Volume 4 - Non Technical Summary

South Kyle II Wind Farm

April 2025

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Contents

1. Introduction

An application has been made by Vattenfall Wind Power Ltd (the Applicant) to Scottish Ministers for consent under Section 36 of the Electricity Act 1989 and for deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997, to construct and operate South Kyle II 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 environmental effects that the Proposed Development may create and whether there would be likely significant effects. 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

Vattenfall AB, the ultimate owner of Vattenfall Wind Power Ltd, is a leading European energy company with approximately 20,000 employees, owned by the Swedish state. For more than 100 years Vattenfall has powered industries, supplied energy to people's homes and modernised the way its customers live through innovation and cooperation.

Vattenfall aims to make fossil-free living possible within a generation and is leading the transition to a more sustainable energy system through growth in renewables and climate-smart energy solutions for its customers.

Vattenfall has over 50 wind farms, onshore and offshore, across five countries and pioneered co-locating wind with solar and batteries. Vattenfall has been in the UK since 2008, investing over £3.5 billion in enough wind to power nearly a million British homes. Vattenfall owns the largest onshore wind farm in England and Wales, Pen y Cymoedd, and in Scotland operates wind farms on the Isle of Skye and in Aberdeenshire. At a local level Vattenfall developed the consented South Kyle wind farm, near Dalmellington, lying within both East Ayrshire and Dumfries and Galloway, which began commercial operation in early 2023.

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, just 21 km from the Proposed Development.

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 (ISO 45001), environmental (ISO 14001) and quality (ISO 9001) management systems.

Other consultants involved in the EIA have provided independent professional input for Planning, Aviation, Noise, Cultural Heritage, Forestry, Socioeconomics and Landscape and Visual Impact Assessment (LVIA):

- ReAmp – Planning
- PagerPower – Aviation
- TNEI – Noise
- GUARD Archaeology Limited – Cultural Heritage
- DGA Forestry – Forestry
- WSP - LVIA
- Tom Finnie Photography – LVIA Photography
- Biggar Economics – Socioeconomics

1.3. Terminology

The 'Proposed Development': the turbines and all associated infrastructure required for South Kyle II Wind Farm;

The 'Proposed Development Area': all land within the current application site boundary, including the main wind farm area (refer to EIAR Volume 2 Figure 1.1 or Diagram 4.1 of this NTS for example).

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 Energy Consents Unit (ECU) on behalf of Scottish Ministers. This included input from East Ayrshire Council, Dumfries and Galloway Council[1] as the Local Planning Authorities, and from other consultees including Scottish Environment Protection Agency (SEPA), NatureScot (formerly Scottish Natural Heritage (SNH)) and Historic Environment Scotland (HES) (formerly Historic Scotland). A scoping opinion was sought from Scottish Ministers in March 2022 and received from ECU on 29 June 2022.

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. Each EIAR chapter considers the baseline environment, the likely significant effects for each phase of the development, and, where relevant, any required mitigation and cumulative impacts.

[1] Note that only a small portion of the site access road enters into the administrative boundaries of Dumfries and Galloway Council. The majority of the development will be carried out within East Ayrshire Council.

Table 2.1: EIAR Structure

Volume	Heading	Description
1	EIAR Chapter 1: Introduction	Introduces 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.
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 and Biodiversity	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.
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: Aviation and Other Effects	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

Volume	Heading	Description
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.

Source: Natural Power

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

USB sticks of the entire application material are available on request, free of charge. Hard copies of the EIA Report are also available, on request, at a charge of £1,200 per hard copy (telephone: 07855173381/ email: simon.lejeune@vattenfall.com).

3. Overview of the Proposed Development

The Proposed Development is located south-east of the B741, south east of Dalmellington and south-west of New Cumnock, in East Ayrshire. The maximum elevation within the Proposed Development Area is c. 516 m above sea level. The Proposed Development Area covers an area of approximately 21.8 hectares.

Within the Proposed Development Area, the River Doon has the largest catchment with two primary watercourses known as the Mossdale Burn and the Linn Water that both feature multiple tributaries. The River Nith is situated to the eastern extent of the Proposed Development Area. In relation to the Proposed Development Area the River Nith flows in a northern direction but has multiple tributaries within the Proposed Development Area, such as Loup Burn, Powkelly Burn, Peddinnan Burn and other unnamed watercourses. The River Dee is situated to the southern extent of the Proposed Development Area. The named watercourses draining the Proposed Development into the River Dee catchment are the Prickeny Burn, Pougherygown Burn, Stonecross Burn, Pochriegavin Burn, Saugh Gutter, Black Burn, Murray's Burn and Brownhill Burn.

Located to the south east of Dalmellington, the Proposed Development Area is occupied predominantly by commercial plantation forestry. As such, changes to the existing landowner's plans for forest felling and replanting will be undertaken to facilitate the Proposed Development.

The Proposed Development's generating capacity of renewable electricity is not fixed and will be subject to final wind turbine availability and procurement but is anticipated to be around 92.4 MW , with an additional capacity of up to 50MW of battery/energy storage also proposed within the substation compound.

The Proposed Development comprises the following main elements:

- Up to 11 wind turbines
- Turbine foundations
- External transformer housing
- Crane pads
- Substation, control building and compound
- Battery/energy storage infrastructure
- Upgraded and new access tracks

- Underground cables
- Signage
- Temporary batching plant area(s)
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure
- Drainage and drainage attenuation measures (as required).

