

Environmental Impact Assessment

Sandy Knowe Wind Farm Extension

Volume 6: Non-Technical Summary

ERG UK Holding Ltd



July 2022



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Preface

This Non-Technical Summary (NTS) is an overview of the Environmental Impact Assessment Report (EIA Report), undertaken to support an application under Section 36 of the Electricity Act (Scotland) 1989 (as amended) to develop a wind farm consisting of up to six wind turbines, battery storage facility and associated infrastructure such as access tracks. This is referred to throughout this document as the 'Proposed Development'.

The Proposed Development is located on open land south-west of Kirkconnel in Dumfries and Galloway and is an extension to the existing 24 turbine Sandy Knowe Wind Farm.

This application (including the EIA Report and this NTS) has been prepared by Atmos Consulting Ltd on behalf of ERG UK Holding Ltd.

The EIA Report has been produced to provide information on the likely significant environmental effects of the Proposed Development.

The EIA Report includes the following documents:

- Volume 1: EIA Main Text;
- Volume 2: Technical Appendices;
- Volume 3: Figures;
- Volume 4: Landscape and Visual Impact Assessment (LVIA) Landscape Figures and Visualisations;
- Volume 5: Confidential Annex; and
- Volume 6: NTS.

Viewing the EIA Report

Under normal circumstances a physical copy of the EIA Report is made available for inspection free of charge at a specified public place or address.

The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 notes temporary amendments to the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. During the Emergency Period there is a temporary relaxation to the requirement that copies of the EIA Report are available for inspection at a place or address.

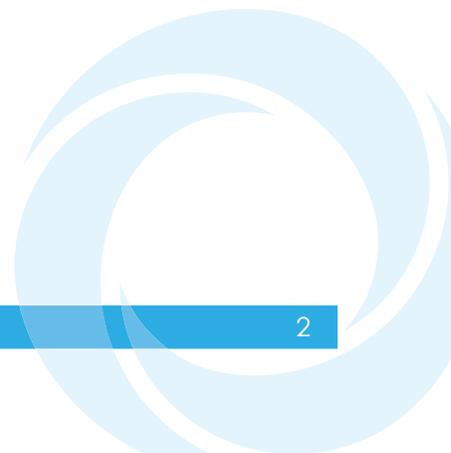
The Emergency Period means the period beginning on 24 April 2020 and ending on the date on which Part 1 of the Coronavirus (Scotland) Act 2020 expires in accordance with section 12 of that Act; currently on 30 September 2022.

As a result, hard copies will not be available at this time, however, electronic copies of the EIA Report can be found:

- On the Scottish Government Energy Consents Unit (ECU)'s website at www.energyconsents.scot; and
- The Applicant's website at <https://sandyknowewindfarm.com/>.

Alternatively, the EIA Report can also be purchased from the Applicant (telephone: +44 141 212 7222 / email: jennifer.peltier@invictapa.co.uk), either in digital or hard copy. Charges for copies are:

- £900 for a paper hard copy (Full EIA and Supporting Documents, including Non-Technical Summary);
- £15 a paper hard copy of the Non-Technical Summary; or
- £10 for a CD/USB with all documents.



1 Introduction

ERG UK Holding Ltd. (ERG or 'the Applicant') is seeking consent under Section 36 of the Electricity Act (Scotland) 1989 (as amended) to develop Sandy Knowe Wind Farm Extension, a wind farm consisting of up to six wind turbines (three turbines up to a maximum 125m tip height and three turbines up to a maximum of 149.9m tip height), battery storage and associated infrastructure including, hardstandings, cabling and access roads (the 'Proposed Development').

The wind turbines have an indicative output of 21.6MW and the battery storage will have an indicative capacity of 28.4MW.

The Proposed Development is an extension to the adjacent Sandy Knowe Wind Farm (currently under construction). This consists of 24 wind turbines (at 125m tip height).

The Scottish Government has set a target of achieving net zero carbon emission by 2045. This target relies on a large increase in renewable energy generation across Scotland and on the Scottish Government's ambitions to secure an additional 8-12 GW of installed onshore wind capacity by 2030, which Sandy Knowe Wind Farm Extension would help to achieve.

1.1 The Applicant

ERG is a leading European renewable energy producer, owning and operating wind farms with a total installed capacity of approximately 2GW.

With an office in Edinburgh, ERG is active in the UK. ERG is constructing wind farms in Scotland and is committed to investing in Dumfries and Galloway through renewable energy projects. ERG also owns and operates wind farms in Northern Ireland.

1.2 Land Use

The area within which the Proposed Development (the 'Proposed Development Footprint') is located on low lying hills to the north of the Southern Uplands hill range, south of the A76 and approximately 2.5km south-west of the town of Kirkconnel.

The Proposed Development Footprint is centred on National Grid Reference (NGR) (approximate) NS 69292 10825 and is illustrated in **Figure 2**.

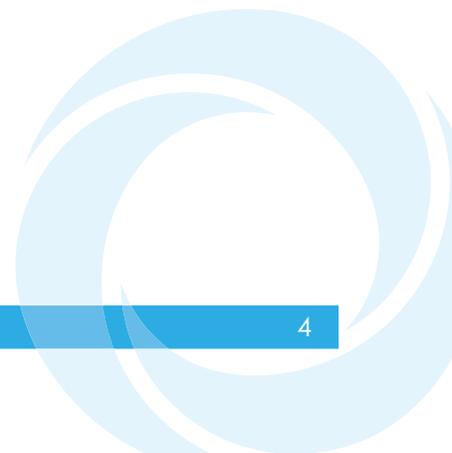
It lies to the south of the Nithsdale on the lower-lying northern slopes of hills which include High Cairn (553m Above Ordnance Datum (AOD)) and White Hill (418m AOD). The surrounding area is largely characterised by moorland landcover with blocks of coniferous forest cover.

