



Vale of Leven Wind Farm Limited

Vale of Leven Wind Farm

Additional Information: Volume I: Written Text

663510 – 4 (00)



MARCH 2025





RSK GENERAL NOTES

Project No.: G/P/663510/09/10/01

Title: Vale of Leven Wind Farm Additional Information: Volume I: Written Text

Client: Vale of Leven Wind Farm Ltd

Date: March 2025

Office: Glasgow

Status: Final

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Date:	<u>19/02/25</u>	Date:	<u>25/02/25</u>

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ABBREVIATIONS

AI	Additional Information
AIP	Aeronautical Information Publication
ANO	Air Navigation Order
AESLQ	Assessment of Effects on Special Landscape Qualities
AWI	Ancient Woodland
BMAA	British Microlight Aircraft Association
BMMP	Bat Mitigation Monitoring Plan
BEMP	Biodiversity Enhancement Management Plan
BNG	biodiversity net gain
BESS	Battery Energy Storage System
CAA	Civil Aviation Authority
AAT	Airfield Advisory Team
CC	Community Council
CEMP	construction (or contract) environmental management plan
CHVP	Cultural Heritage View Point
CIEEM	Chartered Institute of Ecology and Environmental Management
EclA	ecological impact assessment
ECoW	Ecological Clerk of Works
ECU	Energy Consents Unit of the Scottish Government
EDC	East Dunbartonshire Council
EIA	environmental impact assessment
EIAR	environmental impact assessment report
GA	General Aviation
GDL	Garden and Designed Landscape
GIS	geographic information system
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPG	Good Practice Guidance
GW	Gigawatt
ha	hectares
HES	Historic Environment Scotland
HMP	Habitat Management Plan
IEF	Important Ecological Features
IEMA	Institute of Environmental Management and Assessment
IFP	instrument flight procedures
IOF	Important Ornithological Features
km	kilometre

LCT	landscape character type
LDP	local development plan
LEPO	Long Established woodland of Plantation Origin
LLA	Local Landscape Area
LLTNP	Loch Lomond and Trossachs National Park
LLTNPA	Loch Lomond and Trossachs National Park Authority
LNCS	Local Nature Conservation Site
LVIA	landscape and visual impact assessment
m	metre
MW	megawatt
NCR	National Cycling Route
NERL	NATS En Route plc
NHZ	nature heritage zone
NPF	National Planning Framework
NS	NatureScot
NSA	National Scenic Area
NVC	national vegetation classification
OBEMP	Outline Biodiversity Enhancement Management Plan
OHS	Outer Horizontal Surface
OLS	Obstacle Limitation Surfaces
OWPS	Onshore Wind Policy Statement
PLHRA	Peat Landslide Hazard Risk Assessment
PMP	Peat Management Plan
PSR	primary surveillance radars
RSPB	Royal Society for the Protection of Birds
RVAA	residential visual amenity assessment
SC	Stirling Council
SEPA	Scottish Environment Protection Agency
SID	Standard Instrument Departure
SLQ	Special Landscape Qualities
SME	Small and Medium Enterprise
SNH	Scottish Natural Heritage (now NatureScot)
SPA	special protection area
SPP	Species Protection Plan
SSSI	site of special scientific interest
TA	Technical Appendix
UK	United Kingdom
VP	vantage point

WDC	West Dunbartonshire Council
WHW	West Highland Way
WLA	Wild Land Area
ZTV	zone of theoretical visibility