Diagram 3.1: Concrete turbine foundation (South Kyle Wind Farm)

The public road network up to the site entrance is considered capable of utilisation, although certain parts of the public road may be subject to upgrades where necessary. Habitat management and enhancement measures will be undertaken in the Proposed Development Area.

The Proposed Development is expected to have an operational life of up to 40 years. For the purpose of assessment, the Applicant has considered turbines with a maximum height (base to blade tip) not exceeding 200 m.

Volume 2a, Figure 1.1 of the EIAR illustrates the Proposed Development's site layout.

Locations (subject to micro siting) and maximum tip height dimensions of the proposed turbines are shown in Table 3.1.

Table 3.1: Indicative Turbine details and co-ordinates

Turbine ID	Easting	Northing	Maximum Tip Height (m)
1	251586	606353	200
2	251796	606892	200
3	252126	606495	200
4	252210	605653	200
5	252292	607281	200
6	252614	606862	200
7	253406	606364	200
8	253283	605872	200
9	253962	606846	200
10	254043	605697	200
11	252533	606114	200

Source: Natural Power

The information provided in this section of the NTS satisfies the requirement of Regulation 5(2)(e) of the EIA Regulations to provide a summary of the Proposed Development. A more detailed description of the Proposed Development is provided in Volume 1 Chapter 3 of the EIAR.

4. Reasonable Alternatives

The Applicant has an ongoing search regime seeking sites across Scotland which may have potential for renewable energy development. Some are not progressed whilst others make it all the way to application stage and are constructed following consent.

The search regime culminates in a range of sites that progress to a desk-based and/or site visit feasibility study. The rigorous feasibility studies result in the exclusion of sites which offer the least potential to accommodate wind farm development. The short-list of remaining sites included the Proposed Development Area.

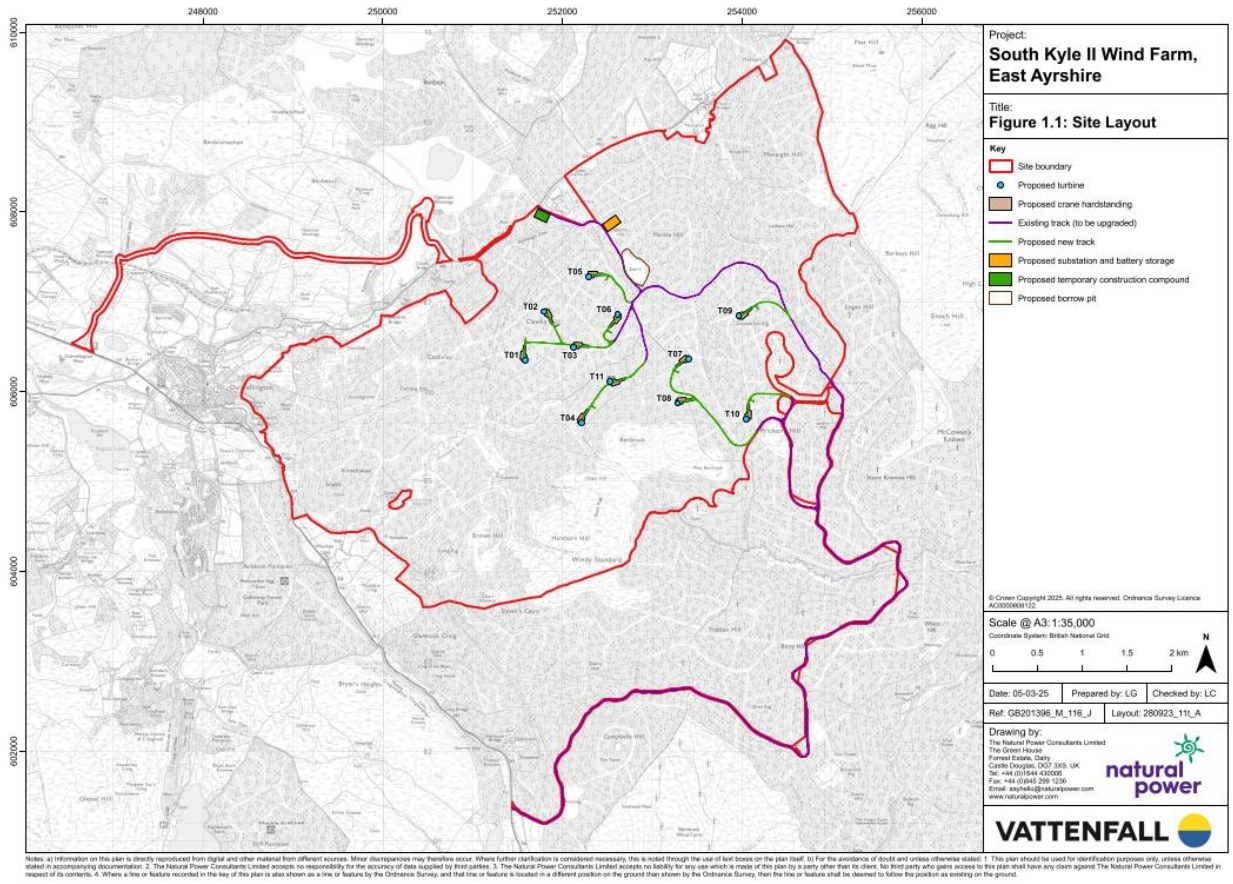
Sites which provide a positive outcome in the feasibility study are progressed to an in-depth site specific suitability assessment and eventually, if appropriate, to an application to the relevant determining authority. Factors influencing the suitability of the site included:

- Suitable wind speeds;
- Suitable separation distance from dwellings and settlements;
- Proximity to sensitive landscape and visual receptors;
- Reasonably close proximity to viable grid connection;
- Willing landowner(s);
- Potential to use existing infrastructure, as far as practical;
- A feasible route for transporting components to site by the public road network;
- Suitable land area to accommodate generating capacity and civil engineering requirements; and
- No significant environmental constraints preventing development.

