



Environmental Appraisal Report

Woolfords Wind Farm - Tip Height Increase

Environmental Appraisal

Woolfords Wind Energy Ltd

wind2

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Document Prepared For

Ewan Eley

Woolfords Wind Energy Ltd

Document Prepared By

Jyotika Shah

Project Manager

planning@atmosconsulting.com

Document Approved By

Malcolm Sangster

Technical Director

planning@atmosconsulting.com

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Glossary of Terms

Term	Definition
The Applicant	Woolfords Wind Energy Ltd
Environmental and Planning Consultant	Atmos Consulting Limited
The Consented Development	Woolfords Wind Farm (Planning Reference: P/22/0031 & Date of Consent: 30 May 2025)
The Proposed Development	Woolfords Wind Farm - Tip Height Increase
The Site	The site of the Proposed Development outlined in red. This is also the application boundary.
The Planning Act	The Town and Country Planning (Scotland) Act 1997 (as amended)

List of Abbreviations

Abbreviation	Description
AGL	above ground level
ATC	Air Traffic Control
CAA	Civil Aviation Authority
CCC	Climate Change Committee
CCUS	carbon capture utilisation and storage
CEMP	Construction Environmental Management Plan
GW	gigawatt
GWDTE	Groundwater Dependent Terrestrial Ecosystems
EA	Environmental Appraisal
ECow	Ecological Clerk of Works
EIA	Environmental Impact Assessment
Ha	hectares
HES	Historic Environment Scotland
HMP	Habitat Management Plan
HIA	Heritage Impact Assessment
Hz	Hertz
m	Meter
MW	megawatt
MWh	Megawatt hour
NEED	National Energy Efficiency Data
NGR	National Grid Reference
NPF 4	National Planning Policy Framework 4
LDP	Local Development Plan
OnWPS	Onshore Wind Policy Statement
PAN	Planning Advice Notes
PWS	Private Water Supply
SAC	Special Areas of Conservation
SPA	Special Protection Area
SLC	South Lanarkshire Council
SuDS	Sustainable Drainage Systems
WoSAS	West of Scotland Archaeology Service
ZTV	Zone of Theoretical Visibility

1. Introduction

This report presents the findings of an Environmental Appraisal conducted in support of a new planning application for the Woolfords Windfarm.

Woolfords Wind Energy Limited (“the Applicant”) is seeking planning permission under the Town and Country Planning (Scotland) Act 1997 (as amended) (‘the Planning Act’) for the construction and operation of an electricity generating station located on land 940m northwest of Woolfords Farm, Woolfords, West Calder, South Lanarkshire and is illustrated in Figure 3-1: Site Location.

This report has been prepared by Atmos Consulting Ltd (Atmos) on behalf of the Applicant.

1.1 Background

The planning application in respect of the Woolfords Wind Farm (‘Consented Development’), consisting of three wind turbines with maximum dimensions of 155m rotor diameter and 180m blade tip height each, along with associated infrastructure, was submitted in December 2021, and granted in full by South Lanarkshire Council (SLC) in May 2025 (Reference: P/22/0031).

Through this new application to increase the maximum tip height to 200m, the Applicant wishes to make minor changes to the Consented Development to provide greater flexibility in choosing the most modern, high-efficiency turbines, best suited to the site and the wind resource.

Since the Consented Development went into planning in 2021, new larger turbine models have become more widely available, whilst some of the previous candidate turbines at smaller tip heights are being phased out of production, limiting the availability of some turbine models.

This and other changes in the market means that the Applicant requires more flexibility to allow for the installation of larger turbines to increase the renewable energy output and improve the economic viability of the wind farm.

As per the advice received from SLC on 17th June 2025, an increase to the dimensions of the turbines cannot be permitted through variation of the planning conditions applicable to the Consented Development but require an entirely new planning permission.

With the exception of some minor alterations to the dimensions of the turbine bases and laydown areas to allow for the larger turbine components no changes to the civil infrastructure (access tracks, watercourse crossings, access junction etc.) of the Consented Development are proposed.

As a result this Appraisal does not reassess those components as permission has already been granted permitting their construction.

1.2 The Applicant

The Applicant is Woolfords Wind Energy Ltd, a wholly owned subsidiary of Wind2 Ltd. Wind2 Limited is an established development company which has consented wind and solar projects across the UK.

1.3 The Agent

Atmos is an experienced environmental consultancy providing environmental assessment and planning expertise working on behalf of the Applicant and acting as agent in relation to the Proposed Development. Atmos acted as Agent for the Consented Development.

2. Environmental Appraisal Approach

This report, its supporting Technical Appendices and Figures presents a summary of the Proposed Development and its potential environmental effects where they have the potential to differ from those identified for the Consented Development. Details of the proposed mitigation solutions are also included where required.

2.1 Screening

Prior to the submission of this application, an Environmental Impact Assessment (EIA) Screening request was made to SLC in February 2026, in relation the Proposed Development under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (UK Government, 2017).

A Screening Opinion was received in March 2026 from SLC confirming that an application for the Proposed Development was not EIA Development and would not require to be accompanied by an EIA Report.

The Screening Opinion identified a number of environmental assessments that should be undertaken with the findings reported and presented alongside the planning application. The table below signposts those technical assessments within this report.

Table 2-1: Technical Topics for the Environmental Appraisal

Topics	Report Section Number
Landscape and Visual Impact Assessment	Section 5
Cumulative Impact Assessment	Included in the Technical Sections and detailed in the relevant Technical Appendices
Ecology	Section 6
Transport, including abnormal load routing	Section 11
Residential amenity, including Noise	Section 5, Section 8, and Section 12
Hydrology/hydrogeology	Section 10
Archaeology/Cultural Heritage	Section 9
Construction Environmental Management Plan	Section 13

2.2 Data Collection

In order to better understand the Proposed Development Site, further information was collected through desk-based study, review of the planning policy and available assessment details. This includes baseline data drawn from the previously Consented Development, as presented within the relevant technical sections.

This information has informed the updates in the design and is presented in this Environmental Appraisal (EA) Report to support the proposed change to the Proposed Development.

3. The Proposed Development

3.1 Location

The location of the Proposed Development is unchanged from the Consented Development which is repeated here for ease of referral.

The Consented/Proposed Development is located approximately 4km northeast of Forth in South Lanarkshire, centred on National Grid Reference (NGR) 299380, 657570 as shown on Figure 3-1: Site Location Plan (the 'Site').

The Site occupies an area of approximately 290 hectares (ha); however, the footprint of the Proposed Development will be substantially less. The red line application boundary is shown on Figure 3-2, with the redline boundary area of 27.5ha.

The Site is open moorland used for the grazing of sheep and cattle.

The Site itself is not located within any statutory ecological designation. However, several designated ecological sites are located within the wider 10km study area.

There are three Special Areas of Conservation (SACs) located within 10km radius of the Site boundary in which the Braehead Moss is the nearest, 4.7km southwest of the Site boundary. The other two SACs are Craigengar (located 7.3km southeast) and Cranley Moss (located 9.5km southwest).

Thirteen Sites of Special Scientific Interest (SSSIs) are recorded within 10km of the Site. These include Cobbinshaw Reservoir (around 400m to the east), Cobbinshaw Moss (1.4km east), Skolie Burn (3.6km north), Hermand Birchwood (3.9km north-east), and Braehead Moss (4.7km south-west). Easter Inch Moss and Seafeld Law Local Nature Reserve is located approximately 7.3km to the north.

There are no statutory heritage designations within the Site boundary, such as Scheduled Monuments, Listed Buildings, World Heritage Sites, Inventory Gardens and Designed Landscapes, Inventory Battlefields, or Conservation Areas.

