

BLACKWOOD WIND FARM

Environmental Statement

Volume 4: ES Non Technical Summary
February 2012

NON TECHNICAL SUMMARY

Introduction

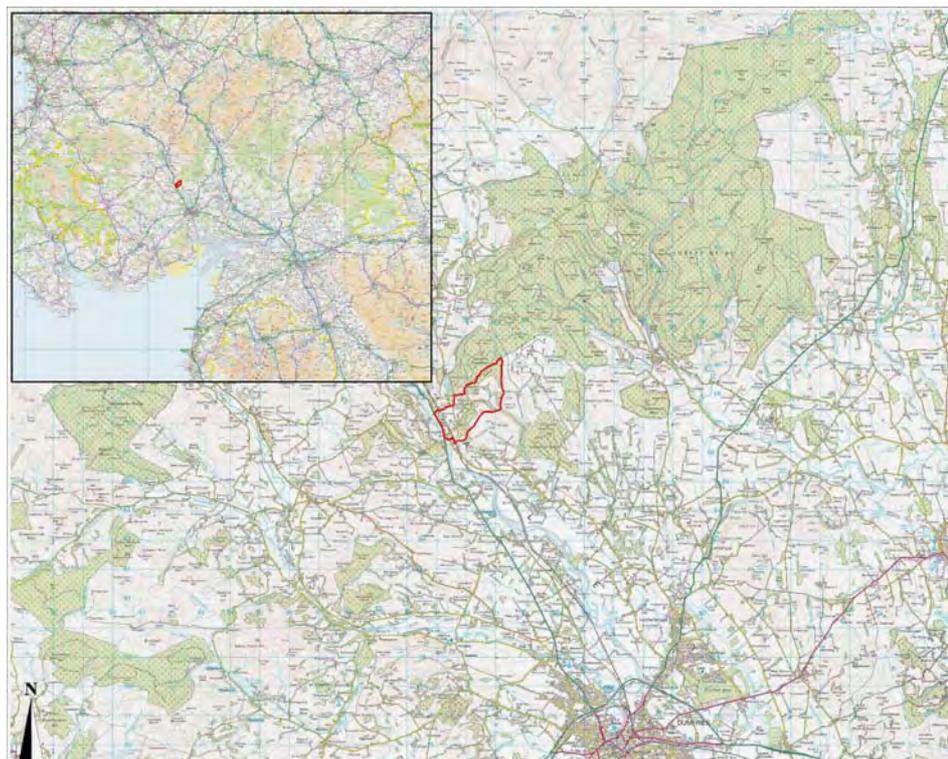
Force 9 Energy Partners LLP (Force 9 Energy) is seeking planning permission jointly with EDF (together the applicant for the planning application) for the Blackwood Wind Farm. Should planning consent be granted, EDF would take the lead during construction and subsequently own and operate the wind farm.

The Blackwood Wind Farm would be located within the Blackwood Estate, Near Auldgrith, approximately 14km to the north of Dumfries and adjacent to the west of the existing operational Dalswinton Wind Farm (a 15 turbine wind farm operational since 2008). The development would consist of five wind turbines, together with a small substation building and a permanent mast to collect weather data for the site. Some existing access tracks would be upgraded and new sections of track would also be built within the estate, to allow vehicles access to construct and service the turbines.

Force 9 Energy determined that the Blackwood Wind Farm could give rise to some locally significant effects on the environment, and therefore under the Town and Country Planning Environmental Impact Assessment (Scotland) Regulations 2011 the wind farm could be classified as a Development that requires an Environmental Impact Assessment (EIA).

RSK Environment Ltd has therefore completed an EIA of the Blackwood Wind Farm on behalf of Force 9 Energy LLP and EDF. The likely significant environmental impacts of the wind farm identified during the EIA process and the measures proposed to reduce potential negative impacts (the mitigation measures) are reported in the Environmental Statement (ES), which must be submitted with the planning application. This Non Technical Summary (NTS) provides a summary of the main findings of the EIA in non-technical language.

Figure 1: Site Location Plan



EIA Methodology

The purpose of the EIA is to ensure the potential environmental impacts and benefits of a new development are considered as part of the planning process. It provides a methodical assessment of the potential environmental impacts associated with the construction, operation and decommissioning of the development.

The EIA for the Blackwood Wind Farm has been undertaken by a team of experienced technical specialists, using established assessment methodologies and criteria and best practice guidance, where available.

