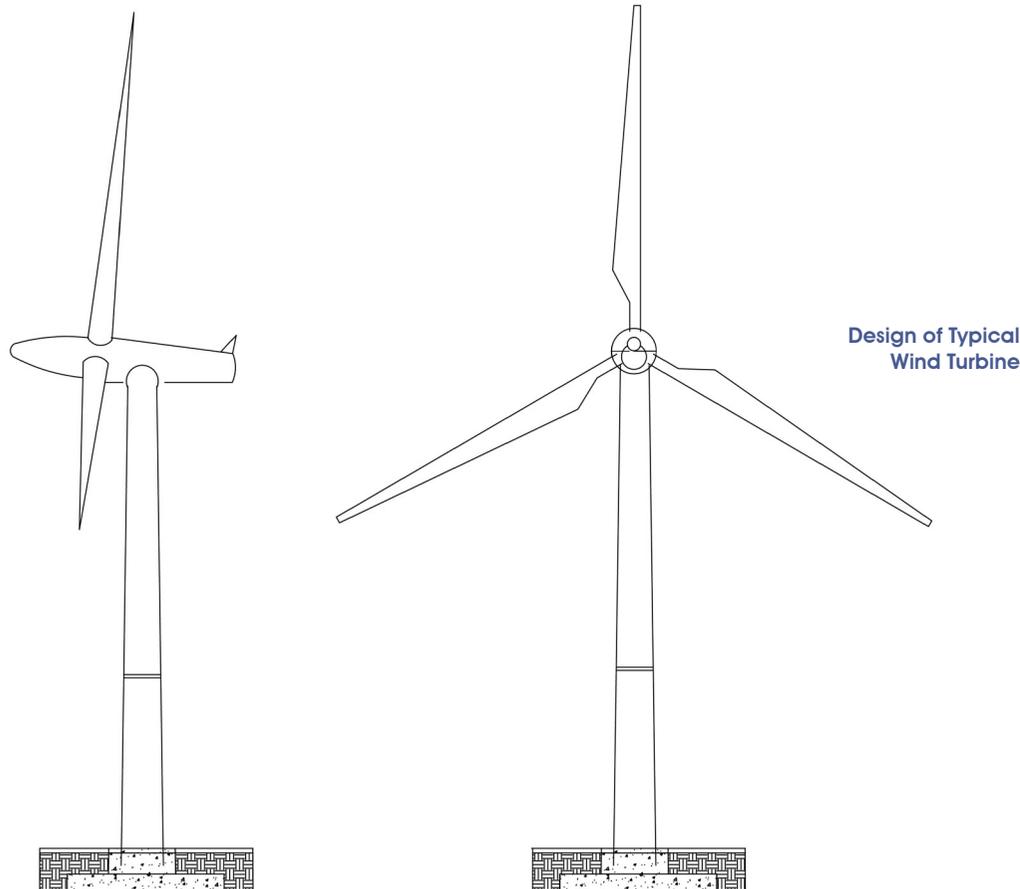
The main transportation impacts will be associated with the movements of commercial Heavy Goods Vehicles (HGVs) to and from the site during the construction phase of the development. The windfarm would be served by a single vehicular access point located on the A714 at Duisk Bridge to the south-east of Barrhill village centre

Most traffic for the construction of the windfarm will come from the south avoiding Barrhill Village Centre. Stone will be won on site for access track construction and concrete is likely to come from Barrhill. The turbines would be delivered from the south.

Information about existing traffic use and accident data was obtained to undertake the assessment.

Working out when deliveries will be made to the site over the construction period shows that the busiest period will be during the twelfth month of the construction programme. During this month, an average of 26 two-way trips per day (13 in and 13 out) are predicted, with the exception of 28 days when up to 150 movements may arise due to concrete deliveries (localised traffic on the A714 between the batching plant located to the south-east of Barrhill village and the site access at Duisk Bridge).

The impact of construction-related traffic has been calculated, in percentage terms, relative to the background traffic in the year of assessment (2006). The percentage impact exercise predicts that there increase in HGV traffic during the construction period will be within acceptable limits.





