

Daer Wind Farm

Volume 4

NTS



CONTENTS

Non Technical Summary

PREFACE

An Environmental Impact Assessment Report (EIAR) has been prepared in support of an application submitted by Natural Power Consultants Limited (Natural Power) on behalf of the Applicant (RWE Renewables UK Development Limited). The application seeks consent under Section 36 of the Electricity Act 1989 and the EIAR has been prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2017. The application also seeks a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended that planning permission for the development be deemed to be granted. This EIAR contains the information carried out for the Environmental Impact Assessment to develop a wind farm comprising of up to seventeen wind turbines and associated infrastructure (the Proposed Development). The Proposed Development is located in both South Lanarkshire and Dumfries & Galloway local authority areas.

The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 (“the Temporary Regs”) came into effect on 24 April 2020. These Regulations are temporary and were due to expire on 30 September 2020. However, due to the ongoing COVID19 pandemic the Coronavirus (Scotland) Acts (Amendment of Expiry Dates) Regulations 2020 were enacted to extend temporary arrangements until 31 March 2021.

Due to Covid-19 restrictions hard copies will not be available at this time however electronic copies of the EIAR can be found on the Energy Consents Unit’s website at www.energyconsents.scot and the Applicant’s: www.rwe.com/daer

Copies of the EIAR may also be obtained from RWE Renewables UK Developments Ltd (telephone: 0191 376 0893 / email: nicholas.taylor@rwe.com) at a charge of £500 per hard copy and free on DVD/CD. Copies of a short Non-Technical Summary are available free of charge.

- **This is Volume 4 of the EIAR** which presents the Non-Technical Summary
- Volume 1 of the EIAR presents the 15 Chapters of the EIAR.
- Volume 2a of the EIAR presents the technical Figures associated with the EIAR Chapters except for Chapter 5 (Landscape & Visual Impact Assessment)
- Volume 2b of the EIAR presents the technical Figures associated with EIAR Chapter 5.
- Volume 2c of the EIAR presents the Visualisations produced for EIAR Chapters 5 and 10 (Landscape & Visual Impact Assessment and Cultural Heritage).
- Volume 3 of the EIAR presents the Technical Appendices associated with the EIAR Chapters.

In addition to the EIAR, the application is also supplemented by accompanying documents including:

- Planning, Design & Access Statement,
- Pre-Application Consultation (PAC) Report.

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This is to certify that

Natural Power Consultants

is a member of the

EIA Quality Mark

for the registration period covering

April 2020 – April 2021*

*Subject to meeting the requirements of registration



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1. Introduction

An application for consent to construct and operate Daer Wind Farm (the Proposed Development) has been made to Scottish Ministers under Section 36 of the Electricity Act 1989. 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 create. As per Regulation 5(2)(e) of the EIA Regulations, this NTS provides a non-technical 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

On 01 July 2020, RWE concluded its major asset swap with E.ON, which involved the integration of innogy Renewables in the UK. This established RWE as one of the UK's, and the world's, leading producers of renewable energy.

In the UK, this strengthens RWE's position as a leading energy player. RWE's UK & Ireland footprint extends over 80 sites, located across England, Scotland, Wales and Ireland, employing over 2,600 people and generating over 10% of the UK's electricity needs - enough power for over 10 million homes. This makes RWE the second largest generator in the UK as a whole.

Source: RWE



Scotland	
Installed sites	MW*
10 Onshore wind	213
1 Offshore wind	174
1 Biomass	55
14 Hydro	31
Sites	Total installed capacity*
26	473 MW

RWE has made ambitious commitments to increase the generation of clean, reliable and affordable electricity. Alongside the ambition to be carbon neutral by 2040, RWE continues to invest heavily in wind power and other emerging technologies, such as hydrogen and floating offshore wind. RWE's planned gross growth capex spend 2020-2022 will be €8-9bn globally, of which around 30-35% will be in the UK.

The Applicant is RWE Renewables UK Developments Ltd and has the necessary knowledge and experience in renewable energy to develop the Proposed Development.

Diagram 1.1: About RWE

1.2. Consultants

Natural Power Consultants Limited (Natural Power), the lead consultancy on the project, has been providing expertise to the renewable energy industry since the company was formed in 1995 and is one of the UK's leading renewable energy and infrastructure consultants. As well as development and EIA services, Natural Power also provide expert advice and due diligence consultancy, site construction management and site operation and maintenance.

Natural Power currently employs over 400 people working full time on providing renewable energy services internationally. In Scotland, Natural Power has offices in Stirling and Inverness, and its headquarters 'The Green House' is an award winning, environmentally friendly office building located in Dumfries and Galloway.

Testimony to Natural Power's experience and ongoing commitment to competency and continual improvement, its Planning and Environment department is accredited by the Institute of Environmental Management and Assessment and EIAs prepared by Natural Power display the IEMA quality mark. In addition, Natural Power also operates in formally accredited health and safety (IOSAS 18001), environmental (14001) and quality (9001) management systems.

Other consultants involved in the EIA have provided professional input for Aviation, Noise, Cultural Heritage, Traffic & Transport, Forestry and photography for the Landscape and Visual Impact Assessment (LVIA):

- WPAC - Aviation
- Hayes McKenzie – Noise
- CFA Archaeology Ltd. – Cultural Heritage
- Pell Frischmann – Traffic & Transport
- DGA Forestry LLP - Forestry
- Tom Finnie Photography – LVIA Photography
- Wood Environment & Infrastructure Solutions UK Limited – LVIA Review
- 1st Line Defence – Unexploded Ordnance Study

1.3. Terminology

- The 'Proposed Development': the turbines and all associated infrastructure required for Daer Wind Farm;
- The 'Proposed Development Area': all land within the current application site boundary, including the Main Wind Farm Area and the Primary Proposed Access Route (refer to EIAR Figure 1.1 or Diagram 3.1 of this NTS for example).
- The 'Primary Proposed Access Route': the access routing for Daer Wind Farm – leaves the public road to the south east of the Proposed Development Area and approaches the site making use of existing forestry and wind farm tracks (included as part of the Proposed Development Area);
- The 'Daer Land Portion': Scottish Water Land Ownership, comprising of land south of Daer Reservoir. Wholly within South Lanarkshire;
- The 'Rivox Land Portion': this Forestry and Land Scotland (FLS - formerly Forestry Commission) owned area of commercial forestry sits to the east of the Proposed Development. It was formerly included within the Original Site Boundary and Scoped in 2018 but is not being considered for turbine placement at the EIA report stage. Situated wholly within the Dumfries and Galloway. Some of the Primary Proposed Access Route goes through this land;
- The 'Original Site Boundary': the original application boundary (including Daer and Rivox land portions), which comprised a larger area than the Proposed Development.

