

FAIRBURN WIND FARM

ENVIRONMENTAL STATEMENT

VOLUME 1 – NON TECHNICAL SUMMARY

MAY 2005



NON-TECHNICAL SUMMARY

A INTRODUCTION

Scottish and Southern Energy has submitted a planning application for a 35 MW, 20 turbine windfarm at Fairburn, near Dingwall in Ross-shire (Figure A). The application was accompanied by an Environmental Statement, which recorded the findings of an Environmental Impact Assessment. This Non-Technical Summary summarises the Environmental Statement.

B BACKGROUND

Man made emissions of greenhouse gases, in particular carbon dioxide, are widely believed to be accelerating the process of climate change. Concern about the environmental, social and economic consequences of climate change has driven agreements to control emissions of greenhouse gases. As part of the European Union plan, the UK has a target to reduce greenhouse gas emissions by 12.5% by 2008-2012, against a 1990 baseline¹.

A key element of the greenhouse gas reduction programme is the further promotion of renewable energy, by means of a market mechanism referred to as the Renewables Obligation. The Renewables Obligation incentivises electricity suppliers such as Scottish and Southern Energy to develop additional renewable energy supplies, and the Fairburn proposal forms a part of this wider programme.

Scottish and Southern Energy's renewables programme includes onshore wind, refurbishing existing hydro, new hydro and co-firing of biomass. In addition, new and emerging technologies including offshore wind, tidal, solar and small scale wind are being evaluated and supported.

The Fairburn site was selected, along with other sites, after a detailed site selection process that considered technical and environmental factors. The site is not subject to any nature conservation or other designations.

C THE DEVELOPMENT

The windfarm would comprise the following main elements:

- 20 wind turbines, with a tip height up to 100m high, on reinforced concrete foundations, with internal or external transformer
- site tracks allowing access to each turbine, extending from an access track based upon an existing track which services part of the Orrin hydroelectric scheme
- a small control building / sub-station
- anemometer masts

Turbines would be connected to the control building by underground cables, and the whole windfarm would connect to the grid at Orrin Power Station, also by means of underground cables.

¹ In addition there is a voluntary target of 20% reduction by 2010.

Construction would last approximately 9 months, involving civil, electrical and turbine contractors. A temporary construction compound would be established. Rock will be required for various purposes, in particular for track construction, and borrow pits will be formed on site to avoid the need to import stone.

Environmental factors have influenced the design and layout of the windfarm, in particular landscape and visual, ecology and birds considerations.

Appropriate best practice measures will be incorporated into the detailed design and construction methods.

The windfarm would operate for nominally 25 years, typically generating enough electricity for 20 000 homes annually. At the end of 25 years the site would be decommissioned.

D ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment is a process that considers how a proposed development will change existing environmental conditions, and what the consequences will be. It therefore informs both the project design and planning decision-making processes.

The process, which is reported in the Environmental Statement comprises the following stages:

- Scoping, to define the issues which are to form the basis of the Environmental Impact Assessment
- Consultation, to supplement the Scoping and agree any specific methodologies
- Baseline reviews, to establish relevant existing conditions on the basis of currently available information and / or new surveys
- Characterisation of the value or sensitivity of potentially affected elements of the environment (receptors)
- Prediction and characterisation of the changes experienced by the receptors (impacts)
- Evaluation of the consequences for the receptor of the impact (effect)

The assessment of effects for some environmental aspects is based upon established methodologies, techniques and criteria. These are applied as appropriate.

E PLANNING CONTEXT

The key plans, policies and guidances relevant to the application are:

- The Highland Structure Plan (2001)
- NPPG 6 Renewable Energy (2000)
- PAN 45 Renewable Energy Technologies (2002)
- Ross and Cromarty East Local Plan (2003)

F LANDSCAPE AND VISUAL ASSESSMENT

A landscape and visual assessment has been carried out which examined the potential for impacts of the project both on the overall landscape and its effect on views up to 30km from the site. The assessment concluded that the final design had responded to the landscape and setting in a positive way.