In line with the EIA Regulations a 'scoping study' was first completed for the Blackwood Wind Farm, to identify the key environmental issues to be assessed in detail in the EIA. The scoping report was used to agree the scope of the EIA with Dumfries and Galloway Council (DGC).

The EIA was then completed based on the scoping study and the detailed description of the proposed scheme as set out in the ES. Desk based studies, field work and surveys, calculations, modelling and visualisations were used as required for the various technical assessments, which are described in turn below. The EIA included a cumulative assessment of the potential environmental impacts of the wind farm in combination with other wind farms in the area (including those in the planning system but yet to be constructed).

A consultation exercise was completed as part of the EIA - regulatory authorities such as the local council, Scottish Natural Heritage (SNH), and the Scottish Environment Protection Agency (SEPA) and other stakeholders such as the Royal Society for the Protection of Birds (RSPB) and local airports were contacted for baseline information and opinion / advice. Public consultation was also undertaken, through a series of correspondence and a public exhibition held at the Auldgirth Village Hall in September 2011. Feedback from these consultations was used to inform the design and assessment of the wind farm.



Figure 2: Existing Turbines at the adjacent Dalswinton Wind Farm

Alternatives

In accordance with the EIA Regulations the ES includes a description of the main alternative development and design options considered, including a 'no development' option, if the site were to remain in its current condition.

Force 9 Energy has an ongoing search programme for potential sites that might be suitable for a wind farm. They consider a range of commercial, environmental, technical and policy factors before making a decision on whether to continue with an environmental assessment and a planning application for a particular site. This includes factors such as locations of international and nationally protected areas, areas where potential impacts on radar may be a risk, accessibility and potential local grid connections and network capacity. The Blackwood Wind Farm site was concluded to meet the various site selection criteria and be suitable for a potential wind farm development.

A first layout for the wind farm was then developed, based on the local topography and wind speeds, initial identified environmental constraints, and the existing adjacent Dalswinton Wind Farm. The wind farm layout changed several times during the EIA process, as more environmental information became available for the site, in order to reduce or avoid potential environmental impacts. This included a reduction in the number of turbines (from six to five) and changes to the locations of the turbines, access track and construction compound, in response to noise, archaeology and heritage, ecology and hydrology (water) constraints, before a final layout was selected.

The Site

The application site is located in Nithsdale, Dumfries and Galloway. It is bounded to the north by Clauchrie Forest, to the east by Fern Hill, to the south by Mullach Hill and to the west by the A76(T). The total site area is 305 hectares (ha) though the wind farm would occupy a much smaller area in the eastern section of the site, as shown in the plan.

At present the main land uses within the site are grassland and forestry plantation (mostly conifers) of varying maturity. Auldgirth village is located across the south west corner of the site and the Glasgow South Western railway line runs through the western section of the site. A number of houses and flats are located at Low Auldgirth and High Auldgirth, and a keeper's cottage is also located close to High Auldgirth. An unclassified road leads east from the A76(T), providing access to both Low Auldgirth and High Auldgirth. Several tracks lead from this road to provide access to other parts of the site. The Burntkettle Shooting Ground is located at Glenloy, close to the proposed turbine locations.

The site is situated adjacent to the west of the existing Dalswinton Wind Farm, a 15 turbine 30MW wind farm that has been in operation since 2008. Other land uses in the area are mainly farmland and woodland plantations. The River Nith flows in a generally southerly direction approximately 100m from the western site boundary.

The Wind Farm

The wind farm would include five turbines, three of which would be a maximum 140m height to blade tip (100m hub height, the point at which the blades attach to the structure), and two would be a maximum 120m height to blade tip (80m hub height). This is to allow for local differences in ground levels, so the turbines would appear to be a similar height. The turbine heights would also be similar to those of the Dalswinton Wind Farm. The turbines would be a typical modern design, off-white in colour, with tubular towers and three blades attached to the main body (the 'nacelle') that contains a

generator, gearbox and other operating equipment. The operational lifetime of the turbines is assumed to be 25 years.

An area of hard groundcover would be constructed next to each turbine, to provide a suitable platform for the cranes to construct the turbines. These platforms would be left in place once construction works were complete, to provide parking for maintenance staff visiting the operational wind farm. The platforms would also be used at the end of the operational lifetime of the wind farm, when cranes were brought back to site to dismantle the turbines.

