



Balgray Wind Farm

Volume 1: Non-Technical Summary

June 2025



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Glossary

Term	Definition
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of drawing together an assessment of the likely significant environmental effects arising from a Proposed Development to aid the public and the decision maker in understanding the importance of the predicted effects and scope for reducing them.
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the Electricity Act (Environmental Impact Assessment) (Scotland) Regulations 2017, Regulation 5.
The Applicant	Fred. Olsen Renewables Limited (FORL)
The Proposed Development	The proposed Balgray Wind Farm development
The Site	The area within the red line boundary (application area) shown in EIAR Figure 1.2 in Volume 3A

List of Abbreviations

Abbreviations	Description
AIL	Abnormal Indivisible Loads
AOD	Above Ordnance Datum
BBPP	Breeding Bird Protection Plan
BESS	Battery Energy Storage System
BHMP	Biodiversity and Habitat Management Plan
BT	British Telecom
CAA	Civil Aviation Authority
CEMP	Construction Environment Management Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HES	Historic Environment Scotland
IEF	Important Ecological Features
LCT	Landscape Character Type
LDP	Local Development Plan
LVIA	Landscape and Visual Impact Assessment



Abbreviations	Description
MoD	Ministry of Defence
NATS	National Air Traffic Services
NHZ	Natural Heritage Zone
NPF	National Planning Framework
NTS	Non – Technical Summary
PAC	Pre-Application Consultation
SEPA	Scottish Environmental Protection Agency
SPA	Special Protection Area
TMP	Traffic Management Plan



1. Introduction

An application has been made by Fred. Olsen Renewables Limited (the Applicant) to Scottish Ministers under Section 36 of the Electricity Act 1989 and deemed planning under Section 57(2) of the Town and Country Planning Act 1997 for consent to construct and operate the proposed Balgray Wind Farm (the Proposed Development). This Non-Technical Summary (NTS) has been produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended), hereafter referred to as the EIA Regulations. It accompanies an Environmental Impact Assessment Report (EIAR) which presents the results of the Environmental Impact Assessment (EIA) undertaken to establish the potential effects that the Proposed Development may have. The NTS sets out the main findings of the EIA Report in accessible plain English. Regulation 5(2)(e) of the EIA Regulations requires that the NTS provides a summary of the following:

- (a) A description of the development comprising information on the site, design, size and other relevant features of the development;*
- (b) A description of the likely significant effects of the development on the environment;*
- (c) A description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- (d) A description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.*

1.1. The Applicant

- 1.1.1. The Applicant is a leading developer, owner and operator of renewable energy assets, primarily onshore wind farms. They have been developing and operating wind farms in the UK since the mid 1990's demonstrating long term commitment to the renewable energy generation market in Scotland.
- 1.1.2. With over twenty-five years' experience in consenting, developing and operating wind farms, the Applicant is one of very few developers that take a project all the way from initiation and development, through to operation and ultimately decommissioning.
- 1.1.3. The Applicant is one of the longest standing developers in Scotland. In the UK, their portfolio consists of 258 operational turbines, alongside a further 75 consented. This combined with projects in Norway and Sweden, brings the organisation's total operational capacity to 804.9 MW – providing enough power for 698,344 UK homes.



- 1.1.4. The Applicant was the first developer to bring forward community benefit in Scotland. To date, they have made available over £6 million to eligible communities surrounding their wind farms and are substantially increasing this investment as new projects come online.
- 1.1.5. The Applicant has an established presence in Dumfries and Galloway. The company continues to operate Scotland's first consented wind farm, Windy Standard Wind Farm, located outside of Carsphairn, which generates 83.1MW of clean electricity – enough to power 44,500 UK homes.
- 1.1.6. The Applicant has, across its portfolio, signed more than £920m worth of contracts with Scottish businesses. £186m of these contracts have been delivered in Dumfries and Galloway through Windy Standard Wind Farm, which employed 116 jobs (Full Time Equivalent) during the construction phase and 73 operational and maintenance jobs (Part Time Equivalent). The company is committed to identifying additional opportunities to further expand its network locally and to further utilise local services throughout its operations.
- 1.1.7. In the event that the Proposed Development is consented, the Applicant has committed to maximising opportunities to involve the local supply chain and support main contractors to spend at least 30% of the contract value locally.
- 1.1.8. Fred. Olsen Renewables is a wholly owned subsidiary of Bonheur ASA and is responsible for the group's renewable energy activities.

1.2. Consultants

- 1.2.1. Locogen Limited (Locogen) has been appointed to co-ordinate and produce the EIAR and associated application documentation.
- 1.2.2. Locogen is an independent Scottish company comprising a team of professional project managers, engineers, planners and environmental consultants with expertise in the development and implementation of low carbon generating technologies.
- 1.2.3. Our team has extensive knowledge in the development of a range of renewable technologies for commercial, public sector and community organisations.
- 1.2.4. The specific services we provide for wind energy projects include (but are not limited to)
 - Environmental screening and scoping works;
 - Management of the EIA, planning submission and appeal process;
 - Grid connection applications, negotiations and agreements; and
 - Wind monitoring and detailed wind resource and energy yield assessments



- 1.2.5. Locogen has successfully project managed the construction of over 40 commercial wind energy projects.
- 1.2.6. Locogen has also commissioned the following specialist consultants (Table 1.1) to provide professional advice for specific assessments in relation to the EIA of the Proposed Development.

