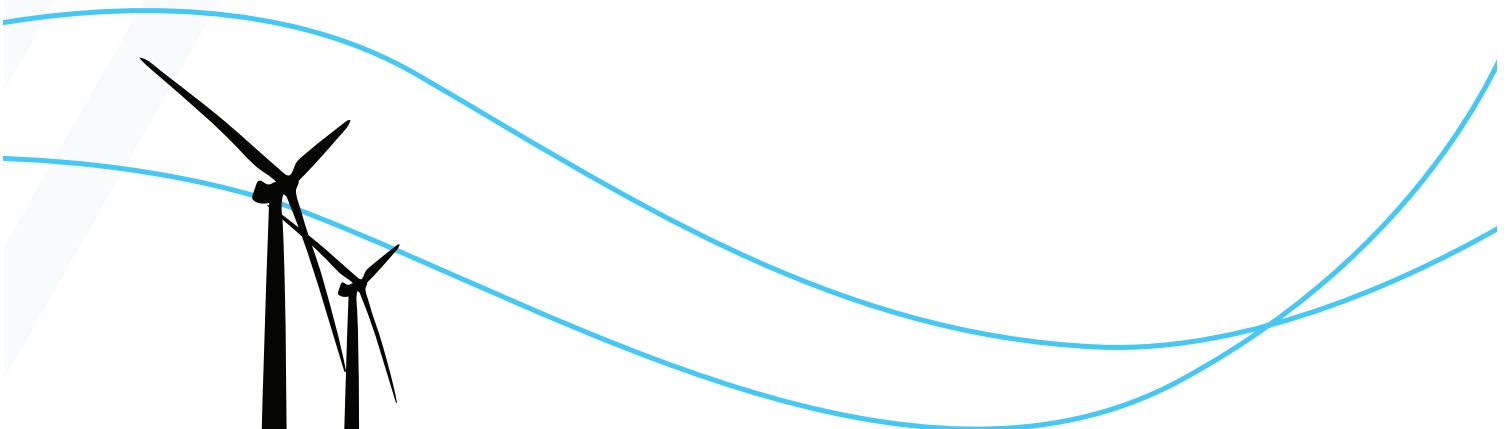




DEUCHRIES WIND FARM

Environmental Statement

Volume 4: ES Non-Technical Summary
September 2012

NON TECHNICAL SUMMARY

Introduction

Force 9 Energy Partners LLP (Force 9 Energy) and EDF Energy Renewables (EDF) are jointly seeking planning permission for the Deuchries Wind Farm, which is proposed in a location approximately 2km to the north of Aberchirder, Aberdeenshire.

Force 9 Energy is a dedicated wind farm development company based in and with a focus on the UK market. To date six developments have been taken through the planning process and a further three are awaiting determination. Force 9 Energy has a joint development agreement with EDF, through which Force 9 Energy lead on the wind farm development process up to the start of construction. Should the wind farm be granted planning permission EDF would take the lead during construction and operate the wind farm.

The Deuchries wind farm would consist of three turbines, together with a small substation building and a permanent wind monitoring mast to collect data for the site. The turbines would have an installed generating capacity of up to 6.9 megawatts (MW). Some existing access tracks within the application site would be upgraded and new sections of track would also be built within the planning application site, to allow vehicles access to construct and service the turbines.

As part of the submitted planning application an Environmental Impact Assessment (EIA) of the Deuchries Wind Farm has been completed, in order to predict and assess the positive and negative effects that the construction, operation and decommissioning of the wind farm would be likely to have on the environment. The EIA responds to the requirements of the Town and Country Planning Environmental Impact Assessment (Scotland) Regulations 2011.

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 an easy to understand language.

EIA Methodology

The purpose of the EIA is to ensure that 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 Deuchries Wind Farm has been undertaken by a team of experienced technical specialists, using established assessment methodologies and criteria and best practice guidance where available.

A 'scoping study' was first completed for the Deuchries Wind Farm in order to identify the key environmental issues to be assessed in detail in the EIA. This report was then used to agree the scope of the EIA with Aberdeenshire Council.