A mast (of height 80m) to collect local weather data would be installed close to the turbines. Existing access tracks within the site would be re-used and upgraded where possible, but it would also be necessary to construct some new sections of track. This would include a section of track around Low Auldgirth, in order that vehicles avoid travelling through the village.

Up to 26,000 cubic metres of stone, for use in construction of the turbine foundations and access tracks, would be excavated from two 'borrow pits' on-site. Once all the necessary stone had been extracted from the pit in the middle of the turbine area, the pit area would be levelled and re-used for the temporary construction compound. The site offices would be located here together with storage areas for materials and plant. Towards the end of the construction works the substation / control building would be constructed across part of the compound area.

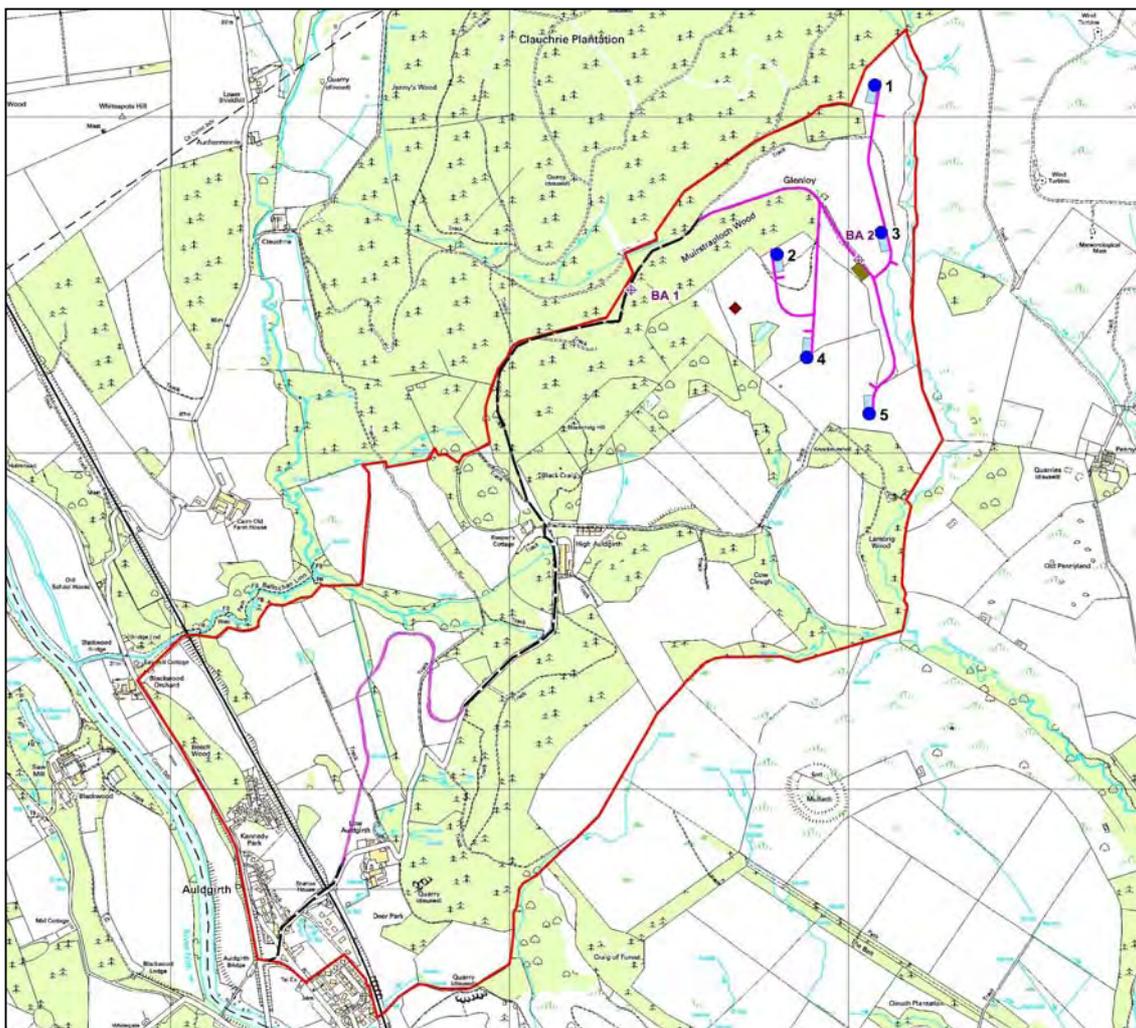


Figure 3: Proposed Layout of the Wind Farm

A separate application is to be made by ScottishPower Power Systems, for a cable connection from the wind farm to the local electricity distribution network. For the purposes of the planning application the Dunscore substation is assumed to be the connection point.