Table 1.1: Other consultants involved in the production of the Environmental Impact Assessment Report

Consultants	
ORNITHOLOGY CONSULTANCY	
Ecology Consulting	Swallow Ridge Barn, Old Cassop, Durham, DH6 4QB
LANDSCAPE CONSULTANCY	
Pegasus Group	Pavilion Court, Green Lane, Garforth, Leeds, LS25 2AF
HYDROLOGY CONSULTANCY	
Pell Frischmann	93 George Street, Edinburgh, EH2 3ES
TRAFFIC AND TRANSPORT CONSULTANCY	
SYSTRA Ltd	38 Queen Street, Glasgow, G1 3DX
NOISE CONSULTANCY	
Ion Acoustics Ltd	Georges House, 9-10 Bath Street, Bristol, BS1 6HL
AVIATION CONSULTANCY	
Gladhouse Planning Ltd, t/a Aviatica	Reservoir House, Gladhouse, Midlothian, EH23 4TA
SOCIOECONOMICS CONSULTANCY	
MKA Economics Ltd	Scion House, Stirling University Innovation Park, Stirling, FK9 4NF
VIBRATION CONSULTANCY	
Xi Engineering Consultants Ltd	Codebase, Argyle House, 3 Lady Lawson Street Edinburgh, EH3 9DR

2. Environmental Impact Assessment Report

- 2.1.1. The EIAR has been prepared in line with the EIA Regulations. The EIAR reports the findings made in the EIA of the Proposed Development. The scope of the EIA was the subject of a formal scoping opinion from the Scottish Government Energy Consents Unit on behalf of the Scottish Ministers (Volume 1, Appendix 1.2). This included input from the Local Planning Authority, which is Dumfries and Galloway Council, and from other consultees including Scottish Environmental Protection Agency (SEPA), NatureScot and Historic



Environment Scotland (HES). A Scoping opinion was sought from Scottish Ministers in January 2024.

2.1.2. During the EIA process, site visits, surveys and desktop assessments, in line with relevant guidance, were carried out to ascertain the potential impacts of the Proposed Development on the environment and to inform mitigation measures to be taken. A review of planning and other relevant policies was also undertaken to inform the assessment process and ensure that the Proposed Development adequately considered local and national policy.

2.1.3. The EIAR has been prepared in accordance with the EIA Regulations and follows the structure presented in Table 2.2 below. The structure of the EIAR has been designed to cover the factors on which the Proposed Development, and any interaction between these factors.

2.1.4. Where relevant each EIAR chapter considers:

- the baseline environment;
- the likely significant effects for each phase of the development;
- any regulation mitigation; and
- cumulative impacts.

Table 2.2: Structure of the Environmental Impact Assessment Report

Volume	Heading	Description
1	Non-Technical Summary	Summarises the main findings of the EIA Report in accessible plain English.
2	EIAR Chapter 1: Introduction	Presents the Proposed Development and provides a brief overview of the Applicant and the EIAR.
2	EIAR Chapter 2: Site Selection and Design Evolution	Provides a detailed description of the site selection process for the proposed site. This chapter also discusses the design evolution process and mitigation measures that were introduced at the site selection and design stage to reduce environmental impacts from the beginning.
2	EIAR Chapter 3: Description of Development	Provides a detailed description of the Proposed Development including details of the construction, operational and decommissioning arrangements.
2	EIAR Chapter 4: Approach to Environmental Impact Assessment Report	Presents a methodology for environmental design and assessment of the Proposed Development through gathering baseline environmental data, mitigation of impacts during site design and final assessment of the significance of residual environmental and human effects of the proposal.
2	EIAR Chapter 5: Policy Context	Describes the legislative and policy background relevant to the Proposed Development.



Volume	Heading	Description
2	EIAR Chapter 6: Landscape and Visual Impact Assessment	Provides an assessment of the Landscape and Visual Impacts (LVIA) of the Proposed Development and cumulative LVIA.
2	EIAR Chapter 7: Ornithology Assessment	Describes the ornithological interest at the Proposed Development and assesses the predicted effects on these interests.
2	EIAR Chapter 8: Ecology Assessment	Provides an overview of the baseline ecological conditions relating to the habitats and (non-avian) fauna present within the Proposed Development area and immediate surrounding environment.
2	EIAR Chapter 9: Hydrology, Geology and Hydrogeology	Assesses the impacts on the hydrological, geological and hydrogeological environment at the Proposed Development.
2	EIAR Chapter 10: Noise and Vibration Assessment	Assesses the potential noise and vibration effects of the Proposed Development.
2	EIAR Chapter 11: Cultural Heritage Assessment	Considers the potential impacts of the Proposed Development upon cultural heritage assets.
2	EIAR Chapter 12: Traffic and Transport Assessment	Assesses the effects due to transport and access resulting from the construction, operation and decommissioning of the Proposed Development.
2	EIAR Chapter 13: Socioeconomics, Tourism and Recreation	Assesses the predicted socioeconomic and tourism impacts of the Proposed Development at local, regional and national levels.
2	EIAR Chapter 14: Aviation and Radar	Assesses the potential for impact upon aviation, Ministry of Defence (MoD) interests, communication operations and existing site infrastructure and demonstrates the consulting process undertaken and outlines mitigation where it is deemed necessary
2	EIAR Chapter 15: Other Issues	Assesses the potential impacts on telecommunication infrastructure and assesses shadow flicker and ice throw.
2	EIAR Chapter 16: Synergistic Effects, Schedule of Environmental Commitments, Summary of Residual Effects	Summarises the findings of the EIA presented in the EIAR Chapters, provides summary tables of all mitigation measures and predicted residual effects and assesses synergistic effects.
3a	Figures	EIAR Figures, except Landscape and Visual
3b	Figures	EIAR Landscape and Visual Figures and Visualisations and Cultural Heritage Visualisations
4	Technical Appendices	

2.1.5. The Application is also complemented by a Planning Statement, Socio-Economic Benefit and Community Wealth Building Report and Pre Application Consultation (PAC) Report.

