



Earlsburn Wind Farm

Non-Technical Summary

October 2003



Introduction

RDC Scotland has submitted a Planning Application to Stirling Council for the development of a wind farm to generate electricity on privately owned land located between the communities of Fintry and Denry (i.e. approximately 10km north-east and 15km north-west from these population areas, respectively).

Early discussions with Stirling Council indicated that the development should be subject to a formal Environmental Impact Assessment (EIA) and therefore, RDC Scotland has prepared an Environmental Statement (ES) to accompany the Planning Application. This document provides a summary of the Environmental Statement.

The scope of the ES was agreed in discussion with Stirling Council and other Statutory and Non-Statutory agencies. The ES provides environmental information to assist Stirling Council in the process of the determination of the wind farm proposal.

The following documents have been submitted to Stirling Council to support the application for the development of the wind farm.

- Volume 1 - Planning Statement Document
- Volume 2 - Environmental Statement (Text and Appendices)
- Volume 3 - Environmental Statement (Maps and Figures)
- Volume 4 - The Non-Technical Summary (this volume)



Wind Clean Energy for a Sustainable Future

There is now clear evidence that global warming and climate change are a reality and have the potential to cause major adverse effects on sea levels, water supply and agriculture in the coming decades. One of the major causes of global warming is the emission of carbon dioxide from power stations burning fossil fuels (coal, oil, gas) to generate electricity. There is therefore a need to obtain clean, diverse and sustainable supplies of energy from renewable sources such as wind.

Wind Energy in Europe

Within Europe, virtually all member states are seeking to generate electricity from wind energy. Germany leads the way with over 12000 MW of installed capacity, with Spain at 4830 MW of installed capacity, and Denmark at over 2880 MW of installed capacity. Denmark remains the most ambitious of all the European states with an aim to have 50% of all its power met from wind energy by the year 2030.

Wind Energy in the UK Sustainable Power

The Scottish Executive, Welsh Assembly and the UK Government are all strongly committed to developing wind power and other renewable technologies. A market-based support mechanism for renewable energy has been introduced and this places an obligation on electricity suppliers to buy an increasing proportion of electricity from renewable energy sources. In Scotland, this mechanism is called the Renewables Obligation Scotland (ROS) and in England and Wales, it is called the Renewables Obligation (RO).

Renewable energy has a key role to play in the UK government's Climate Change Programme. Renewable energy sources generally produce low or negligible levels of pollutants such as carbon dioxide and other 'greenhouse gases' and so by displacing conventional sources of energy, they can help the UK meet its climate change targets.

By May 2003, a total wind energy capacity of 585 megawatts (MW) had been installed in the UK meeting the average electricity needs of 385 000 homes from 82 onshore wind energy sites. In Scotland there are currently 15 wind farms, with no wind farms currently operational in Stirlingshire.

Wind Energy in Scotland 18% target and beyond

The Scottish Executive has a target of 18% of Scotland's electricity to be generated by renewable sources by 2010. This commitment will aid in attaining the overall UK target of 10% of electricity to be generated by renewable sources by 2010. Achieving the 10% UK target is expected to result in annual savings of around 2.5 million tonnes of carbon emissions by 2010. The Scottish Executive has also signalled its intent to achieve a 40% contribution from renewable energy by 2020.

Earlsburn Wind Farm

The application site is on Cringate Law (summit 397m OD) and Hart Hill (summit 437m OD) within the Fintry, Gargunnoch and Touch Hills. The land is for the most part heather and grass covered moorland and rough pasture, characterised by extensive tracts of peat bog interspersed with grass-covered bedrock knolls. The land is used for sheep pasture and as a grouse moor.

The Earlsburn site was initially identified as potentially suitable for a wind farm after consideration of the following criteria:

- Good wind resource;
- Availability of an economically priced connection to the electricity grid;
- National and local planning policy;
- Lack of nature conservation, archaeological and landscape designations;
- No transmission and microwave signals crossing the site;
- Suitable access from the local highway;
- Landowner participation.