The nearest Scheduled Monument is the West Harwood burial mound, located approximately 1.6 km to the north-east. Another nearby site is Haywood deserted mining village, around 1.9km to the south-west. In total, 35 Scheduled Monuments are present within 10km of the Site.

The nearest Conservation Area is Livingston Village, approximately 8.7km to the north-east.

Two Gardens and Designed Landscapes are located within 10 km of the Site. The closest is Harburn House, around 3.9km to the north-east, and Little Sparta (Stonypath) lies approximately 9.3km away.

There are no Listed Buildings within the Site or within 1km of its boundary. The nearest Category C listed building is North Valve House, located about 2.1km to the north-east. Auchengray Church, a Category B listed building, lies approximately 2.1km to the south. The nearest Category A listed building is the West Pavilion at Blackburn House, around 6.9km to the north. In total, 114 Listed Buildings are recorded within 10km of the Site.

There are no Core Paths or National Trails within the Site. An aspirational core path (CL/5667/1) lies approximately 260m to the south-east of the Site boundary. The nearest National Cycle Network route is located around 7.4km to the north from the site boundary.

The Site is located within a landscape influenced by a number of existing and consented wind farm developments. Since the previous baseline studies were produced, the cumulative wind energy context surrounding the Site has evolved, with a number of wind farm developments now operational and/or consented in the surrounding area. These include Longhill Burn, Pearie Law extension and Heathland resubmission etc (see Figure 5-13).

As a result, the Site is now located within a more developed wind energy landscape than previously, with an increased presence of operational and approved turbines in the wider area. This change in cumulative context has been fully reflected in the assessments undertaken as part of this application.

3.2 Description of Proposed Development

The Proposed Development will consist of three wind turbines with current candidate turbine dimensions of 175m rotor diameter and up to 200m blade tip height, and increase of 20m from the Consented Development, along with associated infrastructure including:

- Access tracks (6m running width, unchanged from the Consented Development);
- Updated Turbine foundations (of an area up to 26m x 26m compared to the 25 m×25m permitted as part of the Consented Development);
- Altered Crane hardstandings (up to 45m x 24m; with 58m x 3.7m working area per turbine as opposed to 40m by 35m and up to 5m x 75m working area per turbine permitted as part of the Consented Development);
- A combined Substation and control building (20m x 6m unchanged from the Consented Development);
- A temporary construction compound (100m x 50m unchanged from the Consented Development); and
- An area of borrow pit search is also proposed, again unchanged from the Consented Development.

It is noted that transformers will be internal to the wind turbines.

The Proposed Development is anticipated to be operational for 40 years, following which it would be decommissioned and restoration undertaken.

Construction is anticipated to take approximately 9 months (unchanged from the Consented Development).

The layout of the Proposed Development is shown on Figure 3-2.

Indicative details of the proposed turbine, substation, foundations, crane hardstandings, tracks are shown in Figure 3-3 to 3-7. The turbine (Figure 3-3), its foundations (Figure 3-5) and associated crane hardstandings (Figure 3-6) have been revised to accommodate the larger turbine model. The substation, cable trenching and access track details remain unchanged from the Consented Development.

The locations of the turbines and associated infrastructure remain unchanged from the Consented Development, with no alterations proposed to the previously approved layout.

The indicative access junction and visibility splay has been updated to accommodate the larger turbines, as shown on Figure 3-8.

3.3 Electricity and Emissions

From the data gathered to date from the onsite meteorological mast, the Proposed Development will generate an estimated 65,353 MWh of renewable electricity per year, an 18% uplift from the output figures for the consented project. This annual output is equivalent to the electricity required to power approximately 16,715 households in Scotland¹, demonstrating the high yield potential and technical efficiency of the 200m turbine tip height.

This is predicted to save the 22,977 tonnes CO₂ emissions per year, or 919,080 during its operational life, when compared to using the grid mix (Scottish Government 2021). This is compared to a saving of 827,867 tonnes/lifetime for the Consented Development, representing a savings increase of 11% tonnes of CO₂.

¹ According to the Scottish Government's Renewable Energy Output Calculator. NB this calculator has not been updated since 2021.

² According to the Scottish Government's Renewable Energy Output Calculator with Fuel Type Displaced = Grid Mix. NB this calculator has not been updated since 2021.

4. Planning Policy and Legislation

Since the submission of the previous application, there have been significant changes to planning policy at National level. The most notable of these is the adoption of the National Planning Framework 4 (NPF4), which represents a major shift in planning policy and has an important influence on how the planning balance is now considered for renewable energy proposals.

NPF4 places the climate and nature crises at the heart of decision-making, giving substantial weight to developments that contribute to Scotland's transition to net zero.

SLC's Local Development Plan 2 was adopted in 2021 and was primarily informed by the then-applicable Scottish Planning Policy. Since that time, the NPF4 has been adopted, placing the climate and nature crises at the heart of planning and strongly supporting renewable energy development.

As NPF4 is the most recent statement of national planning policy, it will prevail over the older Local Development Plan 2 policies where there is an incompatibility, therefore, the Proposed Development should be assessed primarily against NPF4. In this context, the scheme is in accordance with NPF4 provisions for renewable energy, climate action, and sustainable development, ensuring that the benefits of the development are aligned with current national policy priorities.

This Section sets out the planning policy context for the Proposed Development and focuses upon the main policies relevant to the Proposed Development. A detailed assessment of the Proposed Development against planning policy is contained within a separate Planning Statement, which is submitted separately with the application and is not covered in this report.

4.1 Statutory Development Plan

The Statutory Development Plan for the Proposed Development consists of National Planning Policy Framework 4 (NPF4, Scottish Government 2023), SLC's Local Development Plan 2 (LDP2) (SLC, 2021) and relevant Supplementary Guidance.

In accordance with Section 25 of the Act, the determination must be made in accordance with the Statutory Development Plan unless material considerations indicate otherwise.

In considering the Development Plan in undertaking this EA Report, Section 24(3) of the Planning Act has been taken into account when considering the applicability of the LDP2 policies. This states:

"In the event of any incompatibility between a provision of the National Planning Framework and a provision of a local development plan, whichever of them is the later in date is to prevail."

National Planning Framework (NPF) 4

NPF4 was adopted on 13th February 2023 and is the national spatial strategy for Scotland and Scottish planning policy. It sets out the principles for spatial development, defines national developments and regional priorities and sets out national planning policy.

There are some overarching policies that are considered particularly applicable to the conduct of the EA.

The principle of renewable energy generation is clearly supported by NPF4 as demonstrated by the statements in Annex B – National Developments of Need:

"A large and rapid increase in electricity generation from renewable sources will be essential for Scotland to meet its net zero emissions targets..."

and:

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

This need for new renewable electricity generation is carried forward into National Policy through Policy 11: Energy, the intent of which is:

“To encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS)”

Paragraph a) of Policy 11 states that:

“Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include wind farms including repowering, extending, expanding and extending the life of existing wind farms”

Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported including solar arrays.”

“Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include energy storage, such as battery storage and pumped storage hydro.”

In undertaking the design of the Proposed Development and conducting the EA, Policy 11 e) has been a key consideration. This states that:

“...project design and mitigation will demonstrate how the following impacts are addressed:

- i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
- ii. significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/ or appropriate design mitigation has been applied, they will generally be considered to be acceptable;*
- iii. public access, including impact on long distance walking and cycling routes and scenic routes;*
- iv. impacts on aviation and defence interests including seismological recording;*
- v. impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;*
- vi. impacts on road traffic and on adjacent trunk roads, including during construction;*
- vii. impacts on historic environment;*
- viii. effects on hydrology, the water environment and flood risk;*
- ix. biodiversity including impacts on birds;*
- x. impacts on trees, woods and forests;” and*
- “...xiii. cumulative impacts”*

Compliance with these policies are demonstrated in the relevant technical sections and the Planning Statement prepared to support this EA Report and planning application.