2.1.6. Copies of the full EIAR can be obtained from the Applicant through communities@fredolsen.com:



- Non Technical Summary in printed form – Free
- EIAR in printed form - £1,800 per copy
- EIAR in PDF format on CD or USB Storage Device - £15

2.1.7. An electronic copy of the EIAR (accessible free of charge) can also be found on the project website <https://balgraywindfarm.co.uk/> and on the Energy Consents Unit website under reference ECU00005016.

3. Overview of the Proposed Development

3.1.1. The Proposed Development is located approximately 6km to the northeast of Lockerbie. Most of the Proposed Development is on land owned by Balgray Estate, with the access route to the north of the site in separate ownership. The Proposed Development lies between 250m AOD (Above Ordnance Datum) at the top of Firtree Hill and 180m AOD on the track which runs towards Hallhills Farm. The area consists primarily of open moorland with some pastoral farmland towards its southern extent near Balgrayhill Farm. A small body of water known as Hallhills Loch lies in the northern part of the Proposed Development, and there is a small area of woodland located alongside the Rockhillflat Burn. Other named watercourses within the site include the Hewke Burn, running into and out of Hallhills Loch and the Kirkcroft Burn. The Proposed Development is located immediately adjacent to a large area of plantation woodland to the north-east, with a smaller area also adjacent to the southeast. The land is currently used for sheep farming, and game shooting. The access route from the public road passes through a commercial forestry plantation, with the route using existing forestry tracks as far as possible.

3.1.2. The Proposed Development is expected to be approximately 43MW in wind generation and approximately 43MW of battery energy storage and includes the following elements:

- Turbine infrastructure for up to six turbines including turbine foundations; external transformer housings, crane pads and hardstand areas;
- Micrositing allowance of turbines and associated infrastructure of up to 50m;
- Substation, control building and compound;
- Battery energy storage infrastructure;
- Construction of approximately 6.28 km of new access tracks, including the creation of a new access junction at the site entrance;
- Alterations to the public road network;
- Underground electricity cables;



- Signage;
- Up to two temporary borrow pits;
- Temporary concrete batching plant;
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure;
- Water crossings;
- Drainage and drainage attenuation measures (as required).

3.1.3. Access to the site from the public road network would follow the A74(M) to the B7068, B7076 and Breckenry Road to Boreland, using the Unclassified Road from the B723 to the site access track.

3.1.4. A Biodiversity and Habitat Management Plan (BHMP) has been proposed, focussing predominantly on Marsh Fritillary Butterfly populations and peatland restoration. The main aim of the BHMP is to increase the overall area of suitable habitat for marsh fritillary butterfly within the site and to enhance the quality of existing habitat. Two areas of peatland have also been identified for possible restoration.

3.1.5. The Proposed Development is expected to have an operational life of up to 35 years. For the purpose of the assessment, the Applicant has considered turbines with a maximum base to tip height not exceeding 200 m. Figure 1.2 of the EIAR illustrates the Proposed Development's site layout.

3.1.6. Locations (subject to micro-siting) and indicative dimensions of the proposed turbines are shown in Table 3.3.

Table 3.3: Turbine Information

Turbine number	Easting	Northing	Maximum tip height (m)
1	317391	587505	200
2	316590	587430	200
3	316359	588065	200
4	317141	587842	200
5	317032	588302	200
6	316614	588650	200

3.1.7. The information in this section of the NTS satisfies the requirement of Regulation 5(2)(a) of the EIA Regulations. A more detailed description of the Proposed Development is provided in Chapter 3 of the EIAR.



4. Reasonable Alternatives

4.1. Introduction

4.1.1. The Applicant is engaged in a continual search and assessment of potential wind farm sites across the United Kingdom (UK). This includes the consideration of extensions to existing projects and the investigation of new and separate sites.

4.1.2. The Applicant utilises constraints mapping, site visits and the continual review of technical, environmental and planning considerations to identify potential sites. The overarching aim of the selection process was to achieve a layout that maximised the efficiency of the Proposed Development whilst limiting the potential environmental impacts. Factors influencing the suitability of the site included:

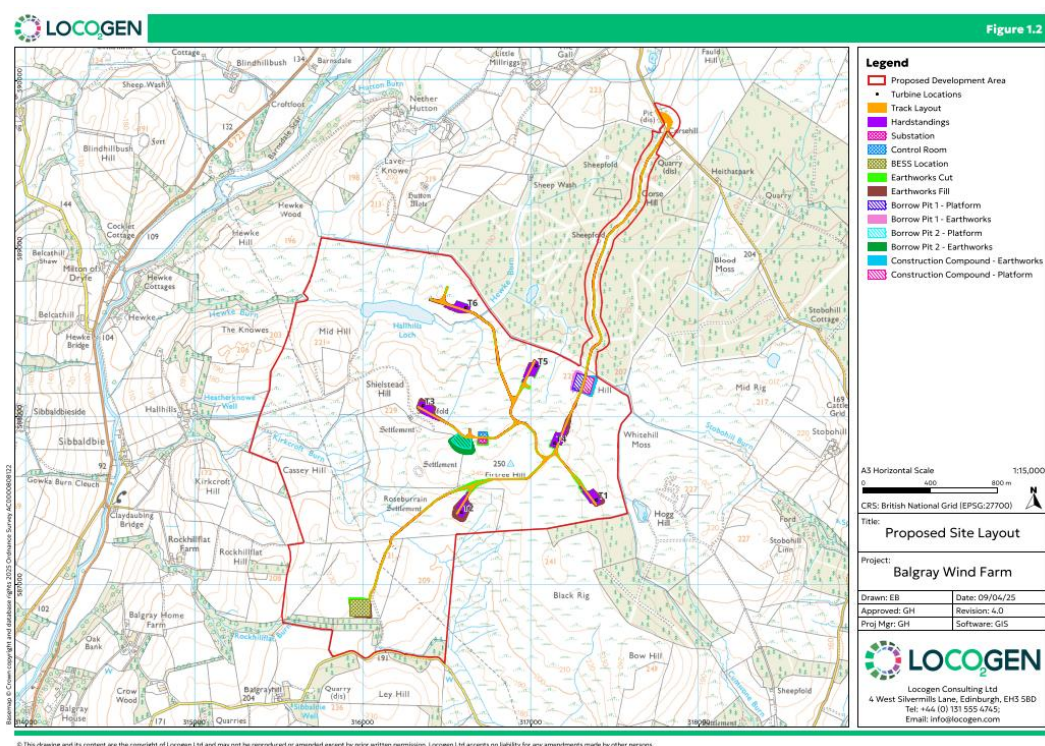
- Suitable wind speeds;
- Standard separation distance from dwellings;
- Reasonably close proximity to viable grid connection;
- Willing landowner(s);
- Potential to use existing infrastructure, as far as practical;
- Suitable land area to accommodate generating capacity;
- Minimised impacts to the local communities and existing infrastructure; and
- No significant strategic constraints preventing further development.