1.3 Purpose of the EIA Report

The EIA Report presents the findings of the EIA process by describing the Proposed Development, the current conditions at the Proposed Development Footprint and the likely environmental effects which may result from the Proposed Development.

Where appropriate, measures designed to avoid, reduce or offset potentially significant effects are proposed (mitigation measures) and residual effects (those effects that are expected to remain after mitigation) are described.

The findings and conclusions of the EIA are summarised this NTS which is intended to allow anyone with an interest in the Proposed Development to understand and access information on its potential environmental effects.



2 EIA Approach

EIA is systematic process used to inform consenting authorities of the environmental implications of a development by collecting background information about the existing environment and the determining the potential effects of the development on the environment. Where significant negative (adverse) effects are identified, reduction of these effects is then sought by changing the design or applying mitigation measures.

The Proposed Development falls under Schedule 2 of the EIA Regulations¹ and an EIA has been undertaken as the Applicant recognises that the Proposed Development could have significant environmental effects.

The scope of the EIA was determined through a Scoping Opinion from the Scottish Government Energy Consents Unit (ECU) on behalf of the Scottish Ministers in October 2021.

¹ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017

3 Development Description

The Proposed Development consists of six three-bladed horizontal axis wind turbines; three turbines up to a maximum 125m tip height above ground level (AGL) and three turbines up to a maximum of 149.9m AGL; a battery storage compound; and other associated infrastructure (See **Figure 2**).

The associated infrastructure includes:

- Use of existing and consented / under construction access tracks;
- New access tracks;
- Construction of turbine foundations and crane hardstandings;
- Underground cabling;
- Use of an existing borrow pit;
- Reuse of two consented temporary storage compounds; and
- Three watercourse crossings.

The turbines will be built using gravity base foundations made of steel reinforced concrete. To allow the turbines to be installed a crane hardstanding beside the turbine base will be built, approximately 62.5m x 25m in area.

It is anticipated that approximately 3km of new track is likely to be required to construct and access the new turbines. No upgrades are proposed on the consented / constructed Sandy Knowe Wind Farm access tracks.

All construction traffic, including the delivery of large components such as turbine blades (abnormal loads) will access the site via the existing Sandy Knowe Wind Farm north western access point directly off the A76, while all other vehicles during operation will access the site from the existing/constructed north eastern access via the Heads of the Valley Road.

Once a turbine has been installed, the crane hardstand area around the turbine will remain in place as permanent infrastructure. The boom assembly areas, temporary track and hardstand working areas will be restored using the retained topsoil or turf.

The Proposed Development includes for the use of an existing borrow pit for the excavation of on-site aggregate to be used in the construction of the Proposed Development and for peat reinstatement. Any extraction of aggregate will be within the existing boundaries of the Borrow pit (See Chapter 3 Project Description).

Peat excavated as part of the construction of the Proposed Development will be used in the restoration of the existing borrow pit used in the construction of the existing wind farm.

The turbines will be connected to the existing on-site substation using underground cabling running along the routes of the access tracks. The underground cable connection from the on-site substation to the electricity grid network is being constructed for the existing wind farm and has enough remaining capacity to accommodate the output of the Proposed Development.

The construction of the Proposed Development is anticipated to take approximately 12 months. Construction of the wind farm will take place in accordance with a Construction Environmental Management Plan (CEMP). The CEMP will provide the

overarching environmental management principles that will be taken forward into all environmental management plans, supporting documents and method statements during the construction phase.

The Proposed Development will have an operational lifespan of 40 years after which it will be decommissioned.

3.1 Benefits of the Proposed Development

Once operational, the Proposed Development will generate approximately 66,225MWh of electricity per year. This will displace an equivalent amount of fossil fuel generated electricity amounting to a reduction in the release of greenhouse gases equal to 29,801 tonnes per year or 1.2 million tonnes over the lifetime of the wind farm.

The Scottish Government's Online Carbon Calculator was used to calculate the carbon payback period for the Proposed Development. When taking into consideration the potential carbon loss of various construction and operational phases such as peat extraction for access tracks, the Proposed Development is expected to payback the carbon cost in **2.6 years** which represents 6.5% of the operational life of the Proposed Development.

The Scottish Government's Climate Change Plan (2018) states that by 2030 Scotland will have a largely decarbonised electricity system with a grid carbon intensity of 50g CO₂/kWh of generation (p. 66).

The carbon intensity of the Proposed Development is 16.77g CO₂/kWh, which is below the 2030 carbon intensity target. The Proposed Development is anticipated to have an overall beneficial effect on climate change mitigation.

The results of the Carbon Calculator are presented in EIA Volume 2 Appendix 3-1.

The Applicant will provide a voluntary community benefit package of £5,000 per MW installed capacity, equating to £4.3M over the lifetime of the windfarm.

The development of a wind farm is a substantial investment that results in the generation of employment. It is estimated that the Proposed Development will generate up to 239 jobs during its design and construction phase, with a further 10 to 11 jobs during its 40-year operational phase. It is likely that the Proposed Development will also have wider beneficial effects that are not possible to quantify at this stage. Nevertheless these would be expected to have positive effects on the local and national economies including:

- Local supply chain opportunities – wider, 'knock-on' effects of expenditure of workers visiting the area, e.g., in the accommodation, food service and retail sectors;
- Income effects – the generation of additional wages and salaries from new employment, much of which will be spent regionally or nationally; and
- Exchequer effects – additional tax revenue, regionally and nationally from increased economic activity.

