

Glenvernoch Wind Farm

Environmental Impact Assessment Report Volume IV Non-Technical Summary

October 2024

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1 INTRODUCTION

Overview

- 1.1 An Environmental Impact Assessment Report (EIAR) has been prepared to accompany a Section 36 (s.36) submission by Energiekontor UK Limited (the “Applicant”) to the Energy Consents Unit (ECU) for thirteen wind turbines and associated infrastructure (the “Proposed Development”) on land at Glenvernoch, Newton Stewart. The Site Location Plan is provided at Figure 1.1 of Volume II of the EIAR.
- 1.2 This document provides a Non-Technical Summary (NTS) of that EIAR.

Purpose of the NTS

- 1.3 The aim of the NTS is to summarise the content and main findings of the EIAR in a clear and concise manner to assist the public in understanding what the potential environmental effects of the proposed Glenvernoch wind farm are likely to be. The full EIAR (Volumes I-IV) provides a detailed description of the proposed wind farm and the findings of the Environmental Impact Assessment (EIA) process.

Viewing the EIAR

- 1.4 The full EIAR, together with the application for consent and associated documents, will be available for viewing on the application website at <https://energiekontor.co.uk/our-projects/glenvernoch/> or the Scottish Government Energy Consents Unit at www.energyconsents.scot.
- 1.5 For additional copies, a charge of £15 will be made for a full electronic copy of the EIAR on CD. Costs of paper copies are as follows:
- Volume I – Written Text: £100
 - Volume II – Figures and Visualisations: £600
 - Volume III – Technical Appendices: £600
 - Volume IV – Non-Technical Summary: £20
- 1.6 Any representations to the application may be submitted via the Energy Consents Unit website at www.energyconsents.scot/Register.aspx; by email to the Scottish Government, Energy Consents Unit mailbox at representations@gov.scot; or by post to the Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the proposal and specifying the grounds for representation.

The Applicant – Energiekontor UK Ltd

- 1.7 Energiekontor UK Ltd is a renewable energy development company with offices in Edinburgh, Glasgow and Leeds. The company was formed in 1999 and develops onshore wind farms throughout the United Kingdom. The company has built eight wind farms in the UK and also has a number of other wind farm projects at various stages of the development process throughout the UK.

- 1.8 EK is part of the Energiekontor Group. The parent company, Energiekontor AG, was established in 1990 in Bremerhaven in Northern Germany. It has since grown to become one of the leading wind energy companies in Europe, having built more than 100 wind farms in Europe.

2 EIA APPROACH

Introduction

- 2.1 EIA is a process that identifies the potential environmental effects (both beneficial and adverse) of a proposed development and proposes mitigation to avoid, reduce and offset any potential significant adverse environmental effects.
- 2.2 The main activities in the EIA process can be summarised as follows:
- definition of the project to be assessed;
 - description of the 'baseline' environment (i.e. the conditions that are likely to prevail at the commencement of the project);
 - definition of the scope of the assessment;
 - scoping and consultation with interested parties;
 - optimisation of the Proposed Development based on the consultation process;
 - prediction of the likely effects of the Proposed Development;
 - evaluation of these effects in terms of their potential significance;
 - description of the nature and effectiveness of measures / design evolution which could be adopted in order to mitigate significant adverse effects;
 - identification of residual impacts;
 - submission of EIAR and publicity;

Approach to Technical Studies Undertaken

- 2.3 The EIA studies commenced at an early stage in the evolution of the application proposal. At the outset, with the objective of avoiding or minimising potential environmental impacts, the findings of these baseline environmental studies played an important role in the design evolution of the Proposed Development. These studies defined the environmental sensitivities and constraints associated with the Proposed Development, the Site, and its surroundings.
- 2.4 The technical EIA studies have been undertaken in accordance with relevant guidelines and procedures.
- 2.5 The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and input of mitigation to the design, where appropriate.
- 2.6 The content and conclusions of the EIAR, which includes a clear, reasoned description of any potential adverse or beneficial impacts of the Proposed Development, are based on a comprehensive assessment undertaken with all information available at the time of writing.

3 PROJECT DESCRIPTION AND CONSTRUCTION METHODS

Introduction

- 3.1 This chapter provides an outline description of the Proposed Development, the Site, and its surroundings. It also describes the issues and constraints that have influenced the layout of the Proposed Development and the evolution of the design.
- 3.2 The Proposed Development will consist of the construction, 35 year operation and subsequent decommissioning of up to thirteen wind turbines, up to 200m to blade tip, including associated development.