- The 'Kinnelhead Development Area': component area of the Proposed Development Area to the southeast of the Original Site Boundary and wholly within Dumfries & Galloway.
- The 'Main Wind Farm Area': the area comprising both the Daer Land Portion and the Kinnelhead Development Area.

2. Environmental Impact Assessment Report

The Environmental Impact Assessment Report (EIAR) has been prepared in line with the EIA Regulations. The EIAR reports the findings made in the Environmental Impact Assessment (EIA) of the Proposed Development. The scope of the EIA was the subject of a formal scoping opinion from the Scottish Government on behalf of Scottish Ministers, which included input from the Local Planning Authorities, which are South Lanarkshire and Dumfries and Galloway Council, and from other consultees including Scottish Environmental Protection Agency (SEPA), NatureScot (formerly Scottish Natural Heritage (SNH)) and Historic Environment Scotland (HES).

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 mitigation measures to be made. A review of planning and other relevant policies was also made to inform the assessment process and ensure the Proposed Development adequately considered local and national policy. The EIAR has been prepared in accordance with the EIA Regulations and follows the structure presented in Table 2.1 below. Where relevant each EIAR chapter considers the baseline environment, the likely significant effects for each phase of the development, any required mitigation and cumulative impacts.

Table 2.1: EIAR Structure

Volume	Heading	Description
1	EIAR Chapter 1: Introduction	Presents the Proposed Development and provides a brief overview of the Applicant and the EIAR.
1	EIAR Chapter 2: Site Selection and Design Evolution	Explains the site selection and the design evolution process that has resulted in the Proposed Development.
1	EIAR Chapter 3: Project Description	Provides a detailed description of the infrastructure associated with the Proposed Development.
1	EIAR Chapter 4: Climate Change, Legislative and Policy Context	Identifies the energy and land use policies and outlines the need for the Proposed Development and its benefits within the context of international climate change agreements and European, UK and Scottish renewable energy policy. Includes analysis of the Proposed Development's carbon payback.
1	EIAR Chapter 5: Landscape and Visual Impact Assessment (LVIA)	Provides an assessment of the Landscape and Visual Impacts of the Proposed Development including Residential Visual Amenity and Night-time effects.
1	EIAR Chapter 6: Ecology	Provides an assessment of the habitats and (non-avian) fauna present within the Proposed Development area and immediate surrounding environment.
1	EIAR Chapter 7: Ornithology	Provides an assessment of the potential effects upon avian species.
1	EIAR Chapter 8: Hydrology, Geology & Hydrogeology	Assesses the effects on the hydrological, geological and hydrogeological environment by the Proposed Development, including private water supplies and peat.
1	EIAR Chapter 9: Cultural Heritage	Provides an assessment of the potential effects of the Proposed Development upon cultural heritage assets.

Volume	Heading	Description
1	EIAR Chapter 10: Noise	Provides an assessment of the potential noise effects of the Proposed Development.
1	EIAR Chapter 11: Traffic and Transport	Provides an indicative construction programme, load requirements and assesses the potential effects upon the transport network resulting from the Proposed Development.
1	EIAR Chapter 12: Forestry	Assesses how the Proposed Development will affect the existing plans for felling, restocking, and proposes suitable amendments to forestry design plan(s) to accommodate the Proposed Development.
1	EIAR Chapter 13: Infrastructure and Aviation	Provides an assessment of the potential effects upon aviation, Ministry of Defence (MoD) interests, communication operations and existing site infrastructure.
1	EIAR Chapter 14: Socioeconomics	Provides an assessment of the potential socioeconomic and tourism effects of the Proposed Development.
1	EIAR Chapter 15: Synergistic effects, Summary of Mitigation and Residual Effects	Assesses the potential synergistic effects created by effects from different subject areas in combination and summarises the proposed mitigation and residual effects of the Proposed Development.
2a	Figures	EIAR Figures except for LVIA
2b	Figures	LVIA Figures only
2c	Figures	LVIA and Cultural Heritage Visualisations
3	Technical Appendices	Provide additional supporting documents and data which inform the EIA.
4	Non-Technical Summary	Provides a high-level summary of the EIA's results in terms that can be understood by a layperson.

The EIAR is also supplemented by an accompanying Planning, Design and Access Statement and a Pre-Application Consultation (PAC) Report.

Copies of the EIA Report may be obtained from RWE Renewables UK Developments Ltd (telephone: 0131 357 2454 / email: nicholas.taylor@rwe.com).

3. Overview of the Proposed Development

The Proposed Development is located in both Dumfries & Galloway and South Lanarkshire local authority areas and lies approximately 8 km west of the nearest town, Moffat, in the southern uplands of Scotland. It is directly adjacent to the southeast of the Daer Reservoir.

The Proposed Development comprises the following main elements:

- Up to 17 wind turbines
 - Turbine foundations
 - External transformer housing
 - Crane pads
- Substation, control building and compound
- Battery/energy storage infrastructure
- Upgraded and new access tracks
- Underground electricity cables connecting infrastructure within the Proposed Development Area
- 2 Anemometry masts
- Signage
- Temporary borrow pits
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure
- Drainage and drainage attenuation measures (as required).

Any public road utilised for access to the site entrance may be utilised subject to upgrades where necessary. Habitat management will be undertaken within the Proposed Development Area. Whilst the land where turbines will be erected is not forested, forest felling and replanting will be undertaken to facilitate road widening along the private access track to allow for construction traffic and component deliveries.

The Proposed Development is expected to have an operational life of 35 years. For the purpose of assessment, the Applicant has considered turbines with a maximum height base to tip not exceeding 180 m.

Figure 1.1 of the EIAR illustrates the Proposed Development's site layout.