The results indicated that the Proposed Development Area would be a technically and environmentally appropriate location to develop a wind farm.

4.1. Site Design

Environmental survey of South Kyle II, for example for birds and other species, peat depth, archaeology and other matters of interest, were carried out over a period from 2021-2022. As the data gathered became available, the results of the surveys enabled the EIA team to investigate 15 different design iterations before settling on the final design which 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. Volume 2 Figure 1.1 of the EIAR, illustrates the site location and layout of the Proposed Development Area, presented below Diagram 4.1.

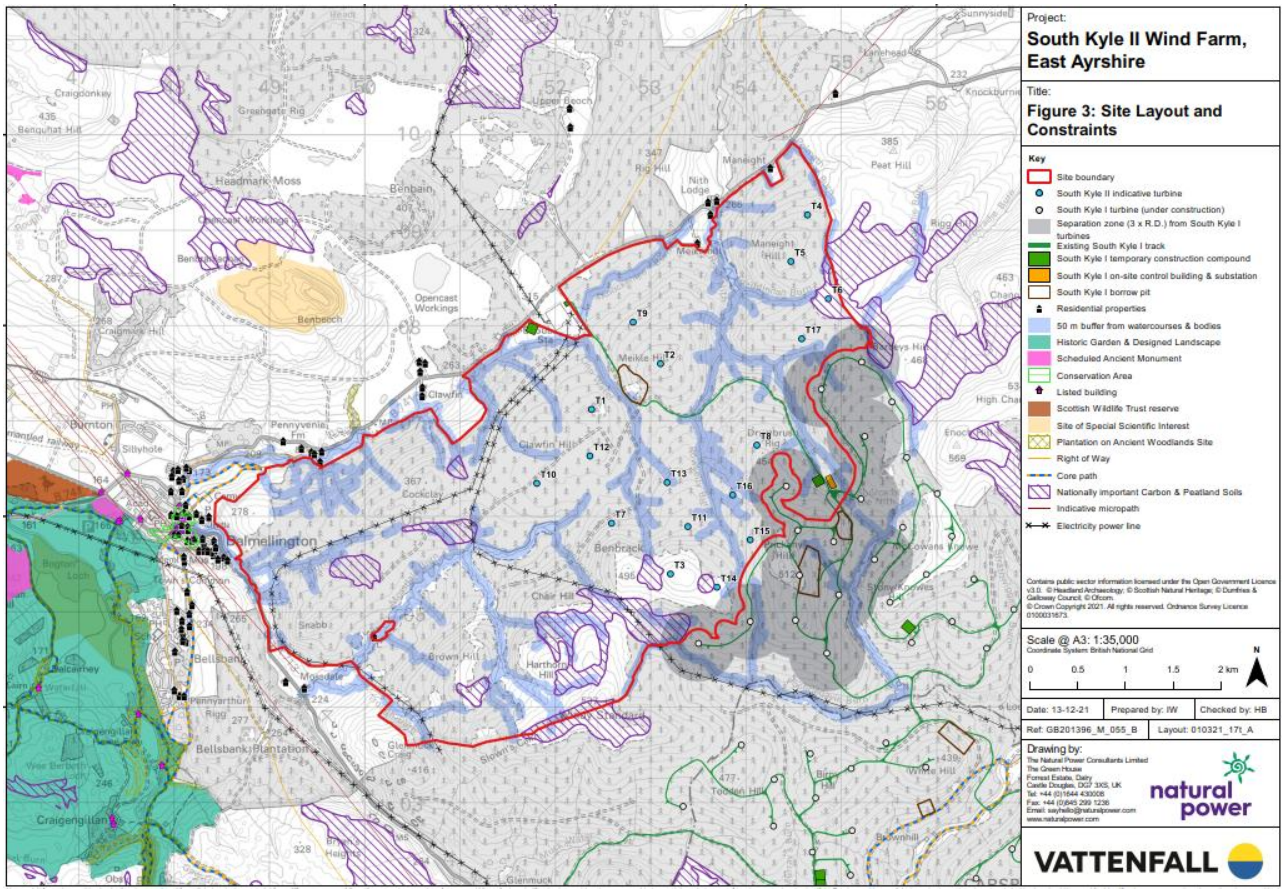


Source: Natural Power

Diagram 4.1: Site layout and location (not to scale)

The Proposed Development has been in the design process for a considerable time and the layout has evolved iteratively, including responding to issues raised during and after Scoping, having considered different number and size of turbines; see Volume 1 Chapter 2 of the EIAR for full details. Such changes have been influenced by several factors including economics, stakeholder feedback, planning policy and seeking to avoid or reduce significant adverse environmental effects.

Diagram 4.2 illustrates the Proposed Development at Scoping stage in 2022. This layout represented what was likely to provide the most benefit in terms of electricity generation, climate mitigation, net biodiversity gain, supply chain, and community benefit (£/MW), but would also be the 'worst case' with regard to potential significant adverse environmental effects. The Scoping layout, therefore, comprised the largest extent of land and the tallest and greatest number of turbines which was expected to be put forward for consent resulting in an initial proposal for up to 17 turbines, tip heights of between 180 and 220 m.