1 INTRODUCTION

- 1.1.1 In October 2023, Vale of Leven Wind Farm Ltd (the Applicant) submitted an application to the Energy Consents Unit (ECU) of the Scottish Government under Section 36 of the Electricity Act 1989 in respect of a proposed wind farm on land just over 2 km north-east of Bonhill and 2.8 km south of the Loch Lomond and the Trossachs National Park (LLTNP) in West Dunbartonshire. The proposed wind farm comprised 10 turbines of up to 250m to blade tip along with associated infrastructure and is hereafter referred to as ‘the Proposed Development’.
- 1.1.2 The application was accompanied by an Environmental Impact Assessment Report (EIA Report) prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) which provided the assessment of likely significant environmental effects of the Proposed Development. It includes 15 chapters with figures, visualisations and technical appendices, setting out the findings of the environmental impact assessment carried out.
- 1.1.3 Since the submission of the application for consent of the Proposed Development and subsequent consultation, consultation responses have been received from stakeholders and discussions have been held with the ECU, Historic Environment Scotland (HES), NatureScot (NS), Glasgow Airport among others, regarding technical aspects of the Proposed Development. Further to the consultation responses and subsequent discussion, the Applicant proposes to alter the Proposed Development by reducing the height of the turbines from 250m to tip to 220m to tip. The tip height and hub height of the turbines have therefore both reduced by 30 m, in response to consultation responses. No other alteration to the development is proposed. The Applicant has therefore prepared this Additional Information (AI) which includes substantive information relating to the likely significant effects of the Proposed Development as amended (“the Amended Development”). The AI will be published in accordance with Regulation 20 of the EIA Regulations. The Amended Development is described within Chapter 3 of this AI Report.
- 1.1.4 This document considers and assesses the difference between the environmental effects assessed in the 2023 EIA Report and describes the changes to likely significant effects of the Amended Development. Given the nature of updated information, not all chapters of the EIA Report require to be updated.
- 1.1.5 Therefore, the assessments, whilst numerical in their order, only contain the information which has required new or revised assessment. This is the case for all volumes, and therefore there may appear to be ‘gaps’ within the submission.
- 1.1.6 This AI follows the same chapter numbering for each topic as contained in the EIA Report. A note is provided to explain the basis for the decision that a chapter is not updated. In this case the relevant chapter in the 2023 EIA Report should be referred to.
- 1.1.7 This AI is contained in the following volumes:
- Volume 1: Written Text – this provides a written update and comprises new assessment where applicable. It is not set out in the same chapter numbering format as the original 2023 EIA Report;
 - Volume 2: Figures – updated and/or new figures; and

- Volume 3: Additional Information Appendices – updated and/or new technical appendices to complement the assessments undertaken within Volume 1.
- Addendum to Design Statement.
- Updated Planning & Sustainable Place Statement.

1.2 Contact for Further Information

- 1.2.1 Copies of the Additional Information and the application are available for public inspection in person, free of charge at West Dunbartonshire Council. The address is:

West Dunbartonshire Council
16 Church Street
Dumbarton
G82 1QL

- 1.2.2 For additional copies, a charge of £15 will be made for a full electronic copy of this Additional Information on CD or memory stick. Hard copies can be made available for a £500 charge.

- 1.2.3 Requests for copies should be made to:

James Baird
Vale of Leven Wind Farm Limited
22- 24 King Street
Maidenhead
Berks
SL6 1EF
E: info@valeoflevenwindfarm.com

1.3 Statutory Requirements

- 1.3.1 Statutory notices will be placed in relevant publications and all parties to whom an EIAR was sent to under Regulation 16 will be sent a copy of this AI Report.

2 APPROACH

2.1 Environmental Topics Considered

2.1.1 The approach to the scope of assessment has been adopted to be consistent with that taken in the EIA Report. Changes in the baseline or in potentially different assessment outcomes have been considered.

2.1.2 Accordingly, this AI covers the following topics:

- Updates to Chapters 1-4 to describe the Amended Development and changes to the policy context. These chapters are to be read together with chapters 1 to 4 of the EIAR.
- Chapter 5: Landscape and Visual, including relevant graphics, visualisations and appendices in order to describe and assess the effects of the Amended Development and to identify differences when compared to the Proposed Development. The **AI Chapter 5** provides updated figures and visualisations that have altered as a result of the reduced tip heights.¹
- Chapter 6: Ecology and Biodiversity, provides additional information relating to local nature conservation site designations relative to the Site; the management of peat as proposed as part of the Outline Biodiversity Enhancement Management Plan (OBEMP); and describes habitat management measures further in the context of the OBEMP. **AI Chapter 6**, figures and TAs are to be read together with the EIA report Chapter 6, figures and appendices.
- Chapter 7: Ornithology, provides a collision risk update and is to be read together with the EIAR Chapter 7, figures and appendices.
- Chapter 10: Archaeology and Cultural Heritage evaluates the effects of the Proposed Development on the Historic Environment (Cultural Heritage and Archaeology). The **AI Chapter 8** considers the impact of the Amended Development layout on cultural heritage and archaeology, provides further analysis of the contribution made by setting to the cultural significance of Dumbarton Castle (SM90107) in light of HES's objection based on the EIA Report layout and responds to HES's comments provided in their February 2024 objection. This includes the addition of a new cultural heritage viewpoint from Westferry The **AI Chapter 8**, figures, wirelines and photomontages are to be read together with the EIA Report Chapter 10, figures and appendices.
- Chapter 11: Noise; the **AI Chapter 11** addresses the change to the noise assessments between those of the candidate turbine selected for the Proposed Development and the candidate turbine for the Amended Development. It is to be read together with the EIA Report Chapter 10, figures and appendices.
- Chapter 12: Socio-economics to describe any likely significant change as a consequence of the Amended Development. This is covered in **Chapter 10** of the AI and should be read together with Chapter 12 of the EIA Report.