4 Planning and Energy Policy

4.1 National Planning Policy

National planning policy is taken into account within development proposals, specifically:

The National Planning Framework (NPF3):

The National Planning Framework 3 (NPF3) was published on 23 June 2014 and is a long-term strategy for Scotland. It is the spatial expression of the Scottish Government's Economic Strategy and plans for development and investment in infrastructure.

NPF3 acknowledges that whilst good progress is being made in diversifying Scotland's energy generation capacity and lowering the carbon emissions associated with it, more action is needed.

NPF3 is clear that the Scottish Government wants to continue to capitalise on Scotland's wind resource whilst developing a growing focus on marine energy. The policy is clear that onshore wind will continue to make a substantial contribution to diversification of energy supplies.

Scottish Planning Policy (SPP)

This is the Scottish Government's policy on how nationally important land use planning matters should be addressed across the country. The latest SPP was published in June 2014.

SPP sets out to achieve the Scottish Government's Purpose of creating a more successful country, as detailed in the Scottish Government's Economic Strategy. It expresses the need for the planning system to "*support the transformational change to a low carbon economy*".

SPP provides the basis for decision making on development proposals and includes a requirement for planning authorities to set out spatial frameworks to help identify where there is capacity for wind farms. It also sets out what the key considerations for proposals should be. These include net economic impact; the scale of contribution to renewable energy generation targets; effect on greenhouse gas emissions; cumulative effects; impacts on the environment and on communities, including landscape and visual impacts.

The Fourth National Planning Framework (NPF4) Draft

The Draft NPF4 was published in November 2021. Although not finalised, it is an important consideration for the Proposed Development. Once adopted it will replace NPF3 and the SPP.

It sets out increased emphasis on the 'net zero agenda' through four key themes; sustainable places, liveable places, productive places and distinctive places.

NPF4 acknowledges the need to; "*diversify and expand renewable energy generation*" and states that:

“Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas”

4.2 Local Planning Policy

The Local Development Plan for the Proposed Development comprises:

- Dumfries and Galloway Council Local Development Plan 2 (DGC LDP2) (October 2019);
- Supplementary guidance: Wind Energy Development: Development Management Considerations (February 2020a); and
- Supplementary guidance: Part 1 Wind Energy Development: Development Management Considerations Appendix 'C' DGWFLCS (February 2020b).

These have been used to help steer the design of the Proposed Development.

4.3 Climate Change and Energy Policy

Both the UK and Scottish Government have declared a Climate Emergency and climate change has been described as the greatest environmental challenge facing the world today. Dumfries and Galloway Council also declared a climate emergency on 19 June 2019 and noted the urgency to respond to climate change and transition to a carbon neutral region.

Scottish Energy Strategy

The Scottish Energy Strategy (SES): The Future of Energy in Scotland was published in December 2017. The SES sets two new targets for the Scottish energy system by 2030:

- The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources; and
- An increase by 30% in the productivity of energy use across the Scottish economy.

For the longer term the SES states that;

“Scotland's long term climate change targets will require the near complete decarbonisation of our energy system by 2050, with renewable energy meeting a significant share of our needs”

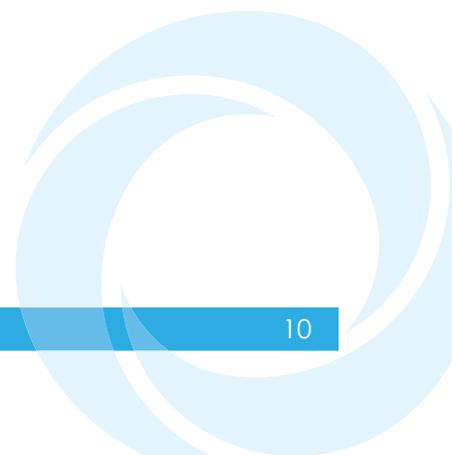
This commitment has been brought forwarded to 2045 following the Climate Change (Emission Reduction Targets) (Scotland) Act 2019 and the noted in the Scotland's Energy Position Statement (2021).

Onshore Wind Policy Statement

The Onshore Wind Policy Statement (OWPS) published in December 2017 sets out the Scottish Government's policy position on Onshore Wind and re-affirmed the SES in setting out an important role for onshore wind in achieving Scotland's renewable energy targets.

It also recognises the wider economic and industrial opportunity that growing the onshore wind sector represents.

The Onshore Wind Policy Statement Refresh 2021: Consultative Draft, published in October 2021, revisits the OWPS and seeks responses on the Scottish Governments ambitions to secure an additional 8-12 GW of installed onshore wind capacity by 2030.



5 Landscape and Visual Impact Assessment

A landscape and visual impact assessment (LVIA) of the Proposed Development was carried out in accordance with the principles of the 3rd edition of Guidelines for Landscape and Visual Impact Assessment ("GLVIA3").

The study area for the assessment was defined as 40km radius from the outermost turbines. The assessment involved desk study, 3D modelling, and field survey across the study area.

The scope and approach were agreed with the ECU, NatureScot, Scotways, and East Ayrshire Council (EAC), including the selection of representative viewpoint locations. DGC was also approached but no response has been provided until May 2022, a small number of additional photomontages and wirelines were requested and considered as part of the LVIA.

South Lanarkshire Council (SLC) was also approached but no response has been received.

The LVIA examined how the Proposed Development would alter the baseline landscape characteristics of the site, and of the study area, including the special qualities of designated landscapes.

By examining the sensitivity of these characteristics and qualities, and the scale and duration of the changes proposed, the LVIA concluded that the main landscape effects will be focused within 3-4km of the Proposed Development.

Significant effects are predicted on the landscape resource of the Proposed Development Site itself during construction and operation.