The Site and its Surroundings

- 3.3 The proposed Site is located within Dumfries and Galloway (DGC) administrative area and consists of hilly grassland, predominantly used for grazing. The Site lies just north of Penninghame Forest and 0.3 km east of Loch Ochiltree.
- 3.4 The proposed Blair Hill Wind Farm is located 2km South East of the site. Other nearby farms include the operational Kilgallioch Wind Farm (5.8 km west), the approved Kilgallioch extension (5.3 km west) and the operational Airies Farm Wind Farm (7.9 km west).
- 3.5 The nearest settlements are Glentool (2.8km north) and Newton Stewart (7km south east). The nearest main highway is the A714 which runs adjacent to the east of the site.
- 3.6 There are no nationally designated landscapes in close proximity to the Site although it is located near to the Galloway Oakwoods Special Area of conservation, the Wood of Cree Site of Special Scientific Interest (SSSI), and the River Bladnoch special area of conservation (SAC).

Description of Proposed Development

- 3.7 The Proposed Development comprises 13 wind turbines and associated development, illustrated in Figure 3.1 of Volume II of the EIAR.
- 3.8 The Proposed Development consists of the following principal elements:

Table 3.1: Principle Development Elements

Infrastructure	Summary Description
Thirteen wind turbines	13 three-bladed, horizontal axis wind turbines up to 200m to blade tip
Thirteen turbine foundations	The foundations of the turbines could be either reinforced concrete gravity structures or piled foundations. Ground and hydrological conditions at the turbine location will determine the type and overall size of the support structure
Crane hardstandings	To provide a level and firm base for the cranes at the location of each turbine. Each would be surfaced with coarse aggregate

Infrastructure	Summary Description
Turbine transformers	A device used to convert the voltage generated by wind turbines to a higher level for efficient transmission. The size and specifications of the turbine transformer will be determined in line with the project's energy output requirements
Site tracks	These would be constructed at the commencement of the construction phase and would remain until the end of the decommissioning phase. They would have a running width of no less than 4.5m, the final width dependant on turbine supplier requirements
Underground cables (linking the turbines to the substation)	Conductors that connect the wind turbines to the substation, facilitating the transfer of generated electricity
Borrow Pit (search area)	As a source of material for the creation of other ground infrastructure. The eventual size of borrow pit will be informed by ground investigations
Construction compound/storage areas	The main compound to facilitate construction of the Proposed Development, and would also provide a storage area for plant and materials
Substation / switchgear housing building	Single storey substation building will house the switchgear and control equipment, in addition to acting as a secure storage space
Battery storage	A facility that stores excess energy generated by the wind turbine for later use, balancing supply and demand. The capacity and configuration of the battery storage will be determined by energy needs and project requirements
Areas of forestry felling	'Keyhole' felling would be required around the turbine positions. There would be felling required along the access tracks within the Site to allow turbine delivery. Compensatory planting for forestry felled for the development will be provided
Site access	A new and upgraded site access would be provided onto the A77 at its junction with the U152W to Little Laight and then onwards to the Site

Construction Methodology and Programme

- 3.9 The estimated duration of the construction period for the proposed Glenvernoch wind farm is approximately 18 months. The proposed construction programme is in Table 3.2, below:

Table 3.2: Indicative Programme of Construction Activities

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site Mobilisation / demobilisation																		
Construction compound and access																		
Track and hardstanding construction																		
Construction of turbine foundations																		

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Substation construction																		
Excavating trenches and laying electrical and communication cabling																		
Turbine delivery and installation																		
Site restoration																		
Turbine fit out and grid connection																		
Turbine commissioning																		

- 3.10 The Proposed Development would be constructed by a team of contractors with a proven track record of working on similar projects in line with UK and International standards in respect of quality, health, safety and Environmental Management.
- 3.11 Construction of the proposed Glenvernoch wind farm would follow a Construction Environmental Management Plan (CEMP), the aim of which would be to provide working methods that would aid in avoiding, minimising and controlling potential significant adverse effects on the environment.

Construction Works

- 3.12 Construction works include:
- Highway modifications to enable vehicles to access the Site from the strategic and local highway network;
 - Installation of construction compound / storage area for Site office facilities and storage of materials and components;
 - The excavation of the borrow pits and extraction of aggregate for new tracks and hardstandings;
 - Construction of new permanent Site tracks and the upgrading of existing sections;
 - Installation of hardstandings and outrigger pads for the support of the cranes that would be used for the erection of the turbines;
 - Construction of foundations for the support of the turbine structures;
 - Wind turbine delivery and erection;
 - Installation of transformers in separate housings alongside each wind turbine (if required);
 - Installation of on-site High Voltage (HV) cabling, communication cabling and earthing underground adjacent to access tracks;
 - Installation of Supervisory Control and Data Acquisition (SCADA) system;
 - Construction of substation compound and control buildings;
 - Commissioning of Site mechanical and electrical equipment; and

- Reinstatement, landscaping and habitat improvement, removal of temporary site offices, reseeding verges, borrows pit and areas around turbine bases.
- 3.13 The works would mainly follow the order detailed above, but many would be carried out concurrently to reduce the overall length of the construction programme. There would be construction phasing, with civil engineering works progressing in some areas whilst turbines are being erected elsewhere. In order to minimise disruption to land use, site restoration would be undertaken as early as possible in development areas.
- 3.14 Should consent be granted then it is likely that construction hours would be restricted via means of a planning condition imposed by the Council as part of the consent.