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 likely environmental effects 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 Environmental Protection Agency (SEPA) along with other stakeholders such as the Royal Society for the Protection of Birds (RSPB) and local airports were contacted for baseline information and opinions / advice. Public consultation was also undertaken through a series of correspondence and a public exhibition held at the Marnoch church hall, Aberchirder in October 2011. Feedback from these consultations was used to inform the design and assessment of the wind farm.

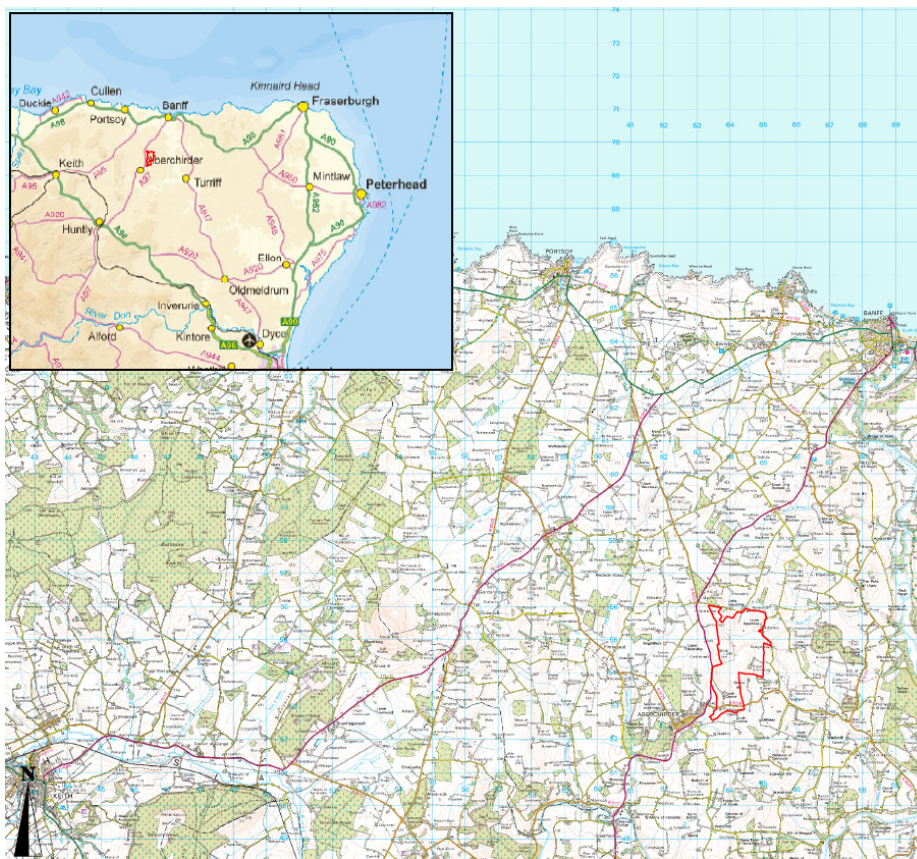


Figure 1: Site Location Plan

Site Selection and Design Evolution

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 national protected areas, areas where potential impacts on radar may be a risk, accessibility and potential local grid connections and network capacity. It was concluded that the Deuchries Wind Farm site

meets the various site selection criteria and a planning application for a wind farm could be prepared for the site.

A first layout for the wind farm was developed, based on the local topography and wind speeds and initial identified environmental constraints. 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 seven to three). There were also changes to the locations of the turbines, access track and borrow pits, in response to noise, archaeology and heritage, landscape and visual, ecology and hydrology (water) constraints, before a final layout was selected.

The initial scoping layout had four turbines prominently located on the hilltops within the site. The final layout presented within the ES has three turbines located within the Rosy Burn valley – using the surrounding landform to partially screen the development from a number of viewing locations including Aberchirder and to the south of the site.