¹ Only the figures that have altered as a result of the revised tip heights i.e. the GIS figures that have the ZTV shown on them and all of the visualisations are provided. The GIS figures without the ZTV (e.g. landscape character) have not been resubmitted and have just been referred to in the text as remaining the same from the previous application.

- Update to Chapter 13: Aviation and Radar, in order to re-evaluate assessments and radar mitigation options for a decreased turbine height and to address objections from aviation stakeholders. The **AI Chapter 9** presents an updated assessment of affects on receptors.
- Chapter 14: Other Issues. The **AI Chapter 11** presents an updated assessment of affects on noise and shadow flicker receptors. It is to be read together with the EIA Report Chapter 14 which remains otherwise unchanged (see below).

2.1.3 The following chapters have not been updated:

- Chapter 8: Geology, Hydrology and Hydrogeology, given the worst case has already been assessed within the EIA Report based on a higher turbine.
- Chapter 9: Traffic and Transport, given the worst case has already been assessed within the EIA Report based on a higher turbine to tip .
- Chapter 14: Other Issues, given the worst case has already been assessed within the EIA Report for telecommunications, trees and woodland and carbon balance based on a higher turbine.

2.1.4 The Planning and Sustainable Place Statement and Design Statement submitted to support the Application have also been updated and are provided as separate documents.

3 PROJECT DESCRIPTION

3.1 Introduction

- 3.1.1 This section forms an update to Chapter 2: Proposed Development included within the EIA Report.
- 3.1.2 Only sections which require updating are included here and existing information which is not subject to change is not repeated.

3.2 Development Proposals

- 3.2.1 Following receipt of consultation responses to the Section 36 Application and detailed discussions with various consultees, a design review was carried out and a decision was made to alter the Proposed Development by reducing the height of the ten turbines from 250m to tip to 220m to tip.
- 3.2.2 The revised Proposed Development, henceforth referred to as the 'Amended Development' for clarity when differentiating between the two layouts does not contain any other alterations.
- 3.2.3 The indicative site layout presented in Figure 2.5 of the 2023 EIA Report remains unchanged.
- 3.2.4 Indicative wind turbine elevations applicable to the Amended Development are shown on AI Figure 3.1a.
- 3.2.5 All other components of the Amended Development remain as described in Chapter of the 2023 EIA Report.

4 RENEWABLE ENERGY AND POLICY FRAMEWORK

4.1 Accordance with the Development Plan

4.1.1 Based on the policy appraisal presented in the Planning & Sustainable Place Statement (2023) and as supplemented by this Update (full update document is provided separately), the Amended Development is considered to be acceptable in terms of its environmental effects and accords with the lead and with other relevant policies and with the Development Plan when it is read as a whole.

4.2 The Climate Crisis & Renewable Energy Policy Framework

4.2.1 The urgent need for onshore wind has been set out: a large increase in the deployment of this renewable energy technology is supported through a number of policy documents and by Scottish Government commitments – particularly as expressed in the Onshore Wind Policy Statement (OWPS), the recent Green Industrial Strategy and in NPF4.

4.2.2 Onshore wind was already viewed and described as “vital” to the attainment of targets in 2017. This imperative has only increased since a ‘climate emergency’ was declared by the Scottish First Minister in April 2019, in line with the recommendations made by the CCC (2019) ‘net zero’ publication³. Furthermore, the drive to attain net zero emissions is legally binding at the UK and Scottish Government levels by way of amendments to the 2008 Act and in Scotland through the provisions of the Climate Change (Scotland) Act 2009 and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

4.2.3 Achieving net zero is therefore a legal requirement, and the Scottish Government has recognised, in the OWPS, that a very substantial quantity of new onshore wind is required to meet the onshore wind target requirement by 2030 – namely a minimum of 20GW of operational capacity. Deployment of more onshore wind is described as being “*mission critical for meeting our climate targets*” in the OWPS. More recently, the UK Government has set a target to have 30GW of onshore wind operational by 2030 and the vast majority of that capacity is to be in Scotland.