4 DESIGN EVOLUTION

Introduction

- 4.1 The Applicant has completed a wide search of potential wind farm sites throughout Scotland and is in the process of taking a number of those forward. The proposed Glenvernoch wind farm site was selected for a number of reasons, including:
- Lack of landscape designations – including National Parks, special landscape areas, and local landscape designations;
 - Lack of environmental designations- including statutory wildlife designations;
 - Energy capture – software modelling indicates that the Site offers a strong wind resource with few obstacles or areas of pronounced topography close enough to interrupt wind flow;
 - Settlement – the Site is well removed from main settlements, the closest being Glentrool at approximately 2.8km;
 - Transport infrastructure – the Site benefits from suitable access for turbine component delivery; and
 - Grid Connection – the Applicant has engaged with the Transmission Network Operator regarding the exportation of the electricity generated by the Proposed Development.
- 4.2 The design of the Proposed Development was developed by taking into account the various technical and environmental constraints identified during the process of the EIA.
- 4.3 The design process took place over a number of months and the Proposed Development has been progressively revised and refined during this time to take account of the information arising from pre-application consultation with stakeholders, and the findings of the EIA. As a result, the design and EIA process has been highly iterative and all aspects of the final design, including the location of the wind turbines, crane hardstandings, the site access, layout of the access tracks, the locations of the substation and construction compound have been influenced by various technical, environmental and planning considerations.
- 4.4 The design of the Proposed Development has been optimised to produce a project which balances the use of land available with the overall impact of the development. This is based mainly on the following technical, economic and environmental considerations:
- Ground conditions and existing land use – the layout design minimises the impact to areas of deep peat. Watercourses and critical slope gradients have also been avoided where possible;
 - Distance between turbines. To minimise the turbulent interaction between turbines they should be spaced in a suitable manner to minimise wind wake effects;
 - Environmental constraints – The individual assessment chapters of the EIA Report discuss these considerations and issues in detail; and
 - Landscape and Visual Amenity – Chapter 6 of the EIA Report covers this in depth. The design of the Proposed Development seeks to match the turbines and the overall

development with the scale of the landscape and the existing strategic pattern of wind farm development.

- 4.5 The positioning of the turbines, through the design, has been continually altered to account for the proximity of constraints as these have been assessed, and as EIA studies have progressed. Stakeholder consultation has been based on the principal iterations detailed in Chapter 4 of the EIA Report, and a number of other designs between principle iteration stages. The principle iterations are shown in EIAR Vol II Figures 4.1-4.3.

Summary of Design Evolution

- 4.6 The wind farm layout in its proposed form takes account of stakeholder feedback received during pre-application discussions, and environmental and technical constraints.
- 4.7 The overall design layout principle of the Proposed Development has been to achieve a coherent and compact design, which minimises direct and indirect adverse effects on the local and wider landscape, while balancing commercial considerations and maximising energy production. Figure 3.1 shows the final design layout submitted as part of this application.

5 RENEWABLE ENERGY AND PLANNING POLICY

Introduction

- 5.1 This chapter in the EIA Report provides an outline of the national and local planning policies, guidance and other material considerations that are potentially relevant to the Proposed Development.
- 5.2 The Proposed Development will be considered under Section 36 of the Electricity Act 1989. As part of the S.36 application process, the applicant will request that the Scottish Ministers issue a Direction under s.57(2) of the Town and Country Planning (Scotland) Act 1997 ("the 1997 Act") that deemed planning permission be granted for the proposed development.
- 5.3 In materially considering the Development Plan the test to be applied is not the same as in the case of the Town and Country Planning (Scotland) Act 1997 as amended (the 1997 Act). The test, as set out in Section 25 of the 1997 Act against the Development Plan, is not triggered in the case of a S36 application. In effect, a development being considered under Section 36 of the Electricity Act, need not necessarily accord with the Development Plan to be considered acceptable for consent to be granted.
- 5.4 Notwithstanding the limited role of the Development Plan in the decision making process, a separate Planning Statement assesses the conformity of the Proposed Development with the Development Plan and other material considerations.

Planning Policy Context

- 5.5 The review of the relevant policy and material considerations set out in Chapter 5 of the EIA Report therefore adopts the following structure:
- 5.6 This section sets out the planning policy context that is relevant to the Site and Proposed Development. It includes consideration of:
- National Planning Framework 4; and
 - Dumfries and Galloway Local Development Plan and Supplementary Planning Guidance
- 5.7 Other material considerations, including:
- International Renewable energy framework
 - UK Carbon and Renewable Energy Policy
 - Onshore Wind Policy Statement
 - Scottish Government Web Based Renewable Guidance
 - Local landscape capacity and wind farm sensitivity studies
- 5.8 A full review of the Proposed Development against relevant planning policy is included in the Planning Statement which accompanies the planning application. This is also

summarised within the EIA Report. These reviews conclude that the Proposed Development is in general accordance with local and national planning policy.