Any disturbance caused by construction traffic will be limited through the implementation of a Traffic Management Plan. The traffic management plan could include measures to restrict movements during peak hours of background traffic and other sensitive periods such as school set down/pick up times to further minimise any impact. In addition the Traffic Management Plan could include voluntary HGV speed restrictions during term times at school bus pick up and drop off times.

It is considered that assuming all mitigation measures are satisfied, that any effects on the surrounding highway network will be of an acceptable level.

Archaeology and the Historic Built Environment (Cultural Heritage)

Direct effects on known features of cultural heritage resulting from the proposed windfarm have been avoided through development design.

There may be more undiscovered remains on site but this is unlikely as the forestry will have already impacted on them. When the forest is felled and archaeologist will visit the site and identify any previously unrecorded features with standing remains and inform any small changes to design which may be required. An archaeologist will also monitor work on site adjacent to any recorded features. The exact scope for archaeological monitoring work will need to be agreed in advance of development with West of Scotland Archaeology Service.

The magnitude of the effect on the setting of one Scheduled Monument (Ballmalloch, chambered cairn), which lies in close proximity to the site, is likely to be high. The overall visual context of the cairn will change over time as the commercial forest plantation that surrounds it matures. The overall indirect effect on the setting of monuments and other designated features in the vicinity of the site is of a low magnitude. All these effects are temporary and reversible because of the temporary nature of the windfarm development.

The Water Environment

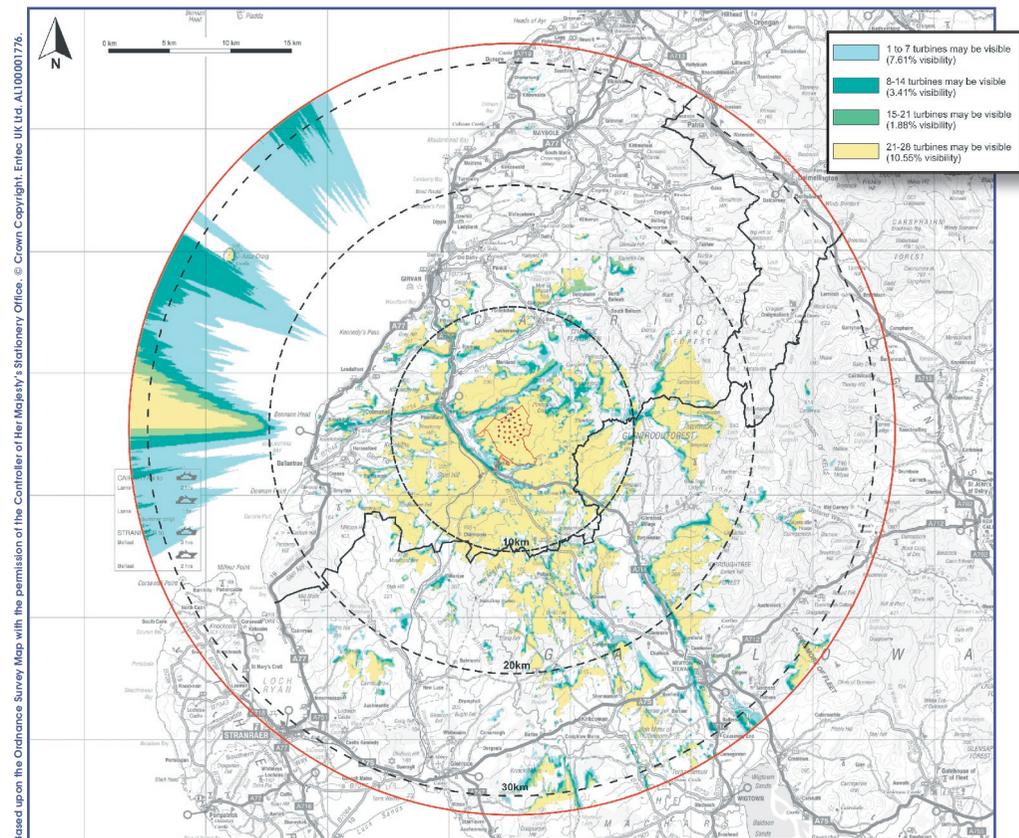
Using best practice construction techniques there should be no harmful effect on the water environment during construction. There will be disturbance to peat soils within the site, but all peat will be handled according to best practice. Any excess peat soil, following the placement of the wind turbines, will be used for restoration.