Source: South Kyle II Scoping Report 2022

Diagram 4.2: Scoping Layout 2022 (not to scale)

Through the design and consultation process, the number of turbines and their proposed height decreased from 17 at up to 220 m tall to 11 at up to 200 m tall, balancing the various site constraints with the scale of development required to be economically viable. The turbines and associated infrastructure, including tracks, crane pads were introduced, relocated and micro-sited within the Proposed Development Area to account for the various site constraints. The EIAR outlines in extensive detail how environmental matters and stakeholder feedback have influenced the process, however prominent issues which affected the design include:

- reducing potential landscape and visual effects by removing turbines and decreasing their height;
- avoid Instrument Flight Procedure (IFP) impacts with Glasgow Prestwick Airport (GPA);
- adhere to Overhead line (OHL) restrictions with avoidance of buffer from OHL;
- Reducing noise effects by removal of turbines close to the northern site boundary, increasing distance from properties on roadside; and
- minimising impacts on watercourses and the aquatic environment.

4.2. Planning Policy

4.2.1. Policy context

International climate policy

As of 31st January 2020, the UK ceased being a member of the European Union (EU). A transitional period was in place until the end of 2020, during which time the UK remained bound by EU rules, including the renewable targets noted in the following paragraphs. Following the end of the transitional period, Section 2 of the European Union (Withdrawal) Act 2018[2] (as amended) provides that all EU derived domestic legislation continues to have effect after exit day.

EU energy legislation and policy, like that in the UK, is driven by international co-operation to cut the emission of greenhouse gas emissions, as a means of combating climate change. This includes the 'Paris Agreement' (United Nations, 2015)[3], established through the 21st session of the Conference of Parties ('COP 21'). Ratified in the UK on 17th November 2016, the Paris Agreement sets out the ambition of holding the increase of global average temperature to 'well below 2 °C' and pursuing efforts to limit temperature increase to 1.5 °C. The COP26 'Glasgow Climate Pact'[4] published in 2021 reaffirms the Paris Agreement temperature goal of holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

The United Nations Emissions Gap Report 2023[5], is the fourteenth in a series of reports comparing where greenhouse gas emissions are heading, against where they need to be and highlighting the ways to close the gap. This latest report shows that new national climate pledges combined with other mitigation measures put the world on track for a global temperature rise of 2.5 - 2.9°C by the end of the century. The report further notes in 2023 that 86 days were recorded with temperatures over 1.5°C above pre-industrial levels. September 2023 was the hottest recorded month, with global average temperatures 1.8°C above pre-industrial levels. That is well above the goals of the Paris Agreement and the Glasgow Climate Pact and would lead to catastrophic changes in the Earth's climate. To keep global warming below 1.5 °C this century, the aspirational goal of the Paris Agreement, this report states that the world needs to cut annual greenhouse gas emissions by 28-42 per cent in the next six years.

Domestic climate law and policy

The Scottish Government is a devolved administration and is responsible for law and policy relating to climate change in Scotland. In line with the UK's agreement with the Kyoto Protocol and the Paris Agreement, the Scottish Government brought into force:

- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[6];
- The Climate Change (Scotland) Act 2009[7];

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[2] European Union (2018) Section 2 of the European Union (Withdrawal) Act 2018 (as amended). [Online] Available at http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted Accessed 03/04/24]

[3] United Nations (2015) Conference of Parties ('COP 21'). [Online] Available at . https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement Accessed 03/04/24]

[4] United Nations (2021) The COP26 'Glasgow Climate Pact'. [Online] Available at https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact-key-outcomes-from-cop26 Accessed 03/04/24]

[5] Emissions Gap Report 2023 | UNEP - UN Environment Programme Accessed 03/04/24]

[6] Scottish Government (2019) The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. [Online] Available at https://www.legislation.gov.uk/asp/2019/15/enacted Accessed 03/04/24]

[7] Scottish Government (2009) The Climate Change (Scotland) Act 2009. [Online] Available at https://www.legislation.gov.uk/asp/2009/12/contents Accessed 03/04/24]

- The Scottish Energy Strategy (December, 2021)[8];

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.

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 Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland' (2021)[9];
- The 'Progress in Reducing Emissions in Scotland 2023 Report to Parliament' (CCC, March 2024)[10];
- The Scottish Climate Change Plan (February, 2018)[11];
- Climate Change Monitoring Report 2023[12];
- Update to the Climate Change Plan 2018 - 2032: Securing a Green Recovery on a Path to Net Zero (December, 2020)[13];
- Scotland's Energy Strategy Position Statement (2021)[14];and
- The 'Onshore Wind Policy Statement 2022[15].
- Draft Energy Strategy and Just Transition Plan (2023) [16]

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.

Planning policy

The Planning etc. (Scotland) Act 2006 amended the 1997 Act to put a National Planning Framework on a statutory footing. The current edition, the fourth edition ('NPF4'), was adopted on 13 February 2023. NPF4 sets out a strategy for Scotland's development over the next 20 to 30 years, providing a national context for development plans and planning decisions, to inform wider programmes of government, public agencies and local authorities.