NPF4 places significant emphasis on the effect of development on climate change and the potential to contribute to carbon reduction targets with the generation of renewable energy recognised as being of national importance as:

“...significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets”.

The Proposed Development is also considered to contribute to the Scottish Government’s aims in supporting sustainable development. Cross-cutting priorities to achieve these aims are presented in NPF4 as part of three key themes: Sustainable places, liveable places and productive places.

Part 1 of NPF4, the National Spatial Strategy for Scotland 2045 will be supported by the planning and delivery of sustainable places; “...where we reduce emissions, restore and better connect biodiversity”. It sets out that:

“Scotland’s future places will be net zero, nature-positive places that are designed to reduce emissions and adapt to the impacts of climate change, whilst protecting, recovering and restoring our environment.”

National Planning Policy 1 in Part 2 of NPF4: ‘Tackling the climate and nature crises’, states that:

“When considering all development proposals, significant weight will be given to the global climate and nature crises” (NPF4 page 36).

Policy 2 ‘Climate mitigation and adaptation’ seeks to:

“... encourage, promote and facilitate development that minimises emissions and adapts to the current and future impacts of climate change” (NPF4 page 37).

This indicates that climate change should be a guiding principle for decision making and that substantial policy support is given to any development which contributes towards climate change targets.

Policy 3: Biodiversity has the policy intent to:

“... protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks” (NPF4 page 38).

Policy 3(a) states that:

“Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the connections between them. Proposals should integrate nature-based solutions, where possible.”

Policy 3(b) clarifies that:

“Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention.”

Policy 3(d) states that:

“Any potential adverse impacts, including cumulative impacts, of development proposals on biodiversity, nature networks and the natural environment will be minimised through careful planning and design.”

The intent of Policy 4: Natural places is to:

“...protect, restore and enhance natural assets making best use of nature-based solutions.” (NPF4 page 40”).

Policy 4(c) states that:

“Development proposals that will affect a National Park, National Scenic Area, Site of Special Scientific Interest or a National Nature Reserve will only be supported where: i) The objectives of designation and the overall integrity of the areas will not be compromised; or ii) Any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social, environmental or economic benefits of national importance.”

These policies have been considered throughout the design of the Proposed Development as one of the guiding principles. Compliance with these policies is demonstrated in the relevant technical sections, and the Planning Statement prepared to support this EA Report and planning application.

Details of the incorporation of biodiversity enhancement measures into the design is included in Annexure 6-1-2: Habitat Management Plan.

NPF4’s policies in relation to impacts on peat have also been a key consideration in undertaking the EA and informing the design.

The intent of Policy 5: Soils is to:

“... protect carbon-rich soils, restore peatlands and minimise disturbance to soils from development.” (NPF4 page 42”).

Policy 5(a) states that:

“Development proposals will only be supported if they are designed and constructed:

i. In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land.”

Policy 5(c) makes it clear that:

“Development proposals on peatland, carbon-rich soils and priority peatland habitat will only be supported for:

ii. The generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets; and

v. Restoration of peatland habitats.”

Further clarification as regards requirements for developments that are proposed on peatland, carbon rich soils, or priority peatland habitat is subsequently provided in Policy 5(d), as follows:

“... a detailed site specific assessment will be required to identify:

- The baseline depth, habitat condition quality and stability of carbon rich soils;*
- The likely effects of the development on peatland, including on soil disturbance; and*
- The likely net effects of the development on climate emissions and loss of carbon.”*

In consideration of the potential effects on cultural heritage assets, Policy 7(a) states that:

“Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place. The assessment should identify the likely visual or physical impact of any proposals for change, including cumulative effects and provide a sound basis for managing the impacts of change.

Proposals should also be informed by national policy and guidance on managing change in the historic environment, and information held within Historic Environment Records.”

Compliance with this policy is demonstrated in the relevant technical sections and the Planning Statement prepared to support this EA Report and planning application.

Planning Advice Notes

The Scottish Government has published a number of Planning Advice Notes (PANs), providing advice on good practice on a variety of subjects. Since the adoption of NPF4, references in planning advice to 'spatial framework', 'spatial planning' and 'areas of search', in relation to onshore wind generation have been superseded and therefore not considered relevant.

The following are considered of relevance to this application and have informed the EA Report:

- PAN 2/2011: Planning and Archaeology;
- PAN 3/2010: Community Engagement;
- PAN 1/2011: Planning and Noise;
- PAN 51: Planning, Environmental Protection and Regulation;
- PAN 60: Natural Heritage;
- PAN 62: Radio Telecommunications;
- PAN 68: Design Statements;
- Onshore wind turbines: planning advice (2014);
- PAN 73: Rural Diversification;
- PAN 75: Planning for Transport;
- PAN 79: Water and Drainage;
- Flood risk: planning advice;
- Planning Advice Note 61: Sustainable urban drainage systems;
- Wind farm developments on peat land: planning advice;
- Planning and waste management advice; and

4.2 Local Planning Policy

National and international policy is used to inform local planning policy and is implemented through Local Development Plans.

The development plans for the area consist of the following key documents:

- LDP2 (SLC, 2021);
- Tall Wind Turbines: Landscape Capacity, Siting and Design Guidance (SLC, 2019);

Renewable energy proposals are primarily assessed against the relevant policies of the Local Development Plan, which includes specific development management policies, together with any applicable supplementary guidance.

SLC is currently preparing Local Development Plan 3 (LDP3). This emerging plan will guide how land is used, developed and protected over the next 10 years and beyond. Once adopted, LDP3 will replace LDP2 and, together with NPF4, will be used in the determination of planning applications. At this stage, LDP3 is afforded limited weight as an emerging document.

With the introduction of the NPF4, Clydeplan (the Strategic Development Plan for the Glasgow City Region) no longer forms part of the statutory development plan and is no longer a material consideration in that context.

South Lanarkshire Local Development Plan 2

The South Lanarkshire Local Development Plan (LDP) was adopted in April 2021 and sets out the framework for the continued growth and regeneration of South Lanarkshire through sustainable development. The following key policies have informed the design of the Proposed Development on the assumption that these will be the policies against which the proposals will be reviewed where there is consistency with NPF4:

- **LDP 2 Policy 1 Spatial Strategy**, encourages sustainable economic growth and regeneration, protection and enhancement of the built and natural environment and a move towards a low carbon economy;
- **LDP 2 Policy 2 Climate Change**, sets out that proposals for new development must, where possible, seek to minimise and mitigate against the effects of climate change. The policy sets out a number of ways in which this should be achieved including utilising renewable energy sources and using, where appropriate, low and zero carbon energy generating technologies. This has some consistency with NPF4 Policies 1 and 2, signifying that significant weight will be given to the global climate and nature crises with development proposals encouraged to mitigate, minimise emissions and adapt to climate change;
- **LDP 2 Policy 4 Green Belt and Rural Areas**, sets out appropriate use of the countryside and the requirement to demonstrate a location need for locating a development in the greenbelt or rural area;
- **LDP 2 Policy 5 Development Management and Placemaking**, sets out that all development proposals will require to take account of and be integrated with the local context and built form. Development proposals should have no significant adverse impacts on the local community and environment and should include measures to enhance the environment where possible.