It is estimated that approximately 2.09 ha of recently planted forestry would require clearance to allow construction of the wind farm but full replacement planting would be provided within the Blackwood Estate, with the details and locations of this planting to be agreed with the landowner.

Potential environmental impacts have been reduced through changes to the design of the wind farm, but in addition there are a number of standard good practice measures for construction works that would be implemented by Force 9 and EDF (and their appointed contractors), if the wind farm was to be granted planning consent. This includes the preparation and implementation of a Construction Environmental Management Plan (CEMP) and a Traffic Management Plan (TMP). These should ensure that potential local noise, pollution, nuisance and/or disturbance during the construction (and decommissioning) works are minimised or avoided. The CEMP would include procedures for correspondence with local residents and community organisations, to advise of particular activities and project updates, and ensure that in the event of any complaint, these would be dealt with quickly and efficiently.

The wind farm would take about nine months to construct. It is not possible at this stage to give precise start and finish dates for the construction works, but it is anticipated the works would start in 2013 and finish in 2014.

Planning

Roger Tym and Partners has completed an assessment of the Blackwood Wind Farm against relevant planning policy. This is reported in detail in the Planning Statement that accompanies the planning application, but a discussion of the relevant planning policy is also contained in the ES. At a national policy level there is a requirement to encourage the use of renewable technologies to tackle climate change. The Blackwood Wind Farm would help to satisfy these requirements and make a contribution to achieving UK and Scotland renewable energy targets.

The development plan comprises of the Dumfries and Galloway Structure Plan (Approved 1999) and the adopted Nithsdale Local Plan (2006). The main policy on wind farm development is Structure Plan Policy S22, Wind Farm and Wind Turbine Developments, which is supplemented by the Structure Plan Wind Energy Diagram (WED) and Technical Paper 5 – Preparation of Wind Energy Diagram. According to the WED three of the turbines would be located in an ‘intermediate’ area of search for wind farms and two of the turbines would be located outside any designated area of search; none of the turbines would be located in a designated ‘sensitive’ area.

Physical Environment

This assessment considered potential impacts of the wind farm on local geology, groundwater and surface water (drainage, streams and rivers). Desk based studies provided baseline information for the site and local area and a Flood Risk Assessment was completed for the wind farm, which was used to inform the assessment. Site walkovers were also completed by the project engineers to investigate the best locations for the borrow pits and local ground conditions generally, and make an initial assessment as to whether any peat was present on the site.

Ground conditions in the area of the proposed turbines generally comprise a shallow topsoil directly overlying solid rock. One area of peat deposits was noted next to the Burnt kettle Shooting Ground (this area would remain undisturbed if the wind farm was to be built).

Several small streams cross the site, the majority of which drain to Pennyland Burn to the east and the remainder drain to Clauchrie Burn to the north, or directly to the River Nith to the west. The existing sections of access tracks that would be upgraded as part of the wind farm development cross a total of 11 streams. Two additional stream crossings would be needed for the new sections of access track proposed. The site is generally in an area of low flood risk, with the exception of some areas around Auld girth village including the access point to the site from the A76(T).

The CEMP would include a number of pollution and drainage control measures for the construction and decommissioning phases of the wind farm, such as following the SEPA pollution prevention guidelines, use of sustainable drainage systems in the drainage design and appropriate storage of construction materials. The new stream crossings and any works that could impact the streams would have to be undertaken in accordance with regulations set to protect the surface water environment (the Water Environment (Controlled Activities)(Scotland) Regulations 2011). As a result, no significant impacts on water quality or flood risk are predicted during the works. The TMP would also include alternative access arrangements to the site, in the event of a flood at the A76 (T) at Auld girth.

The wind farm development – the turbine bases, crane hardstanding areas and new access tracks - would increase the area of impermeable groundcover at the site. However, this area of hard groundcover would be very small in relation to the overall area of the site and therefore there would be no significant increase in surface water run off and flood risk. Only small volumes of materials such as oils and greases to maintain the turbines would be stored on site, in the substation building and therefore no significant impacts on water quality or flood risk are predicted for the operational phase of the wind farm.