During operation significant effects on landscape character are predicted for the Upper Dale and Southern Uplands with Forest Landscape Character Types (LCTs). This will be on areas across the Proposed Development Site (the site is on the transition between the two) and on areas of the Upper Dale LCT to the north and west of Sandy Knowe Wind Farm, within approximately 3km.

No significant effects on other LCTs are predicted. Furthermore, the Proposed Development will not alter the integrity of any landscape designations by affecting the qualities for which they have been designated.

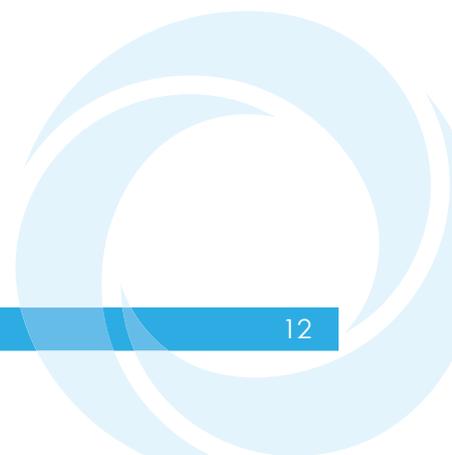
Significant effects on views are predicted at five of the 17 representative viewpoints. All of the viewpoints are within 6km to the north and north-east of the Proposed Development and represent either close proximity views or higher sensitivity views from the northern side of Nithsdale.

In general terms the Proposed Development reads as a small extension to Sandy Knowe Wind Farm. The proposed turbine size has been selected to reflect the height of the turbines in Sandy Knowe. The greater offset of the three larger turbines from more sensitive lower lying receptors in Nithsdale, to the north, helps to mask the increased height of these turbines.

Moderate sequential effects on views from short sections of the A76, as it passes the Proposed Development Site, and from open sections of the Core Path Network to the north of Kirkconnel (within 5km) are also predicted.

No significant effects on views from any settlements are predicted.

No significant cumulative landscape or visual effects are predicted with the Proposed Development creating a slightly larger cluster of turbines within the southern wind farm group, marginally intensifying the influence of turbines to the south of Nithsdale.



6 Ecology

The Ecology assessment describes and evaluates the current nature conservation interest with the Proposed Development Footprint and study areas based on the location of the proposed new infrastructure. The assessment evaluates potential impacts on both habitats and non-avian animal species.

The scope of the assessment was determined based on the ECU's EIA Scoping Opinion and in particular responses from NatureScot, Fisheries Management Scotland, the Nith District Salmon Fishery Board and Galloway Fisheries Trust.

The following surveys were undertaken:

- An extended phase 1 habitats survey to identify nature conservation interests and potential for impact and to scope further specialised assessments;
- A National Vegetation Classification (NVC) survey to classify the habitats present according to the presence and abundance of plant species;
- Bat surveys using static bat detectors in the vicinity of the proposed turbine locations;
- Protected species surveys for otter, water vole, red squirrel, badger and for the potential for trees and buildings to host bat roosts; and
- Fish habitat and aquatic surveys.

No sites designated for nature conservation interest are present on site (the nearest is the Afton Uplands Local Wildlife Site located 800m west and includes mire, heath and grassland habitat).

The habitats on site consist of mires and flushes, grassland and woodland. Potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) were identified including Atlantic wet heath and degraded raised bog.

The presence of badgers was identified (although not within proximity to the proposed infrastructure). The bat activity recorded was low with limited roosting and foraging habitat. Although otters are known in the area, otter signs were not identified, and no evidence of red squirrel was identified (although some suitable habitat was identified in the woodland bordering the western side of Proposed Development Site).

The fish surveys identified the presence of eels, stone loach and trout and salmon parr/fry were found 500-800m downstream of the Proposed Development.

Potential impacts include loss or damage to habitats, disturbance to fauna and sedimentation/pollution of watercourses.

Mitigation measures included the siting of turbines to avoid areas of deep peat and sensitive habitats and to avoid or minimise works in the vicinity of watercourses. Undertaking construction in accordance with the mitigation described in a Habitat Management Plan (HMP) and the CEMP will minimise impacts on ecology.

Taking into account mitigation, it is considered that the Proposed Development would not have any significant impact on the fauna or flora on and around the Proposed Development Footprint.

7 Ornithology

The ornithology assessment evaluates the effects of the Proposed Development on the ornithological receptors on and in the vicinity of the Proposed Development and the Proposed Development Site.

The survey and assessment process has been informed and agreed by the ECU, NatureScot and RSPB.

A number of surveys have been undertaken between September 2019 to October 2021 including:

- Vantage point surveys;
- Breeding Bird surveys;
- Breeding raptor surveys; and
- Winter bird surveys.

In addition to the surveys noted above, other data such as the findings from the original Sandy Knowe Wind Farm surveys between April 2011 and July 2012; Dumfries and Galloway Raptor Study Group records; and RSPB records were used to inform the ornithology assessment.

There are no designated sites for ornithological interests within the Proposed Development Site. The nearest designated site is Muirkirk and North Lowther Uplands Special Protection Area (SPA), located approximately 4-5km to the north. This is designated for:

- Hen harrier;
- Peregrine;
- Merlin;
- Short-eared owl; and
- Golden plover.

The Muirkirk and North Lowther Uplands (SPA) is underlain by two Sites of Special Scientific Interest (SSSI):

- North Lowther Uplands SSSI: designated for breeding Hen harrier and also an upland breeding bird assemblage; and
- Muirkirk Uplands SSSI: designated for a number of features including Hen harrier, Short-eared owl and an upland breeding bird assemblage.