A difference in approach to addressing significant impacts is evident in NPF4 Policy 11 Energy. In the NPF4 policy it is noted that whilst it must be demonstrated within project design and mitigation that impacts are addressed, some impacts are to be expected and will be acceptable where mitigated appropriately:

“...significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/ or appropriate design mitigation has been applied, they will generally be considered to be acceptable”;

- **LDP 2 Policy 14 Natural and Historic Environment**, Natural and Historic Environment, sets out that the Council will assess all development proposals in terms of their effect on the character and amenity of the natural and built environment.

Designations are categorised in terms of importance, with Category 1 designations including Special Protection Areas (SPAs) and SACs (Natura 2000 sites) for which development should not adversely affect the integrity of the sites following the implementation of any mitigation measures; and the New Lanark World Heritage Site, where the Council will seek to protect the Outstanding Universal Values of the site. Proposals should take account of the guidance in the South Lanarkshire Landscape Character Assessment (2010) and, where relevant, the Landscape Capacity Study for Wind Energy (2016) and its Addendum Tall Wind Turbines Landscape Capacity, Siting and Design Guidance (2019). As noted above, a difference in approach to significant impacts is evident in NPF4 Policy 11 Energy:

“...significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/ or appropriate design mitigation has been applied, they will generally be considered to be acceptable”;

- **LDP 2 Policy 16 Water Environment and Flooding**, Water Environment and Flooding, impacts to be appropriately managed, including consideration of water levels, flows, quality, biodiversity and flood risk. Use of buffers and ‘no development zones’ from watercourses to be implemented as appropriate; and
- **LDP 2 Policy 18 Renewable Energy**; Renewable Energy; states that applications for renewable energy infrastructure developments will be supported subject to an assessment against the spatial framework principles as set out in the 2014 published Scottish Planning Policy (SPP) (Scottish Government, 2014), and sets out that energy proposals will be assessed against the LDP Assessment Checklist for Renewable Energy Proposals. With the adoption of NPF4, the 2014 SPP has been superseded and the spatial approach set out within LDP Policy 18 no longer applies. NPF4 Policy 11 requires project design and mitigation to demonstrate how certain impacts are addressed but it also accepts that there may be significant landscape and visual effects. In particular, where impacts are localised and/or appropriate design mitigation has been applied they will generally be considered to be acceptable. Furthermore, it is stated within Policy 11 that:

“significant weight will be placed on the contribution of the proposal to renewable energy generation targets and GHG reduction targets”.

Supplementary Planning Guidance

SLC has published Supplementary Planning Guidance (SPG) to support LDP2.

The SPG supports the policies in SLLDP2 and gives further guidance to developers. The SPG on Renewable Energy (SLC, 2021a) supports Policy 18: Renewable Energy, of SLC LDP2 by providing more detailed policy and guidance for developers on the requirements for wind energy. In addition, the SPG is supported by a Landscape Capacity Study that was undertaken in 2016 and is appended to the SPG.

The study is based on the premise that, given current renewable energy targets, continuing landscape change and impacts on visual amenity resulting from wind energy development is accepted. However, the SPG recognises that due regard has to be given to environmental, community and cumulative impacts and that local authorities require a strategy in order to keep change within acceptable limits.

In applying the assessment process, the study addresses concepts and issues that affect the perceived significance and acceptability of cumulative changes caused by multiple wind energy developments in the landscape.

A subsequent update to the Landscape Capacity Study was published in June 2019; Tall Wind Turbines: Landscape Capacity, Siting and Design Guidance (2019). The update takes account of the impacts of taller wind turbines which are 150m to 250m in height and provides relevant siting and design guidance for these turbines.

The Proposed Development has been designed to be viewed as a natural extension to the immediate operational wind farm pattern of development and lies within an area identified as high potential for wind farm development of turbines 150-250m tip height.

However, as the spatial approach set out within this study has now been superseded by the approval of NPF4, the SLC Wind Energy Supplementary Guidance is considered to provide an indication of the approach to wind energy development within the SLC area as opposed to a guide to the spatial approach to wind energy development.

Overall, the guidance indicates that SLC supports renewable energy development at an appropriate scale where it can make an effective contribution to climate change mitigation.

South Lanarkshire Biodiversity Strategy (2024 – 2030)

The Biodiversity Strategy sets out an approach to guide the conservation and enhancement of biodiversity, to ensure a focus on being nature positive. The main aims of the strategy are focused on how protecting local biodiversity can contribute to national and global priorities, to promote the protection, enhancement, and creation of habitats, and to facilitate a wider understanding of locally important habitats and species.

4.3 Climate Change and Energy Policy

Carbon Emissions Legislation

Through the Climate Change Act 2008 (UK Government, 2008) and Climate Change (Scotland) Act 2009 (UK Government, 2009); both the UK and Scotland have statutory targets for the reduction of carbon emissions.

Scotland now has a statutory target of achieving net zero carbon emissions by 2045. However, the Climate Change Committee (CCC) in their Progress in reducing emissions in Scotland 2023 Report to Parliament (CCC, 2024) stated that:

“Most delivery indicators are off track, many significantly so... and overall policy progress has been insufficient over the past year”

They also noted that the growth in onshore wind has slowed and is off track to meet the 2030 budget, meaning that operational capacity will have to more than double to meet the 2030 target.

4.4 Onshore Wind Policy Statement

The Onshore Wind Policy Statement (OnWPS) (Scottish Government, 2022) was published on 21 December 2022 and outlines the Scottish Government’s ambitions for the Onshore Wind Sector, highlighting how these can be delivered. The urgency and relevance of the need to meet Net Zero targets is stressed through the statement that: “We must now go further and faster than before”.

The OnWPS notes Scotland’s current installed onshore capacity of 8.7 gigawatt (GW) (as of June 2022) and the aim to maintain a supportive policy and regulatory framework, which will enable an increase in renewable energy deployment and the realisation of the overall ambition of 20GW of installed onshore wind capacity in the country by 2030.

The OnWPS reiterates the Scottish Government’s commitment to tackling the climate and nature crises in tandem.

The OnWPS cites evidence that significant positive effects for biodiversity from wind farm developments can be achieved and provides examples of best practice in biodiversity enhancement on wind energy development.

Scotland's onshore wind sector can bring many and considerable benefits to rural areas, ranging from the delivery of jobs and investment to the restoration and protection of natural habitats.

The OnWPS highlights the role ‘taller and more efficient turbines’ have to play in meeting this ambition for installed onshore wind capacity, stating: *“Taller turbines have a higher installed capacity which results in the need for fewer turbines per site.”*

The ongoing technological development in the sector and the availability of larger wind turbines with greater output is recognised in the OnWPS which states Scottish Government support for development of larger (taller) wind turbines in appropriately sited locations, noting that;

“What would previously have been considered “taller” turbines are now more common and must continue to be deployed in appropriate locations.”

In its conclusion, the OnWPS is clear that:

“Deployment of onshore wind is mission-critical for meeting our climate targets.”

The contribution of the Proposed Development towards meeting climate and renewable energy targets is considered a key driver in favour of the Proposed Development in the context of the above. Further detail can be found in the Planning Statement that accompanies the Consent application.

4.5 Draft Energy Strategy and Just Transition Plan

The draft Energy Strategy and Just Transition Plan was released in January 2023. The consultation period for the draft strategy finished in 9th May 2023. As of writing there is no released timescale for the draft strategy to be finalised.

The draft Energy Strategy and Just Transition Plan sets out the scale Scotland’s climate change ambitions and aims to show the scale of this opportunity and provide clarity on how Scotland should prepare for a just energy transition.

The strategy sets out policy positions and a route map with a focus on delivery by 2030 that the Scottish Government will take and the changes that the UK Government will deliver.

The contribution of the Proposed Development towards meeting climate and renewable energy targets is considered a key driver in favour of the Proposed Development. The Proposed Development will positively contribute to the aims of the strategy. Further detail can be found in the Planning Statement that accompanies the Consent application.