Figure 4: Existing Stream and Drainage within the Site

Ecology

The ecological impact assessment of the wind farm was based on a desk study (which included a search of ecological records) and a range of field surveys – including habitat surveys and surveys for the following legally protected species: bats, badger, water vole, otter, great crested newt and red squirrel. The scope of the assessment took into account comments received from SNH and SEPA.

There are no internationally, nationally or locally protected ecological sites on or within 2km of the site. The closest designated site, the Black Loch Site of Special Scientific Interest, is situated approximately 6km to the east of the site and is considered to be sufficiently far away that the habitats and species present would not be affected by the proposed wind farm.

Habitats present on site include woodland (with areas of conifers and broadleaved trees and areas containing mixtures of the two), recently cleared woodland and different types of grassland. A pond is also present near the area of proposed turbines. Plenty of habitat suitable for badgers, bats and reptiles was noted on-site, and bat roosts were confirmed in several of the buildings at High Auldgirth and the Keepers Cottage. At least four different species of bat were recorded on-site, with activity concentrated along woodland edges, treelines, Pennyland Burn and around the pond. Signs of red squirrel presence were noted in Muirstraploch Wood and signs of otters were also recorded in Pennyland Burn to the east of the site. No water voles were recorded during surveys and the pond was concluded unlikely to be suitable for Great Crested Newts.

No significant impacts have been identified for the construction and decommissioning works. Further detailed survey works would be completed before the start of construction, any vegetation clearance would be undertaken at an appropriate time of year and application of the CEMP by the contractors would further reduce the potential for any negative impacts. Whilst some clearance of plantation areas would be needed to allow construction of some of the turbines and access tracks, this would be a relatively small area and there would be no overall loss, since replacement planting would be provided in other areas of the Blackwood Estate. Once construction works are complete there would also be a programme of works to restore the habitats temporarily lost e.g. at the site of the construction compound.

Once the wind farm is complete there would be a permanent loss of some small areas of habitat suitable for use by a number of the species recorded on-site but this is not considered to be a significant impact. Bat species can potentially be at risk from collisions with the operational turbines; the death or injury of bats due to collision with the turbines would result in a permanent loss of these animals from the local population. However, such losses of individual bats due to the wind farm are predicted to be small and not significant in terms of the local population. There are opportunities on the site to improve the existing habitats and this would be explored further should the wind farm be granted planning consent.

Ornithology

The impacts of the wind farm on bird species have been assessed following SNH guidance. Initial desk studies and field work indicated the application site was likely to support a range of common farmland and woodland birds, with potential for goshawk to occur in surrounding woodland. Several different types of field surveys, which covered the bird breeding season, autumn migratory period and winter season, were then completed to obtain up to date baseline information for the site and wider study area.

Two ecological sites specifically designated for birds (Special Protection Areas, SPA) are located within 20km of the site: the Castle Loch, Lochmaben SPA and the Upper Solway Flats and Marshes SPA. The results of the field surveys showed the site to be of medium importance for barn owl and low importance for goshawk, though the Clachrie Forest adjacent to the north of the site is of medium importance for this species. Of the other bird groups assessed, the site was found to be of negligible importance for wildfowl, low importance for wader species e.g. curlew and lapwing, and low importance for other species of birds considered e.g. skylark, starling and house sparrow.

The assessment concluded that, given the bird species recorded over the site, the two SPAs would be unlikely to be affected by the wind farm. No significant construction or decommissioning impacts are predicted: any clearance of trees and vegetation would take place outside the breeding bird season to avoid destruction of nests. Should this not be possible, checks would be made by an independent ecologist before the works started to ensure no nests would be destroyed or damaged. Evidence also suggests that most bird species are tolerant of construction type disturbance – any such disturbance would be temporary and short term in nature and would have no measurable impact on local populations in the long term.

On completion of the wind farm there would be a permanent loss of nesting and foraging habitat but this area would be small and would have little if any impact on bird populations. Similarly no significant impacts on bird species were predicted in relation to potential collision with the operational turbines or displacement due to operational disturbance.



**Figure 5: Species considered in the ecological and ornithological assessments
(Red Squirrel and Barn Owl)**

Landscape and Visual Impact

The landscape and visual assessment considered the impact of the wind farm on the existing landscape and on viewpoints within an agreed study area. The assessment followed best practice guidance available from SNH and the Landscape Institute and included a desk study in combination with a number of field visits. Computer modelling was also completed to assess the area over which it would be possible to see the wind farm (and in combination with other proposed wind farms) and to generate images of the turbines from agreed viewpoint locations.