Locations (subject to micrositing) and indicative dimensions of the proposed turbines are shown in Table 3.1.

Table 3.1: Turbine details and co-ordinates

Turbine ID	Easting	Northing	Maximum Rotor Diameter (m)	Maximum Tip Height (m)
1	299455	608292	155	180
2	300111	607970	155	180
3	299851	607249	155	180
4	299329	606646	155	180
5	298901	607099	155	180
6	299494	605398	155	180
7	298138	607804	155	180
8	297970	607086	155	180
9	298166	606462	155	180
10	298185	605881	155	180
11	298439	605196	155	180
12	298839	604642	155	180
13	299505	604105	155	180
14	299818	603575	155	180
15	298729	603082	155	180
16	297818	603681	155	180
17	297325	604275	155	180

Source: Natural Power

The information provided 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

This section of the NTS presents the reasonable alternatives to the design of the Proposed Development as required by Regulation 5(2)(d) of the EIA Regulations.

The Applicant has studied many sites across Scotland for the potential for wind energy development. Some are not progressed whilst others make it all the way to application stage and constructed following consent.

4.1. Site Design

The area at Daer Reservoir has been investigated by the Applicant for over 10 years. In that time, a wind monitoring campaign has been undertaken with data collected from two temporary anemometer masts. Feasibility studies have been completed results from those indicated that this site would be a technically and environmentally appropriate location to develop a wind farm. The selection process investigated different designs and aimed to result in a layout that maximises the efficiency of the Proposed Development whilst limiting the potential environmental impacts. The Proposed Development Area has also been assessed by checking it against a number of strategic constraints. Figure 1.3 of the EIAR, illustrates the regional context of the Proposed Development Area, presented below in Diagram 4.1.

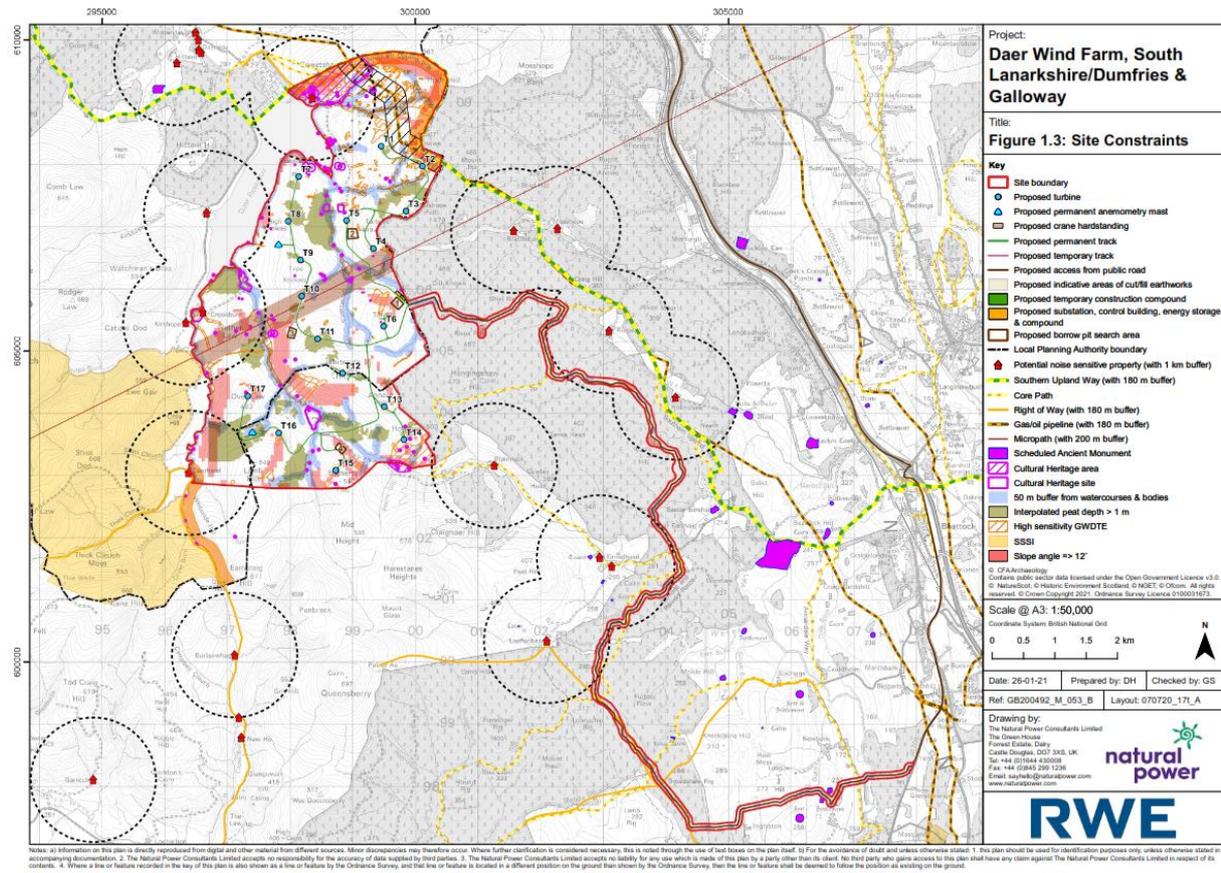


Diagram 4.1: Regional Context (not to scale)

The Proposed Development has been in the design process for several years and the layout has changed over this time even since Scoping, having considered different size turbines and land parcels; see Chapter 2 of the EIAR for full details. Such changes have been influenced by several factors including market mechanisms, landownership, stakeholder feedback, planning policy and potential environmental effects.

Diagram 4.2 illustrates the Proposed Development at Scoping stage in 2018 and considered the Daer land adjacent to the Daer Reservoir and the forested area to the east in Dumfries & Galloway, called Rivox. Turbines were considered at 170 m in height to tip and primary access was envisaged to be from the west.