Nature conservation evaluations were carried out and three receptors – Muirkirk and North Lowther Uplands, Hen harrier and Black grouse taken forward for impact assessment.

Effects considered were habitat loss, construction and operational disturbance/displacement and additional mortality as a result of collision risk.

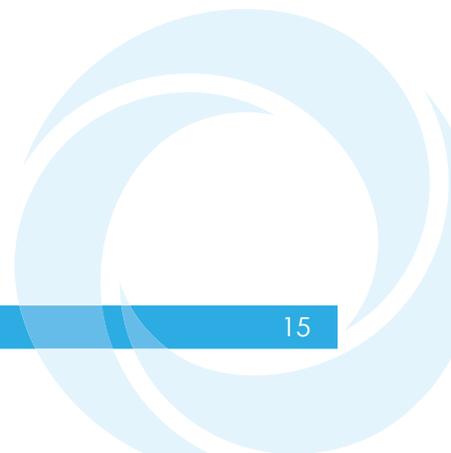
Mitigation measures included the siting of turbines to maintain spacing between the turbines and Black grouse and species management plans. Undertaking construction in accordance with the mitigation described in a HMP and the CEMP will minimise impacts on ornithology.

An Outline HMP (EIA Volume 2, Technical Appendix 14-2) has been prepared for the Proposed Development and consist of the following objectives:

- Improve habitat desirability for Black grouse through habitat management and restructuring, while increasing floristic species diversity; and
- Protect and enhance blanket bog and Ground Water Dependant Terrestrial Ecosystem (GWDTE) habitats.

The outline HMP will be finalised following the completion of the planning process in collaboration with DGC.

Taking into account mitigation, it is considered that the Proposed Development would not have any significant impact on the ornithology receptors.



8 Hydrology, Hydrogeology and Soils

The aim of the Hydrology, Hydrogeology and Soils chapter is to assess potential effects of the Proposed Development during the construction, operation and decommissioning on the surface water, groundwater, and on soil and geology across the Proposed Development Footprint, including peat landslide hazard risk. An assessment of risk posed by historical coal mining was also undertaken

Data collection and a series of surveys were carried out, including extensive peat depth probing, vegetation surveys and peat slide hazard risk assessment.

The area of the Proposed Development Footprint is underlain by glacial diamicton till, and peat. This overlies bedrock of by greywacke (turbidite), sandstones, mudstones and siltstones of the Ordovician Kirkcolm Formation in the northern section and the Lower Coal Measures of the Sanquhar Coalfield in the western section.

The Proposed Development Footprint lies within the catchment of the River Nith with the northern extent of the site draining into the Polhote Burn and the western extent draining into the Polmeur Burn. It contains three north flowing sub-catchments of the River Nith, the Polhote Burn, Polneul Burn and Polmeur Burn sub-catchments. The gorges of the Polhote and the Polmeur Burn are a designated SSSI and are within and adjacent to the Proposed Development Footprint. The designated feature of this SSSI is geological. Construction activities close to the sides of the Polhote and Polneul Burns gorges could potentially affect the structural integrity of these Geological designated SSSI.

There are legacy areas of coal mining adjacent to the Proposed Development Footprint. A Coal Mining Risk Assessment (CMRA) was carried out in accordance with the requirements of the Coal Authority. This concluded that there are some potential risks associated with the former coal mining workings.

It is likely that any risks would be largely realised during the one year construction period although some effects could increase over time such as mine gas migration, if present. Thus the risk magnitude during Operation is assessed at Low. The predicted effect is therefore Minor and Not Significant.

In order to reduce the estimated risk to development associated with mining hazards during the construction phase, a number of mitigation measures will be undertaken such as site investigations to confirm the absence of shallow mine workings, ground gas monitoring, and a watching brief for unrecorded mine entries.

There are no high dependency GWDTE within 250m of infrastructure. There are 44ha of moderately dependent within this buffer area.

Estimated direct loss due to permanent infrastructure built over moderately dependant ecosystems is expected to be 0.9ha. This constitutes just over 2% of moderately dependent GWDTE identified within the Proposed Development Footprint.

Estimated indirect loss effects due to potential barriers to groundwater flow as a result of infrastructure is expected to be 6ha. This is approximately 13% of the total moderately dependent GWDTE on the Proposed Development Footprint.

Mitigation will be considered where access tracks or other below ground infrastructure cross or are located above GWDTE flushes and wetter areas of groundwater connectivity.

The overall aim of mitigation is to maintain the natural pre-existing shallow groundwater flow paths supporting the GWDTE or to replicate as close to the infrastructure areas as possible, and up gradient of the GWDTE.

The Proposed Development is classified as Class 3 carbon-rich soils i.e. the dominant vegetation cover is not priority peatland habitat. The peat is considered to be degraded species and unlikely to be highly active or capable of restoration. However, it does represent a significant source of carbon sequestration. Peat occurs mainly on the western extent of the Proposed Development Footprint at depths between 0.6m and 1.0m with distinct areas of deeper peat between 1.5m and 3m depth. There are several very small areas >3m depth. 778m³ of acrotelm and 1,440m³ of catotelm will be temporarily excavated prior to being directly reinstated at the point of excavation. 5,659m³ of acrotelm and 14,231m³ of catotelm will be permanently excavated and require reuse.

Peat landslide likelihood was found to be Low to Moderate across a majority of the site.

There are no private or public water supply assets in the area which could be impacted by construction works and no abstractions for public water supply in hydrological continuity have been identified. Similarly there is no flood risk within the Proposed Development Footprint nor within 1km.

Potential effects were assessed for the Proposed Development after considering embedded mitigation such as avoiding sensitive hydrological, hydrogeological and geological receptors where possible; maintaining a 50m distance from watercourses for turbines and hardstands; and positioning infrastructure to avoid and reduce impact on GWDTE and peat.