4.1.3. The results indicated that this site would be a technically and environmentally appropriate location in which to develop a wind farm.

4.2. Site Design

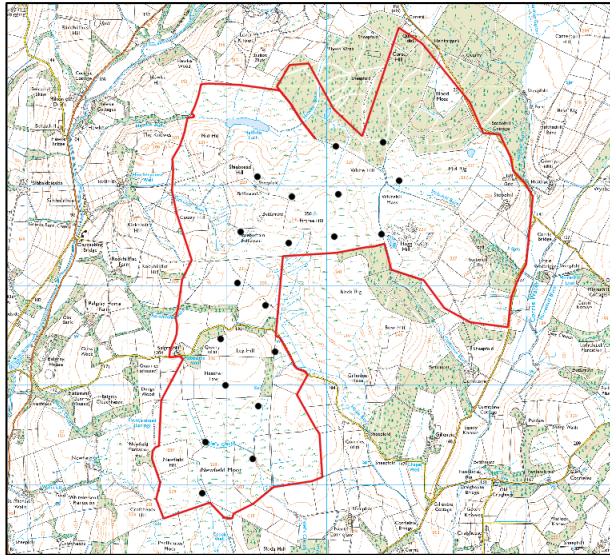
4.2.1. Environmental surveys, including those for birds and other species, peat depths, archaeology and other subjects of interest ran over a period from 2020 to 2024. The data gathered enabled the project team to consider three different design iterations before settling on the final design which maximises the efficiency of the Proposed Development whilst limiting the potential environmental impacts. The Site has also been assessed against a number of strategic constraints. Figure 1.2 of the EIAR illustrated the site location and layout of the Proposed Development, presented below:



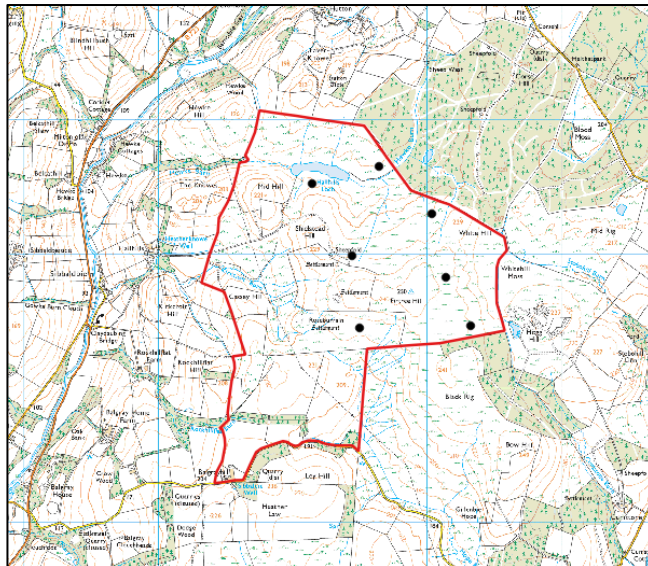


- 4.2.2. The Proposed Development has been in the design process for a number of years and the layout has evolved iteratively to respond to issues raised during and after Scoping. The various iterations have considered different numbers and sizes of turbines; see Chapter 2 of the EIAR for full details. Changes to the design have been influenced by several factors including stakeholder feedback, planning policy, potential environmental effects and economics.
- 4.2.3. The preliminary layout before Scoping was a 19-turbine development designed to maximise generation. Following changes to landowner agreements and consideration of the feedback in relation to the Newfield Wind Farm scheme previously proposed by a different applicant, the layout was reduced to 7 turbines, and this layout proceeded to formal Scoping in 2024.
- 4.2.4. After the Scoping Opinion (Vol 1, Technical Appendix 1.2) was received and following receipt of the results of onsite survey work, the number of turbines was further reduced from 7 to 6, and the tip height of all turbines was reduced from a tip height of 230 m to a tip height of 200 m. Turbines were also relocated to balance on site constraints.
- 4.2.5. The images below show the various layout iterations as they have progressed.





Layout 1: Initial Layout



Layout 2: Scoping Layout





- Reducing landscape and visual effects by removing turbines and reducing the tip height;
- Reducing impacts on plant and animal species, including the Marsh Fritillary Butterfly;
- Avoiding areas of deeper peat identified during Phase 1 peat probing;
- Protecting buried archaeology within the Site; and
- Minimising impacts on watercourses and the aquatic environment.