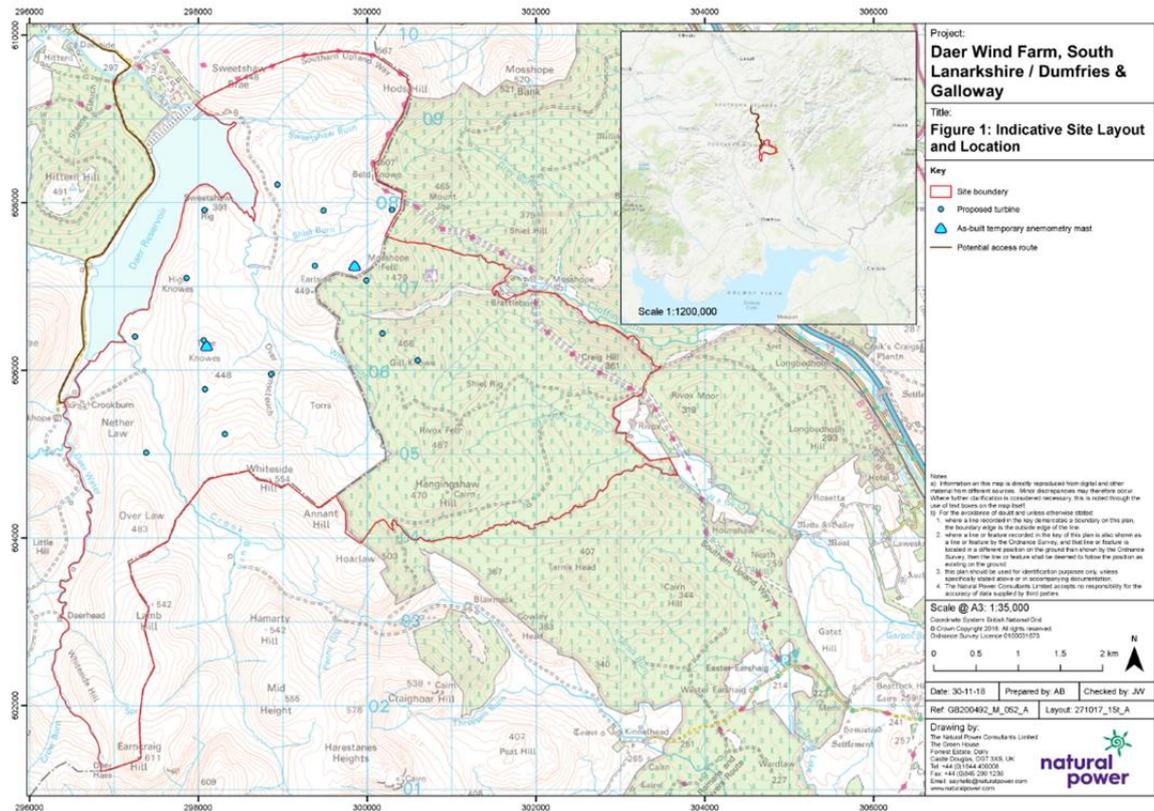


Diagram 4.2: Scoping Layout 2018 (not to scale)

However, during the design process which included desk based and site-based survey work that informed a series of design workshops the final layout for the Proposed Development was established (illustrated in Diagram 4.3 below). Through that process the number of turbines and height had increased from 15 at 170 m tall to 17 at 180 m tall which provided for more renewable electricity generation and greater contribution towards national targets for renewable energy generation and reduction in carbon emissions. Removing the forested area of Rivox from development of turbines significantly reduced the amount of tree felling that would be required. The Rivox Land Portion was replaced with the Kinnelhead Development Area which became available for developing and was surveyed accordingly. The turbines and associated infrastructure including tracks, borrow pits, anemometer masts, crane pads were introduced, relocated and micro-sited within the Proposed Development Area to account for the various site constraints and reduce for example potential landscape and visual effects by moving western turbines further east away from residential receptors on the west.