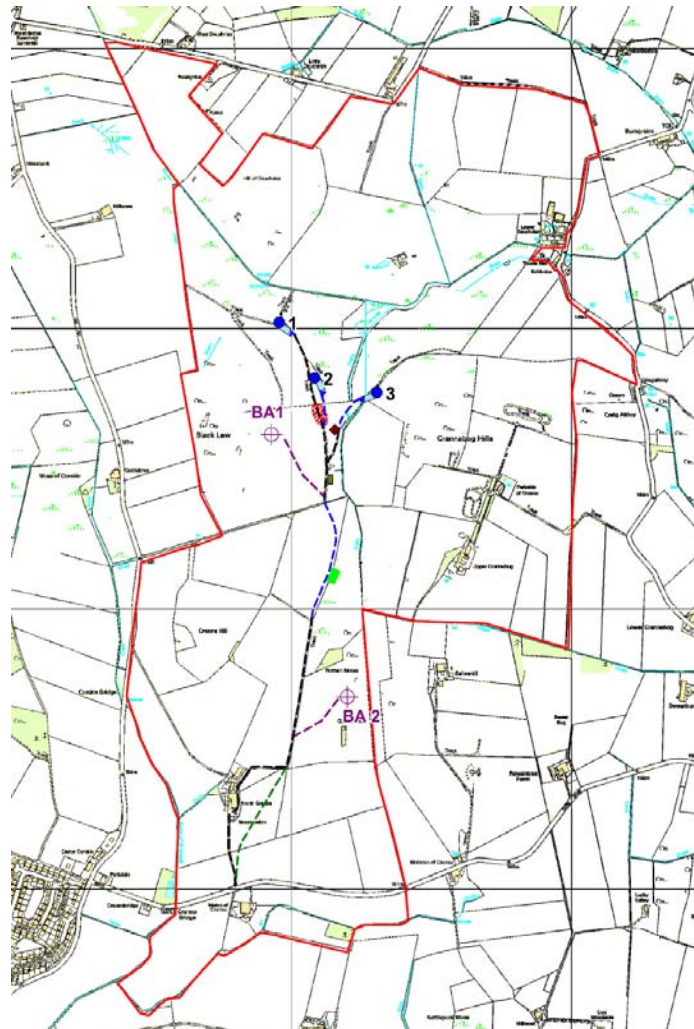


Figure 2: Site Plan and Wind Farm Layout

The Site

The site includes the Rosy Burn valley situated between the Crannabog Hills to the east and Black Law to the west and is bounded by the A97 to the west, the B9025 to the south and minor unclassified roads to the east and north. The total Site area is approximately 363 hectares (Ha), though the wind farm would occupy a much smaller area within the centre of the site, as shown in the plan.

At present the site is largely in use as farmland, for grazing for sheep and cows but crops are also grown in some of the fields. An area on the west side of Blacklaw had previously been quarried during the construction of the adjacent A97, but is now disused and overgrown. A number of farms and farmhouses are located within the site.

An unclassified road leads north from the B9025 to the North Cranna property, from which a farm access track leads north to Cranna Hill and the A97. A second farm track leads into the Site from the minor road to the east, to provide access to other farms and homes within the site.

Surrounding land use is also mainly farmland, with several local areas of woodland. There are four operational wind farms located in the wider area (between 5 and 18km from the site); these range in size from one to eight turbines.

The Wind Farm

The wind farm would comprise three turbines all of which would be a maximum 100m height to blade tip. The hub height, the point at which the blades attached to the structure, would be approximately 65m and the turbine blades would be approximately 35m (giving an approximate rotor diameter of 70m).

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.

Each turbine would require an electrical transformer that would be housed either inside the turbine tower or in a small cabin next to each tower, depending on the turbine model chosen for the wind farm. Below ground cables would connect the turbines to the substation, located to the south of the turbine area. The substation would be a small single storey building, which would also contain a control room, meters, electrical plant and a mess room and store room for use by wind farm maintenance staff.

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 permanent mast (of height 70m) to collect local wind 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 route through or around the North Cranna farm buildings (both route options have been considered in the EIA).

A cable connection would be required from the wind farm to the local electricity distribution network. The relevant consent procedure for the connection would be completed by the Distribution Network Operator (DNO) of the area. Current studies show the wind farm could connect to the local network

via an existing 33kV transmission line that runs between Turriff and Aberchirder, close to the southern boundary of the Site. The preferred option would be to use a below ground cable leading from the on-site substation through the site, to 'T' into the existing overhead line.