The proposed wind farm at Fairburn will introduce a group of man made structures into a large scale area of Moorland south of Strathconon. While the introduction of the turbines will be a new landscape feature, the layout is considered to be well designed and sited with due consideration to the potential landscape and visual effects.

The highest level of landscape effects are confined to a limited area within a 5-7km radius of the project, where changes will be evident, but the character of the area would be retained. The landscape in the vicinity of the site would remain upland moorland/ grassland, and remain elevated, exposed and windswept. No significant effects are predicted within the designated National Scenic Areas and Areas of Great Landscape Value within the 30km study area.

Significant visual effects are limited to local views from dispersed settlement in Strathconon and at distances of approximately 6 km in the vicinity of Jamestown, road users travelling on the minor road within Strathconon and in views obtained by walkers and mountain bikers on the track to Orrin dam continuing to Erchless. Any new wind farm development is likely to result in significant effects on the landscape character and visual amenity of the locality. In the case of the Fairburn Wind Farm, a 30km radius study area has been assessed and significant effects identified in a relatively small area in close proximity to the application site.

G ECOLOGY

The ecology assessment considers an area encompassing the site area and access track with a 500m buffer.

The main potential effects considered are:

- Direct habitat loss
- Disturbance of fauna
- Secondary effects of siltation

The study area is a managed moor, mainly comprising wet heathland and modified bog, and is not subject to any nature conservation designations. Broadleaved woodland exists on the lower slopes. Management includes muirburn and drainage, and there is extensive grazing mainly by red deer. Otter and water vole are present on some watercourses within the study area, in small numbers. Salmon and freshwater mussels are not found within the study area. However, freshwater pearl mussel is known to be present further downstream in the River Conon, and there are salmon spawning sites in the Conon and Orrin, and the lower reaches of their tributaries. Bat roosts may be present in trees beside the public road used by construction traffic.

The layout of the windfarm has taken account of habitat type and sought to avoid the most sensitive types in order to minimise effects. Since some broadleaved woodland will necessarily be lost along the access track, it is proposed to compensate for its loss with new planting. In all cases the scale of habitat loss is relatively small, and no significant effects are predicted.

Pre-construction surveys will be completed for otter and water vole on the site, and for bats along sections of the access route that may require modification, in order to target specific mitigation measures (eg exclusion zones, bat roost boxes). Culvert design will ensure that passage of otter is not impeded. Measures will be implemented to minimise the potential for siltation during construction. With appropriate mitigation measures implemented, no significant effects on protected animal species are predicted.

H BIRDS

The site does not qualify as internationally or nationally important for birds and the area of the proposed development and its immediate surroundings do not include any designated/notified Special Protection Area (SPA) or Site of Special Scientific Interest (SSSI).

The assessment was based on results of baseline surveys (conducted in 2003 and 2004). The principal findings were:

- Two pairs of hen harrier hunt over the survey area and nest nearby (farther than 1km).
- One pair of merlin hunt over the area and breed to the north of the proposed windfarm
- Ten pairs of golden plover breed in the survey area, and at least part of seven of their breeding territories are within 250m of proposed turbine positions.
- Peregrine hunt over the area and occasionally roost on the cliffs immediately south and east of the far-eastern proposed turbine locations
- Red kite and golden eagle occasionally hunt over the area but do not breed there.
- Seven species (black grouse, skylark, song thrush, grasshopper warbler, spotted flycatcher, bullfinch and reed bunting) are Red-listed as Birds of Conservation Concern and these breed in the survey area
- Black grouse occur in very small numbers (2 males, 1 female) in the north of the survey area
- Other Red-listed species all breed in lower parts of the area and none are within 500m of any proposed turbine.
- The site does not appear to support high numbers of meadow pipits or voles, the main prey species for merlin and hen harrier respectively.

Considerations for birds have influenced the design of the proposed development (specifically the nesting locations of merlin and hen harrier). If the prescribed mitigation measures to improve foraging and nesting habitat for hen harrier and merlin are followed, there would likely be a low impact on these species. There are not likely to be any significant impacts on other recorded species on the site.