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[8] Scottish Government (2021) The Scottish Energy Strategy. [Online] Available at https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/ [Accessed 03/04/24]

[9] Scottish Government (2021) The Scottish Government's 'Programme for Scotland 2021-2022 'A Fairer, Greener Scotland [Online] Available at https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/ Accessed 03/04/24]]

[10] Committee on Climate Change (2024) The 'Progress in Reducing Emissions in Scotland 2023 Report to Parliament'. [Online] Available at Progress in reducing emissions in Scotland - 2023 Report to Parliament - Climate Change Committee (theccc.org.uk) / Accessed 25/07/24]

[11] Scottish Government (2018) The Scottish Climate Change Plan [Online] Available at https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/ [Accessed 03/04/24]]

[12] Scottish Government (2021) Climate Change Monitoring Report 2023. [Online] Available at: Climate change monitoring report 2023 - gov.scot (www.gov.scot) [Accessed 03/04/24]

[13] Scottish Government (2020) Update to the Climate Change Plan 2018 - 2032: Securing a Green Recovery on a Path to Net Zero. [Online] Available at (https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/ [Accessed 03/04/24]]

[14] Scottish Government (2021) Scotland's Energy Strategy Position Statement. [Online] Available at https://www.gov.scot/publications/scotlands-energy-strategy-position-statement/ Accessed 03/04/24]]

[15] Onshore wind: policy statement 2022 - gov.scot (www.gov.scot) Accessed 03/04/24]

[16] Scottish Government (2023) The Scottish Government's " Energy Strategy and Just Transition Plan" [Online] Available at Draft Energy Strategy and Just Transition Plan [Accessed 08/04/25]

NPF4 includes centralised development management policies which are to be applied Scotland wide, and also provides a policy direction to Planning Authorities with regard to the content and preparation of Local Development Plans (LDPs). LDPs should accord with NPF4. East Ayrshire Council adopted its LDP, The East Ayrshire LDP 2 (EALDP2), on 8 April 2024. Dumfries and Galloway Local Development Plan 2 (DGLDP2) was adopted on 3 October 2019[17]. NPF4 together with the EALDP2 and DGLDP2 constitute the applicable 'development plan' containing planning policy applicable to the Proposed Development. It should be noted where NPF4 precedes an adopted Development Plan, policy directions in the older LDP which are incompatible with the policy direction in NPF4, then NPF4 assumes precedent until that particular development plan is updated. In this instance policy direction in NPF4 assumes primacy over any incompatible policy direction in DGLDP2.[18]

The Proposed Development is classed as a National Development under NPF4 as it will have an installed electrical generating capacity in excess of 50 megawatts (MW). The Proposed Development will be assessed by the decision-maker against a number of relevant policies including, but not limited to, NPF4 Policy 11 (Energy), NPF4 Policy 1 (Tackling the Climate and Nature Crisis) and Policy RE1 (Renewable Energy) of EALDP2. Generally speaking, significant weight is to be accorded to the contribution made by proposals for additional electricity generation from renewables and electricity transmission capacity towards renewable energy and climate emission reduction targets, as this is "*fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas*."

4.3. Wind Resource

Wind speed measurements using a Lidar and historic data from temporary anemometer masts associated with South Kyle Wind Farm have been used for the Proposed Development. 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. The anticipated load factor at South Kyle II is between 38 and 42%, which compares favourably to the UK average figure for onshore wind of 26.45%.[19] Load factors are a ratio used in the electricity industry to express the actual electrical output of a power plant compared to its theoretical maximum over a given period (typically an average year) and is used to make comparisons of the relative efficiencies of different facets of the same technology (e.g. location or turbine model for onshore wind) or comparing different types of power generating technology.

4.4. Grid Connection

The Applicant has consulted with the network operator and agreed upon a short connection to link the Proposed Development with the National Grid at New Cumnock substation. Electricity generated by the Proposed Development will be exported from the onsite substation to New Cumnock substation.

The connection itself will be subject to a separate design and routing process, and planning application and environmental impact assessment all 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 months through many changes which have reacted to environmental data gathered on the site, new policies, market dynamics and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the

[17] in the event of any incompatibility between a provision of NPF4 and a provision of an LDP adopted before NPF4 the provision of NPF4 is to prevail

[18] The Scottish Planning System - Learning to live with NPF4 | Brodies LLP (Accessed on 24 April 2025)

19 Renewable UK, https://www.renewableuk.com/page/UKWEDExplained (accessed on 15 November 2021).

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)(e) of the EIA Regulations in summarising the reasonable alternatives studied by the Applicant.

5. Potential Effects and Mitigation

This section of the NTS presents the potential significant effects of the Proposed Development, identifying any likely significant effects on the environment and the measures taken or put forward to reduce those 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 King George V docks in Glasgow or Port of Ayr along the public highway. The proposed route has been used to transport wind farm components successfully by a number of other wind farm developments. The Proposed Development's primary option for abnormal load access to the Proposed Development Area is from the existing A713 into the operational South Kyle Wind Farm. These roads will be utilised and upgraded where necessary. An assessment of the public road access is provided in Volume 1 Chapter 11: Traffic & Transport.

A Traffic Management Plan (TMP) will submitted for approval by the local planning authorities in consultation with Transport Scotland and Roads Authority and police prior to construction starting on the Proposed Development. The TMP will detail any temporary changes to road furniture, timings of deliveries, the construction routes etc. to minimise the impact of construction traffic on the local road network.

The assessment of potential effects upon traffic and transport is provided in Volume 1 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**.

Diagram 5.1: Plant in snow (South Kyle)

5.2. Landscape and Visual Impact

The Landscape and Visual Impact Assessment (LVIA) and the design of the South Kyle II Wind Farm has taken account of relevant legislation, consultation and national and local planning requirements in relation to wind farm development. The LVIA accords with best practice and has been undertaken by chartered landscape architects at WSP.