5. Landscape and Visual

The Proposed Development would be sited within the moorland plateau, immediately adjacent to Longhill Burn wind farm.

Large forest plantations on rising ground provide extensive screening, so limiting the prominence of the turbines in views from the north. More open views are possible from the south, although rising ground would screen tracks and ancillary structures from views in this direction.

In most views, the Proposed Development would appear to form an extension to Longhill Burn, having a similar landscape context, scale and rotation speed. This would help to minimise the landscape and visual effects of the Proposed Development.

Cumulative effects would be similarly minimised, as the Proposed Development would appear to form part of the cluster that includes Longhill Burn and the consented Heathland resubmission, which would lie immediately to the south of Longhill Burn.

Consequently, this Landscape and Visual Appraisal (LVA) has found that moderate-major effects would be limited to landscape and visual receptors lying within 2.5km of the Proposed Development.

These are described in more detail in Technical Appendix 5-1 and summarised below.

5.1 Landscape Effects

Construction

Moderate short-term effects are predicted on the landscape elements and features of the Proposed Development Site and on immediately surrounding parts of the Plateau Moorlands (Glasgow & Clyde Valley) Landscape Character Type (LCT) and Upland Fringes (Lothians) LCT during the construction period.

Operation

The Proposed Development is not predicted to affect the integrity of any designated landscape by detracting from the qualities for which it has been designated. Moderate-major effects are predicted on the parts of the Plateau Moorlands LCT immediately surrounding the Proposed Development and moderate effects on parts of the Plateau Farmland LCT lying within 2.5km. Effects on LCTs elsewhere within the study area, are predicted to be moderate-minor or less.

5.2 Visual Effects

Construction

Residents of dwellings within 2.5km would experience very short-term moderate visual effects due to the presence of cranes. Elsewhere, visual effects during construction are predicted to be moderate-minor or less.

Operation

Moderate-major effects are predicted for residents of Woolfords, and for several individual dwellings lying within 2km of the Proposed Development (see Residential Visibility Amenity Assessment (RVAA)). Residents of Tarbrax with views of the Proposed Development would experience moderate effects. Elsewhere, visual effects for residents are predicted to be moderate-minor or less.

Moderate visual effects are predicted for rail users on the West Coast Main Line travelling north and within 2.5km of the Proposed Development. Visual effects from other road and rail routes are predicted to be moderate-minor or less.

5.3 Cumulative effects

Cumulative Landscape effects

The Proposed Development is not predicted to affect the integrity of any designated landscape by detracting from the qualities for which it has been designated.

Moderate-major cumulative effects are predicted on the parts of the Plateau Moorlands LCT immediately surrounding the Proposed Development; and moderate effects on parts of the Plateau Farmland LCT lying within 2.5km. Cumulative effects on LCTs elsewhere within the study area are predicted to be moderate-minor or less.

Cumulative Visual effects

Moderate-major cumulative effects are predicted for residents of Woolfords, and for several individual dwellings lying within 2km of the Proposed Development (see RVAA). Elsewhere, cumulative visual effects for residents are predicted to be moderate-minor or less.

Moderate cumulative visual effects are predicted for rail users on the West Coast Main Line travelling north and within 2.5km of the Proposed Development. Visual effects from other road and rail routes are predicted to be moderate-minor or less.

6. Ecology

An assessment has been carried out to identify the likely significant effects on ecological features associated with the construction, operation and decommissioning of the Proposed Development and provided as Technical Appendix 6-1: Ecology and Ornithology Assessment, with this EA Report.

The specific objectives of the assessment have been to:

- describe the ecological baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

This assessment updates the assessment undertaken for the previously Consented Development to reflect the proposed increase in turbine tip height from 180m to 200m, together with minor changes to the infrastructure layout. In line with recent guidance on streamlining EIA (Scottish Renewables, 2025), it avoids repeating findings from the Consented Development where baseline conditions remain unchanged and ecological receptors are unlikely to be materially affected by the tip height increase or minor infrastructure changes.

The assessment factors in a range of survey updates undertaken in 2024, including National Vegetation Classification and Protected Species surveys, the latter including bat activity surveys using static detectors.

No significant effects were found on ecological receptors. Whilst the conclusions of the impact assessment remain the same as previously, planning conditions related to that scheme have specified the need for more peatland restoration than the area lost. As a result, the Outline Habitat Management Plan (HMP) identifies a 14.6ha area of poor-condition blanket bog to compensate for the losses of 4.41ha of blanket bog to the Proposed Development.

Potential in-combination effects with other schemes (a cumulative assessment) has also been undertaken that concludes there will be no significant effects on ecological features from the Proposed Development in tandem with these schemes.

Any potential effects will be further minimised through ongoing review and refinement of mitigation measures, as set out in the HMP and Construction Environmental Management Plan (CEMP), which will remain live documents.

7. Ornithology

An assessment has been carried out to identify the likely significant effects on ornithological features associated with the construction, operation and decommissioning of the Proposed Development and provided as Technical Appendix 6-1: Ecology and Ornithology Assessment, with this EA Report.

The specific objectives of the assessment have been to:

- describe the ornithological baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

This assessment updates the assessment undertaken for the previously Consented Development to reflect the proposed increase in turbine tip height from 180m to 200m, together with minor changes to the infrastructure layout. In line with recent guidance on streamlining EIA (Scottish Renewables, 2025), it avoids repeating findings from the Consented Development where baseline conditions remain unchanged and ornithological receptors are unlikely to be materially affected by the tip height increase or minor infrastructure changes.

Ornithology surveys for the previous scheme concluded in August 2021 and are considered to remain in date.

No significant effects were found on ornithological receptors. The HMP includes measures to improve grasslands on site to encourage use by waders species, which were observed on site during surveys.

Whilst the methodology for ornithological Collision Risk Modelling has changed since the assessment for the Consented Development was carried out, no significant increase in collision risk is predicted as a result of the tip height increase.

Potential in-combination effects with other schemes (a cumulative assessment) has also been undertaken that concludes there will be no significant effects on ornithological features from the Proposed Development in tandem with these schemes.

Any potential effects will be further minimised through ongoing review and refinement of mitigation measures, as set out in the HMP and CEMP, which will remain live documents.

8. Noise

An update to the Noise Appraisal has been undertaken to assess the potential noise impact of the construction, operation and decommissioning of the Proposed Development (see Technical Appendix 8-1: Noise).

Noise during the construction and decommissioning of the Proposed Development was scoped out of the assessment as likely effects remain unchanged from the Consented Development. Nevertheless, noise during the construction phase will be managed through the CEMP, and noise during decommissioning will be controlled as required at the time.

Operational noise from the Proposed Development has been assessed by comparing predicted operational noise levels with relevant noise limits. In this case the relevant cumulative noise limits are specified within the planning conditions for the Consented Development.

Predicted cumulative operational noise levels have been compared with the relevant cumulative noise limits which have been shown to be met without any specific mitigation, and therefore operational noise effects are considered to be not significant in EIA terms.

Site-specific operational noise limits have been derived that take into account cumulative noise effects such that these site-specific noise limits can be applied via planning conditions to ensure that operational noise levels from the Proposed Development, in conjunction with noise from other wind turbine developments, remain acceptable throughout the lifespan of the wind farm.

9. Cultural Heritage and Archaeology

This assessment (see Technical Appendix 9-1: Cultural Heritage) considers the potential for the Proposed Development to result in any greater or additional impacts upon heritage assets when compared to the Consented Development. It identifies any further measures since the production of the Consented Development EA Report that should be taken to mitigate predicted adverse effects.