It is recommended that monitoring surveys of breeding hen harrier, merlin and golden plover are undertaken. The studies should cover an area extending at least 2km beyond the proposed turbine locations and continue for three years after construction. It is also recommended that surveys of foraging hen harrier and merlin should be done to determine the usage of any habitat modified under the mitigation plan. Appropriate study design and survey methods should be agreed in consultation with the RSPB and SNH.

I NOISE

Possible noise effects have been considered on dwellings up to 2.5 km from the location of the nearest proposed turbine. The dwellings considered are Stronachroe, Fairburn and Garrimatic. Possible noise effects are:

- construction plant operations
- borrow pit operations
- cable laying activities
- turbine mechanical and aerodynamic noise
- turbine low frequency noise.

The area surrounding the proposed site is rural and contains no significant noise sources. The nearest dwellings are located to the north and east of the site.

Predicted maximum construction noise levels at the nearest dwellings are substantially below advisory limits for construction related activities. Significant adverse construction noise effects are expected not to occur. In addition to this, best practice noise control measures will be employed during construction works to ensure that construction noise levels are kept to a minimum.

A preliminary prediction of noise levels indicated that operational noise levels are expected to be below the advised best practice minimum threshold for wind farm noise, hence noise monitoring at nearby dwellings was not carried out. Operational noise levels are expected to be below the advised best practice minimum threshold for wind farm noise, hence significant adverse operational noise effects are expected not to occur.

J CULTURAL HERITAGE

The cultural heritage assessment covers an area encompassing the main wind farm site, the access track, and land within a 2 km radius of the wind turbines. Additional searches were also made within an extended zone up to 5 km beyond the wind farm site specifically for protected sites (including scheduled ancient monuments, listed buildings, designed landscapes and historic gardens), which might be subject to visual effects from the proposed wind farm.

The main impacts considered are:

- Loss, damage or severance of cultural heritage sites
- Effects on the setting of cultural heritage sites

A desk-based research and a detailed walkover survey were undertaken which revealed no known or visible archaeological remains located within the limits of the proposed wind farm. The majority of cultural heritage remains known in the immediate vicinity are post-medieval farmsteads of relatively low cultural heritage significance. However, the wider study area is rich in both prehistoric and historic archaeological remains and it could therefore be said that a low probability exists of disturbing unknown, buried, archaeological remains during ground-breaking works on the site. Accordingly it is recommended that a representative proportion of the ground-breaking works are subject to an archaeological watching brief during the development.

The assessment indicates that the significance of visual effects on the scheduled ancient monuments and listed buildings within the assessment area will be minor.

In conclusion, with appropriate mitigation measures implemented, no significant effects on cultural heritage are predicted.

K SOIL AND WATER

The soil and water assessment considers receptors in the physical site area, access tracks and offsite receptors.

The main potential effects considered are:

- Pollution of surface waters and groundwaters by contaminants and sediment loading generated through wind farm construction and operation.
- Impacts on both the hydrological and hydrogeological regimes.
- Impacts on peat and soil
- Effects on slope stability.

The site consists of upland moor with peat and glacial soils which overlay bedrock. The hydrology regime comprises of a number of streams connected to a system of artificial peat gullies. The hydrogeology regime comprises mainly of a system of fissures that transport groundwater through the rock. Thus, precipitation inputs to the site is divided into overland flow through the hydrological network and infiltration into the groundwater system. Ultimately, precipitation recharges the two main rivers to the north and south of the site. The Orrin Tunnel, which is part of the local hydroelectric network, intercepts surface water draining north from the site.

The layout of the wind farm has taken account of the sensitivity of both soil and water receptors. Where necessary, these have been excluded by a buffer zone in order to mitigate adverse impacts. A number of potentially adverse effects have been identified from the proposed wind farm construction. It is proposed in all cases that these effects can be minimised through a series of construction method statements, which will specify the most appropriate working practices. All significant effects will be mitigated in this way. With appropriate mitigation measures implemented, no significant effects on soil and water are predicted.