Further detailed assessment and consultations with the Council, consultees and interested parties have tended to be in accordance to these initial conclusions.

Project Description

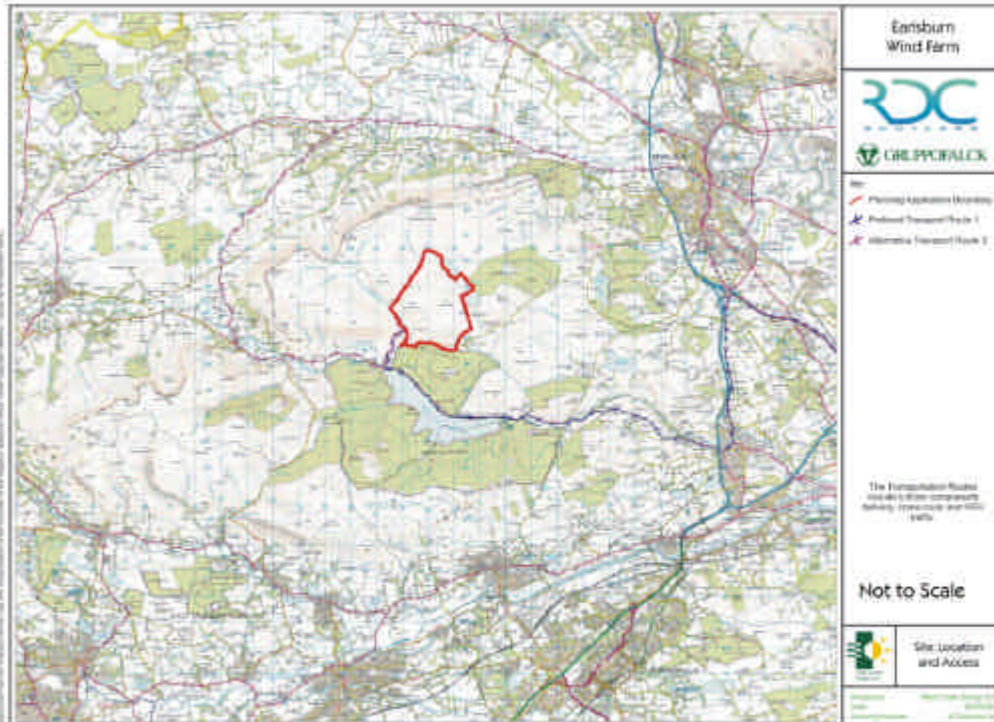
The wind farm will comprise 14 wind turbines of modern design, each having a three bladed rotor of up to 90 meters in diameter supported on a tapered cylindrical tower to give a height of up to 70 meters to the rotor hub and up to 115 meters to the blade tip. Each turbine will have a power output of between 2 and 3 megawatts (MW). The potential generation capacity of the wind farm will, therefore, be between 28 MW and 42 MW.

Technical and environmental considerations have resulted in the wind farm design as shown in the site layout plan. The wind turbines are spaced so as to minimise energy loss due to wind turbulence, to avoid sensitive local areas and to minimise impact on neighbouring properties.

The significant proportion of the on-site access will use existing rough tracks, used by the landowner, of the application area. Approximately 8500 metres of additional on-site access track will be required to provide access to all of the turbines. Each turbine will be linked by a new access track, which will be approximately 5 metres wide. The turbines will be connected by underground cables, which will take power from each turbine to a single storey control building at the site.

The site occupies an area of 735 hectares. Of this, approximately 6 ha will be permanently occupied by the project components, representing around 0.8% of the total land area.

In terms of connecting to the nearby electrical distribution network: from the control building) approximately 250 metres of underground cable will be routed to overhead cabling offsite, supported by wooden poles, continuing southeast for approximately 11 km towards the local electricity network. This connecting line will be the subject of a separate planning application under section 37 of the Electricity Act 1989.



Wind Farm Construction and Operation

Construction traffic will be spread over the 8-10 month construction period. One entrance to the site is proposed for vehicles during the construction period. This will be via the existing entrance onto the site from the B818, and would require moderate improvement to accommodate the exceptional loads.