The historic environment baseline remains unchanged from the Consented Development EA Report and the changes to the heights of the proposed turbines would not result in any additional physical impacts to known heritage assets within the Site and therefore no additional significant physical impacts have been identified.

Potential operational effects on the settings of designated heritage assets up to 10km of the Proposed Development Site have been considered as part of this assessment. This includes heritage assets identified as requiring assessment through consultation with Historic Environment Scotland (HES) and West of Scotland Archaeology Service (WoSAS) which were included within the Consented Development EA Report.

Review of a comparative Zone of Theoretical Visibility (ZTV) and updated visualisations has indicated that no assets outwith the ZTV for the Consented Development have been brought into the ZTV for the Proposed Development as a result of proposed changes to the height of the turbines.

Whilst the visualisations indicate there would be slight perceptible changes in the heights of the turbines when viewed from the assets considered, this would not change the overall magnitude of impact predicted for the Consented Development. As such, the potential operational impacts on the designated heritage assets within up to 10km of the Proposed Development Site remains unchanged from the Consented Development.

No significant setting impacts have been identified. At most, impacts would be of low magnitude and not significant. There would be no significant adverse impacts upon the integrity of setting of any Scheduled Monuments.

10. Hydrology, Hydrogeology, Geology and Ground Stability

This section provides a comparative appraisal of the potential effects of the Proposed Development on the water environment, hydrogeology, and soil resources. The assessment considers whether the increase in turbine tip height to 200m introduces any new environmental effects beyond those identified for the Consented Development.

The March 2026 Screening Opinion (P/26/0268) confirmed that turbine locations remain unchanged from the Consented Development. As shown on Figure 3-2: Site Layout, the infrastructure therefore remains within the environmental parameters previously assessed, although the footprint of foundations and hardstandings has increased to accommodate the larger turbine specification.

10.1 Technical Baseline and Methodology

This appraisal is based on the 2021 Hydrology and Hydrogeology Report (Technical Appendix 10-1), which provides the established Site baseline. Updated maps (Figures 10-1 to 10-5) have been reviewed to confirm that the 200m redesign remains compliant with previously defined environmental constraints.

The Site is underlain by Carboniferous sedimentary bedrock of the Clackmannan Group, overlain by glacial till and widespread peat deposits.

The Site lies on a regional watershed divide between the River Clyde and River Almond catchments. Groundwater is generally deep and confined by low-permeability superficial deposits.

Identified Groundwater Dependent Terrestrial Ecosystems (GWDTE), including M6 and M23 communities, are primarily sustained by surface water inputs and shallow subsurface flow rather than groundwater dependence.

The Site is located outside Coal Authority Development High Risk. Flood risk is predominantly low to medium, with no significant fluvial floodplain interaction recorded within the development area.

10.2 Assessment of Potential Effects due to the Proposed Change in the Turbine Tip Height

The Proposed Development has been assessed against the established baseline to determine whether the increase in turbine scale or associated layout refinements result in any material change to previously identified effects.

Hydrology and Hydrogeology

A review of the revised Site Layout, in conjunction with the Water Features mapping (Figure 10-2), confirms that all infrastructure continues to comply with the established 50m buffers to all watercourses, as defined for the Consented Development.

The relationship between infrastructure and the Dippool Water and Harwood Water sub-catchments remains unchanged. As such, the revised layout does not introduce new hydrological connectivity or altered drainage pathways that could result in additional sediment transport or pollutant mobilisation.

The hydrogeological baseline indicates that the Site is underlain predominantly by low-permeability glacial till, which inherently limits groundwater vulnerability and connectivity. The Proposed Development will not materially alter groundwater interactions or drainage behaviour.

In addition, the layout remains hydraulically separated from the Private Water Supply (PWS) at Mountainblaw Farm by intervening topography and surface water features. On this basis, the

magnitude of change to hydrology and hydrogeology is considered low, and the significance of effects remains Minor, consistent with the Consented Development.

Peat and Carbon-rich Soil

Review of the revised Site Layout in conjunction with the interpolated peat depth mapping (Figure 10-3) indicates that the overall infrastructure layout continues to follow the established avoidance strategy for high-sensitivity peatland resources. The spatial distribution of turbines, access tracks, and associated infrastructure remains broadly consistent with the Consented Development, with no material shift into areas of extensive deep peat at a site-wide scale.

At Turbine 1 and Turbine 2 the revised footprints, including foundations and hardstandings, remain located predominantly within areas of mineral soils or shallow peat (<0.5m). The increase in turbine size does not materially alter ground conditions or extend the footprint into deeper peat deposits. As such, there is no change in the nature or magnitude of effects at these locations.

At Turbine 3, the updated layout shows a limited overlap with an area of deeper peat (>1.5m). However, as illustrated in Figure 3-6, this interaction is associated with temporary construction areas rather than permanent infrastructure. The permanent infrastructure remains located on shallower peat or more competent ground where practicable, avoiding permanent loss of deeper peat.

These temporary construction effects are short-term in nature and will be subject to reinstatement following completion of works. Restoration measures, including removal of temporary hardstanding, peat re-profiling, and surface recovery, will allow for the re-establishment of peatland function over time.

On this basis and given that the revised design does not introduce new or increased encroachment into peatland resources compared with the Consented Development, the significance of effects on peat and carbon-rich soils remains Minor (adverse), consistent with the original assessment.

Groundwater Dependent Terrestrial Ecosystems

The Proposed Development has been assessed against the 2021 baseline characterisation of potential GWDTE, including M6 and M23 habitat communities identified in Figure 10-2. The updated layout remains within the same habitat corridors as the Consented Development and does not extend into areas of higher ecological sensitivity.

The baseline assessment indicates that these communities are primarily sustained by a combination of surface water inputs and shallow groundwater influence, rather than reliance on deeper groundwater systems.

As the revised design does not alter the drainage regime, excavation depth, or introduce dewatering effects, the underlying hydrological mechanisms supporting these habitats remain unchanged. The existing mitigation measures, including the maintenance of surface flow connectivity through cross-drainage, remain appropriate and effective.

Accordingly, the magnitude of effect remains unchanged and the significance of effects on GWDTE is retained as Moderate, consistent with the Consented Development.

Geology and Mining History

The Proposed Development has been reviewed against the 2021 geological baseline and Coal Authority data to assess potential effects on ground stability and mining features.

A comparison of the Proposed Development with Mining Features mapping (Figure 10-5) confirms that all three turbine locations remain located outside of designated Development High Risk Areas. The infrastructure avoids all recorded mining features, including shafts, adits, and zones of probable shallow workings.

While the increased turbine height results in revised structural loading conditions, the underlying geological setting remains consistent with that assessed in 2021, comprising stable Carboniferous bedrock conditions with no identified constraints relating to instability or legacy mining.

The Proposed Development does not introduce infrastructure into areas of known geological hazard. On this basis, the magnitude of risk remains low and the significance of effects on geology and mining features remains Negligible to Low.

Flood Risk and Runoff

The Proposed Development has been assessed against SEPA flood mapping and the 2021 baseline to determine whether the changes from the Consented Development have potential to influence flood risk or surface water behaviour.

The Proposed Development continues to avoid all areas identified as being at high risk of fluvial flooding. The Proposed Development Site remains predominantly outside mapped flood extents, with flood risk largely associated with localised surface water accumulation during periods of intense rainfall.

The increase in impermeable surface area associated with larger turbine bases and hardstandings is considered minimal in the context of the wider catchment. As such, there is no material change to runoff volumes or peak flow contributions at a catchment scale.

Surface water will continue to be managed through appropriate Sustainable Drainage Systems (SuDS), consistent with best practice guidance. These measures ensure attenuation, controlled discharge, and sediment management during both construction and operation.