L ROADS AND TRAFFIC

The roads and traffic assessment for construction traffic considers transport links between the Trunk Road network at the A9(T) Tore Roundabout and the site access. The movement of turbine equipment has been considered from the potential port of entry at Invergordon

The main potential effects considered are:

- Traffic congestion due to an increase in HGV traffic
- Traffic congestion due to an increase in non-HGV traffic
- Abnormal road wear and tear

The road network in the Highland Council area is of a relatively low density, and is generally characterised by principle roads (including trunk roads) radiating from Inverness along natural communication corridors (e.g. through main straths and along the east and north coast), and a network of local secondary and minor roads. The proposed site is therefore in relatively close proximity to a well developed road network, but relies on less well developed roads for access.

National and local transport policies were reviewed to allow a desktop hierarchy of roads to be prepared, and site visits were undertaken to undertake a visual review of conditions, and to identify sensitive receptors. A preferred route for construction traffic was derived, using the A832 from Tore roundabout, partly bypassing Muir of Ord using the B9169 and A862, turning left to rejoin the A832 to Marybank then along Achonochy Road to the site access. Turbine equipment would be delivered from Invergordon via the B817 and A9 to the Tore roundabout, then using A835 to Conon Bridge, then the A862 southbound to Muir of Ord then the A832 to Marybank and then the Achonochy Road to the site access.

The quantities of plant, equipment and materials required for the construction effort were considered, and a delivery profile has been established, identifying the average number of construction vehicle movements (average 8 vehicle round trips per working day over nine months). These movements were then compared in relation to historic traffic flow data to allow the level of impact of increased traffic volumes to be assessed. This showed that, for the locations at which historic traffic data was available, construction traffic would represent an increase of between 3% and 12% of the HGV flow. For all vehicles (construction and staff) the increased flows represented 5% and 2% of the existing traffic flows.

The receptors assessed are mostly predicted to experience Insignificant or Low Significance Impacts, the exception being the single track road from Marybank to the site access, which is predicted to experience a Moderate Impact. Mitigation measures such as on-site concrete batching as opposed to hauling ready-mix to site, and local traffic management measures are proposed which seek to minimise the impact of traffic during construction

M AIR AND CLIMATE

The air and climate assessment considered the impact of dust on sensitive receptors, the predicted emissions reduction from coal fired sources of generation and the potential release of carbon stored in peat as a result of the developments construction.

No dust sensitive receptors were identified within the site boundary. Any dust sensitive receptors in the surrounding area were not considered to be at risk due to the Construction Methods Statement which would advocate best practice with regards to dust management.

The development is estimated to generate 92 000 MWh which is predicted to off-set 79 120 Te of carbon from coal fired generation annually.

The construction of the windfarm is estimated to release 18 067 Te of carbon. This is off set by the reduction in coal based carbon emissions. Thus, the windfarm will have paid back this carbon release in twelve weeks.

N TELECOMMUNICATIONS AND AVIATION

Civil and military aviation agencies, television and radio transmission operators, and mobile telephone network agencies and operators have been consulted. No objections have been raised with respect to telecommunications and aviation interests.

O RECREATION AND TOURISM

The recreation and tourism assessment considers an area that is 30 km in radius from the development site boundary. This is consistent with the landscape and visual amenity study area.

The main potential effects considered are:

- Access restrictions
- Disturbance of sporting activities and
- Changes in visual amenity.

The landscape of the study area is an important context for recreation and tourism activity. There is a wide selection of recreational paths, including rights of way, and a National Cycle Network route and a National Tourist Route pass within 10 and 5 kilometres of the proposed development site respectively. Fishing is a popular recreational pursuit locally, and there are various activity centres and other tourist resources within the study area.

The use of an existing track for site access will restrict recreational access during construction, and appropriate signage will be erected on site. There will be substantial visual impact on visitor resources close to the site, and significant visual effects are predicted for outdoor activities such as fishing, shooting, stalking, golf and walking. For all other resources and activities, no significant effects are predicted.

P SOCIAL AND ECONOMIC

The social and economic assessment considers an area that is 30 km in radius from the proposed development site boundary. This is consistent with the recreation and tourism study area.

The main potential effects considered are:

- Disturbance of economic activity on the proposed development site and
- Disturbance of other economic activity within the study area.