Source: Daer Wind Farm EIAR Figure 1.1

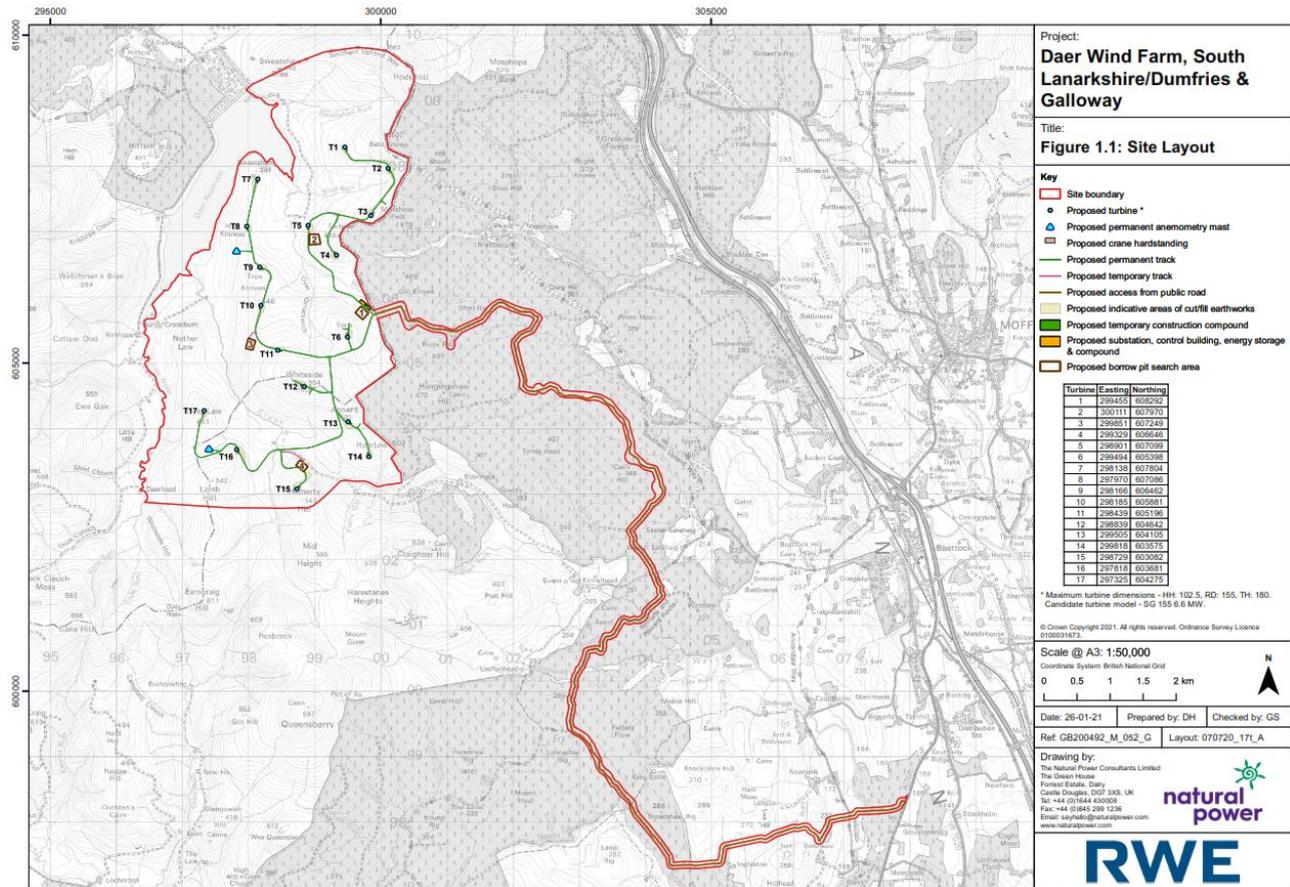


Diagram 4.3: Proposed Development Site Layout (not to scale)

4.2. Planning Policy

4.2.1. Design consideration

According to Scottish Planning Policy criteria, the Proposed Development is located mostly in an “Area with Potential for Wind Farm Development” (Scottish Planning Policy (SPP) Group 3) with localised pockets of land categorised as “Areas of Significant Protection” (SPP Group 2) owing to presence of carbon rich soils/peat. These were taken into account in the design process and avoided as much as possible (see EIAR Figure 8.4 for example). Those parts of the site which fall within Group 2 due to the strategic identification of carbon rich soils have been found after further assessment not to have any significant effects on the reasons for the Group 2 identification. Therefore, the Proposed Development has strategic support in this regard from SPP.

4.2.2. Policy context

Nations including the UK signed the Paris Agreement in April 2016 to make the global plan to limit global warming below 2 °C legally binding and entered into force in November 2016. In addition to the target of keeping global warming below 2 °C of pre-industrial levels, there is a commitment to pursue efforts to limit the temperature increase to 1.5 °C,

The Scottish Government is a devolved administration and is responsible for climate change and energy issues in Scotland. In line with the UK’s agreement with the Kyoto Protocol, the Paris Agreement and the targets set out in the European Directive 2009/28/EC, the Scottish Government brought into force:

- The Climate Change (Scotland) Act 2009;
- The Scottish Energy Strategy 2017; and
- The Scottish Onshore Wind Energy Policy Statement 2017.

These documents are the main drivers in steering Scotland towards a low carbon economy and meeting international targets on climate change and renewable energy generation.

The Scottish Energy Strategy includes the aim to meet 50% of Scotland's whole energy demand from renewables by 2030.

The document outlines a vision to drive Scottish Energy Production for 2050 and stresses the importance of renewable energy in achieving a low carbon economy in Scotland.

More explicitly the Scottish Onshore Wind Energy Policy Statement sets out the role of onshore wind in meeting these targets.

Since the publication of these landmark documents, considerable additional weight has been afforded to the matters raised by them through the publication of amongst other things:

- The Climate Change Plan 2018
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 setting the target for net zero carbon emissions by 2045
- Net Zero - The UK's Contribution to Stopping Global Warming 2019
- Climate Emergency: Scotland
- Reducing emissions in Scotland Progress Report to Parliament Committee on Climate Change October 2020
- Protecting Scotland, Renewing Scotland: The Government's Programme for Scotland 2020-2021
- The Sixth Carbon Budget, Climate Change Committee, December 2020

Both South Lanarkshire and Dumfries & Galloway Councils have announced Climate Emergencies.

4.3. Wind Resource

Wind speed measurements using temporary anemometer masts have been ongoing at the Proposed Development Area. With the relatively high wind speeds recorded, the Applicant is confident that the Proposed Development can generate renewable electricity at this site on an economically viable basis.

4.4. Grid Connection

The Applicant has an agreement with the network operator for a connection to the National Grid in 2027. The connection itself is subject to a separate application to be undertaken by the network operator.

4.5. Summary

The Proposed Development has been located in a suitable area for wind farm development following a site selection process. The rigorous design evolution has taken place over several years through many changes which have reacted to new policies, market mechanisms and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the Applicant believes that the Proposed Development provides optimum use of the Proposed Development Area with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

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

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

5.1. Access

It is likely that the turbine infrastructure will be delivered from docks in Glasgow along the public highway which has been used successfully by many other wind farm developments. Upon reaching the Proposed Development Area there is an existing access route available on private road that has been used for the existing Minnygap Wind Farm. It is proposed to utilise and upgrade this track in conjunction with the network of existing forestry tracks to access the Proposed Development. The ability to use this existing infrastructure minimises disruption and environmental impact.

A Traffic Management Plan (TMP) will be agreed with the highways agency, police and local planning authorities prior to construction starting on the Proposed Development. This will detail any temporary changes to road furniture, timings of deliveries, the construction routes etc. to minimise its impact.

The assessment of potential effects upon traffic and transport is provided in Chapter 11 of the EIAR. It concludes the Proposed Development would lead to a temporary increase in traffic volumes on the study road network during the construction phase and **no significant capacity issues are expected**. A review of the road network has been undertaken to assess the feasibility of transporting the candidate turbines to the site and **no significant issues have been noted**.

5.2. Landscape and Visual Impact

Landscape and visual considerations were taken on board at an early stage of the project as these were understood to be key to project progression. Higher ground surrounding the site restricts the extent of theoretical visibility.

During the design process, residential receptors and the SUW were a key consideration and turbines were positioned to create a buffer and reduce the vertical extent to avoid being overbearing within the view.

Consideration was also given to other wind farm sites in the surrounding area and cumulative considerations. Establishing a sufficient gap from other wind farms was a factor to prevent amalgamation with other nearby cumulative sites. Ensuring the Proposed Development reads in harmony with the existing developments in the area (in particular the existing Clyde Wind Farms and Harestanes Wind Farm developments) is fundamental to considering the potential landscape and visual impacts.