Accordingly, the Proposed Development is not expected to alter flood frequency or magnitude, and the significance of effects remains Negligible, consistent with the Consented Development.

10.3 Mitigations

The assessment confirms that the nature, magnitude, and significance of effects on hydrology, hydrogeology, peat, soils, and flood risk remain consistent with those identified for the Consented Development. As such, the mitigation strategy established for the Consented Development remains applicable.

No material changes to infrastructure layout, receptor interactions, or impact pathways have been identified that would require the development of additional or fundamentally revised mitigation measures. The mitigation framework previously defined therefore continues to provide a proportionate and effective response to the potential environmental effects of the Proposed Development.

Key mitigation measures will continue to be implemented through the CEMP, supported by specialist input from an Ecological Clerk of Works (ECOW), and include measures relating to:

- Protection and management of surface water and groundwater resources;
- Avoidance and micro-siting of infrastructure within sensitive peat and soil areas;
- Maintenance of hydrological connectivity across GWDTE habitats through appropriate drainage design; and

- Implementation of sediment and runoff control measures during construction.

Where peat and habitat restoration opportunities are identified, these will be addressed through the HMP, which provides for the restoration and enhancement of priority habitats through appropriate hydrological management. In summary, the mitigation measures secured for the consented Development remain sufficient to address the effects associated with the Proposed Development, and no additional mitigation is required.

10.4 Summary

The assessment confirms that the potential impacts associated with the Proposed Development remain broadly consistent with the those identified for the Consented Development.

A comparative review of the updated layout against the 2021 technical baseline, supported by current mapping of peat depths (Figure 10-3), water features (Figure 10-2), and mining legacy (Figure 10-5), indicates that the revised infrastructure continues to adhere to the established avoidance strategies and protective buffers.

Although the footprint of the turbines has increased, the permanent infrastructure remains located primarily within areas of shallow peat. Any interaction with deeper peat at Turbine 3 is associated with temporary construction activities, which will be subject to reinstatement and restoration measures following completion of works. As such, no material change to the long-term function of peatland hydrology or carbon storage is anticipated.

The 50m buffers to watercourses remain unaffected by the revised layout, and separation from private water supplies continues to be maintained through existing topographic and hydrological constraints. Likewise, no changes to mining legacy constraints or geological stability risk have been identified.

In conclusion, the nature, magnitude, and significance of effects on hydrology, hydrogeology, peat, soils, and geology remain Minor to Moderate at most, consistent with the findings of the Consented Development EA. The existing mitigation, including the CEMP and HMP, remains appropriate and sufficient to address the effects of the Proposed Development.

11. Traffic and Transport

The Transport and Access appraisal (see Technical Appendix 11-1: Transport Assessment) considers the potential transport related effects of construction of the Proposed Development, taking into account the additional construction traffic that would be generated when compared with the Consented Development.

Only construction stage effects have been assessed, the operational and decommissioning stages of the Proposed Development have been scoped out of the assessment.

The appraisal provides up to date road collision statistics and updated baseline traffic data to the likely year of construction, 2028.

The study area comprises Auchengray Road, the A704, A71, A899 and A70. These routes would accommodate construction traffic and abnormal loads arriving from either the Port of Rosyth or KGV Docks, Glasgow. The study area remains unchanged from the Consented Development.

The construction programme associated with the Proposed Development is anticipated to cover a 9 month period, during which 1,106 HGVs would access the Site equating to 34 daily total HGV trips (approximately 17 inbound plus 17 outbound) during the busiest construction month (Month 1).

This represents an increase of approximately 6 HGV movements per day during the peak month compared to the Consented Development. From months 4 to 9 there are expected to be, on average, a maximum of 5 inbound and 5 outbound HGV movement per day.

The increase in material quantities and resultant vehicle movements for the Proposed Development, compared to the Consented Development is as follows:

- Imported stone: 157 additional loads;
- Steel reinforcement and concrete for turbine bases: 60 additional loads;
- Two additional turbine component deliveries.

Staff vehicle movements are expected to remain the same as anticipated for the Consented Development at 15 inbound and 15 outbound vehicle movements per day.

A robust assessment was undertaken based on a conservative approach for the total construction traffic movements and the worst-case scenario for each road link.

The assessment indicated that on the A71, A968, A704 and A70, the increase in total traffic as a result of construction traffic in the peak month was negligible with an increase of less than 4%. On Auchengray Road the increase in total traffic during the peak month was 10.4% which is due to the very low baseline levels of traffic using this road (617 vehicles per day in 2028).

The percentage increases in HGVs are negligible for the A71, A899, A704 and A70 routes as the percentage impact is below 10%. This is consistent with the assessment for the Consented Development.

The percentage impact on HGV movements on the Auchengray Road link is identified as 181.4%, compared to 155% for the Consented Development. The main reason for this is the existing low level of HGV traffic identified on this road link (19 per day in 2028) which means that the percentage impact is greatly inflated and is not considered to be a true barometer of the impact that will be experienced.

The total construction HGV traffic of 34 vehicles is the sum of 17 inbound vehicles and 17 outbound vehicles (compared to 14 inbound and 14 outbound for the Consented Development). Split over the

working day of 12 hours (0700-1900), the hourly flow would be less than 3 vehicles which on average equates to 1.5 vehicles per hour in each direction through the day.

A CTMP is proposed which would include measures to reduce and mitigate the effects of construction traffic including designated a route for HGV traffic to approach from the north to avoid HGVs travelling through Auchengray or Woolfords.

No significant cumulative or residual transport effects are anticipated.

The appraisal concludes that the additional traffic generated by the Proposed Development is a negligible increase from the Consented Development of approximately 6 HGV movements per day during months 1 to 3 and 2 additional HGV movements per day during months 4 to 7. There is no change to the overall impact or significance of effects and the conclusion of no significant effects as reported for the Consented Development remains unchanged.

12. Other Issues: Aviation, Telecommunications and Shadow Flicker

12.1 Aviation

The Proposed Development Site lies approximately 52km east of Glasgow Airport, 70km northeast of Glasgow Prestwick Airport, 47km north of the Lowther Hill radar station, 32km south east of Cumbernauld radar station, 31km south of Kindardine radar station and 22km south west of Edinburgh Airport.

The Proposed Development is potentially visible from Lowther Radar, Kincardine Radar, Edinburgh Terma Radar, Glasgow Terma Radar and Glasgow NASR Radar. It will also potentially effect Prestwick Air Traffic Control (ATC).

The proposed increase in tip height from 180m to 200m may marginally increase potential interactions with these aviation radar assets; however, radar mitigation has already been contracted with NATS and Edinburgh Airport, and the proven mitigation solution agreed for the Consented Development will be amended as required.

Aviation constraints are shown on Figure 12-1: Aviation and Telecommunications Constraints. No effect is predicted on En-Route Navigational Aid or Radio Communication infrastructure.

The Proposed Development Site lies within a Low Priority Military Low Flying Area. Given that the Proposed Development is greater than 150m in tip height, the Applicant is committed to installing aviation lighting to meet Civil Aviation Authority (CAA) and MoD requirements.

The Proposed Development remains subject to the planning conditions attached to the Consented Development, including the requirement for an aviation lighting scheme, MoD notification, and Radar Mitigation Schemes for Edinburgh Airport and NATS.

With aviation lighting and radar schemes approved before turbine erection, no change to the previous conclusion is predicted and no significant aviation effects are expected.

12.2 Telecommunications

Based on an updated initial desk study (utilising the OFCOM Spectrum Information Portal), no registered links are within the Proposed Development Site, as illustrated on Figure 12-1 (Map 4). As such, the increase in turbine tip height from 180m to 200m does not introduce any new conflicts with existing telecommunication infrastructure or fixed links.