A construction compound would be maintained on-site for the entire construction works. The compound would be located adjacent to the access track in the centre of the site and would contain the site offices as well as storage areas for materials and plant.

Up to approximately 10,000 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 pits, the areas would be levelled.

Likely 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 permission. This includes the preparation and implementation of a Construction Environmental Management Plan (CEMP) and a Traffic Management Plan (TMP). These should ensure that noise, pollution, nuisance and/or disturbance during the construction (and decommissioning) works are reduced as much as possible. The CEMP would include procedures to keep the local community informed on the project and particular activities and ensure that in the event of any complaint, that these would be dealt with quickly and efficiently.

The wind farm would take about seven 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 that the works would start in 2014 and finish in 2015.

Planning

Roger Tym and Partners completed an assessment of the Deuchries Wind Farm against relevant planning policy. This is reported in detail in the Planning Statement which forms part of the planning application package, 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 Deuchries 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 Aberdeen City and Shire Structure Plan (2009) and the Aberdeenshire Local Development Plan (2012). The principal policy on wind farm development is Policy 3 Development in the countryside. There is also supplementary planning guidance (SPG), "Use of Wind Energy in Aberdeenshire Part 1: Guidance for Developers", produced by Aberdeenshire Council on renewable energy which was given consideration in this application.

Physical Environment

This assessment considered likely 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. Site walkovers were also completed by the project engineers to investigate local ground conditions and the best locations for the borrow pits, and provide 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. A soil probing exercise identified wet soft ground, as soft clay or potentially peat,

in the lower-lying parts of the northern area of the site, generally around streams and field drains. The proposed access tracks and turbines have been located to avoid these areas as far as practicable and ground investigation would be undertaken before construction works begin to ensure there is no significant effect with regard to peat. The ground investigation would also confirm local ground conditions for the turbine foundation designs.

The rock beneath the site is classified as of low productivity, that is unlikely to provide a significant source of groundwater e.g. for use as a public water supply. However, there are a number of well features within the site boundary and most of the homes within and close to the site take their domestic water from a private supply e.g. a spring or well, rather than mains water. Before the construction works start the contractor would undertake further discussion with local properties to confirm the sources of private water supplies and implement measures to ensure they would not be affected during the construction works.

A number of small streams drain the Site; surface water in the north of the Site generally drains into the Rosy Burn and the Cuning Burn receives surface water from the east of the Site. A small stream flows into the Rosy Burn through a culvert of approximately 60m length. This existing culvert may require some upgrading development and a new section of culvert for a second field drain would also be needed to allow construction of the wind farm to be completed. The new stream crossings and any works that could impact the streams would be undertaken in accordance with regulations set to protect the surface water environment (the Water Environment (Controlled Activities) (Scotland) Regulations 2011).



Figure 3: Existing Watercourse on Site

The CEMP would include a number of pollution control measures for the construction and decommissioning of the wind farm, such as following the SEPA pollution prevention guidelines, and appropriate storage of construction materials. Once the wind farm was operational only small volumes of materials such as oils and greases to maintain the turbines would be stored on site in the

substation building. As a result no significant impacts on water quality and the water environment are predicted.

The site does not fall within predicted flood zones of the major rivers in the area. 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 increase would be very small in relation to the overall area of the site (a change of less than 1%). Furthermore sustainable drainage systems would be installed as part of the wind farm to control water run-off rates and therefore no significant impacts in relation to flood risk are predicted.

Ecology

The ecological impact assessment of Deuchries Wind Farm was based on a desk study (which included a search of ecological records) and a range of field surveys – including surveys for the following legally protected species: bats, badger, otter and water vole. The scope of the assessment took into account comments received from Scottish Natural Heritage (SNH) and the Scottish Environmental Protection Agency (SEPA).

There are no statutorily protected or locally designated ecological sites on or within 2km of the site. Habitats present on site include grassland, small areas of woodland, scrub, watercourses, drainage ditches and two seasonally present ponds. Suitable badger foraging habitat is present throughout the site and evidence of badgers has been noted in the area.