4.3. Planning Policy

- 4.3.1. The Proposed Development will have an overall generating capacity of over 50MW. In Scotland, onshore renewable energy developments which have capacity to generate 50MW or more need consent from Scottish Ministers through a Section 36 (S36) application under the Electricity Act, rather than a planning application made to the Local Planning Authority. In these cases, the Local Planning Authority (usually the local Council) has to be consulted in the decision-making process, instead of deciding the application themselves. The Local Planning Authority for the Proposed Development is Dumfries and Galloway Council.
- 4.3.2. Full details of the relevant planning policy for the Proposed Development are set out in Chapter 5 of the EIAR and in the accompanying Planning Statement. This includes national and international legislation and policy relating to climate change and renewable energy, as well as Scotland's National Planning Framework 4 ('NPF4') and the Dumfries and Galloway Local Development Plan 2 ('LDP').
- 4.3.3. The UK and Scotland are legally bound to reduce their carbon emissions, with the UK required to reach 'Net Zero' emissions by 2050 and Scotland by 2045. The purpose of the Proposed Development is to generate electricity from renewable energy sources in order to meet these targets, and it is therefore directly supported by all levels of planning policy and legislation.
- 4.3.4. The design of Proposed Development has taken into account the relevant policies contained in NPF4 and the LDP to make sure that any potential impacts on the surrounding area are avoided or reduced as far as possible.

4.4. Wind Resource

- 4.4.1. LiDAR has been used to collect wind speed measurements over a 12-month period on the Balgray Estate. With an average wind speed of around 8 m/s, the Applicant is confident that the Proposed Development can generate renewable electricity at this site on an economically viable basis.

4.5. Grid Connection

- 4.5.1. In order to deliver generated electricity to where it is needed, the wind farm must be connected to the National Grid. The grid application has been submitted. The grid connection route will be subject to a separate assessment and application process to be undertaken by the network operator. The connection date is intended for 2032.

4.6. Summary

- 4.6.1. The Proposed Development has been located in a suitable area for wind farm development following a site selection process. The design evolution has taken



place over several years through many changes reflecting the environmental data gathered on site and consultee responses. The Applicant has balanced the various onsite constraints with the scale of development required to be economically viable and believes that the Proposed Development provides optimum use of the Site with respect to the potential renewable electricity generation capacity balanced against the potential environmental and other effects.

- 4.6.2. This Section of the NTS has addressed the requirement of Regulation 5(2)(d) of the EIA Regulations in considering reasonable alternatives.

5. Potential Effects and Mitigation

- 5.1.1. This Section of the NTS presents the potential significant effects of the Proposed Development and the measures taken or proposed to reduce the potential significant effects identified (mitigation). In doing so, it addresses Regulations 5(2)(b) and 5(2)(c) of the EIA Regulations.

5.1. Landscape and Visual Impact

- 5.1.2. Landscape and visual considerations were taken on board at an early stage of the project as it was understood that these were key to project progression, Chapter 6: Landscape and Visual considers these impacts. Whilst it is noted that opinion on wind farms and their visual effects varies and is subjective, for the purposes of assessment it has been assumed that all visual impacts are negative.
- 5.1.3. During the design process, views from residential and sensitive locations were key considerations. Out of the 51 residential properties assessed within the 2km Residential Study Area, 21 would experience a higher degree of change to their views. However, none of these properties would be subject to such overbearing or overwhelming impacts that their visual amenity would become unacceptable or render them unattractive places to live.
- 5.1.4. Consideration was also given to other wind farms in the surrounding area to assess their cumulative impact. At the time of the assessment, there were 14 wind farms within 20km of the Proposed Development, either already operating, under construction or in planning. Two scenarios were considered for assessing cumulative effects. The first scenario (where other consented wind farms are also considered to be operational) includes Little Hartfell, Hopsrig, and Loganhead, which are located 5km to 15km east of the site. These sites do not significantly change the overall landscape and visual effects already identified in the assessment. The second scenario (where other developments in planning are also considered to be consented and operational) includes the revised Hopsrig project, Callisterhall, Bloch, and Scoop Hill, which are situated 10km to 20km away, mostly to the east and southeast. Their addition would not lead to a noticeable increase in cumulative effects beyond what has already



been assessed. While there are multiple wind farms in the area, the Proposed Development has been assessed to ensure its contribution to cumulative effects remains in line with existing developments.

- 5.1.5. Key infrastructure elements, such as the temporary construction compound, substation, control building, and battery energy storage systems, have been carefully sited to minimize their proximity to residential areas and to avoid ridgelines, steep slopes, and extensive areas of excavation. Efforts will also be made to reinstate the landscape after construction to mitigate any negative impacts from these temporary changes.

Table 5.4: Summary of Impacts and Effects

Impact upon:	Potentially Significant Effect
Landscape Character	Localised significant effects on 5 of the 12 Landscape Character Types (LCTs) identified within 20 km. This is due to direct effects upon one LCT and indirect effects in proximity to the Proposed Development
Landscape Designations	The Proposed Development would not be located in any national or local designations, but it is acknowledged that there would be some limited, non-significant effects upon landscape character and visual amenity experienced on 1 of the 9 protected and designated landscapes identified within the 35 km study area.
Settlement	4 of the 13 Settlements within 20km of the Proposed development have potential for visibility due its proximity.
Route Receptors	The assessment of route receptors, including roads, railways, and core paths, determined that six of the eleven core paths—312, 309, 285, 311, 313, and 259—along with the Annandale Way recreational route, major roads (A74, A709, B723, B7076, B7068, B7020), and the West Coast Mainline railway, are in close proximity to the Proposed Development. As a result, these routes have the potential to experience significant visual effects due to their direct relationship with the development area

- 5.1.6. Chapter 6 of the EIAR provides a detailed assessment of each receptor. The findings indicate that while there would be some significant effects on both landscape and visual receptors these impacts are limited to receptors in close proximity to the Proposed Development.