During the construction period, there will be three types of traffic accessing the site: exceptional loads, conventional HGVs, and the vans and cars of construction staff. There are two potential local routes for the delivery of exceptional loads, as shown on the Site Location and Access Plan.

There will be around 120 exceptional loads, 116 of which will deliver the tower sections, blades and components of the turbines and the associated electrical equipment. The remaining four will deliver the mobile cranes and other construction plant. With the exception of the cranes, some of the long vehicles delivering the large loads will reduce in length for their return journey, thus reducing their impact.

Aggregate material for track construction, crane hardstandings, control building hardstanding, turbine foundations and the temporary site office area are required.

Importing aggregate, during the first four months of the construction period, to the wind farm site will result in notably more transport volumes to that of onsite extraction of aggregate. During this period, the percentage increase to existing traffic flows on the B818 highway is anticipated to be 18% for importing aggregates and 1.7% for extracting materials onsite. This equates to an estimated total of 3919 HGV loads of aggregate material. If importation of this material is evenly spread throughout this period, it will equate to approximately 32 HGV loads of aggregate per day. Concrete for the foundations will either be delivered from a local batching plant ready mixed, or will be batched on site. Assuming concrete is transported to the site ready mixed, a maximum of 50 loads per turbine foundation will be required.

With onsite aggregate extraction, the total volume of HGV loads would be reduced by more than 90% to a total of 378 (i.e. 3 HGV loads per day, as opposed to 32 per day from importing aggregate). The benefit of on site batching is a 50% reduction in the potential number of transport deliveries and the flexibility to schedule deliveries over a longer period of time.

Around 60 people will work at the site and there will be some van deliveries. This traffic will approach the site from various directions and is not anticipated to create any noticeable effect on local traffic flows during the construction period.

The benefit of on site batching and sourcing aggregate onsite is a lower total number of transport deliveries and the flexibility to schedule deliveries over a longer period of time. Therefore, in order to minimise potential effects to public highways, in particular the B818, the intention of the developer is to undertake all concrete batching on site and source all aggregate requirements insitu.

* 378 loads importing sand and cement for onsite concrete batching. This is based on all stone aggregate materials being sourced onsite.

* Typical concrete mix of materials would be approximately 40% stone aggregate, 20% cement, 30% sand and 10% water. Therefore, with concrete batching conducted onsite and stone aggregate and water delivered insitu, sand and cement requirements would represent a 50% reduction of HGV return journeys.

* Preliminary site studies carried out indicate the rock material insitu will be suitable for use as aggregate within concrete structures, although further testing may be required to verify this.