Many elements of infrastructure including the temporary construction compound, substation, control building, energy storage, have been located on the east away from the residential receptors and access tracks designed to avoid ridgelines, steep slopes and large areas of cut and fill as much as possible.

A reduced lighting scheme limiting the number of turbines lit with visible aviation warning lights and the type of light to be used has been agreed with the Civil Aviation Authority.

Further consideration to design from a landscape and visual perspective and the Landscape and Visual Impact Assessment (LVIA) itself is presented in Chapter 5 of the EIAR.

Chapter 5 considers the Proposed Development's residual effects from the operational phase following the mitigation measures which have been incorporated during the design of the proposed layout. Snapshots of the visualisations produced to illustrate the Proposed Development are provided below in Diagram 5.1, Diagram 5.2 and Diagram 5.3 below. The full figures and visualisations which should be referred to for assessment purposes are provided in Volumes 2 (b) & 2 (c) of the EIAR.

Table 5.1: Potentially Significant Landscape and Visual Effects

Impact upon:	Potential Significant Effect
Landscape Character	Localised significant effects on 3 of the 8 landscape character types.
Landscape Designations	Localised significant effects on 2 of the 4 landscape designations within 8 km of the Proposed Development Area. Overall, these would not be significantly affected given the limited extent of effects.
Selected Viewpoints (VP)	From 18 VP, there are 12 VP predicted to receive significant effects. These VP are within 10 km of the Proposed Development.
Residential Receptors	All five of the residential receptors assessed (4 of which are financially involved with the Proposed Development) are predicted to receive a significant effect. This would be due to the openness of the view obtained from each property within 2 km of the proposed turbines and supporting infrastructure would be visible.
Sequential Routes	One route receptor has been assessed as receiving significant effects; the SUW which passes through the northern section of the Proposed Development Area. This route would receive close open views towards the Proposed Development which would occupy a considerable part of the view but for a relatively short section of the overall length of the walk.

Source: EIA Chapter 5: LVIA

Chapter 5 of the LVIA should be referred to for full detailed assessment of each receptor. Settlements assessed in the LVIA have been concluded to receive **no significant effects**. It concludes that there would be **several significant effects to both landscape and visual receptors but these would affect a relatively small number of landscape and visual receptors overall**. The potential significant effects identified in Table 5.1 are restricted to isolated landscape and visual effects upon limited receptors within close proximity of the Proposed Development which are commonly associated with wind farms. Diagrams 5.1-5.3 present snapshots of photomontages produced to illustrate the Proposed Development, these examples being from Queensbury Hill including what the Proposed Development may appear like with visible aviation warning lights on. The South Lanarkshire Council Wind Capacity Study identified several sensitive VP including Queensbury Hill which was a key summit view and a sufficient distance was maintained and the layout designed to reduce vertical extent and stacking of turbines from this view.

Source: EIA Figure 5.33 Viewpoint 17



Diagram 5.1: Baseline Photo (not to scale)

Source: EIA Figure 5.33 Viewpoint 17



Diagram 5.2: Photomontage with the Proposed Development (not to scale)

Source: EIA Figure 5.33 Viewpoint 17



Diagram 5.3: Photomontage with the Proposed Development in low light (not to scale)

5.3. Ecology and Ornithology

The Proposed Development is not located within any ecological or ornithological designation. Assessments of the relevant potential effects upon ecology and ornithology are presented in Chapters 6 and 7 of the EIA respectively. The Proposed Development is assessed to not have any significant effects in this regard.

There are no significant effects, however, additional controls will be put in place during construction through creation of site-specific Construction Environment Management Plan (CEMP), Species Protection Plan and appointing an Environmental Clerk of Works (ECoW) to monitor adherence to such plans.

In addition, a Habitat Management Plan (HMP) is proposed as a benefit of the project to restore modified and damaged bog habitats. This is aligned with the principle of Biodiversity Net Gain.

5.4. Hydrology, Hydrogeology & Geology

Scottish Water is a landowner of part of the Proposed Development Area and a relevant stakeholder as the Proposed Development is adjacent to Daer Reservoir. Scottish Water has been consulted during the EIA and its guidance used in designing the layout to protect watercourses from disturbance and potential effects on water quality during construction and operation. Good practice during construction, adherence to a site-specific CEMP and a site-specific Pollution Prevention Incident Plan (PPIP) as well as appointment of an ECoW have been considered as embedded mitigation and as such **no significant effects** are assessed to result. An assessment of hydrological elements is provided in Chapter 8 of the EIA.

In addition, a HMP is proposed as a benefit of the project which will improve natural flood management.

5.5. Cultural Heritage

Baseline survey work indicated the northern part of the Proposed Development Area in particular has several features of cultural heritage importance. These assets were one reason for the northern extent not being progressed in the design process.

A full assessment of cultural heritage is provided in Chapter 9 of the EIAR. It concludes that **there will be no significant effects upon cultural heritage**. It also recommends a programme of mitigation works. These would be proposed in a Written Scheme of Investigation and include appointing an Archaeological Clerk of Works to offset any potential loss of low sensitivity cultural heritage features within the Proposed Development Area.

5.6. Forestry

Whilst there is no forestry on the ground where wind turbines are proposed, there is commercial forestry along the proposed access from the public road. There would be a net loss of woodland area of 5.13 ha to accommodate the Proposed Development (0.089% of the total study area).

In order to comply with the Scottish Government's Control of Woodland Removal Policy, compensatory planting would be required to mitigate for the loss of woodland area (**5.13 ha**). The Applicant is committed to providing appropriate compensation to replace the loss of woodland area in terms of the relevant policy requirements as applicable at the time. It concludes that that **neither the extent of felling nor the potential environmental impact of this felling will be significant**.

5.7. Noise

The potential effects upon noise are assessed in Chapter 10 of the EIAR. An operational noise assessment has been undertaken by comparing predicted noise levels for a candidate turbine for the Proposed Development with the noise limits derived from baseline noise measurements carried out at a number of properties in the vicinity of the Proposed Development. Predicted noise levels are below these noise limits under all wind speed and wind direction conditions, and therefore **the operational noise impacts are not significant**.

Noise from traffic during the construction and decommissioning phases were assessed against the noise limits set out in BS 5228. Noise from construction activities will be below this noise limit and therefore the **noise from such activities is not significant**.