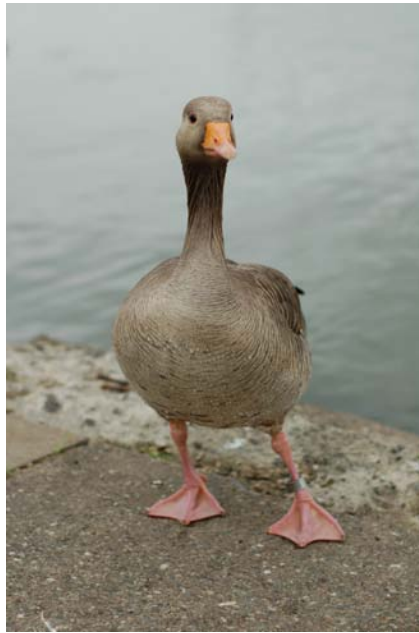
The site has limited suitability for bats; the farm buildings and mature trees present offer some potential for roosting, however no roosts were confirmed during the surveys. Low levels of bat activity (foraging and commuting) were recorded across the site, with common pipistrelle, soprano pipistrelle and *Myotis* bat species all noted. Activity was concentrated in the centre of the site around areas of grassland, watercourses and scrub.

No evidence of otters were found on the Site although the relative closeness of the site to the River Deveron means it may be used occasionally by this species. No signs of water voles were recorded and the habitats present were generally unsuitable for this species.

No significant impacts have been identified for the construction and decommissioning works. Further detailed field surveys would be completed in advance of the construction works and licence applications would be sought in respect of badgers, bats and otters where necessary. Any vegetation clearance would be undertaken at an appropriate time of year and watercourses would be protected against pollution and sedimentation. The CEMP, which would be implemented by the contractors, would further reduce the potential for any adverse impacts on protected species and habitats within the site.

Once the wind farm is complete there would be the permanent loss of small areas of low ecological value farmland and scrub but this is not considered to be a significant impact in relation to habitats or protected species.

Wind turbine operation has the potential to impact on both individual bats and populations. However the wind farm design includes a stand-off from landscape features used by bats and the ecological impact assessment has shown the wind farm would be unlikely to have any impact on the local bat populations. As a result no impacts on the bat population in the wider area are predicted.



**Figure 4: Species considered in the ecological and ornithological assessments
(Greylag Goose and Myotis Bat)**

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 wildfowl, raptors, waders and passerine birds. Several different types of field surveys, which covered the bird breeding season 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 ornithological interest (Special Protection Areas, SPA and Site of Scientific Interest SSSI) are located within 20km of the site: the Troup, Pennan and Lion's Head SPA and the Gamrie and Pennan Coast SSSI.

The results of the field surveys showed the site to be of medium importance for pink-footed goose, greylag goose and whooper swan and low importance for a number of other species considered e.g. teal, peregrine and short-eared owl.

One field would be likely to become unavailable for a single winter season as a result of construction disturbance but this was not predicted to be a significant impact in relation to geese species. No other 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.

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

Landscape and Visual Impact

The landscape and visual assessment reported the likely significant effects of the construction/ decommissioning and operation of the wind farm on the landscape resources and visual amenity, using a number of key viewpoints within an agreed study area of 35km radius around the proposed turbine locations.

The assessment was based on principles established in a number of best practice guidance documents and included desk studies in combination with a number of field visits. Photography and computer modelling was also completed to assess the area over which it would be possible to see the wind farm, to set an area for assessment of the wind farm in combination with other proposed wind farms, and to generate images of the turbines from the agreed key viewpoints. The assessment concluded that no significant effects would result from the construction or decommissioning of the wind farm.