Environmental Impact

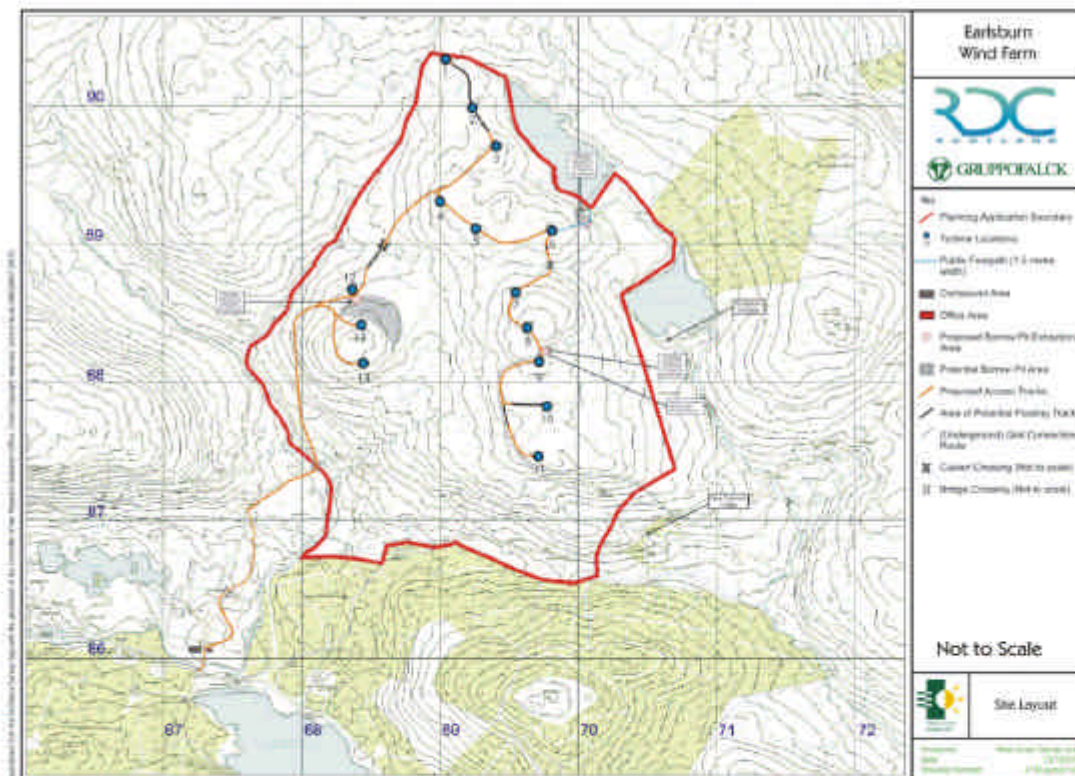
Early consultations with Stirling Council identified the key environmental and amenity issues to be considered in determining the planning application. These are fully addressed in the Environmental Statement which includes reports on landscape and visual amenity, cultural heritage, ecology, hydrology, noise, soils, access and safety, and the effects of the proposal on TV and other communication systems. These reports have been commissioned from independent expert consultants, the main conclusions of which are summarised below.

Cultural Heritage

Independent archaeologists were engaged to undertake an assessment of the Earlsburn wind farm site. A desk based study and walkover assessment were completed.

There are no sites of national importance (Scheduled Ancient Monuments or non-scheduled sites) within the proposed development area. Two Scheduled Ancient Monuments lie close to the proposed access route, north of Todholes, but will not be directly impacted upon physically by the turbines or access trackways associated with the wind farm development.

The proposed development would result in only one moderately significant, but low magnitude, indirect effect occurring: the visual setting of a scheduled cairn north of Todholes Farm.





Predicted view from: Meikle Bin Summit



Predicted view from: Stirling Castle

Benefits

The total cost of the wind farm will depend on the final turbine choice but is expected to be around £30 million, and, as such, would require significant investment within Stirling. It is estimated that local companies will be able to bid for about £6 million worth of construction contracts. Additional indirect expenditure in local shops, service stations etc is also expected. RDC Scotland has a policy to utilise, when practicable, local contractors for construction, operation and maintenance work.

Utilising updated figures of average UK household electricity consumption of 4,345kWh per annum, it is calculated that the Earlsburn wind farm will be sufficient to supply the average annual domestic needs of approximately 25,403 homes. This is equivalent to supplying the electricity needs of over 60% of all homes in Stirling.

Using the British Wind Energy Association emission figures for coal-fired plant, it is estimated that the Earlsburn wind farm could displace the following gaseous emissions which would otherwise have been produced by a power station burning fossil fuel:-

- Up to 94,933 tonnes of carbon dioxide (CO₂) per annum;
- Up to 1,104 tonnes of sulphur dioxide (SO₂) per annum;
- Up to 330 tonnes of nitrogen oxides (NO_x) per annum.

Over a 25-year period carbon dioxide emission savings alone could amount to over 2.4 million tonnes.

Earlsburn wind farm will therefore make a notable contribution to the Scottish Climate Change programme including the Scottish and UK targets for renewable energy to increase the use of electricity from renewable sources in Scotland by 2010, taking it to a total of 18%, and the longer term target of 40% by 2020.

Community Benefit

RDC Scotland is of the opinion that the Earlsburn Wind Farm will offer significant benefit to the local community. Valuable economic activity will also be attracted to the local area during the construction and operation of the wind farm.