5.2. Ornithology

- 5.2.1. The potential effects on ornithology are detailed in Chapter 7 of the EIAR. The Ornithology of the Environmental Impact Assessment Report for the Proposed Development has been prepared by Dr Steve Percival of Ecology Consulting. The assessment has been informed through a desktop study, field surveys and consultation with relevant stakeholders. Comprehensive bird surveys were carried out between 2021 and 2023 to include two full breeding seasons and thoroughly characterise the ornithological features on site. Care has been taken to record any sensitive species and habitats present.



- 5.2.2. There are unlikely to be any significant impacts on ornithology because of the Proposed Development, with no likely significant effect on the conservation status of any bird species of conservation importance within the Natural Heritage Zone (NHZ), either alone or in combination with other schemes. The Proposed Development would not contribute to any likely significant effect on any Special Protection Areas (SPA) or result in any breach of the Habitats Regulations.
- 5.2.3. Even though there are no likely significant effects, best practice measures should be followed to ensure compliance with the nature conservation legislation and to deliver suitable enhancements to biodiversity in accordance with NPF4. A Breeding Bird Protection Plan (BBPP) will ensure compliance with the Wildlife and Countryside Act 1981.
- 5.2.4. A Construction Environment Management Plan (CEMP) will be overseen by an appointed Environmental Clerk of Works (ECoW). The ECoW will monitor adherence to wind farm good construction guidance and manage the implementation of the CEMP, HMP and BBPP. No mitigation is required for the operational phase, but to reduce the collision risk to scavenging raptors a programme of carcass removal could be implemented.

5.3. Ecology

- 5.3.1. The full assessment of potential effects on habitats and non-avian species is outlined in Chapter 8 of the EIAR. Embedded mitigation measures are expected to reduce the magnitude of residual effects for all Important Ecological Features (IEF) identified, in the short and long-term.
- 5.3.2. A Construction Environment Management Plan (CEMP) will provide guidance to facilitate the implementation of best practice to prevent or minimise effects on sensitive habitats (including peat) and species during the construction phase. The details for protecting peat and watercourses/waterbodies are outlined in Chapter 10: Hydrology, Geology and Hydrogeological Assessment.
- 5.3.3. An Ecological Clerk of Works (ECoW) will be present on Site to oversee construction. The ECoW will oversee that works are carried out in accordance with the CEMP and advise on compliance with legislation. The ECoW will have the authority to stop any construction activity that is having or likely to have a significant environmental impact.
- 5.3.4. Permanent features of the Proposed Development are not predicted to have any continuing effects on habitats once they have been completed and the areas surrounding these will be reinstated, following current best practice guidance. However, regular monitoring will be carried out.
- 5.3.5. During the operational phase of the Proposed Development, there could be a significant effect to a commuting route for noctule bats. This can be mitigated by curtailing Turbine 6 during autumn.



- 5.3.6. It has been determined that there is an opportunity to have a positive effect on the Marsh Fritillary Butterfly population at the Site through enhancing and expanding existing Marsh Fritillary habitat. This includes restoring degraded peatland within the development area to contribute to an overall positive gain to biodiversity. This will be detailed in a supporting Biodiversity and Habitat Management Plan (BHMP).

5.4. Hydrology, Hydrogeology & Geology

- 5.4.1. The potential effects on Hydrology, hydrogeology and geology (including soils and peat) are assessed in Chapter 9 of the EIAR.
- 5.4.2. Peat depth and condition surveys were undertaken across the Site to investigate the potential impacts resulting from the Proposed Development. The results are presented in Appendix 9.4. The peat depth across the majority of the Site was found to be shallow, with only one measurement greater than 1m in depth. Based on the depth and low decomposition observed by using the Von Post humification scale, the soils have been characterised as peaty soils, as opposed to peat. The Site is mostly comprised of modified agricultural land and so disturbance of near natural peatland is unlikely. Due to these factors the impacts to peat are low.
- 5.4.3. Subject to adoption of good practice measures no significant effects on hydrology, geology, and hydrogeology are anticipated as a result of the Proposed Development.

5.5. Noise

- 5.5.1. The potential effects on noise and vibration are assessed in Chapter 10 of the EIAR. The operational noise assessment for the wind turbines has been undertaken according to the Institute of Acoustics (IoA) Good Practice Guide (GPG) and Assessment & Rating of Noise from Wind Farms (ETSU-R-97). This is the guidance recommended in Scottish Government planning advice for onshore wind turbines. The noise assessment has been undertaken by comparing predicted noise levels, based on the indicative dimensions of turbines for the Proposed Development with the noise limits derived from baseline measurements at three properties in the vicinity of the Proposed Development. In terms of operational noise, the development can meet the lower simplified limit stated in guidance document ETSU-R-97.
- 5.5.2. Noise from the operation of the proposed BESS will also be insignificant. A fixed noise limit has been proposed in line with the guidance in BS4142:2014.
- 5.5.3. Noise during construction and decommissioning will be insignificant for activity on the main wind farm site. Some audible noise will occur from the transportation of construction material and wind farm components. A CEMP will detail measures to control noise and vibration from construction.



- 5.5.4. There are no operational wind farms immediately adjacent to, or within the immediate area of the Proposed Development. The nearest scheme is Little Hartfell which is 4.8 km to the east. This is too far to have any impact on noise levels at the receptors considered for this assessment. There are no cumulative noise effects.