4.2.4 The important benefits of the Amended Development have been set out in the context of the current climate emergency, and they would help attain the very challenging ‘net zero’ targets and contribute to improving security of supply. In addition, the proposal would deliver a wide range of socio-economic benefits, as described in the previous Chapter.

4.3 The Planning Balance

4.3.1 NPF4 and the OWPS are unambiguous as regards the policy imperative to combat climate change, the crucial role of further onshore wind in doing so, and the scale and urgency of onshore wind deployment required. As described in this statement:

4.3.2 NPF4 requires that the decision-maker must also identify and weigh the adverse effects of a proposed development. The way that decision makers can recognise the strengthening policy imperative and the increased weight that should be given to the

benefits of the Amended Development is by giving stronger weight in the planning balance to the seriousness and importance of energy policy related considerations and the contribution of the Amended Development in meeting green energy targets.

- 4.3.3 In this case, the Amended Development has a capacity of over 50MW; it is a National Development and also has the status of essential infrastructure in NPF4. It is a development that will help to deliver the national Spatial Strategy set out in NPF4. The Amended Development would make a valuable and near-term contribution to help Scotland, and the UK attain Net Zero, security of supply and related socio-economic objectives.
- 4.3.4 Furthermore, as explained above, the Scottish Government has recently issued the Green Industrial Strategy, and the Amended Development would be fully in line with the policy objectives and the Government's overall mission to maximise the benefits from onshore wind in relation to the wider national economy, as demonstrated by the Applicant's updated detailed Report on Net Economic Impact
- 4.3.5 The effects of the Amended Development, including the relevant effects listed in NPF4 Policy 11 (Energy) Paragraph (e) have been addressed, as detailed in the supporting information to the application. The Amended Development would deliver significant biodiversity enhancement, and the information in the AI demonstrates that the proposal is acceptable in relation to landscape and visual and other environmental and technical considerations. The Applicant, by amending the proposal has made an appropriate response to consultee positions.
- 4.3.6 In terms of NPF4 Policy 11, in considering the identified impacts of the Amended Development significant weight must be placed on its contribution to renewable energy generation and greenhouse gas emissions reduction targets.

4.4 Overall Conclusion

- 4.4.1 The policy set out in NPF4 and the OWPS requires a rebalancing of the consenting of onshore wind developments in response to the challenges of tackling the climate and nature crises. Having regard to the weight to be ascribed to the important benefits of the Amended Development it is considered that the benefits of the proposal clearly outweigh its adverse effects.
- 4.4.2 The up-to-date policy set out in NPF4 and the OWPS and the draft Energy Strategy provide strong and increased support for the grant of consent for the Amended Development.
- 4.4.3 The conclusion remains that the Amended Development would be consistent with all relevant policies of the Development Plan (NPF4 and the Local Development Plan), and with the Development Plan when read as a whole and relevant material considerations further support the position that consent should be granted, subject to appropriate consent and deemed planning conditions
- 4.4.4 The Amended Development is also supported by an update to the Planning and Sustainable Place Statement, which is separate from the Additional Information Report and is provided as a paper apart.