The increase in noise levels due to construction traffic accessing the site was assessed by comparing the noise levels generated including the construction traffic with the predicted road traffic noise levels in the absence of construction activities. The predicted increase is less than 1 dB and therefore there will be no perceptible impact.

The cumulative operational noise assessment shows that there are no significant cumulative noise impacts predicted, and **no significant cumulative construction noise impacts** are expected.

5.8. Aviation

The potential effects upon aviation are assessed in Chapter 13 of the EIAR. The Civil Aviation Authority (CAA) requires any structure equal to and taller than 150 m in height to be fitted with visible aviation warning lighting. The CAA has been consulted and a lighting scheme agreed. Diagram 5.3 provides an illustration of how the Proposed Development may appear in low light conditions with such aviation warning lighting fitted.

Under the usual planning conditions expected upon consent, the Ministry of Defence (MOD) would be informed of the dates of commencement, completion, final turbine locations and heights. In addition, infra-red aviation lights would be fitted to the turbines as per Ministry of Defence requirements.

The Proposed Development is assessed to have an impact upon the operational ability of Lowther Hill Radar (pictured in Diagram 5.4). The stakeholder (NERL) has confirmed that new radar which will be in service by the end of 2021 would provide suitable mitigation for the Proposed Development. The stakeholder has also confirmed that a planning condition is appropriate for the Proposed Development to ensure a Radar Mitigation Scheme is established.



Diagram 5.4: Lowther Hill Radar Station (pictured top left)

In summary, it is concluded in the EIA that with this mitigation in place there are **no significant residual effects** from the Proposed Development upon aviation interests.

5.9. Eskdalemuir Seismic Array

The MOD operates the Eskdalemuir Seismic Array monitoring station near Langholm. The Proposed Development is approximately 29 km from this asset. Under methodology used by the MOD at present, the Proposed Development would exceed the allocated 'noise' (underground vibration detection) budget for the operational effectiveness of this asset. A national working group is established which is investigating the methodology for assigning budget of which RWE is an active member. Furthermore, a court ruling on 23 December 2020 quashed the MOD's current policy on allocating Eskdalemuir noise budget¹. It is understood that the MOD will consult on a new approach and it is expected that a solution can be attained before the Proposed Development is operational. Therefore, a suitably worded suspensive planning condition should be used to facilitate reaching an agreed position with the MOD.

5.10. Telecommunication Networks

The potential effects of the Proposed Development on Telecommunications are assessed in Chapter 13 of the EIA. There remains one micropath link known to the Applicant which bisects the Proposed Development Area. All proposed turbines are greater than 200 m away other than one which is more than 100 m from the micropath. The operator of the link was consulted on numerous occasions but a response was not received to confirm the potential effect. It is considered that the Proposed Development would not affect the micropath's operation. Additional controls through checks for microwave fixed links will be undertaken pre-construction.

5.11. Public Rights of Way & Core Paths

The potential effects of the Proposed Development on Rights of Way and Core Paths are also assessed in Chapter 13 of the EIA. The Southern Upland Way (SUW) passes through the northern part of the Proposed Development Area and crosses the proposed access from the public road. This section is an existing track and

¹ Available online: <https://www.scotcourts.gov.uk/docs/default-source/cos-general-docs/pdf-docs-for-opinions/2020csoh107.pdf?sfvrsn=0> (last accessed 17/02/2021)

therefore no new effects other than temporary management during construction. The Proposed Development has been designed to avoid new direct effects on the SUW and an exclusion zone buffer of 180 m applied to turbine locations from the SUW.

There are **no significant effects assessed for designated paths** and additional controls during construction will be in place to manage the SUW in the Proposed Development Area for health & safety.

In addition, the **Applicant proposes benefits** of the Proposed Development by funding upgrades of the SUW.

5.12. Public Water Supply

The Proposed Development is within the catchment for the Daer Reservoir. As noted above, Scottish Water has been consulted throughout the process and is also a landowner which has experience of such projects in similar settings elsewhere. Embedded mitigation through following best practice, SW's guidance and a PPIP will ensure there are **no significant adverse effects on public water supply**.

5.13. Underground Assets

A high-pressure gas pipeline runs underground in the northern tip of the Proposed Development Area. **Direct effects have been avoided** and proposed turbines located at least 180 m away. Additional checks for underground assets will be undertaken pre-construction.

5.14. Unexploded Ordnance (UXO)

An early-stage desk-based survey indicated potential risk of UXO in and around the Proposed Development Area due to previous activities in World War 2 (available in EIAR Technical Appendix 13.2). Surveys for UXO undertaken during other survey work resulted in no UXO being found. Additional checks for UXO will be undertaken pre-construction.

5.15. Shadow Flicker

The potential effects by the Proposed Development are assessed in Chapter 13 of the EIAR. Wind turbines are tall structures which can cast long shadows when the sun is low in the sky. Under certain conditions (e.g. clear skies, enough wind for the turbines to be rotating and a low angle of the sun in the sky), observers close to a wind farm could experience a phenomenon commonly known as "shadow flicker", where the rotating turbine blades pass between the sun and the observer creating an intermittent shadow. It is, however, part of the nature of long shadows that they pass any particular point relatively quickly and the effect, if present, lasts a short period of time, due to the movement of the sun across the sky. They are generally only observed in the period after dawn and before sunset as the sun is rising and setting.

There are 5 properties identified which, albeit at the periphery of, are within a zone whereby shadow flicker may be experienced under certain meteorological conditions. Four of these properties are financially involved with the Proposed Development. None of the identified properties have been assessed to experience shadow flicker beyond an acceptable threshold.

Therefore, it has been concluded that the Proposed Development would **not cause a significant adverse effect** upon amenity due to shadow flicker.