The study area comprises a number of distinctive landscape character areas. Sensitive landscape areas are protected through use of designations; those within the study area include Areas of Great Landscape Value (within Moray) and Historic Gardens and Designed Landscapes (including Craigston Castle and Fyvie Castle). The assessment concluded there would be no significant impacts on any landscape character area as a result of the wind farm. However, localised significant impacts were predicted from the host landscape character area - Area 3, Western Coastal Farmland - from the area to the west of the Rosy Burn valley. Localised significant landscape impacts were also predicted from one neighbouring landscape character area to the east - Area 12, River Deveron and Upper Ythan Valleys - between Mains of Eden and Muirden and with regard to key views looking west from the higher western facing valley sides. No significant impacts were identified on any landscape designations within the study area.

Of the 15 representative viewpoints assessed, the operational wind farm would result in significant impacts from two viewpoints: Viewpoint 2 – Lower Deuchries and Viewpoint 6 – Mains of Eden. Viewpoint 2 is representative of closer views from homes to the north and east where views into the site are not partially screened by the local landform. Viewpoint 6 is representative of people using the National Cycle Path which runs along the higher sides of the River Deveron valley to the east of the site. The assessment on settlements also identified significant visual impacts from limited closer proximity residential receptors, with clear views towards the proposed turbines, on the rising ground to the west and south of the site (around Milbethill and South Brownhill respectively).

The assessment also considered potential cumulative impacts of the wind farm in combination with other existing and proposed wind energy developments in the local area. The in planning Cowie Hill and the Deuchries wind farm would combine to create localised significant landscape impacts on the host and neighbouring River Deveron valley landscape character areas. However, generally the proposed development is seen as another small commercial scale wind farm in a landscape of many small commercial scale wind farms/ single turbines.

With regard to views of the wind farm (and other wind energy schemes) in sequence from major transport routes in the 35km study area localised significant impacts were identified from the A97 to the west and north west of the site. However, significant impacts were not identified on the route as a whole or from the other major transport routes considered within the assessment (A98 and A947).



Figure 5: Viewpoint 2 Lower Deuchries

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 an archaeological desk-based assessment, site visit and consultation exercise.

There are no legally protected sites, such as Scheduled Monuments or listed buildings, located within the site boundary. The nearest legally protected site is the Conservation Area of Aberchirder, 2.4km southwest of the nearest turbine. There are a number of Scheduled Monuments, Historic Gardens and Designed Landscapes and listed buildings within the wider area (up to 10km from the proposed turbine area).

There are multiple unscheduled archaeological sites within the site boundary. The majority of these relate to the agricultural use of the area and include the remains of crofts, both abandoned and occupied farmhouses, old quarries, sheepfolds and cultivation marks. Other remains of interest include a cropmark of an enclosure, a former smithy, and a possible cairn.

Regarding direct impacts of the Development on the archaeological resource, i.e. sites close to turbines and other proposed wind farm infrastructure, impacts on nine sites are predicted. The potential impact of transporting wind turbine components across Banff Bridge, a listed building, is also considered. Detailed mitigation through avoidance, archaeological recording and a watching brief is proposed.

With respect to indirect impacts upon the wider archaeological and cultural heritage resources, an assessment of the potential impact of the Development on the setting of built heritage features (such as Scheduled Monuments, Historic Gardens and Designed Landscapes, listed buildings and conservation areas) has been completed. Slight impacts are predicted on the setting of six protected sites. These include one listed building and five Scheduled Monuments, including cairns, stone circles and a boundary stone. No significant impacts on the setting of cultural heritage receptors are predicted.



Figure 6: Tam s Chamber

Noise

Noise would be emitted by equipment and vehicles used during construction and decommissioning of the wind farm and by the turbines during operation.

The potential noise impacts from construction and decommissioning of the wind farm have been assessed following British Standard guidance and by assuming the wind farm is constructed using standard methods. Noise levels are predicted to be below the applicable criteria for all construction works. To reduce the effects of construction noise the proposed hours of working are 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays. Implementation of the CEMP and the TMP would also help to reduce potential noise impacts associated with the construction traffic.

Operational turbines emit noise from the rotating blades as they pass through the air. This noise can sometimes be described as having a regular 'swish' and it tends to vary depending on the wind speed. Background noise levels at nearby homes also tend to vary with wind speed, increasing in level as wind speeds rise due to wind in trees and around buildings etc.