At a local level, the South Kyle II Wind Farm is located within the Southern Uplands and Forestry, in an area already influenced by wind farm development. During the design process, views from residential receptors were key design considerations and turbines were positioned further back from these sensitive receptors to reduce the vertical extent and avoid being overbearing within the view or alter the area such that it becomes an unpleasant place to reside. 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 all visual impacts are negative. Although significant landscape effects are to be expected, the extent of these is not unusual for wind farm development and the large scale and simple characteristics of this landscape reduce the susceptibility of this landscape to the Proposed Development.

There would be no significant effects on any landscape planning designations including the Doon Valley Local Landscape Area (LLA) or Wild Land Areas within the Study Area.

Many elements of infrastructure, including the temporary construction compound, substation, control building, and energy storage, have been located to avoid proximity to residential receptors and to avoid ridgelines, steep slopes

and large areas of cut and fill as much as possible. These temporary construction related effects are also subject to reinstatement to remove the most detrimental aspects of impact.

There would be significant visual effects on the views experienced by people within a localised area including road users and some local residents along the B741, local footpaths, hill summits, and views from Auchenroy Hill.

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 (see Volume 1 Chapter 13 for proposed lighting scheme).

The approved Lighting Strategy for the aviation warning lights includes mitigation to ensure there would be no significant night-time effects.

Volume 1 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 5.2, Diagram 5.3 and Diagram 5.4 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.

Diagram 5.2: Extract of photomontage visualisation from A713 West of Dalmellington (See Figure 5.17 of the EIAR for complete visualisation)

Diagram 5.3: Extract of photomontage visualisation from Bogton Loch (See Figure 5.18 of the EIAR for complete visualisation)

Diagram 5.4: Extract of photomontage visualisation from Craigengillan Estate (former Dark Sky Observatory Site) (See Figure 5.20 of the EIAR for complete visualisation)

Volume 1 Chapter 5 of the LVIA should be referred to for full detailed assessment of each receptor. It concludes that the Proposed Development would **significantly** affect parts of three landscape character areas within 2-5km of the proposed turbines. Whilst it would not significantly affect the integrity of the Doon Valley LLA and its overarching 'summary statement of character and qualities'. There would be a **significant** effect on two of the 24 Special Landscape Qualities (SLQs) that contribute to the Doon Valley LLA. Both of these relate to views from the wider estate of Craigengillan Garden and Designed Landscape (GDL) and the perceived setting of Dalmellington viewed from the north and west.

The Proposed Development would **significantly affect** the views from part of Dalmellington (northern extents) and Burnton settlements, part of Craigengillan GDL, part of the A713 Galloway Tourist Route and the B741, and three Core Paths and Rights of Way within a localised area mainly to the north and west of the Proposed Development with the effects often overlapping with existing / consented wind farm development.

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 Volume 1 Chapters 6 and 7 of the EIAR respectively. The Proposed Development is assessed to **not have any significant effects** in this regard.

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

Diagram 5.5: Checking camera traps at South Kyle

In addition, a Biodiversity Enhancement and Restoration Plan (BERP) is proposed as a benefit of the project to restore modified and damaged bog habitats.

5.4. Hydrology, Hydrogeology & Geology

SEPA, East Ayrshire Council and other engaged stakeholders have been consulted during the EIA and their 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 Volume 1 Chapter 8 of the EIAR.

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

5.5. Cultural Heritage

A full assessment of cultural heritage is provided in Volume 1 Chapter 9 of the EIAR. It concludes that the Proposed Development would have **no likely significant effects** on cultural heritage.

Given the presence of prehistoric remains within the Proposed Development Area and the relatively undisturbed nature of the land, there is some potential for the survival of hitherto unrecorded cultural heritage remains. East Ayrshire Council may, therefore, require a programme of archaeological works to establish the presence or absence of archaeological remains within those areas of the Proposed Development that will be subject to ground disturbance.

Given that no significant indirect effects upon the settings of cultural heritage sites are anticipated, it is unlikely that East Ayrshire Council should require any mitigation of indirect effects that arise from the Proposed Development.

5.6. Forestry

The Proposed Development is located within commercial forestry. The forestry assessment has identified that areas of forestry would require to be felled for the construction and operation of the Proposed Development.

Forestry is not being regarded as a receptor for EIA purposes. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as storm damage, pests or diseases; and external factors, such as a wind farm or other developments. The forestry proposals are interrelated with environmental effects, which are assessed separately in other chapters of the EIA Report.

The forestry proposals have been developed to identify areas of forest to be removed for the construction and operation of the Proposed Development; and those areas which may or may not be replanted on site.

The Forestry Study Area (FSA) extends to approximately 2,209.6 ha and is comprised woodlands within the National Forest Estate managed by Forest and Land Scotland. The forests are comprised largely of commercial conifers with areas of mixed broadleaves and open ground planted in the late 1990s. The crops are in the mid restructuring phase and there have been recent felling and replanting programmes.

A total of 210.1 ha will require to be felled to enable the construction and operation of the Proposed Development. The majority of the areas to be felled for the Proposed Development would be restocked except for land required for the Proposed Development's permanent infrastructure and land to be left unplanted for forest management; or forest design purposes.

On site replanting of felled areas and restoration of habitat within the woodlands results in a decrease in the area of stocked woodland. There would be a decrease in 70.9 ha within the FSA and as such compensatory planting will be required.

Diagram 5.7: Keyhole Felling Operations at South Kyle

5.7. Noise

The potential effects upon noise sensitive receptors are assessed in Volume 1 Chapter 10 of the EIAR.