5.16. Socioeconomics

Socioeconomics is assessed in Chapter 14 of the EIAR. The Proposed Development has the potential to offer positive socioeconomic benefits nationally, regionally and locally. The Proposed Development has the potential to create job opportunities throughout the construction and operational phases and contribute to meeting the goals of both South Lanarkshire and Dumfries & Galloway Regional Economic Strategies. Local companies such as Natural Power have already been employed in the planning and development stages including EIA. As per the Office for National Statistics' low carbon and renewable energy economy, UK: 2018 survey², it was estimated that 23,100 jobs were supported by Scotland's low carbon and renewable energy sector and supply chain. Employment opportunities will be created during the lifecycle of the project in a relatively rural area and foster their diversification into new industries. The Proposed Development will also help support community initiatives in the surrounding areas. Local businesses will be encouraged to provide services through "Meet the Buyer Events". Furthermore, as a renewable energy asset on Scottish Water land, it accords with the Scottish Water Energy Programme. Hosting private renewable energy investment is one of this utility's four-pronged approach to energy management, stating it hosts private investment in renewables on its land where it provides a good return for customers and is compatible with providing high quality services³.

The Applicant will also be providing a community benefit fund associated with the Proposed Development. From this community benefit investment, the Applicant will fund enhancements to the Southern Upland Way.

The Proposed Development will contribute towards meeting national renewable energy targets and reducing carbon dioxide emissions to help reach the national carbon net zero target.

5.17. Carbon Balance

Peatland is an important carbon store and the Proposed Development will have an impact. A carbon balance assessment report has been produced and SEPA's Carbon Calculator completed, to determine the carbon payback time for the Proposed Development (see EIAR Technical Appendix 4 for full details). The results from the carbon calculator reveal that the Proposed Development would have effectively paid back its expected carbon debt from manufacture, construction, impact on habitat and decommissioning within 1.7 years, if it replaced the fossil fuel electricity generation method. Following the expected **~33 years generation of carbon-free renewable electricity**, it is calculated that the Proposed Development will result in over **3,743,124 tonnes of CO₂ emission savings** when replacing fossil fuel electricity generation.

Since the negative payback period represents approximately 6% of the operational period and the positive contribution is 94%, it is possible to conclude that the positive contribution is statistically significant. The Proposed Development therefore illustrates a **significantly positive** net impact in terms of its contribution towards the reduction of greenhouse gas emissions from energy production.

5.18. Synergistic Effects

An assessment of synergistic effects considers the combination of effects upon different topics together. This is provided in Chapter 15 of the EIAR. It ensures that the assessments provided in the EIAR for each topic are not considered in isolation.

During the construction and decommissioning phases, potential adverse synergistic effects are limited to the Proposed Development Area where there will be heavy plant operations, earth works, forestry operations and

² ONS, Low Carbon and renewable energy economy, UK: 2018. Available online at Low carbon and renewable energy economy, UK - Office for National Statistics (ons.gov.uk) (Last accessed 11/02/2021)

³ Available online: <https://docs.google.com/viewerng/viewer?url=www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Key-Publications/Energy-and-Sustainability/Scottish-Water-Energy-Programme.pdf> (last accessed 23 November 2020)

vehicle movements. These could result in potential synergistic effects upon physical and biological receptors including where there are overlaps between ecology, hydrology, hydrogeology. In isolation each have been assessed in the EIAR as not significant. These effects have been considered together through careful design including embedded mitigation, would be temporary in nature and will be managed through a CEMP, PPIP, TMP and/or Decommissioning Plan. These potential effects will also be monitored by an ECoW and if deemed necessary a Planning Monitoring Officer enforced through planning condition(s). Given the limited number and extent of receptors, the limited effects predicted and their temporary nature, the synergistic effects during construction and decommissioning phases are considered not significant.

Potential synergistic effects during the operational phase relate primarily to overlaps between physical and human receptors and are limited to areas which are within or close to the Proposed Development Area where there may be a combination of potential visual, noise and shadow flicker effects.

The EIAR predicts that there are no significant adverse effects in isolation for noise and shadow flicker but there may be potential significant adverse visual effects upon 5 residential receptors and (users of) the SUW within 2 km of the Proposed Development. It is noted that 4 of the residential receptors are financially involved with the Proposed Development. The residential receptors may experience temporary adverse synergistic effects in this regard however these would be limited by the meteorological conditions required and dependent upon the receptor's line of sight with the Proposed Development. The residential receptors will still have open views clear of wind turbines and the synergistic effect is not considered to be overbearing or alter the area such that it becomes an unpleasant place to reside.

Potential visual effects upon the SUW are dependent upon the views of users as they pass the Proposed Development. Potential direct effects will be managed through siting, site management and signage. The Applicant also proposes enhancement to the sections of the SUW which will improve public access in this regard. It is considered that the synergistic effects during operation are on balance positive.

The inclusion of habitat management proposed by the Applicant, which will restore degraded peat habitat shall also improve natural flood drainage and habitat for some breeding bird species, thus have a positive synergistic effect in this regard.

5.19. Summary

This section of the NTS has presented the potential significant effects of the Proposed Development and the measures taken or put forward to reduce the potential significant effects identified (mitigation). In doing so, it has addressed Regulation 5(2)(b) and 5(2)(c) of the EIA Regulations.

6. Conclusions

This NTS has provided a non-technical summary of the Proposed Development which is assessed in greater detail throughout the EIAR. This NTS has presented the information required of the EIA Regulations in a manner that can be readily understood, as guided by Planning Circular 1/2017.

The Proposed Development has been located in a suitable area for wind farm development following a site selection and design process. The design stages have taken place over several years through many changes which have reacted to new policies, market mechanisms and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the Applicant believes that the Proposed Development provides the best use of the site with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

The EIAR presents the potential effects of the Proposed Development as well as potential synergistic effects which consider such effects in combination. Following the use of mitigation, potential significant adverse effects are restricted to isolated landscape and visual effects upon limited receptors within close proximity of the Proposed Development.

The Applicant has proposed enhancements including habitat management which will restore degraded peat habitat, improve natural flood drainage and improve habitat for some breeding bird species. This is aligned with the principle of Biodiversity Net Gain. The Applicant will fund upgrades to the SUW which will improve public access in the vicinity of the Proposed Development. The Proposed Development will provide socioeconomic benefits through continuing employment opportunities it has already provided at the planning stage throughout the lifetime of the project following consent. Local businesses will be encouraged to provide services through “Meet the Buyer Events” and the Proposed Development will progress the energy management programme of Scottish Water; a national utility. The Proposed Development will contribute towards meeting national renewable energy targets and have a significant positive effect on reducing carbon dioxide emissions to help reach the national carbon net zero target.

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