No High Significance effects were identified.

Moderately significant effects were identified as follows:

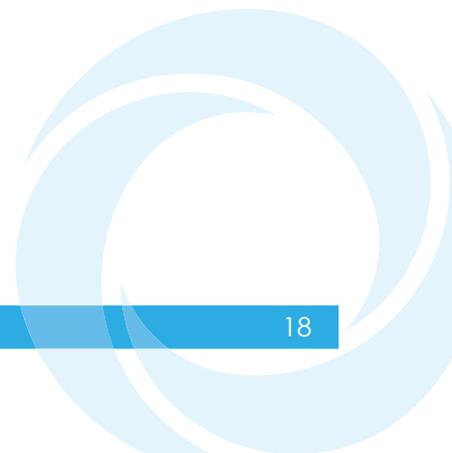
- Potential for sediment and other pollution affecting surface water quality during construction phase;
- Loss, disturbance and degradation of peat and peat soils and their hydrology during construction phase;
- Potential for construction activities having an effect on the integrity of SSSI watercourse gorge geology and geomorphology; and
- Risk of potential effects from unrecorded mine workings and mine gas during construction.

Additional mitigation was designed to further reduce these potential effects to a level that is not significant. The key mitigation involves the implementation of the following plans:

- Drainage Impact Assessment and Drainage Management Plan;
- CEMP;
- Pollution Prevention Plan (PPP);
- Peat Management Plan (PMP); and

- Borrow Pit Restoration Management and monitoring Plan to control use of consented existing excavated borrow pit within the Proposed Development for reinstatement of residual excavated peat.

Taking into account mitigation, it is considered that the Proposed Development would have no significant effects to Hydrology, Hydrogeology and Soils receptors.



9 Transport and Access

This chapter of the EIA assesses the potential effects of the Proposed Development on the existing transport network and on sensitive receptors as a result of the construction phase of the Proposed Development. The operational wind farm will have minimal traffic, related to the maintenance of the wind farm. Decommissioning traffic is also likely to be less than that needed for construction.

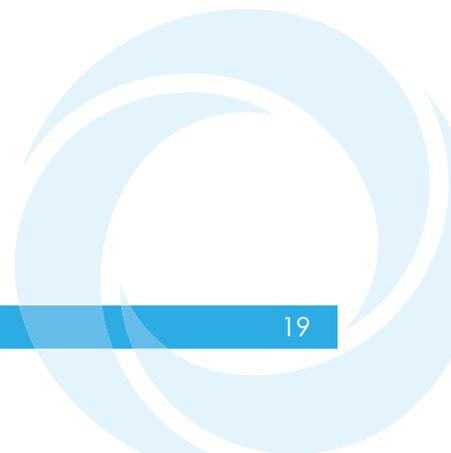
The scope of the assessment includes Heavy Goods Vehicle (HGV) construction traffic and abnormal load movements (associated with the transportation of wind turbine components) and staff vehicle trips have also been assessed.

It has been assumed that King George V Docks in Glasgow will be the most suitable Port of Entry (PoE) for shipping of all wind turbine components. It is assumed the same abnormal route which was assessed for the consented Sandy Knowe Wind Farm will be used for the Proposed Development. The route was as follows:

- M74 / M6 Southbound to M6 Junction 44 (Greymoorhill Roundabout);
- M6 Northbound to the A75(T) via A74 (M) Junction 22; and
- A75(T) to A76(T) / Site Access Road.

The assessment concludes that the total traffic levels associated with the Proposed Development for the wider road network will be negligible (< 30% increase) with a less than 10% increase for sensitive receptors (A76(T) East and West).

A Construction Traffic Management Plan (CTMP) will be produced to reduce the number of construction vehicles (where possible) and reduce or avoid the impact of vehicles through construction programming, routing and identification of an individual with responsibilities for managing transport and access effects.



10 Cultural Heritage

The assessment has considered the likely significant effects upon heritage assets which could result from the Proposed Development. The conclusions of the assessment have been informed by desk-study, walkover survey and site visits to designated assets and Non-Statutory Register (NSR) assets which could have their setting effected. Setting assessments have been further informed by Zone of Theoretical Visibility mapping and by visualisations.

This assessment has identified a number of known assets which have been recorded within the footprint of the consented access tracks associated with Sandy Knowe Wind Farm. As the Proposed Development does not propose to widen or alter any of the Sandy Knowe infrastructure, beyond burying of cables within the footprint of the Proposed Development, no further direct impacts are expected on these assets.

In order to mitigate any direct construction effects, predicted upon a sheepfold (Asset 20), it is proposed that a buffer zone of up to 10m with fencing is put in place in order to reduce the likelihood of inadvertent damage which could result from construction plant movement.

In addition, it is proposed that a watching brief is undertaken on ground-breaking works required within this buffer zone. This will allow for recording of any features affected by the widening or construction of the infrastructure and their preservation by record.

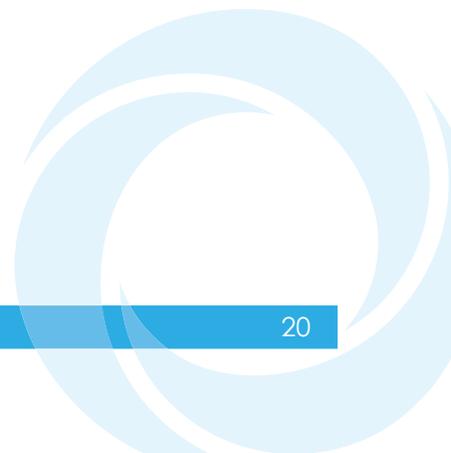
If significant archaeological remains were encountered consideration would be given to micro-siting infrastructure or, where this is not possible, further works such as excavation and post-excavation analyses will be undertaken as necessary.