A noise assessment was undertaken to determine the likely significant noise effects from the operational phase of the Proposed Development, on nearby noise sensitive receptors which were identified as residential properties.

As construction noise activities will be undertaken during typical working hours, it was agreed with East Ayrshire Council (EAC) that a detailed construction noise assessment was not required. However, typical mitigation is recommended via the use of best practice during construction and the preparation of a CEMP which considers noise.

Background noise data previously collected for Enoch Hill Wind Farm at four locations proximate to the Proposed Development was used to establish background noise levels (in the absence of any wind turbine noise) and to set the Total ETSU-R-97 Noise Limits at the nearest receptors to the Proposed Development.

As the hub heights of the Proposed Development is circa 115 m and the background noise levels on Enoch Hill Wind Farm referred to wind speeds up to 82 m, an additional wind shear analysis was undertaken and the background and limits in this report are valid for 115 m.

The operational noise assessment was undertaken in three stages, which involved setting the Total ETSU-R-97 Noise Limits (which are limits for noise from all wind farms in the area) at the nearest noise sensitive receptors, predicting the likely effects (undertaking a cumulative noise assessment where required) and setting Site Specific Noise Limits for the Proposed Development.

Predicted cumulative operational noise levels indicate that for noise sensitive receptors neighbouring the Proposed Development, cumulative wind turbine noise (which considers noise predictions from all nearby operational, consented and proposed wind farms and the Proposed Development) would meet the Total ETSU-R-97 Noise Limits at all Noise Assessment Locations.

The Total ETSU-R-97 Noise Limit is applicable to all operational and consented wind farms in the area, so Site Specific Noise Limits have also been derived to control the specific noise from the Proposed Development. In accordance with the guidance in Institute of Acoustics (IOA) Good Practice Guidance (GPG).

Predictions of wind turbine noise from the Proposed Development have been made in accordance with good practice using a candidate wind turbine, the Siemens-Gamesa SG 6.6-170 6.6 MW with a hub height of 115 m. Predicted operational noise levels from the Proposed Development indicate that, for noise sensitive receptors neighbouring the Proposed Development, the Site Specific Noise Limits at all Noise Assessment Locations (NAL) would be met, subject to the adoption of mitigation measures in the form of low noise mode operation when required for the candidate turbine, and effects are therefore deemed to be **not significant**.

The use of Site Specific Noise Limits would ensure that the Proposed Development could operate concurrently with other operational wind farm developments in the area and would also ensure that the Proposed Development's individual contribution could be measured and enforced if required.

The wind turbine model was chosen in order to allow a representative assessment of the noise impacts. Should the Proposed Development receive planning permission, the final choice of wind turbine would be subject to a competitive tendering process. The final choice of wind turbine would, however, have to meet the Site Specific Noise Limits presented in the noise assessment.

5.8. Aviation

The potential effects upon aviation are assessed in Volume 1 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 following aviation lighting scheme has been agreed with the CAA:

- Medium intensity steady-red (2,000 candela) are to be fitted on the nacelles of turbines T01, T04, T05, T09 and T10.
- A second 2,000 candela light on the nacelles of the above turbines to act as alternate in the event of a failure of the main light (both lights should not be lit at the same time).
- Lights are capable of being dimmed to 10% of peak intensity when the lowest visibility (as measured at suitable points around the wind farm by visibility measuring devices) exceeds 5 km.
- A scheme of infra-red lighting to be agreed with the MOD to account for operators who carry night vision device capability (dimming permission is applicable only to visible lights, not infra-red lighting)

Under the usual planning conditions expected in the consent, if granted, 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 and also the Primary Surveillance Radar (PSR) at Glasgow Prestwick Airport (GPA). Radar Mitigation Schemes will be agreed by the Applicant and NATS and between the Applicant and GPA to address the effects of the Proposed Development on these radars. These Radar Mitigation Schemes can be secured through planning conditions.

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

5.9. Telecommunication Networks

Telecommunications and broadcasting network operators were consulted during the EIA scoping exercise. Openreach responded to confirm that the Proposed Development should not cause interference to BT's current and presently planned radio network. The Joint Radio Company Limited also responded to consultation during EIA scoping indicating that links would not be affected. It is acknowledged that the turbine layout has changed since EIA scoping however it appears that these particular assets do not feature within the Proposed Development Area and therefore it is expected that these stakeholders will remain unaffected.

With the information available to the Applicant, the Proposed Development does not directly affect microwave fixed links and the potential effect on microwave fixed links is **not significant**. Pre-construction checks would be undertaken to ensure this still remains the case nearer the time of construction.

5.10. Public Rights of Way and Core Paths

There are no core paths within or that directly dissect the Proposed Development Area as advised by East Ayrshire Council[20]. There are also no public rights of way that will be directly impacted by the Proposed Development.

Although members of the public have the right to roam land in Scotland under the Land Reform (Scotland) Act 2003 there will be restricted access during the construction phase for Health & Safety purposes. It is expected that the Proposed Development Area will be managed during the construction phase under the Construction (Design and Management) Regulations 2015.

There are **no direct adverse effects** upon Core Paths or Public Rights of Way. Existing forestry paths and tracks would be appropriately managed during construction for health and safety purposes.