In order to provide additional community benefit, RDC Scotland has a policy of establishing a wind farm trust fund, to enable support to be given to local community-based social, educational and environmental initiatives. A commitment to this sort of investment in the local area will enable assistance to be given to such matters as follows:

- Initiatives to promote local development and tourism such as a local visitor centre and/or an interpretation facility;
- Environmental education initiatives;
- The promotion of local recreation infrastructure such as improvements to existing community infrastructure such as bridleways, footpaths, new cycleways, playgrounds and permissive paths;
- Other community-led projects.

* BWEA (2002). Calculation for Wind Energy Statistics (online). British Wind Energy Association.

Website: www.britishwindenergy.co.uk/edu/calcs. Accessed 02.09.02.

* Figures based on BWEA emission calculations. BWEA (2003).

<http://www.bwea.com/map/index.html>. Accessed on 08.09.03



Landscape and Visual Impact

The landscape and visual assessment has examined the potential effects of the proposals on the character of the landscape and changes to local views. As such, the proposed project:

- Is out with any national landscape designation; and
- Has localised landscape and visual effect.

The fourteen wind turbines will be visible from high land on and around the site, partially visible from the Carron Valley to the south of the site and partially visible in distant views from the northwest clockwise round to the southeast.

As a result, there are likely to be significant effects on the character of the Fintry, Gargunnoch and Touch Hills, within which the site is located, the Campsie Fells and Kilsyth Hills to the south and southwest of the site, and the Carron Valley that runs between the two sets of hills. Accordingly, there will also be significant effects on the character of the Area of Great Landscape Value that extends over these hills and valleys, but not on the remaining landscapes or designations in the study area.

The area local to the site is sparsely populated and topography and/or vegetation will partially or totally screen views of the turbines from most properties in the area. There are likely to be significant changes in the view for residents in up to six local properties, who will see the wind turbines from within the curtilage of their properties, although the modifications in the layout have ensured that the turbines will not be overbearing in these views.

The turbines at Earlsburn will be of a modern 3 bladed design and will be painted an appropriate matt colour, to be specified by the Planning Authority. A matt colour reduces the distance over which the turbines are visible, especially in dull weather conditions or low light conditions.

The wind turbines will become a key characteristic of the local landscape and will be clearly visible in views from a few local properties and roads, but these localised effects are not considered to be unacceptable. Indeed, the wind farm will be regarded positively by some people, as it will have an obvious and directly functional relationship with the nature of the local landscape.

It is unlikely that a proposal to site a new wind energy development in the UK would not result in some significant landscape and visual effects in the immediate locality of the site. However, significant effects can be beneficial or adverse and, if adverse, are not necessarily unacceptable.

In summary, the size of the development will respect the scale and composition of the landscape and the significant landscape and visual effects will be localised. Therefore, the proposed development will be considered acceptable in this location

Shown in within this document is a typical turbine, similar to that which will be used at Earlsburn and a predicted local view of the wind farm.



Nature Conservation

An independent specialist consultant has undertaken a review of the ecology of the proposed development site and its surroundings.

The following conclusions can be drawn as a result of this ecological assessment:

- The site is not subject to any statutory or non-statutory designations for ecological reasons;
- Only a small proportion of the habitats are considered ecologically valuable as most of the plant communities are associated with farming/human activities;
- Any significant effects on birds would be confined to the construction period and would be of very little long-term consequence;
- There may be a small amount of habitat loss or fragmentation but this is unlikely to affect how animals use the site;
- No other ecological impacts of any significance have been identified in connection with the proposals;

To offset potential effects, proposed measures within a mitigation management plan, to enhance habitats and increase biodiversity in the uplands, will include:

- Sensitive watercourses will be avoided;
- All roadstone will be obtained from on-site locations;
- Consideration will be given to not restoring all borrow pits, in order to create more diverse habitat (e.g. rock habitat);
- No access to occur within sensitive bird areas;
- Reduction in sheep grazing levels;
- Blocking of artificial drains to promote creation of more wet land areas;
- Modification of current mairburn practice;
- Creation of up to 60 ha of new native woodland species.