Landscape can be categorised into definable units known as character areas or types. Sensitive areas are protected through use of designations e.g. national or regional scenic areas (NSAs and RSAs) and Historic Gardens and Designed Landscapes. The assessment indicated there would not be significant impacts on the landscape character of the study area, or on the majority of identified designated landscape features. Only locally significant impacts are identified within the closer parts of one landscape designation (the Thornhill Uplands RSA directly to the north of the site) and within the parts of three Landscape Character Types (LCT) (Type 7 Middle Dale – Mid Nithsdale and Type 16 Upland Fringe – Torthorwald and Dunscore all to the north and east of the Site) that are closer to the site. LCTs are defined by a number of criteria but the impacts would only be due to changes to key views that are seen as typical of the LCTs. The area of impact on the RSA overlaps with the area of impact on the LCTs.

Potential impacts of the wind farm on the landscape in combination with other proposed wind farms, generally reflect the impacts identified just for the wind farm. This is because the Blackwood Wind Farm would typically be seen as an extension to the operational Dalswinton Wind Farm or, depending on the viewpoint, would be seen in a cluster of wind farms which also include the consented Harestanes wind farm and the Minnygap and Auchencairn wind farms (which are in planning).

Of the 18 representative viewpoints, the assessment found that the wind farm would result in significant impacts (major or major/moderate) for three views:

- Viewpoint 1 – High Auldgirth;
- Viewpoint 3 – Shawsholm Road, Closeburn; and
- Viewpoint 5 – Thornhill.

All relate to views from houses in relatively close proximity to the proposed turbines (within 10km), where turbines would form a key feature in the view. Viewpoint 1 is within the application site. Viewpoints 3 and 5 are in the Nith Valley (to the north of the Site), where there are open views along the valley to the south. From these two viewpoints the wind farm is seen to the right and as an extension to the Dalswinton Wind Farm. This is typical in the majority of views of the wind farm - there is only a limited area to the west of the site where turbines are introduced into views where there are currently none.



Figure 6: Viewpoint 19 Mullach Hillfort

A sequential assessment of the wind farm was also completed. This considers views of the wind farm (and views of the wind farm in combination with other wind farms) as the viewer moves along a route, usually roads. Three routes were assessed – the A76(T), the A75 and the M74 and no significant impacts were identified.

Archaeology and Cultural Heritage

The impact of the wind farm on the archaeological and cultural heritage resource of the site and its surroundings was assessed based on a desk-based assessment, site visits, and consultation.

A single statutorily protected site (Auldgirth Inn, a Category B listed building) is located within the application site. There are a number of Scheduled Monuments, Historic Gardens and Designed Landscapes (HGDLs), listed buildings, conservation areas, Archaeologically Sensitive Areas and non-inventory Gardens and Designed Landscapes within the wider area around the site (up to 15km from the site boundary). There are also several archaeological sites (non designated but of local interest) within the site, including the village of Auldgirth, farmsteads, a plantation bank, the recorded site of a tower house, quarries, cultivation marks, a sheepfold, and a series of earthworks.

No significant direct impacts on known archaeological sites within the site are predicted, as the design of the wind farm has avoided specific archaeological sites and features. Notwithstanding this, outline mitigation measures have been proposed to minimise impacts on known and potential archaeological receptors as far as practicable.

The assessment has also considered potential impacts of the wind farm on the setting of built heritage features (as listed above). Whilst a moderate negative impact is predicted on the setting of Mullach Hillfort to the south of the site it was concluded this would not be significant. No significant impacts on the setting of other cultural heritage receptors are predicted.

Figure 7:
Auldgirth Inn



Noise

The potential noise impacts from construction and decommissioning of the wind farm have been assessed following British Standard guidance. Noise levels are predicted to be below the applicable criteria for all construction works except during works on the access tracks in the vicinity of Low Auldgirth. At this location noise levels are predicted to be slightly above the applicable criteria, but the works in this area would be undertaken over a relatively short time period. Implementation of the CEMP and the TMP would help to reduce potential noise impacts associated with the construction traffic.