6 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Introduction

- 6.1 A Landscape and Visual Impact Assessment (LVIA) has been prepared by Chartered Landscape Architects which assessed the likely significant landscape and visual effects of the Proposed Development during construction. Operation and decommissioning, with reference to mitigation and enhancement measures which were developed during the planning and design process.
- 6.2 The Proposed Development would introduce 13 turbines of up to 200m tip height in the Dumfries and Galloway administrative area.

Construction/Decommissioning Stage Effects

- 6.3 Construction and decommissioning stage effects would be substantively the same. They would involve short-term activities and effects which are largely considered to be Not Significant. There would be no significant effects on any existing landscape features, although there would be localised effects
- 6.4 where the Proposed Development is located which would be significant.
- 6.5 The greatest effects during the construction phase would arise from the standing turbines, and large cranes used to erect these, during the final stages of construction – by which point the effects would be the same as for those during operation.

Operational Stage Effects

Effects on Landscape Character

- 6.6 The host landscape character unit is defined in the Dumfries and Galloway Wind Farm Landscape Capacity Study (DGWLCS) as 17a: Plateau Moorland with Forest, with the Site entrance and a short section of the access track located within the western fringe of NatureScot LCT 160: Narrow Wooded Valley. The Proposed Development would result in direct and significant effects on the parts of the 'host' landscape character types within which the Proposed Development is located. Indirect and significant effects would extend to approximately 6km from the Proposed Development on LCT 172: Upland Fringe, and LCT 168: Drumlin Pasture in Moss and Moor Lowland. Effects on all other landscape character types have been assessed as not significant.

Visual Effects

- 6.7 It has been assessed that there would be significant visual effects experienced at 8no. of the 20. representative viewpoints during daylight hours.
- 6.8 In terms of the effects on residential properties within 2km, 12no. of the 16no. properties assessed would experience a significant visual effect from either a part of their house, garden, or principal access route. Significant effects are also predicted from the Knockville and Crungie Woodland Log Cabins, which are non-permanent residences.

- 6.9 .It is concluded that none of the residents of any of the properties would experience such an overbearing or overwhelming effect on their visual amenity that their properties would become unattractive places in which to live.
- 6.10 In relation to settlements, the assessment found that there would be no significant visual effects during daylight and/or darkness hours

Designated Areas

- 6.11 The Galloway Hills Regional Scenic Area (RSA) is located adjacent to the Site to the east. Indirect significant effects on views from the RSA would extend to approximately 6km but the addition of the Proposed Development would not undermine the qualities of the RSA. Notably, no significant effects are predicted to occur in the Merrick Wild Land Area.
- 6.12 No significant effects would arise upon national designations. The nearest National Scenic Area (NSA) is the Fleet Valley (around 22km south east), however there are no potential for views of the proposed development from the NSA.

Cumulative Effects

- 6.13 The cumulative assessment considers the additional effects that would arise from the introduction of Glenvernoch given the prior presence of other wind farms. Collectively, the operational developments serve to result in wind energy being seen as a notable feature in many views in the landscape of the wider study area to the west of the Site. The addition of the Proposed Development would serve to reinforce this pattern of wind energy in views within the study area, albeit extending the significant visual effects into a separate area further to the east within the landscape. All existing and consented wind farms are considered as part of the baseline assessed in the main assessment included at Chapter 6 of Vol I.
- 6.14 Schemes in scoping are noted in the LVIA as part of a second assessment scenario. This presents a worst-case scenario of the cumulative impact, although it is possible that such schemes may not be approved nor constructed.

Night-time Effects

- 6.15 The Proposed Development comprises turbines at 200m in height and, as such, are required by air traffic safety policy to include visible aviation lighting. Effects of the aviation lighting will be mitigated by reducing the intensity of the lighting during certain atmospheric conditions, which will reduce the visual impact experienced by receptors below the lights.
- 6.16 During darkness hours, significant effects are predicted at only 3no. of the 20no. LVIA viewpoints - Viewpoint 1: Southern Upland Way (Hill of Ochiltree), Viewpoint 4: Southern Upland Way (Bargrennan), and Viewpoint 19: The minor road outside Borgan Cottage.
- 6.17 The locally designated areas closest to the site are the Galloway Dark Skies Park. The centre of the Dark Skies Park lies more than 5km from the nearest proposed turbine which is far enough away that the aviation lighting on six of the proposed turbines, is deemed a non-significant visual effect. Indirect significant effects are predicted up to approximately 6km from the Proposed Development in the 'Buffer Zone' and 'Transitional Area' of the Galloway Forest Dark Sky Park during darkness hours.