If telecommunication links are later identified within the Site, if required, designed-in mitigation would be applied to ensure that no telecommunication links would be affected as part of the Proposed Development.

Taking into consideration the fact that the baseline remains unchanged, there are anticipated to be no new or additional significant effects in relation to telecommunications compared to the Consented Development.

12.3 Shadow Flicker

OS mapping has been used to identify properties with potential susceptibility to shadow flicker, in line with the Parsons Brinckerhoff study Update of UK Shadow Flicker Evidence Base (DECC, 2011).

The area around the proposed turbine locations within a distance of 10 rotor diameters (1,750m) and 130 degrees either side of north (the zone of potential shadow flicker) has been mapped and is

shown in Figure 12-2: Shadow Flicker. The study area has been updated to reflect the increased dimensions and 200m tip height of the Proposed Development.

Several residential properties fall within 10 rotor diameters of the Proposed Development, and therefore further appraisal is set out in the section below.

Shadow Flicker Appraisal

Shadow flicker can arise from the passing of the moving shadow of a wind turbine rotor blade over a narrow opening such as the window of a nearby residence. A similar effect can also occur when the gloss blades of a rotating turbine reflect the sun causing a flashing light. To mitigate the potential for 'blade glint,' all turbines will be finished with a semi-matt, non-reflective coating in accordance with industry best practice.

Shadow flicker happens only when a certain combination of conditions coincide at particular times of the day and year, mainly in the winter months when the sun is low in the sky (DECC, 2011). UK Government guidelines (DECC, 2011) note that a limit of up of 30 hours per year or 30 minutes on the worst affected day is considered acceptable.

The occurrence of shadow flicker and the extent of its effects are dependent on a number of factors, namely:

- Distance from the wind turbine;
- Turbine hub height and rotor diameter;
- Speed of blade rotation;
- The proportion of sunny weather during the months when flicker can occur; and
- The size, shape and orientation of any windows or doors of neighbouring properties.

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

People with photosensitive epilepsy are usually sensitive to flickering light between 16-25 Hertz (Hz), although some people may be sensitive to rates as low as 3Hz and as high as 60Hz (Epilepsy Action, 2011).

Modern wind turbines are designed to operate at a frequency of less than 1Hz and are therefore well below the frequencies known to trigger photosensitive epilepsy (Epilepsy Action, 2011).

In assessing the effect of shadow flicker, the commercial software Garrad Hassan Windfarmer was used to calculate the expected number of hours of shadow flicker that could occur at each receptor. Calculations were undertaken for predicted shadow hours under a bare earth (worst-case) scenario.

For the bare earth (worst-case) scenario the following assumptions were made:

- All receptors have a window facing directly towards the turbine;
- The turbine blades were assumed to be rotating for 365 days per year;
- There is a clear sky 365 days per year;
- The turbine blades are always orientated in a perpendicular direction between the receptor and the sun;
- The receptor is occupied at all times; and
- No screening is present.

These assumptions result in a highly conservative assessment. The modelling results are typically considered to be a theoretical worst-case estimation of the actual impacts experienced, which would

not arise in practice given the assumptions listed above. Specifically, as the model does not account for regional sunshine probabilities (cloud cover) or the orientation of internal living spaces, the actual experienced flicker would be significantly lower than the theoretical maximums.

Similarly, as per the 'Update of UK Shadow Flicker Evidence Base- Final Report' (DECC, 2011), when the sun is close to the horizon, at dawn and dusk, the intensity of the sun's rays is reduced and they are less likely to cast distinct shadows. It is generally considered that when the sun is lower than 3° above the horizon, that shadow flicker is unlikely to occur.

Several properties at Woolford Cottages are identified as experiencing 31-50 hours of shadow flicker a year (Figure 12-2: Shadow Flicker). However, given the specific combination of conditions required for shadow flicker to occur, the likelihood and extent of actual effects are expected to be substantially lower than those predicted.

Mitigation

The Consented Development EA Report recommended the following mitigation:

"A shadow flicker mitigation programme shall be installed into the turbines (on commissioning). This shall ensure that all impacts are eliminated in the presence of conditions that would cause shadow flicker. This shall include the installation of light meters on the wind turbines and programming of the turbines to switch off during potential shadow flicker occurrences that have been predetermined - this programme shall be capable of being initiated at any time during the operational life of the proposed wind turbines.

Details of the said mitigation and intrinsic light meter installation shall be confirmed and approved in writing by the Planning Authority at the point of selection and installation.

This shall take cognisance of the shadow flicker assessment conclusion that that there are 24 properties within the study area that could theoretically receive shadow flicker in excess of the 30 hours per year threshold, and 23 properties experiencing over 30 minutes on any day.

At the reasonable request of the Planning Authority and following notification of alleged shadow flicker, the operator shall engage the services of a competent consultant to review the mitigation programme. Where shadow flicker has occurred, the operator shall make any reasonable adjustment to prevent further occurrence."

The Applicant is committed to developing a scheme for the avoidance or mitigation of any shadow flicker experienced by residential and commercial properties situated within 10 rotor diameters of any turbine forming part of the development and which lawfully exist. Details of the selected mitigation system and light meter installation will be submitted to the Planning Authority for written approval prior to commissioning.

Following receipt of any requirements from the Planning Authority regarding the Applicant will engage with a competent consultant to review the mitigation programme and make any necessary adjustments.

To ensure full alignment with the associated planning conditions, the following mitigation strategy is proposed for the development:

The turbines will have the ability to adopt or install additional environmental controls which protects the surrounding environment from the impact of wind turbines or protecting the wind turbines from the impact of the surrounding environment, including shadow flicker effects.

The turbines will deploy a shadow and flicker control function, to control flicker coming from the turbines during operation. The solution can either be Original Equipment Manufacturer delivered or by 3rd party shadow detection modules via a server interface for starting and stopping turbines. To ensure compliance with previously established standards, this programme will include the installation of light meters on the wind turbines to monitor real-time conditions.

The modules monitor and control turbine state, turbine production figures and weather data, and the module can then send start and stop commands to individual turbines if weather, time and date criteria match periods for site-specific modelled shadow flicker occurrence. This system will be programmed to ensure that any potential shadow flicker occurrences are managed to remain within the 30 hours per year and 30 minutes per day thresholds at identified sensitive receptors.

Taking into consideration the commitment to mitigation, no significant effects in relation to shadow flicker are anticipated.

13. Construction Environmental Management Plan

A draft CEMP has been prepared to support the Planning Application. This is provided in Appendix 13-1.

The purpose of a CEMP is to provide a framework to avoid, minimise or mitigate any construction effects on the environment caused by the Proposed Development. It acts as a starter for discussion to be developed further in due course ahead of project construction.

The measures identified should be included in method statements which should state the perceived risks to the aquatic environment, identify potential pollution pathways, and the mitigation measures to be employed which will negate the risk to any aquatic environment (UK Government, n.d.).

Mitigation measures include:

- Details of all proposed excavations and construction;
- Details of all areas to be used for the storage of substrate/spoil including a suitable buffer between location for storage of excavated spoil and construction materials and any watercourses or surface drain present on or adjacent to the Proposed Development Site;
- Details of the pollution prevention measures to be employed during construction and operation;
- Detailed drawing plans which illustrate a suitable buffer between location of refuelling, storage of oil/fuel, concrete mixing and washing areas and any watercourses or surface drain present on Site or adjacent to Site (at least 10m);
- A Storm Drainage Plan designed to the principles of SuDS in order to minimise the polluting effects of storm water on waterways;
- Regular inspections of machinery at the Proposed Development Site;
- Emergency spill procedures in place; and
- Mitigation in relation to controlling noise.

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