The potential impact of noise from the operational wind farm has been assessed using the methodology set out in ETSU R-97 (as required by the Scottish Government). Noise receptors to be considered in the assessment were agreed with Dumfries and Galloway Council. Background noise levels were measured at two locations and the results were used to calculate the background noise levels at each receptor location for a range of windspeeds. This data was then used to set acceptable noise limits at each receptor location.

Data from the candidate turbine manufacturers was used to predict the turbine noise levels at each receptor over the range of wind speeds at which the turbines would operate. Predictions have shown that noise from the operational wind farm would be below the defined limits at all the receptor locations. This is also the case when noise from the Dalswinton Wind Farm and other proposed wind farms in the area i.e. Auchencairn Wind Farm (in planning) are included in the predictions.



Figure 8: Noise Monitoring at Shieldhill

Traffic and Transport

An assessment has been completed of the potential impacts of the traffic associated with the wind farm development on the local road network and pedestrians.

The nearest major roads are the A74(M) located approximately 20km to the east of the site and the A76(T), which forms the western boundary of the application site. The A76(T) is considered to be of regional importance.

Traffic associated with the wind farm would access the area of turbines from the A76(T), crossing the C11 (a Class III Road) onto the U492n, an unclassified public road that leads east to Low Auldgirth.

An Access Study completed by the project engineers Grontmij concluded that it would not be possible to transport the turbine components on the existing private road that leads between Low Auldgirth and High Auldgirth and therefore a new private access track would be constructed, routing round Low Auldgirth, as shown on the development layout. The track would rejoin the existing private road above Low Auldgirth and continue to the north east to the turbine area. Some upgrades and local widening of the existing private road would be needed to ensure the track was suitable for construction traffic.

Construction traffic volumes were calculated and compared to existing traffic volumes on the A76(T) and U492n. No significant impacts on the A76(T) are predicted. However, whilst implementation of the TMP (e.g. timing of deliveries and regular consultation with local residents) would help to reduce impacts, given the relatively low levels of traffic that use the U492n and C11 and absence of footpaths, negative impacts are predicted to vehicle and pedestrian users of these roads. These would relate to potential delays to journey time and disruption and would vary over the construction period.

Only a small number of vehicles would access the wind farm once it was operational, to undertake servicing and repair of the turbines. No significant transport impacts are therefore predicted for this phase of the development.

Figure 9: The Railway Bridge at Auldgirth



Climate Change

In accordance with recommendations by SEPA, a detailed Carbon Balance Assessment has been undertaken for the wind farm in order to establish its net impact on greenhouse gas (GHG) emissions and overall impact on climate change. The methodology considers emissions across the whole of the wind farm life cycle.

The construction works would result in net GHG emissions, due to activities such as the manufacture of the wind turbines and loss of organic carbon from the soil due to excavations, though restoration of borrow pits would result in a GHG saving. The net GHG impact from the construction and decommissioning of the wind farm is calculated to be the equivalent of 29,397 tonnes of carbon dioxide (tCO₂e.)

The annual GHG savings predicted from the operation of the wind farm operation are 16,351 tCO₂e. This gives a 'payback' period of 1.8 years before the wind farm would start to deliver GHG savings. The wind farm would have a lifetime of 25 years, and the total net GHG impact can be calculated by

multiplying the period of time the wind farm would operate after the carbon payback period (23.2 years) by the annual GHG saving (16,351 tCO₂e) which gives a net positive GHG impact of 379,343 tCO₂e savings over its lifetime.

Socio-Economics

An assessment was completed of the potential impacts of the wind farm on the local economy i.e. jobs and trade, local tourist attractions and leisure facilities. The assessment was based on a desk based study of the site and local area.

Existing land uses on the site include commercial forestry (a forestry plan is in operation for the Blackwood Estate), the Burntkettle Shooting Ground at Glenloy and the village hall at Auldgirth. Local accommodation for visitors and tourists is available at the Auldgirth Inn, the Friars Carse Country House and within the Dalswinton Estate to the south east. A number of self-catering holiday cottages are also located within the wider local area. To the north of the Site is the Clauchrrie Forest, which is currently the subject of a community buyout. The routes of two proposed Core Paths (public footpaths) run in close proximity to the site to the north and east. Visitor attractions within a 15km radius of the site and local outdoor sporting facilities e.g. golf clubs and fishing beats were identified as part of the desk study.