Conclusion

- 6.18 Wind farms give rise to a wide spectrum of opinions, ranging from strongly adverse to strongly positive, with a wide range of opinions lying somewhere between these two positions. Some people view wind turbines as incongruous or industrial structures whilst others view them as aesthetically pleasing, elegant structures and a positive response to climate change.
- 6.19 In considering the effects of the Glenvernoch Wind Farm, a precautionary approach to the assessment has been adopted in assuming that the effects of the proposal would be adverse in nature. However, the identified effects on landscape character and visual amenity should be balanced against the wider benefits of the proposed wind farm, as further discussed within the Planning Statement, and it should be acknowledged that, for some people, the impacts of the wind farm would be positive.
- 6.20 It is noted that locally significant effects on landscape character and visual amenity are inevitable as a result of commercial wind energy development anywhere in the UK. Whilst the LVIA identifies limited and localised significant visual effects it is considered that overall the landscape has the capacity to accommodate the proposed development without being considered unacceptable in relation to the effects identified.

7 CULTURAL HERITAGE

- 7.1 The Cultural Heritage chapter is provided at Chapter 7 of Volume I of the EIA Report and provides an assessment on the potential direct effects from the construction of the Proposed Development and the potential effects upon the setting of heritage assets once operational.
- 7.2 The assessment has been compiled with reference to all relevant planning policy and guidance documents of Historic Environment Scotland (HES) and the Chartered Institute of Archaeologists. The Cultural Heritage chapter has been prepared by an external consultant, The Pegasus Group, with years of experience in cultural heritage assessments.
- 7.3 Within the Site, all heritage assets are assessed for potential construction and operational effects. For designated heritage assets that may be affected by the construction and operation of the Proposed Development, i.e. through effects on their settings and the contribution made to their cultural significance, a study area of 10km was taken from the red line boundary of the Proposed Development. The baseline for the assessment has been informed by a comprehensive desk-based study, based on the results of site visits, review of guidance and professional judgement.
- 7.4 No direct effects upon any known heritage assets within the Site are anticipated during construction and no residual construction-phase effects upon the setting of heritage assets have been identified.
- 7.5 Any effect resulting from archaeological remains discovered during the construction phase, is unlikely to be of greater than minor adverse effect that is not significant. Following implementation of a programme of mitigation agreed with DGC in advance of the works, if required, no residual effects are anticipated upon any hitherto unknown potential heritage assets that may be preserved within the Site
- 7.6 The assessment of potential setting effects upon heritage assets as a result of the construction stage of the Proposed Development, through the introduction of increased traffic, construction noise/dust, and the visual intrusion of cranes etc to the landscape, is the same as those assessed under 'operational effects', although construction effects would be temporary and reversible and therefore not significant in EIA terms.
- 7.7 Residual effects determined as minor adverse, which are not significant in EIA terms, are predicted throughout the operation of the Proposed Development upon:
- Loch Ochiltree Crannogs (ref. SM2266);
 - Historic agricultural features; and,
 - Unknown archaeological deposits.

Residual effects determined as moderate adverse, which are not significant in EIA terms, are predicted on the following designated heritage assets throughout the operation of the Proposed Development:

- Prehistoric Ritual and Funerary Monuments south-east of Proposed Development Area, overlooking the River Cree comprising:
 - Drumfern, cairn and remains of stone circle (ref. SM1019);

- The Thieves, standing stones, Blair Hill (ref. SM1044);
- Napper's Cottage, chambered cairn (ref. SM5676); and,
- Dalvaird, cairn 320m NNE of (ref. SM1015).
- Drumwhirn cairn N of Boreland (ref. SM1021); and,
- White Cairn, chambered cairn, cairn 910m NNE of Bargrennan Cottage (ref. SM1048).

7.8 All degrees of effects are discussed in greater detail as part of the EIA chapter. No effects which would be considered as significant in EIA terms have been identified as arising from the Proposed Development..

8 ORNITHOLOGY

Introduction

- 8.1 Chapter 8 of the EIAR assesses the effects to bird populations associated with the Proposed Development. Bird surveys were carried out between April 2021 and March 2023, and were subsequently assessed in accordance with NatureScot guidance.
- 8.2 The ornithology studies consisted of a review of the main potential bird issues associated with the proposed wind farm, consultation with relevant groups and a number of field surveys, including:
- Breeding Bird Surveys;
 - Species-specific Surveys for scarce raptors and owls, wildfowl, Black Grouse and Nightjar; and
 - Vantage Point (Flight Activity) Surveys.
- 8.3 The Proposed Wind Farm does not lie within any sites or areas designated or recognised for their international or national ornithological value. However, the proposed Glenvernoch Wind Farm lies 370m north-west of the Wood of Cree Site of Special Scientific Interest (SSSI), which supports a rich breeding area for birds. The proposed Glenvernoch Wind Farm also lies approximately 18km to the north-east of the Glen App and Galloway Moors Special Protection Area (SPA) which is designated for its breeding population of Hen Harrier. There are predicted to be no significant effects on either the SSSI or the SPA from the proposed Glenvernoch Wind Farm.