The scope and method of all archaeological mitigation would require to be agreed via a Written Scheme of Investigation (WSI) with DGC.

Likely significant effect upon the setting of designated heritage assets and NSR assets within the established study areas have been considered. No significant effects have been identified. Non-Significant setting effects are expected upon 14 designated heritage assets and upon 12 NSR assets.

No likely significant cumulative effects are anticipated.

It is considered that the Proposed Development would have no significant effects to cultural heritage receptors.



11 Noise

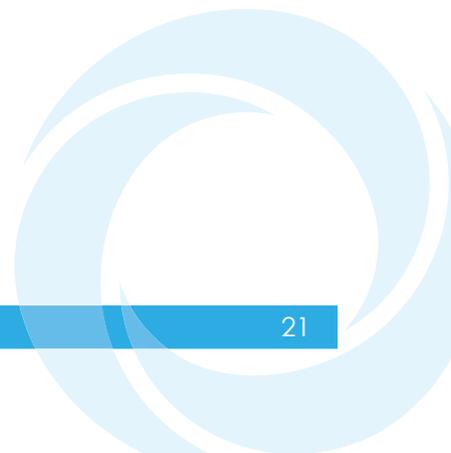
The assessment addresses the potential for noise and vibration issues associated with the construction and operation of the Proposed Development. The operational noise assessment has been undertaken in accordance with the relevant standard (ETSU-R-97) and the Institute of Acoustics (IOA) Good Practice Guide (GPG).

The assessment compares the cumulative predicted noise levels from the Proposed Development and the consented Sandy Knowe wind farm acting together at surrounding residential properties. The scope of the assessment was agreed with the ECU as part of the EIA Scoping process.

Baseline conditions were derived from the noise assessment undertaken for the Sandy Knowe windfarm in 2020 and a baseline noise survey carried out in August 2020 at four properties neighbouring the Proposed Development Site:

- High Cairn to the north;
- Nether Cairn, an unoccupied building also to the north;
- Laigh Cairn to the north of the A76; and
- Nether Glenmuckloch on the opposite side of the River Nith and the railway.

The assessment shows that the predicted turbine noise levels exceed the derived noise limits at some dwellings. A curtailment regime will therefore be devised to reduce the noise levels such that there is no exceedance of the noise limits and, as such, no significant impact is expected due to operational noise.



12 Socio-economics, Tourism and Recreation

This chapter of the EIA Report assesses the likelihood of significant socio-economic effects of the Proposed Development on the surrounding area, with regards to local residents, tourism, and recreation.

The methods applied within this assessment are based on established best practice, including methods from UK Government and industry reports. The assessment has employed appraisal techniques consistent with environmental impact guidance and draws on analysis and assumptions in research published by Renewable UK in 2015, Onshore Wind: Economic Impacts in 2014.

The assessment has also been informed by Visit Scotland and ScotWays from their EIA scoping responses.

For the socio-economic impact assessment, potential effects included project related spend, employment and Gross Value Added (GVA) (GVA is the value generated by the production of goods and services). These effects can occur during the development (assessment and design), construction and operation phases of the project.

The socio-economic impact during construction of the Proposed Development was assessed as minor beneficial in Dumfries and Galloway, and negligible beneficial in Scotland. The annual economic impacts related to operation were assessed as negligible beneficial for both study areas. This means that whilst not significant, there are expected to be some beneficial, employment generation effects associated with the Proposed Development.

Surveys of the public's attitudes to wind farms provide no clear evidence that the presence of wind farms in an area has a negative impact on local tourism. Access to tourist facilities (footpaths, local attractions, etc.) will be unaffected. Hence, even where significant visual effects are predicted, effects of the operational phase of the Proposed Development are predicted not to have a significant effect on tourism receptors.

Table 1 provides a summary of potential effects as a result of the Proposed Development.

It is considered that the Proposed Development would have no significant effects to Socio-economic, Tourism and Recreation receptors.

Table 1: Summary of potential Socio-economic, Tourism and Recreation Effects

| Potential effect | Magnitude Effect | Assessed Effect |
|--|------------------|--------------------------------|
| Socio-economic – Development Phase | | |
| Spend | £3,244,666 | Negligible to minor beneficial |
| Employment | Up to 32 jobs | Negligible to minor beneficial |
| GVA | £2,160,947 | Negligible to minor beneficial |
| Socio-economic – Construction Phase | | |
| Spend | £28,487,700 | Minor beneficial |

| Potential effect | Magnitude Effect | Assessed Effect |
|---|---|--------------------------------|
| Employment | Up to 207 jobs | Minor beneficial |
| GVA | £12,306,686 | Minor beneficial |
| Socio-economic – Operation Phase | | |
| Spend | £1,293,127 | Negligible to minor beneficial |
| Employment | Up to 11 jobs | Negligible to minor beneficial |
| GVA | £556,045 | Negligible to minor beneficial |
| Tourism and Recreation | | |
| National and Regional Attractions | Minimal / very little effect due to distance from Proposed Development | Negligible |
| Local Attractions | Attractions are not expected to have their characteristics affected by the Proposed Development. Therefore, minimal / very little effect | Negligible |
| Trails and Paths | Very little or no effect on the behaviour of visitors/tourists that use trails and paths as the Proposed Development is not expected to alter their features or characteristics. | Negligible |
| Tourism Accommodation | Likely to be beneficial effects for local accommodation providers within 2.5km of the Proposed Development at the construction, and during mature operation phases. The remaining 18 accommodation facilities, ranging from 5km to 15km away, are not expected to have their characteristics altered by the Proposed Development during either phase of its life. | Negligible |

13 Other Considerations (including aviation, telecommunication and shadow flicker)

This chapter of the EIA Report summarises the potential effect of the Proposed Development on aviation and telecommunications and the potential shadow flicker effects on sensitive receptors. Stakeholders have been consulted during the EIA process and have informed the assessments. Stakeholders include the Ministry of Defence (MoD); Vodafone, and airports (such as Glasgow Airport and Glasgow Prestwick Airport).