The construction of the site will lead to changes in the way water runs over the site. The biggest change will be the removal of approximately 6.0 km² of forestry plantation. Under normal clear felling forestry this can lead to an overall increase in runoff. Within this scheme the proposals to restore vegetation to wet modified bog allow for an increase in natural storage levels of water onsite. Increased runoff as a result of the forest removal

will lead to more water in streams supporting their flows during average and low flow conditions, having a positive effect on freshwater ecology.

There may be some short term changes in water quality, though in the long term an improvement in water quality is expected. The risks to downstream watercourses and private water supplies are predicted to be slight. Similarly erosion of soils and with it the potential increase of sediment in stream flow are expected to occur in limited quantities during the construction phase of the project.

The inclusion of access tracks on site will also lead to slight changes in the hydrological regime. However, the tracks have been designed to ensure that impacts and effects on



Based up on the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationary Office. © Crown Copyright. Entec UK Ltd. AL100001776.

peat soils and hydrology are kept to a minimum. The tracks will be of standard windfarm design and construction and will avoid cutting and compaction of soils. Drainage in peat areas will be kept to a minimum, whereas drainage in non peat areas will be passed to grassed swales or infiltration drains to control track drainage.

Effects on People and Business

The development constitutes a large investment in the area by the developer and as such provides the opportunities for indirect positive economic investment. The developer is working with the local community and economic development organisations to encourage employment and training opportunities for people during construction. There is also the potential for a community fund for local projects and the potential for local footpaths to be extended through the windfarm site.

Whilst some local residents may currently have reservations about the proposed development, previous surveys at operational windfarms show that these fears may not be fully realised when the development becomes operational. Overall the windfarm is anticipated to have a neutral effect on residents perceptions within the area.

Overall it is perceived that the proposed windfarm will have a positive impact on socio-economic effects.

Effects on Infrastructure, Radar, Telecommunications and Safety

An unacceptable effect in terms of infrastructure, telecommunications, television, aviation and safety would be one that significantly disrupts a service. There are no effects anticipated in this respect.

By mitigating all other relevant effects the windfarm may have, it is not anticipated to have any significant effects on existing infrastructure, telecommunications, television broadcasting, civil aviation and safety.

Conclusions

The development of a 28 turbine windfarm at Mark Hill will contribute to both the UK government's target of reducing CO2 emissions by 20% by 2010 and the Scottish Executive's target of generating 18% of energy from renewable sources by the same date.

The Environmental Impact Assessment of the proposed Mark Hill Windfarm has addressed a wide range of potential impacts on different aspects of the environment. The emerging findings of the assessment process have had major part in the design of the windfarm and picking the final site layout. A range of other measures come with the windfarm which should prevent most of the potential impacts identified from resulting in significant negative environmental effects.

It is predicted that the only significant negative effects which would result from the construction and operation of the proposed windfarm would relate to landscape and visual effects, ornithology, cultural heritage and hydrology and hydrogeology, although for all of these, with the exception of the visual effects and the indirect effect on one scheduled monument, these effects will be of no more than minor significance.

No significant negative effects have been identified on cumulative landscape and visual effects, noise, traffic and transportation, geology, socio-economics, land use and public attitude; or existing infrastructure, telecommunications, television, aviation safety, shadow flicker and windfarm safety.

The windfarm proposal brings with it a proposed outline habitat management plan which will bring significant major benefits to the diversity of habitats on site. The development will also have several minor positive effects on the local economy through financial contributions to a local landowner, through potential employment opportunities and having the potential to enhance recreational opportunities in the area. The windfarm's major positive effect is its broader contribution to reducing greenhouse gas emissions in a sustainable way.

For further information:



David Butterworth
Managing Director
Force 9 Energy Ltd
St Mary's Court
The Broadway
Amersham
Bucks
HP7 0UT
Tel: 01494 582093
Fax: 01494 582473
email: davidbutterworth@force9energy.com



Entec UK Limited,
6/7 Newton Terrace,
Glasgow,
G3 7PJ
Tel: 0141 222 1200