Ornithological Effects

- 8.4 The assessment identified 16 Valued Ornithological Receptors present within the proposed wind farm site or the core study area. These were: Goosander, Osprey, Goshawk, Red Kite, Hen Harrier, Peregrine, Merlin, Oystercatcher, Golden Plover, Lapwing, Snipe, Curlew, Common Sandpiper, Barn Owl, Long-eared Owl and Common Crossbill.
- 8.5 Through careful siting and the implementation of best practice construction measures, the highest potential ornithological effects are considered to be **minor** during both the construction and operational phases of the proposed wind farm. There will be no significant effect on the Glen App and Galloway Moors SPA or their breeding Hen Harriers. There will also be no predicted effects on the birds located within the Wood of Cree Site of Special Scientific Interest (SSSI). After mitigation the effects on all the VORs are considered to be **Not Significant** in the context of EIA Regulations.

9 ECOLOGY

Introduction

- 9.1 A suite of ecology surveys have been undertaken, during baseline studies for the proposed wind farm development, including habitats, protected species and freshwater. The results of the baseline surveys were used to inform the turbine and associated wind farm infrastructure design and also form the basis of the detailed assessment.
- 9.2 Table 9.1 lists the detailed ecological studies undertaken for the development.

Table 9.1: Ecological surveys undertaken at Glenvernoch Wind Farm.

Survey	Survey Dates
Extended Phase 1 Habitat Survey	September 2023
National Vegetation Classification (NVC) Survey	September 2023
Bat Surveys	May-October 2023
Protected Mammal Surveys	June-September 2023
Great Crested Newt: Habitat Suitability Survey	June-July 2023
Fisheries Assessment Survey	August-September 2024

- 9.3 There are no statutory or non-statutory nature conservation areas, designated for non-avian ecological features within the proposed wind farm site. However, three statutory sites designated for their ecological value lie within 2km of the boundary of the wider Glenvernoch Site: River Bladnoch Special Area of Conservation (SAC), Galloway Oakwoods SAC and Wood of Cree Site of Special Scientific Interest (SSSI). The Wood of Cree SSSI is contiguous with a section of the Galloway Oakwoods SAC. It is concluded that the proposed wind farm will have no detrimental impacts on the designated features of these SACs or SSSI.
- 9.4 Overall, the effects of the proposed development on non-avian ecology features of local or higher value, or which are legally protected, are not significant in terms of the EIA definition.
- 9.5 In addition, mitigation (by following Best Practice) is also identified which would ensure that the wind farm could be constructed and operated without breach of laws protecting flora and fauna.
- 9.6 As a result, the Proposed Development would not significantly impact on the ecological habitats identified on and around the Proposed Development site in terms of the EIA Regulations.

10 NOISE

Introduction

- 10.1 Wind farms have the potential to create noise during the construction, operation and decommissioning phases. Chapter 10 of the EIAR summarises the findings of the construction/decommissioning and operational noise assessments.
- 10.2 The Proposed Development is located in an area of low population density, with a noise environment mainly characterised by natural sources as well as agricultural and traffic noise in some areas. The assessment has considered the residential properties nearest to the Site as these are considered noise-sensitive. Surveys have been performed to establish existing baseline noise levels at a representative number of these properties. Noise limits have been derived from data about the existing noise environment following the method stipulated in national planning guidance.

Construction Noise

- 10.3 Construction noise has been assessed by a desk-based study of a potential construction programme and by assuming the proposed development is constructed using standard methods. Noise levels have been calculated for receiver locations closest to the areas of work and compared with guideline and baseline values. Construction noise, by its very nature, tends to be temporary and highly variable and therefore much less likely to cause adverse effects. Factors including in particular the restrictions of hours of working have been taken into consideration.
- 10.4 Predicted noise levels at the closest noise sensitive receptors for each of the key activities during construction of the proposed development are presented in the EIAR. It is concluded that noise generated through construction activities would have negligible effects at most, and potential worst-case traffic increases would correspond to minor effects at most which is not significant.

Operational Noise

- 10.5 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'. The amount of noise emitted tends to vary depending on the wind speed. Background noise levels at nearby properties will also change with wind speed, increasing in level as wind speeds rise due to wind in trees and around buildings, etc. Predicted wind farm noise levels take full account of the potential combination of the noise from the Proposed Development along with the neighbouring Kilgallioch Wind Farm and the Kilgallioch Extension Wind Farm, as well as an indicative assessment of the Blair Hill Wind Farm. Other, more distant wind farms were not considered as they do not make an acoustically relevant contribution to cumulative noise levels.
- 10.6 Predicted turbine operational noise levels have been compared to the limit values to demonstrate that turbines of the type and size which would be installed can operate within the limits so derived, using operational management where required. It is concluded therefore that operational noise levels from the wind farm will be within levels recommended in national guidance for wind energy schemes. Operational wind turbine noise levels are therefore considered to be not significant.