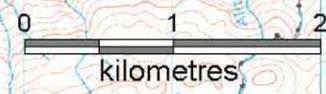
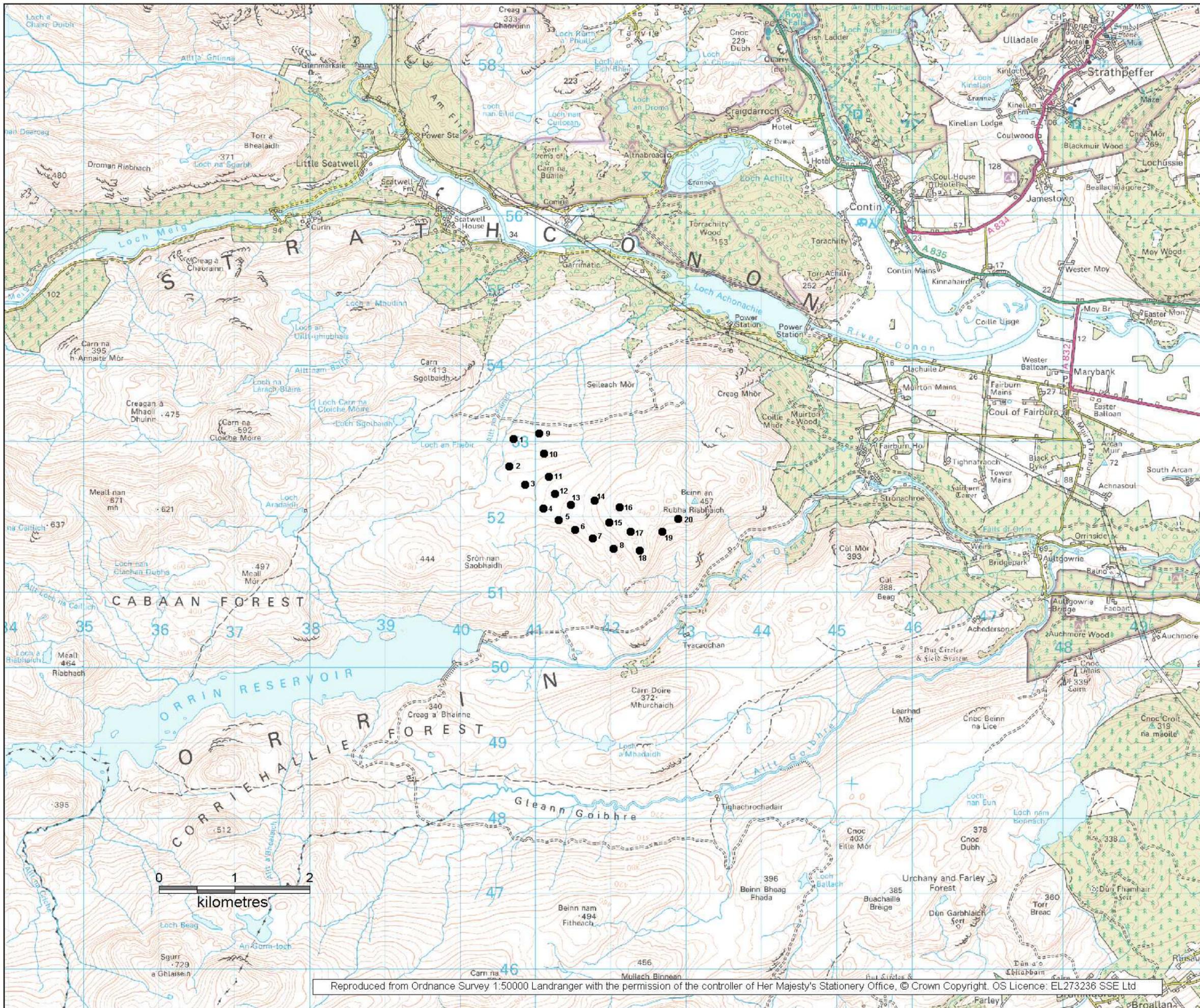
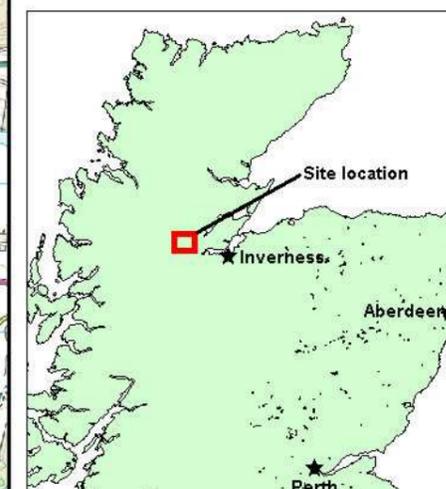
The economy in the study area is one which is based on tourism. There is a variety of tourist accommodation establishments and some activity centres in the study area, and a wide variety of sporting activities are pursued. The area is also relatively popular for use as a filming location. The landscape is an important context for the economic activity in the area.