Noise

An independent specialist assessment of the noise impact of the proposed wind farm development has been carried out in accordance with published guidelines and recommendations, specifically the Scottish Executive's Planning Advice Note (PAN) 45 and DTI Noise Working Group Guidelines (ETSU-R-97).

Baseline noise levels were measured at locations representative of the nearest residential properties in the area and worst case turbine noise levels at these locations were predicted

The assessment showed that the predicted noise levels at the nearest residential locations to the site meet the night time noise limit.

The assessment also showed that predicted noise levels are below the lower amenity hours noise limit at New Cairnoch Lodge, below the landowner noise limit at Easter Cringate and below the upper amenity hours noise limit at Earlsburn Cottage.

Predicted noise levels at properties further from the site are below the WGNWT simplified noise limit.

The overall potential effect of the proposed development, based on worst case noise propagation conditions, is assessed as being of minor significance at the nearest residential property and insignificant at all other properties.

This is a positive indication that the wind farm will not give rise to complaints relating to noise levels.



Interference with Television, Radio and Microwave Paths

Through consultation with communications agencies, it is predicted that there will be no disturbance to communication systems, including those used by the emergency services and mobile telephone services providers.

Public Safety

There is no recorded incident of a member of the public being injured by a wind turbine. The UK Government considers wind energy to be a 'safe' technology, requiring no special safety provisions. Experience has shown that livestock are undisturbed by the movement of the blades and will graze underneath them as well as using the towers for shelter in bad weather. Farming on the windfarm site will not be affected by the development.

The wind turbines are designed and manufactured to withstand weather conditions at least as extreme as those occurring in the United Kingdom, in terms of wind speed, turbulence and temperature. The wind turbines are equipped with safety systems which will automatically shut down the machine should a fault occur.

Shadow flicker can arise from the passing of the moving shadow of the turbine rotor over a narrow opening such as the window of a nearby residence. Various conditions need to be met to create a shadow flicker effect. These have been evaluated and it is concluded that shadow flicker is unlikely to cause a nuisance at any residential properties as a result of the development.

The turbines will not appear suddenly to any motorist travelling at speed on roads close to the site, and therefore driver distraction is not considered to be an issue.

Although there are no marked or specific rights of public access via a public footpath on the site, appropriate steps will be taken to ensure the safety of members of the public during the construction process and operation and maintenance of the wind farm.



Overall Conclusion

National and local planning policy currently provides for a presumption in favour of renewable energy projects unless a particular proposal would cause demonstrable harm to interests of acknowledged importance.

In this particular case, the main issue to be considered is the benefits to be gained from exploiting a clean sustainable energy resource weighed against any perceived impact on changes to views, landscape character, ecology or residential amenity.

It is clear from the individual assessments set out within the Environmental Statement and summarised within this document that there will be no long-term significant effects from the development in relation to ecology, cultural heritage, health & safety, hydrology, noise, ornithology and soils.

In terms of potential landscape and visual impacts, the overall conclusion is that there will be some localised impact due to changes in views but that this will be limited in extent and therefore the wind farm should be acceptable in this location.

Planning policy within the amended Structure Plan contains an identified favourable area for wind farm development, i.e. Area of Search, to which the location of the proposed Earlsburn Wind farm site is situated within.

Further Information

If you would like to find out more about the Earlsburn wind farm proposal, you can read the full Environmental Statement at Stirling Council, Stirling Council Viewforth, Stirling, FK8 9ET.

For further details about this project, please contact Frankie McCulloch at West Coast Energy Ltd, 48 Cassilis Road, Maybole. Tel: 01655 884 909 or e-mail frankie.mcculloch@westcoastenergy.co.uk.

Copies of the full Environmental Statement documentation can be purchased for £100.00 from West Coast Energy Ltd, The Long Barn, Herowys Rd, Auld, Fifehire GHT 4EW.



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