- 10.7 The potential noise from the substation and battery storage equipment would represent a minor impact which is not significant.
- 10.8 Considered cumulatively with other existing and planned wind farms, the operational noise of the Proposed Development is shown to be below acceptable daytime and night-time limits.
- 10.9 In summary, the likely environmental effect of the Proposed Development during construction and daytime and night-time operation is not significant.

11 TRAFFIC AND TRANSPORT

Introduction

- 11.1 An assessment of the traffic levels that would be generated during the construction, operation and decommissioning phases of the Proposed Development has been carried out, with the construction phase being the main focus as this is when most traffic will be generated. Consideration has been given to both Heavy Goods Vehicle (HGV) and abnormal load movements (primarily for the delivery of large turbine components such as blades). The assessment is provided at Chapter 11 of the EIAR.
- 11.2 Turbine components are expected to be delivered to King George V Dock in Glasgow, from where abnormal load vehicles will travel east onto the M8, then south on the M74, merging into the A74 and continuing on the M6 to Carlisle. At junction 43 of the M6, vehicles will turn at the interchange to head north on the M6 and A74 to Dumfries. Vehicles will exit the A74(M) at Junction 22, routing west onto the A75, just past Newton Stewart, before heading north on the A714 towards the site access. Other construction traffic (general construction HGVs and staff trips) would arrive to the Site from the A75 from the east or from the west, then via the minor road to the west of Newton Stewart.

Construction Effects

- 11.3 The impact of traffic generated by construction of the Proposed Development will be a temporary increase in baseline levels by an amount which is considered to be negligible in accordance with the IEMA Guidelines. As such, traffic and transport related effects during construction are not considered to be significant.
- 11.4 A review of the proposed route for ALLs, which includes turbine component delivery, was completed to minimise potential Effects on the surrounding road network and establish that potential pinch points can be resolved.
- 11.5 Due to the nature of the operation of a wind farm the majority of vehicular activity is during the construction phase with minimal traffic during the operational phase.
- 11.6 The potential environmental effects associated with this increase in traffic have been assessed and are anticipated to give rise to effects that are classed as not significant and which do not require mitigation, in accordance with IEMA guidelines.
- 11.7 There are a number of other developments in the area and a possibility of the construction phases overlapping with the Proposed Development. Good practice mitigation measures are therefore included in an outline CTMP in Chapter 11 of the EIAR which sets out proposed details for staff travel, HGV routing and guidelines for deliveries to further reduce potential effects on the surrounding road network.
- 11.8 With these appropriate mitigation measures in place, no significant residual effects from construction traffic is predicted to arise either as a result of the Proposed Development in isolation or cumulatively with other developments considered within the cumulative assessment. During the operational phase, only a small number of vehicles will attend the Proposed Development infrequently to undertake inspections or maintenance activities.

12 HYDROLOGY, GEOLOGY AND HYDROGEOLOGY

Introduction

- 12.1 Chapter 12 of the EIAR considers matters relevant to Hydrology, Hydrogeology and Geology. The Proposed Development has been assessed in relation to the potential impacts it may have on these receptors during the construction and operational phases.
- 12.2 A comprehensive series of hydrological assessments have been carried out. The assessments considered the sensitivity of any receptors identified during the baseline assessment and considered any mitigation measures incorporated as part of the design of the Proposed Development. The mitigation by design has avoided the placement of infrastructure, except for watercourse crossings, within 50 m of watercourses and largely avoided areas of deep peat.

Baseline

- 12.3 There is no hydrological connection between the site and Wood of Cree SSSI, and Galloway Oakwoods SAC. The Proposed Development does have a connection to the River Bladnoch SAC, located 1km West of the site, due to indirect drainage and water flow. However, due to the topography, the site and the river are not hydrologically connected.
- 12.4 Field surveys were undertaken to identify the extent of peat across the Site. Findings indicated that there is a moderate to low probability of the loss of peat and peatland, exceeding 1m thickness, giving an overall minor adverse effect. Furthermore, the design process has been modified to avoid areas of identified deep peat, effectively manage peat during the construction process and implement mitigation measures against any loss of peat.

Potential Hydrological Effects

- 12.5 The potential effects on the hydrological, geological and hydrogeological environment have considered:
- Pollution Incidents;
 - Erosion and sedimentation;
 - Impacts to water resources i.e. private water supplies;
 - Modification of surface water and groundwater flows;
 - Modification of natural drainage patterns;
 - Impediments to flow and flood risk;
 - Peat instability; and
 - Compaction of soils.
- 12.6 Following the identification and assessment of the key receptors, taking into account the potential effects listed above, a comprehensive suite of mitigation and good practice measures has been incorporated into the design, including extensive buffer areas. In addition, a site specific CEMP as detailed design of infrastructure and associated

mitigation will be implemented, to protect the groundwater and surface water resources from pollution and minimise changes to the hydrological environment.