The use of an existing track for site access will restrict access during construction, and appropriate signage will be erected on site. There will be substantial visual impact on visitor resources close to the site, and significant visual effects are predicted for some sporting activities. However, the effects of this are expected to be not significant.

Figure 1.1

Key

- Turbine location

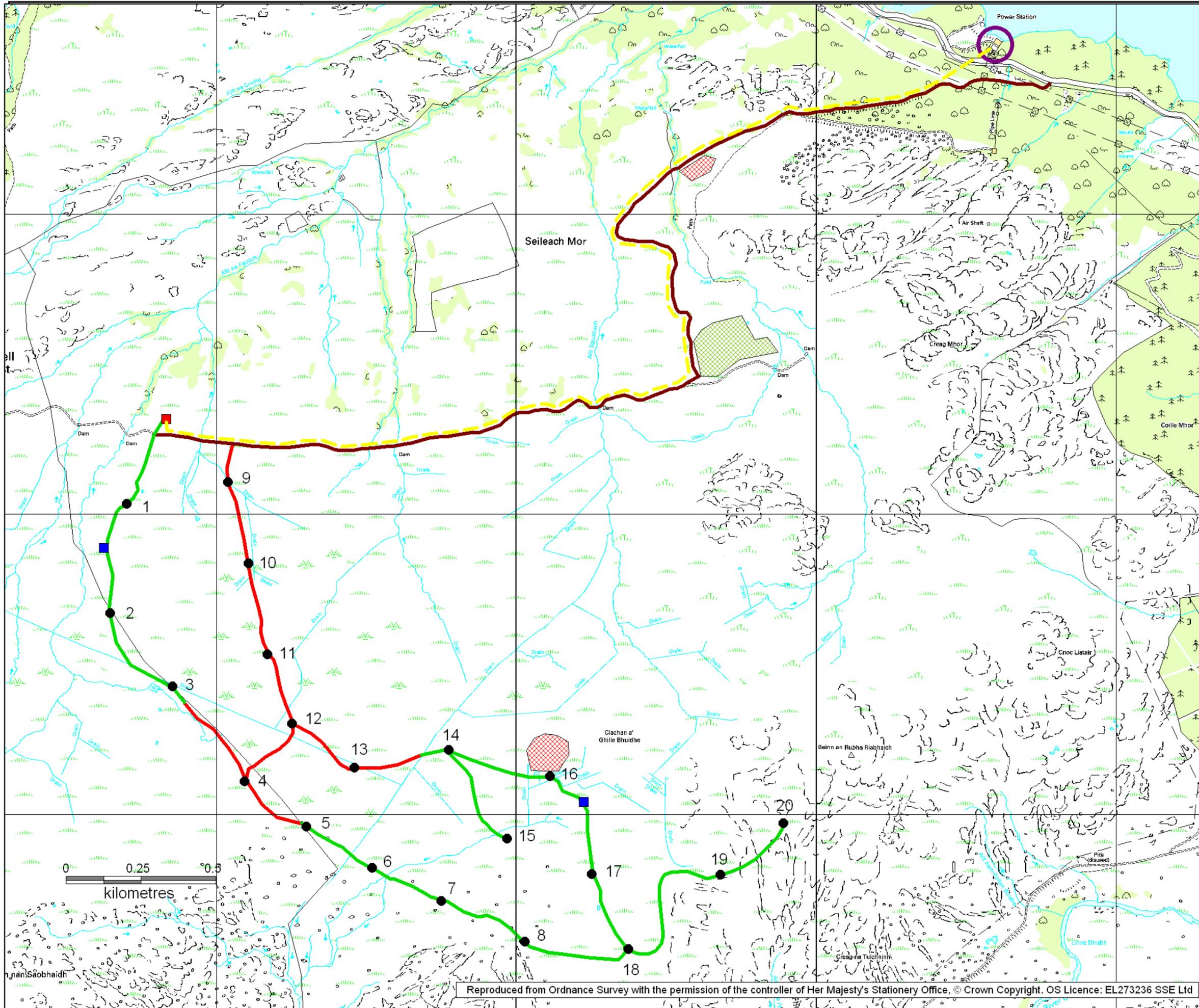


Client:	Scottish and Southern Energy		
Project:	Fairburn Wind Farm		
Title:	Site location		
Scale:	See scale bar	Date:	April 2005