No significant impacts were identified for the construction and decommissioning phases of the wind farm - jobs would be created but these would not be significant in number. Whilst some forestry would require clearance to allow the wind farm to be constructed, there would be replacement planting within the estate. Some minor disturbance may be experienced by local walkers and visitors but implementation of the CEMP and TMP would reduce potential impacts. The shooting ground is generally open on Sundays (when construction works would not be ongoing) and regular consultation would be undertaken with the shooting ground operators, to minimise or avoid any potential disturbance.

Once operational, the wind farm would have a negligible impact on local employment and the commercial estate operations. No significant impacts on local visitor attractions or recreational facilities were predicted – views from the core paths would be altered but these were not considered to be significant given the existing presence of the adjacent Dalswinton Wind Farm.

A potentially significant impact was identified for the Burntkettle Shooting Ground due to the proximity of Turbine 3 and safety standards for the shooting ground, which require 'exclusion zones' to be set around the shooting areas. Any closure to a part of the shooting ground required for safety reasons would result in a loss of income. Force 9 has committed to a redesign of the shooting ground such that the shooting ground can continue to operate safely and co-exist with the wind farm, therefore there would be no negative impact to this local business.

EMI, Infrastructure, Aviation and Safety

An assessment was completed of potential impacts of the wind farm on utilities and telecommunications, aviation infrastructure e.g. airport radar and public safety issues. The assessment focused on the operation of the wind farm, and used the findings of desk-based information searches and consultations e.g. with the Ministry of Defence (MoD) and telecommunications operators. No significant impacts were predicted on utilities or on airport radar infrastructure in the area.

The proposed turbines would be located within 20 miles of the Eskdalemuir Seismological Recording Station, part of an international system of stations that monitor for covert nuclear tests. Such tests can be detected via the seismic signatures (the low frequency energy or vibration patterns) produced. Operational wind turbines create a background low frequency 'noise' (in effect vibration). This is harmless and not noticeable to humans, but can be detected by the equipment at the recording station, which is highly sensitive. The MoD has therefore set a zone around the recording station, within which only a certain wind farm capacity could be developed, to prevent the recording station being affected. This capacity has now been reached by the wind farms that are in operation, have planning consent or are in the planning process.

The Longpark Wind Farm is an existing wind farm operated by EDF within the MoD zone. Measures would be put into place at the Longpark site to reduce ('dampen') the vibration from the existing turbines and similar measures would also be installed at the Blackwood site. Therefore, the total vibration levels within the MoD zone would not be increased so there would be no impact on the operation of the recording station.

Wind in the area of the site mostly comes from the south west (the prevailing wind direction). The Blackwood Wind Farm would be located to the south west i.e. 'upwind' of the Dalswinton wind farm and is therefore predicted to cause a slight reduction in the wind speeds at the Dalswinton site. It is calculated there would be a reduction of 1GWh per annum or 1.6% of the current wind energy potential at the Dalswinton Wind Farm but this is not considered to be significant.

Like any large structure (including buildings), wind turbines can interfere with broadcast signals e.g. for mobile phones or television, by blocking, changing the direction of, or scattering the signals. It was concluded the wind farm would not impact any telecommunications links. To avoid any impact to television reception Force 9 Energy and EDF would assess current television signals before any construction works started and mitigate any problems identified with local viewing quality (there are a number of different techniques or combination of techniques that could be used to make sure television reception was not affected).

Shadow Flicker

Shadow flicker is an effect that can occur under particular light and wind conditions, should the sun pass behind the rotating blades of a wind turbine and the shadow that is cast extends over neighbouring properties. As the blades rotate, the shadow flicks on and off when viewed from specific locations.

Shadow flicker can only occur when the turbines are operating and therefore the assessment was completed for this phase of the wind farm. In accordance with standard industry practice, the assessment was completed for properties located within 800m (ten rotor diameters) of any of the proposed turbines. Two properties are located within this zone: Pennylands and the easternmost cottage at High Auldgirth.

Current policy does not specify limits or levels against which any assessment can be judged, however at both properties, predicted levels of shadow flicker were below levels considered to be the upper limits of acceptability in other countries across Europe where such limits are set. The potential for shadow flicker impacts was therefore concluded to not be significant and no measures were needed to reduce impacts.

Modelling was also completed of potential shadow flicker impacts of the wind farm in combination with the Dalswinton wind farm, but as before the predicted levels of shadow flicker remained below the limits.

For further information on the Blackwood Wind Farm please contact:

Force 9 Energy LLP,
Woodside House,
20-23 Woodside Place,
Glasgow,
G3 7QF.