The potential impact of noise from the operational wind farm was 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 Aberdeenshire Council. Background noise levels were measured at five 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 meet the defined limits at all the receptor locations.

A review of existing, consented wind farms and those in planning identified the Mains of Auchinderran Wind Farm as the only development nearby that might result in cumulative noise impact with the Deuchries wind farm. No exceedences of the noise limits were predicted from the two wind farms operating in combination.



Figure 7: Noise Monitoring at Thistle Mill

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.

The nearest major road is the A97 to the west of the Site, which connects the town of Banff approximately 13km to the north with the A96(T) at Huntly, approximately 20km to the south west of the site. The B9025 runs along the southern part of the site and provides a link between Aberchirder and Turriff (10km to the east).

An access study completed by the project engineers Grontmij concluded that minor modifications would be required on the route taken by the abnormal load vehicles from the port to the site, such as the temporary removal of traffic signs, however these items would be replaced immediately following the turbine movements.

Traffic associated with the wind farm would access the site from the A97 and B9025. The existing farm access into the site would be upgraded. The route to the turbine area within the site would use existing farm tracks wherever possible, which would also be upgraded to ensure they were suitable for construction traffic. The route to the turbine area would follow an existing track that runs via the North Cranna farm buildings, or an alternative route has also been considered in the EIA, with a new section of track that would bypass the farm buildings and rejoin the existing track further to the north.

Construction traffic volumes were calculated and compared to existing traffic volumes on the A97 and B9025. No significant effects on the A97 or B9025 are predicted. A traffic management plan (TMP) would be implemented during the construction and decommissioning phases of the wind farm to ensure access routes are followed and deliveries were timed to minimise disruption.

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 8: Locations considered in the traffic and transport chapter (Macduff and Banff Bridge)

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 20,211 tonnes of carbon dioxide (tCO₂e.)

The annual GHG savings predicted from the operation of the wind farm operation are 11,007 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 (11,007 tCO₂e) which gives a net positive GHG impact of 255,362 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.

The site and surrounding land use consist primarily of farmland, with occasional areas of woodland in the wider area. The wider study area contains limited formal tourist attractions and receptors and none considered of greater than local significance. There is a network of rights of way (Scotways) within the immediate vicinity of the Site and four Scotways paths (GB97, GB98, GB100 and GB101) within the Site. Scotways routes are not statutory designations but are considered of local importance. There are no existing or new Core Paths within the Site.

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. During the construction works the Scotways paths in the area of the construction works would be temporarily closed to ensure the health and safety of local walkers. The CEMP would require alternative routes to be set out, which would be agreed with Aberdeenshire Council and Scotways. Some temporary disturbance and visual effects would be experienced by visitors and recreational users of the local area, but implementation of the TMP would minimise traffic related effects.

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 in EIA terms.

Electromagnetic Interference, Infrastructure, Aviation and Safety

An assessment was completed of potential effects 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, telecommunications or on airport radar infrastructure in the area.

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). On this basis there would be no significant effect on television reception.

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. Three properties are located within this zone: Castlebrae, Upper Crannabog and Parkside of Cranna. The property at Kebholes is 817m away from the nearest turbine but it was also included in the assessment for completeness.

No shadow flicker was predicted at Castlebrae and Upper Crannabog. Current UK policy does not specify limits or levels against which any assessment can be judged. However, the predicted level of shadow flicker at Kebholes was below the level considered to be the upper limits of acceptability in other countries across Europe, where such limits are set. The modelling results showed that at Parkside of Cranna there was a likely significant impact in comparison to these same upper limits.

The simplest form of mitigation for shadow flicker is to physically screen the affected property. A 10-15m high conifer shelter belt is currently located approximately 5m from the rear of the property and in line with the direction of the turbines predicted to cause shadow flicker. This shelter belt would remove the majority of shadow flicker effects on the rear side of the property and can therefore be considered as suitable mitigation. Should the shelter belt be removed, alternative mitigation controls are available and would be implemented to resolve any amenity issue.

There are no other proposed wind farms sufficiently close to the site that cumulative shadow flicker effects could occur.

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