5.6. Cultural Heritage

- 5.6.1. A full assessment of the potential effects on cultural heritage are presented in Chapter 11 of the EIAR.
- 5.6.2. The cultural heritage assessment considers potential direct and indirect physical impacts related to the Proposed Development on the fabric of heritage assets and impacts on the setting of heritage assets within the Site and wider area that could affect their cultural significance.
- 5.6.3. A desk-based baseline assessment was undertaken to identify known heritage assets and the potential for currently unrecorded heritage assets to be present within the Site, as well as assets in the wider landscape which may be impacted by the Proposed Development through changes to their setting. A list of assets that may be affected by the Proposed Development was provided to Historic Environment Scotland (HES) at pre-application stage and taken forward for assessment as part of the EIA.
- 5.6.4. Following implementation of mitigation measures, no significant effect is expected on known heritage assets. However, due to the high potential for unknown subsurface remains from all periods, there is a risk of direct impact during the construction period. As such, a programme of archaeological monitoring will be required, with details to be outlined in a Written Scheme of Investigation (WSI) to be agreed with Dumfries and Galloway Council in advance of construction.
- 5.6.5. No operational phase impacts on cultural significance are anticipated as a result of their change of setting. No cumulative effects have been identified, and no significant residual effects are expected.

5.7. Traffic & Transport

- 5.7.1. The Traffic and Transport Assessment, in Chapter 11 assess the potential impacts due to transport and access for the Proposed Development resulting from the wind farm construction, operation and decommissioning of the development against from baseline conditions of traffic flows on the roads network. Predicted traffic volumes relating to the Proposed Development are based on assumptions set out in the chapter.
- 5.7.2. Traffic generated by the Proposed Development would be concentrated during the construction phase and decommissioning phases of the wind farm. During the operational period of the Proposed Development, traffic would be minimal



since much of the operation of the wind farm would be under monitoring and maintenance.

5.7.3. Construction traffic required to deliver Proposed Development include Abnormal Loads, Heavy Good Vehicles (HGV) and staff vehicles. Turbine components and general construction materials (concrete, aggregates, pipes, cabling, etc.) would need to be transported to the Site using the public road system. It is assumed there will be temporary increase in traffic during this period. The predicted peak of traffic is predicted during month four of the construction programme, with a total of 1626 two-way HGV movements.

5.7.4. The most suitable Point of Entry (PoE) for the wind turbine components to the site is King George V (KGV) Docks in Glasgow. The preferred abnormal loads route is contained within Technical Appendix 11.3 which gives a detailed assessment of each road for transport. These include the public road routes A74 (M), B7068, B7076, Breckenry Road, B723 and C81a.

5.7.5. Based on the methodology outlined in the assessment it concludes that:

- Traffic effects on Breckenry Road is negligible/ non-significant
- Traffic effects on B723 is minor/ non-significant
- Traffic effects on C81a have potential to be moderate/ significant, but if the embedded measure are proposed they would be of low significance.
- Traffic effects on A73 are considered minor/ non-significant

5.7.6. A Construction Traffic Management Plan (CTMP) will be developed and approved by Dumfries and Galloway Council prior to the commencement of construction works. Considering these embedded measures, the overall impact of transport during both the construction and operational phases is assessed as having minor and low Significance, which is not considered Significant under the EIA regulations.

5.8. Socioeconomics, Tourism & Recreation

5.8.1. The potential effects of the Proposed Development on socioeconomics, tourism and recreation are assessed in Chapter 13 of the EIAR.

5.8.2. An assessment was carried out to investigate the likely effects of the Proposed Development on the local and wider economy. The assessment found that during the construction phase, the Proposed Development would result in the following potential benefits at the Dumfries and Galloway level:

- Up to 61 direct jobs;
- £8.4m in capital spending; and
- £3.6m in direct gross value added.



5.8.3. Once construction is completed and the Proposed Development becomes operational, the following effects are predicted at the Dumfries and Galloway level:

- Up to 6 full time equivalent jobs;
- £0.7m of spending per year; and
- A direct injection of £0.3m per year.

5.8.4. The Proposed Development includes a community benefit package, which will include a community benefit fund of £5,000 per MW on installed wind turbine generation per year. Based on the current proposed capacity, this would amount to £216,000 per year. This fund will be administered by a representative local group and will support local community initiatives.

5.8.5. The assessment also considered the effect of the Proposed Development on tourism and recreation in the area. It was found that there would be minimal or negligible effect on national, regional or local attractions or on trails and paths. It was also found that there would likely be minor beneficial effects for providers of local accommodation during the construction and operational phases.

5.8.6. Although the positive socio-economic effects were found to be not significant at a regional or national level, the Proposed Development is expected to have a beneficial impact on the local economy.

5.9. Aviation & Radar

5.9.1. The potential effects of the Proposed Development on aviation and radar are assessed in Chapter 14 of the EIAR.

5.9.2. Wind turbines can have an effect on aviation either by presenting an obstruction hazard to low flying aircraft or by interfering with radar systems. The Proposed Development was assessed for such potential impacts, and it was identified that it could have an impact on the Lowther Hill radar system (which is operated by NATS En Route) and on military low flying which can occasionally take place within the area.

5.9.3. In terms of radar, up to four of the proposed turbines will be within line of sight of the Lowther Hill radar and could therefore have the potential to generate false plots on the radar and affect detection of aircraft in the airspace above the Proposed Development. However, the Applicant is in discussions with NATS En Route on measures that can be implemented to reduce this impact and will enter into a commercial agreement with NATS En Route to implement these. With the mitigation measures in place, the impact on the radar is assessed to be of minor significance.

5.9.4. The Ministry of Defence (MoD) have also advised that the Proposed Development may affect military low flying. Although military low flying only



rarely takes place in the area, infra-red lights will be fitted to all turbines to allow aircrew using Night Vision Imaging Systems (NVIS) to see and avoid them at night. Visible red steady state lights will also be fitted to selected turbines in the Proposed Development to meet civil aviation requirements and give visibility to non-NVIS fitted aircraft. In addition, the Proposed Development will be notified to the MoD and civil airspace users and marked on aeronautical charts and electronic aviation obstacle databases to enable all aircrew to avoid the turbines. With the implementation of these measures, the Proposed Development is assessed to have a minor impact on aviation.