[20] Rights of way, core paths and footpaths · East Ayrshire Council (east-ayrshire.gov.uk)

5.11. Shadow Flicker

The potential effects by the Proposed Development are assessed in Volume 1 Chapter 13 of the EIAR. Wind turbines are tall structures which can cast long shadows when the sun is low in the sky at certain times of year. 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), residents of properties 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 through window openings. 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 4 properties deemed to be at risk of shadow flicker. All 4 properties were assessed using a highly conservative software model which does not account for various factors (e.g. screening by buildings, vegetation) which would in reality reduce the occurrence of shadow flicker. The modelling results indicate that across affected receptors, the 'worst-case' impact is between 18.0 and 59.4 hours per year. Three of the total four receptors experience shadow flicker above the level of 30 minutes/day and 30 hours/year which is identified in guidance as the threshold above which shadow flicker effects could be significant and require mitigation. However, when considering the real-case assessment, no receptors exceed the above limits of shadow flicker. When assessing cumulative shadow flicker affects from neighbouring farms, Natural Power found that there were no increases in effect at any of the receptors considered in this analysis.

5.12. Socioeconomics

Socioeconomics is assessed in Volume 1 Chapter 14 of the EIAR. The Proposed Development has the potential to offer positive socioeconomic benefits nationally, regionally and locally. The Proposed Development will generate economic benefits both during its development and construction and during its operation and maintenance. In particular, its development and construction are expected to generate:

- £9.5 million GVA and 138 years of employment in East Ayrshire; and
- £29.6 million GVA and 467 years of employment in Scotland.

The expenditure for the operation and maintenance of the Proposed Development could deliver up to:

- £0.7 million GVA and 6 jobs in East Ayrshire; and
- £1.6 million GVA and 18 jobs in Scotland.

The Proposed Development has the potential to create job opportunities throughout the construction and operational phases. Employment opportunities will be created during the lifecycle of the project in a relatively rural area and foster their diversification into new industries. The Applicant has submitted a Skills and Employment Plan that sets out the Applicant's approach to strategies and initiatives aimed at maximising local economic benefits through skill development and job creation.

The Applicant is also committed to supporting the long-term ambitions of local communities through local community benefits worth an estimated £18.5 million over 40 years. The effect that a community benefit fund could have on the economies of East Ayrshire, South West Scotland and Scotland as a whole will depend on the projects that this funding supports and the ability of the funding to leverage in wider support. The Applicant is actively engaging with local community groups to ensure that this funding has the maximum socio-economic benefit to local communities and is identifying investment priorities through a Community Development Strategy. This process is ongoing.

There are not expected to be any significant effects on tourism or recreation assets in the surrounding area. Overall, though there may be some cumulative effects due to the addition of the Proposed Development, it is not expected that these would be significant.

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.

5.13. Carbon Balance

Peatland is an important carbon store and the Proposed Development will have an impact on onsite peatlands, despite mitigations proposed to limit disturbance to peat and bog habitats. A carbon balance assessment report has been produced and MS Excel based assessment tool[21] completed to determine the carbon payback time for the Proposed Development (see EIAR Volume 3 Technical Appendix 8.4 for full details). The results from the carbon calculator reveal that the net impact of the Proposed Development will be positive overall, as over a 40-year lifespan of the Proposed Development, it is expected to generate over 37 years' worth of clean energy if it replaced fossil fuel electricity generation. In addition, over the expected 37 years that the wind farm is likely to be generating carbon-free electricity, this could result in **96,211 tonnes of net CO_2 emission savings** when replacing fossil fuel electricity generation.

Since the negative payback period represents approximately 7.5% (3 years) of the operational period (40 years) and the positive contribution is 92.5% (37 years), 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.

5.14. Synergistic Effects

An assessment of synergistic effects considers the combination of effects upon different topics together. This is provided in Volume 1 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, earthworks, forestry operations and vehicle movements. These could result in potential synergistic effects upon physical and biological receptors including where there are overlaps between ecology, hydrology, and hydrogeology. In isolation each have been assessed in the EIAR as not significant. These effects have been considered together and, through careful initial site design and including embedded mitigation, would be temporary in nature and will be managed through a Construction Environmental Management Plan (CEMP), Peat Management Plan (PMP), Biodiversity Enhancement and Restoration Plan (BERP), Traffic Management Plan (TMP), Water Quality Monitoring Plan (WQMP) and/or Decommissioning Plan. These potential effects will also be monitored by an independent Environmental Clerk of Works (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 adverse visual effects upon 3 residential receptors within 2 km of the Proposed Development. All residential receptors may experience temporary adverse synergistic effects in this regard throughout the operational

[21] The online version of the carbon calculator is the latest version of the tool but is currently unavailable due to technical difficulties. As a result, Applicant has made use of the MS Excel based assessment tool, version 2.14.1 (last updated January 2023). A Senior Case Officer at the Energy Consents Unit (email dated 28/01/2025) shared the tool and confirmed that it could be used by developers in lieu of the online tool. Data should be uploaded to the online tool when it becomes available again.

life of the Proposed Development, however, these are assessed to be limited by the meteorological conditions which create these effects and dependent upon the receptor's line of sight with the Proposed Development.

Some residential receptors will 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.

The inclusion of a BERP 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.

5.15. Summary

This section of the NTS has presented a summary of the likely significant effects of the Proposed Development and the measures taken or put forward to reduce the likely 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.

The Proposed Development is 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 utilising a number of iterations in response to environmental data, new policies, market dynamics and consultee responses. Through balancing the various site constraints with the scale of development required to optimise the capacity of the site and its contribution to renewable energy capacity and climate emission reduction targets, the Applicant considers that the Proposed Development provides the best use of the site.

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, likely significant adverse effects are restricted to isolated landscape and visual effects upon limited localised receptors 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. 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. 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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