Aviation

Radar line of sight assessments have been undertaken in relation to Glasgow Airport Primary Surveillance Radar (PSR), Glasgow Prestwick Airport (GPA) PSR, and Lowther Hill PSR. No effects are considered for Glasgow Airport PSR although there is visibility expected from GPA PSR and Lowther Hill PSR.

The Applicant already has in place mitigation with MOD, National Air Traffic Services (NATS) and GPA for the consented Sandy Knowe Wind Farm. The approach to the Proposed Development will be to enhance any existing mitigation to encompass the Proposed Development turbines where necessary.

Following implementation of mitigation, it is considered that there will be no significant effects on Glasgow Airport PSR, GPA PSR, and Lowther Hill PSR as a result of the Proposed Development.

Telecommunication

The moving rotors of wind turbines have the potential to affect telecommunication and television signals by causing Electromagnetic Interference (EMI). Wind turbines cause EMI by reflection of signals from rotor blades so that a nearby receiver picks up both a direct and reflected signal.

The types of civilian and military communication signals which may be affected by EMI include TV and radio broadcasting, microwave and cellular radio communications and various navigational and air traffic control systems. A turbine located within, or near to, the communication link may interfere with the signal causing unwanted 'noise'.

The potential for negative effects on domestic television reception are greatly diminished post digital switchover, which was completed across the UK in 2012.

It has been confirmed through consultation with Vodafone that the separation distance between proposed turbines and existing telecommunications links means that there are no predicted effects to the links that cross the Proposed Development Site.

It has also been confirmed through Scoping consultation responses from BT and JRC that there are no potential effects on their assets.

As such no significant effects are anticipated on telecommunications as a result of the Proposed Development.

Shadow Flicker

Shadow flicker can arise from the passing of the moving shadow of a wind turbine rotor-blade over a narrow opening such as the window of a nearby residence. A similar effect can also occur when the gloss blades of a rotating turbine reflect the sun causing a flashing light.

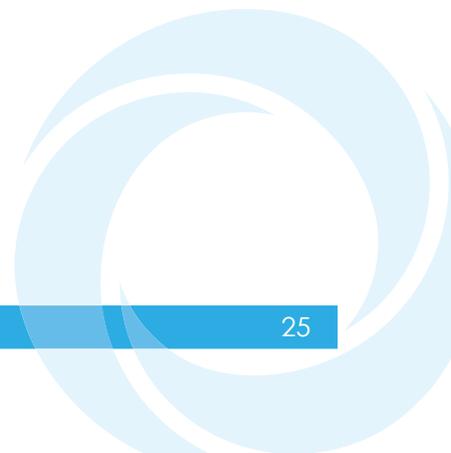
The flickering may have the potential to cause disturbance and annoyance to residents. It is, however, not possible for turbines to cause photosensitive epilepsy.

Shadow Flicker occurs within a distance of 10 rotor diameters (1,120m for the case of the Proposed Development) and 130 degrees either side of north. There are four properties within potential shadow flicker impact distance of the proposed turbines, three of which are financially involved with the Proposed Development.

Although there are no statutory limits on the level of shadow flicker a property can or cannot experience, this assessment has used a limit of 30 hours per year or 30 minutes per day as a significant effect threshold.

Following detailed shadow flicker modelling and analysis, annual and daily shadow flicker predictions were found to fall below the significance threshold levels for all residential receptors. It is therefore concluded that these properties would not experience significant effects from the Proposed development.

As such no significant effects are anticipated on receptors from shadow flicker as a result of the Proposed Development.



14 Summary and Conclusion

ERG is seeking consent under Section 36 of the Electricity Act for six three-bladed wind turbines; three turbines up to a maximum 125m tip height above ground level (AGL) and three turbines up to a maximum of 149.9m AGL; a battery storage system; and other associated infrastructure.

An EIA has been conducted based on a Scoping Opinion received from the ECU on behalf of the Scottish Ministers in October 2021 with the findings presented in an EIA Report. This NTS summarises those findings.

The EIA includes assessments of the impacts on the Proposed Developments on the following:

- Landscape and Visual;
- Ecology and Ornithology;
- Hydrology, Hydrogeology and Soils;
- Transport and Access;
- Cultural Heritage;
- Noise;
- Socio-economics, Tourism and Recreation; and
- Other Considerations (including aviation, telecommunication and shadow flicker).

The assessments have not identified any significant effects with the exception of noise where a curtailment strategy will be needed to mitigate those effects, and a small number of landscape and visual effects. These are generally limited to locations within relatively close proximity to the Proposed Development or higher sensitivity views from the northern side of Nithsdale.

In general terms the Proposed Development reads as a small extension to Sandy Knowe Wind Farm, visuals effects are no greater than moderate and contained within 6km of the Proposed Development. The proposed turbine size has been selected to reflect the height of the turbines in Sandy Knowe Wind Farm. The greater offset of the three larger turbines from more sensitive lower lying receptors in Nithsdale, to the north, helps to mask the increased height of these turbines.

Best practice will be used to control the potential effects of construction activities including undertaking the work in accordance with a CEMP and a CTMP and employing an EnvCoW to provide advice.