- 12.7 A detailed hydrogeological assessment has been completed to further determine mitigation requirements for private water supplies.
- 12.8 The impact assessment has taken into account the hydrological regime, highlighting that the principal effects will occur during the construction. Assuming the successful design and implementation of mitigation measures the significance of construction effects on all identified receptors is considered to be of minor or no significance.
- 12.9 The assessment of predicted ongoing and operational effects has also determined that the significance of effects on all receptors to be of minor/moderate minor or no significance.

13 INFRASTRUCTURE AND HUMAN HEALTH

Introduction

13.1 An assessment has been carried out of the potential effects of the Proposed Development on the following interests and is reported in Chapter 13 of the EIA Report:

- Safety
- Telecommunications
- Aviation
- Television reception
- Buried and above ground infrastructure
- Shadow flicker

Potential Effects

13.2 Consideration has been given to the potential for significant effects on infrastructure and human health. Following implementation of any necessary mitigation it is considered that there would be no potentially significant effects on infrastructure or safety arising as a result of the Proposed Development or in combination with any other existing, consented or proposed wind turbine developments in the local area.

14 SOCIO-ECONOMIC STATEMENT

Introduction

- 14.1 An assessment of the socio-economic effects associated with the Proposed Development is set out in Chapter 14 of the EIA Report.

Socio-Economic Effects

- 14.2 It is likely that Glenvernoch Wind Farm will be developed without any form of government support mechanisms, making it an important project to help minimise consumer's electricity bills.
- 14.3 The proposed Development would provide an annual economic contribution to the local area for the life the wind farm through the community benefit fund. Ongoing community engagement will ensure this fund is distributed effectively, where it can most benefit local communities.
- 14.4 Energiekontor would invest more than £105 million in the project, plus an ongoing expenditure on operation and maintenance. This is a significant investment with a strong policy fit both regionally and nationally.
- 14.5 The total value of contracts that could be secured in Dumfries and Galloway has been estimated as £21.36 million and in Scotland as a whole businesses could secure contracts worth £43.63 million.
- 14.6 The development could support an additional 297 man years in Scotland including 144 man years in Dumfries and Galloway during the construction phase. In Gross Value Added (GVA) terms the construction phase has the potential to inject £8.35 million into the Dumfries and Galloway economy and £17.2 million to the Scottish economy as a whole.
- 14.7 In addition to the expenditure during the construction period and first operational year, it is anticipated that the Proposed Development would further contribute in business rates to the Dumfries and Galloway economy.
- 14.8 The operations and maintenance of Glenvernoch Wind Farm could support an additional 15 jobs in Scotland, of which seven could be in Dumfries and Galloway. In GVA terms the operational phase has the potential to inject £704,088 per annum into the Dumfries and Galloway economy and £1.5 million to the Scottish economy as a whole.
- 14.9 Local businesses will have the opportunity to benefit from the contracting requirement to be awarded by Energiekontor. These range from civil engineering

and ground work contractors, haulage businesses through to suppliers of water, as well as local service based companies including hotels, restaurants and local shops.

- 14.10 The Proposed Development would provide up to 86MW of installed capacity, depending on the turbine model chosen. It is estimated by Energiekontor UK Ltd that this installed capacity could generate approximately 242 GWh of renewable electricity each year. This represents a site capacity factor of approximately 32.2%, which compares very favourably to the UK average onshore capacity factor of 26.34% over the period 2018-2022¹.
- 14.11 The renewable electricity generated by the Proposed Development could power over 74,700 homes on average each year². This could save up to 104,060 tonnes of CO₂ each year³ for the operational life of the wind farm.

¹ Based on Digest UK Energy Statistics (DUKES): renewable sources of energy (updated July 2023)

² Based on an average annual UK domestic electricity consumption figure of 3,239KWh as set out in the BEIS publication "Subnational Electricity and Gas Consumption Statistics" (2024)

³ Based on BEIS's standard carbon dioxide savings figure of 430g/kWh

15 SUMMARY

- 15.1 The Proposed Development, if consented, would be one of the first generation of onshore wind developments to operate without any public support mechanisms by Energiekontor with an installed capacity of 86MW. It has been sited and designed in order to harness the wind resource of the Site while minimising and avoiding adverse impacts where possible.
- 15.2 While some localised significant impacts have been identified, for example localised landscape and visual impacts, the Site is located in a landscape considered suitable to accommodate commercial wind energy generation. Due to a restrained and iterative design process the Proposed Development is deemed acceptable and in line with national and local planning policy, and in particular one which will make a significant contribution to renewable energy targets.