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Figure 4.1



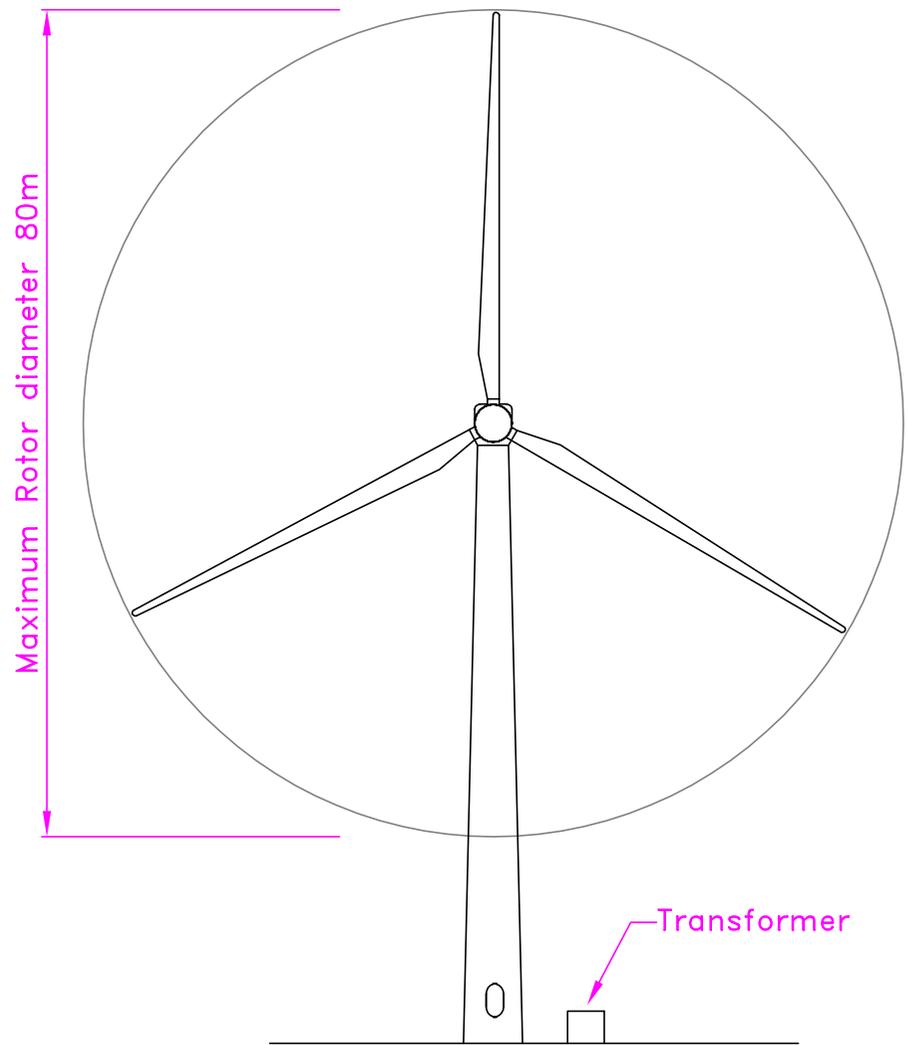
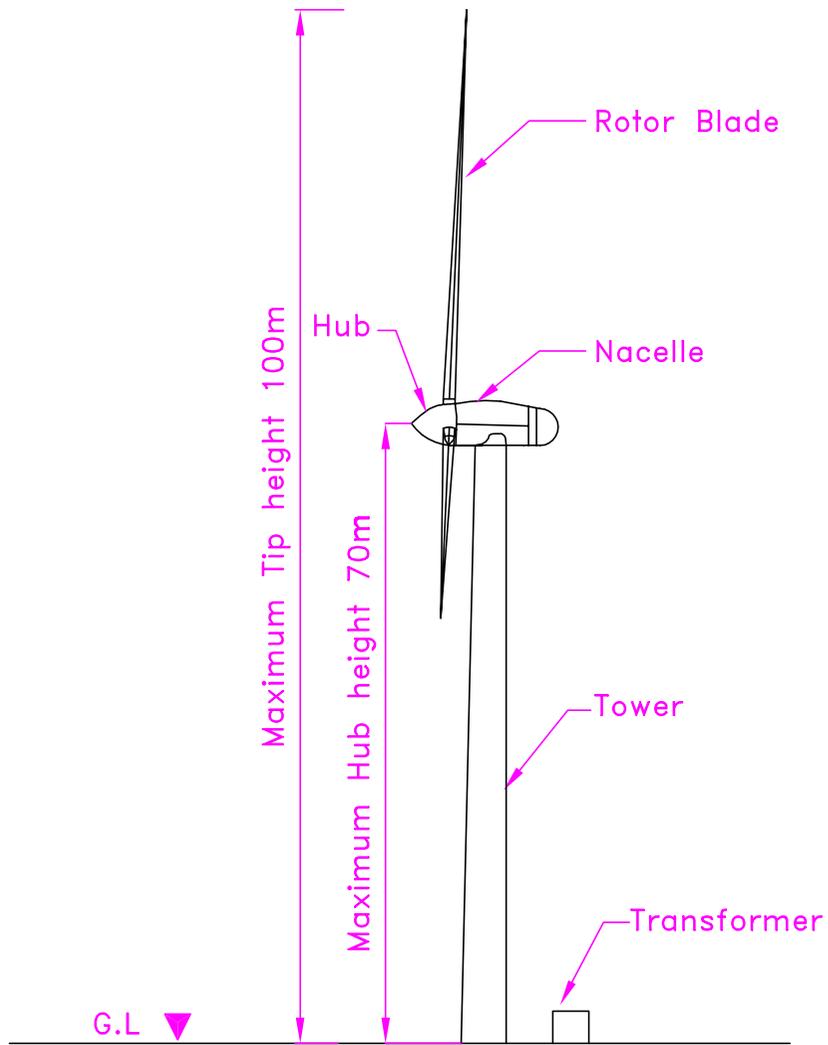
Key

- Anemometer
- Control building
- Turbine
- Proposed site track
- Proposed floated site track
- Proposed upgrade to existing track
- Borrow pit
- Site compound and laydown area (temporary)
- Grid connection route
- Orin power station and sub-station

Client:			
Project:	Fairburn Wind Farm		
Title:	Site layout		
Scale:	See scale bar	Date:	April 2005



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Notes:
 1. Proposed turbine colour is light grey with semi-matt finish, to be agreed with Planning Authority. Turbine materials are: steel tower, glass fibre reinforced epoxy blades.

WARNING: DRAWING MAY BE REDUCED. DO NOT SCALE.



Project Number		Drawing Status	
		FOR ILLUSTRATIVE PURPOSES ONLY	
Title			
FIGURE 4.2 TYPICAL TURBINE ELEVATION			
Location		SSE Drawing Number	Sht No
FAIRBURN WINDFARM		165/1000/0001	00
		Rev No	00

REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd	DATE	08/04/05
															SCALE	N.T.S
															DRAWN	L.SAMUEL
															CHECKED	S.HEYES
															APPROVED	S.HEYES