5.10. Other Issues

- 5.10.1. Chapter 15 of the EIAR provides an assessment of other potential impacts from the Proposed Development which are not covered by other chapters. In the case of the Proposed Development, these issues were identified to be ice throw, shadow flicker and the Eskdalemuir Seismic Array.

5.11. Ice Throw

- 5.11.1. Ice throw can occur in specific weather conditions when ice can form on turbines when they are stationary. This ice can then be ‘thrown’ from the blades either by gravity or from the motion of the blades once the turbines become operational again. Blade icing only occurs rarely under very specific weather conditions, but the Proposed Development has mitigated the risk from ice throw by siting turbines away from occupied buildings, roads and public areas as far as practical. In addition, turbines can be fitted with sensors and control systems which can detect if ice has or is likely to form and shut down turbines until the blades are clear of ice. These systems are being considered as part of the Proposed Development, and together with good practice site management will mitigate and manage the potential risk of ice throw.

5.12. Shadow Flicker

- 5.12.1. Shadow flicker refers to when rotating turbines cause a temporary shadow to pass over neighbouring properties and appear as ‘flicking’ on and off. This can occur at properties within a particular distance and direction of turbines, depending on the locations of the properties, the position of the sun, wind speed and direction, cloudiness and the time of day/year. This effect is most noticeable when the sun is low in the sky directly behind the turbines from the point of view of a property.
- 5.12.2. Ten properties were identified as having the potential to be affected by shadow flicker as a result of the Proposed Development. This was assessed using specialist software. This found that the most affected property could experience a theoretical maximum of 26 hours of shadow flicker in a year. However, in realistic conditions the most affected property would only experience a maximum of 9 hours of shadow flicker per year.



- 5.12.3. Although there are currently no UK guidelines on acceptable levels of shadow flicker, best practice guidance suggests that a maximum of 30 hours of shadow flicker per year is acceptable for properties within 500m of turbines. It was also found that the frequency of any shadow flicker caused by the Proposed Development would be well below the threshold at which it may trigger photosensitive epilepsy.
- 5.12.4. No significant shadow flicker impacts are therefore expected to be caused by the Proposed Development. However, this will be monitored once the Proposed Development is operational, and mitigation measures will be applied if needed to address any unexpected shadow flicker issues.

5.13. Eskdalemuir Seismic Array

- 5.13.1. The Proposed Development lies within the 50-kilometre Eskdalemuir consultation zone, around 20 kilometres from the Eskdalemuir Seismic Array. A new methodology is under development by the Scottish Government, Ministry of Defence (MoD) and industry. The UK Government's Onshore Wind Strategy, published on 4 July 2025, confirms a commitment to implementing an enduring solution for the EKA. Specifically, Action 30 mandates collaboration between DESNZ, the Scottish Government and the MoD to develop a technical solution that enables onshore wind development within the EKA while maintaining protection of the Array. This work will include consultation on the Seismic Impact Limit (SIL) which underpins the mathematical analysis forming the basis for site viability. The solution assumes adoption of the revised SIL. Government guidance, expected to be finalised by the end of 2025, will bridge the timing gap ahead of dedicated legislation, making the approach robust enough for the MoD to lift its objection without having to wait for the full legislative process to conclude.
- 5.13.2. Modelling undertaken by Xi Engineering Consultants has confirmed that the Proposed Development will be within the MoD's 0.336nm cumulative limit under all Seismic Impact Limit queue scenarios provided that the standard monitoring and turbine selection strategies are adopted.

Summary

- 5.13.3. The Proposed Development is expected to deliver a range of positive outcomes, bringing benefits across both economic and environmental areas. From an economic perspective, the Proposed Development will bring a positive impact towards to local economy. Beyond the direct employment and investment generated during construction and operation, the project will play a strategic role in supporting wider economic and policy objectives. Specifically, it aligns with regional and national economic strategies by facilitating capital investment, enhancing the area's green credentials and strengthening the local economy through supply chain engagement, job creation and skills development.



- 5.13.4. Local supply chain opportunities will be actively promoted, with the applicant planning to host “Meet the Buyer” events to enable suitably qualified local firms to tender for various construction packages, such as foundation laying and electrical works. Wherever feasible, construction materials will be sourced locally within Dumfries and Galloway and local transport and plant hire services will be prioritised, thereby maximising regional economic retention.
- 5.13.5. Work expenditure associated with the construction phase is also expected to contribute to the local economy. With a generating capacity of 42.3MW the Proposed Development could generate approximately £324,000 in additional revenue for the accommodation and food service sectors alone. These direct benefits are further amplified by secondary spending in local retail and service industries. Moreover, the pre-construction phase has already stimulated economic activity through the commissioning of planning, engineering and environmental consultancies. While the financial value of this work is ongoing and not yet fully quantified, it represents a continuing contribution to the wider economy.
- 5.13.6. Additionally, the Proposed Development incorporates a range of positive environmental measures aimed at protecting and enhancing local biodiversity. Key mitigation strategies will help safeguard important habitats and species during construction and operation, with best practice measures implemented through a CEMP.
- 5.13.7. Once construction is complete, the permanent infrastructure is not expected to have any ongoing adverse effects on surrounding habitats. Surrounding areas will be reinstated using current best practice guidance and regular monitoring will help maintain environmental quality over time.
- 5.13.8. A positive outcome is the opportunity to enhance the Marsh Fritillary Butterfly population at the Site. This will be achieved by restoring degraded peatland and improving existing butterfly habitat, as outlined in the outline Biodiversity and Habitat Management Plan. These efforts are expected to contribute to an overall net gain in biodiversity within the development area.





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