5 LANDSCAPE AND VISUAL ASSESSMENT

5.1 Introduction

- 5.1.1 This Chapter of the Additional Information (AI) contains the Additional Information Landscape and Visual Impact Assessment (AI LVIA) for the proposed wind farm at Vale of Leven (the Proposed Development, as described in Chapter 2 of the EIAR). This AI LVIA considers the effects of the revised turbine dimensions on the landscape and visual resource of the Site and the wider Study Area in relation to the findings of the October 2023 LVIA.
- 5.1.2 The AI LVIA has been prepared by landscape architects at SLR Consulting Ltd (SLR), directed by James Welch FLI BA Hons, Chartered Landscape Architect. The October 2023 LVIA was carried out by the same team of landscape architects, then working for Optimised Environments Limited (OPEN), which has subsequently become part of SLR.
- 5.1.3 The October 2023 LVIA was carried out on the basis of ten turbines with a maximum blade tip height of up to 250 m, hub height of 164 m, and associated infrastructure. In this AI LVIA, the assessment is based on a maximum tip height of 220 m for all of the turbines, with a nominal hub height of 134 m. The tip height and hub height of the turbines have therefore both reduced by 30 m, in response to consultation responses. The location of the turbines and infrastructure has not altered in any way.
- 5.1.4 This chapter should be read in conjunction with Chapter 5 of the October 2023 EIAR.
- 5.1.5 The October 2023 LVIA included a set of figures and visualisations. Where it is relevant (e.g. figures that show visualisations of the Proposed Development and the zone of theoretical visibility (ZTV)), these have been revised to illustrate the proposed reduction in turbine tip and hub height. Figures that have not been affected by the revised turbine dimensions have not been reproduced and the versions contained within the October 2023 LVIA should be referred to if required. The updated figures produced for the AI LVIA have been prefixed 'AI' to differentiate them from the superseded October 2023 versions that they replace.
- 5.1.6 OPEN/SLR has made minor alterations to its methodology since the production of the October 2023 LVIA but these are not material and the methodology used in this updated LVIA replicates that used for the October 2023 LVIA in order to maintain consistency between the assessments. The methodology is set out in Technical Appendix 5.1: LVIA Methodology (Volume 3) of the October 2023 EIA Report and has not been repeated here.
- 5.1.7 In November 2024, NatureScot issued new guidance² on the assessment of visible aviation lighting. This guidance is similar to the approach used in the October 2023 LVIA but with a key difference in that where automatic dimming of lights from 2,000 candela

² NatureScot (2024). Guidance on Aviation Lighting Impact Assessment
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(cd) to 200 cd is incorporated as embedded mitigation, it is no longer necessary to provide photomontages that illustrate 2,000 cd lighting at the night-time viewpoints or to assess the magnitude of change that would arise in a scenario of 2,000 cd lights.

- 5.1.8 In line with guidance that was current at that time, the October 2023 LVIA included photomontages that showed 2,000 cd lighting and an assessment of the magnitude of change and significance of effects with 2,000 cd lights. However, as the Applicant has committed to incorporating dimming mitigation on this project, it is no longer necessary for the night time assessment to include these elements, and this AI LVIA includes a revised assessment of night-time visual effects, carried out in accordance with the 2024 NatureScot guidance. This replaces the October 2023 EIAR lighting assessment.
- 5.1.9 NatureScot has also issued updated Guidance for Assessment of Effects on Special Landscape Qualities (AESLQ)³, which currently has consultative draft status. In order to maintain consistency with the October 2023 LVIA, and to allow comparison of effects, the assessment of effects on the special landscape qualities (SLQs) of Loch Lomond and the Trossachs National Park (LLTNP) has not been updated in line with this draft guidance.
- 5.1.10 The October 2023 LVIA included a full assessment of cumulative landscape and visual effects, based on various cumulative scenarios of operational, under construction, consented and application stage wind farms that were relevant at that time. A review of the cumulative situation has indicated that there are no new proposed wind farm schemes or changes to the status of wind farm schemes that would materially affect the findings of the cumulative assessment that was carried out in the October 2023 LVIA.
- 5.1.11 The October 2023 LVIA concluded that there would be no significant cumulative effects arising either from the combined effects of all wind farms, including the Proposed Development, or from the addition of the Proposed Development to other wind farms. The cumulative assessment that was carried out in the October 2023 LVIA remains valid as the cumulative wind farms considered in the assessment have not altered, and the revised viewpoint assessment concludes that the effects of the Amended Development have either reduced or remain the same. A revised cumulative assessment has therefore not been carried out.
- 5.1.12 Table 5.1 describes which parts of the October 2023 LVIA (including figures and Technical Appendices) remain relevant or have been updated and superseded in this AI LVIA.

³ NatureScot (2024). Guidance for Assessment of Effects on Special Landscape Qualities (Guidance for AESLQ – Consultative Draft)

Table 5.1: Review of Relevant and Superseded LVIA Material

October 2023 LVIA Component	Status	Revised Name/Number
Text Documents		
Landscape and Visual Impact Assessment (LVIA) (Chapter 5 of October 2023 EIA Report)	The findings of the October 2023 LVIA have been superseded and are replaced by this chapter of the AI. Other elements of the October 2023 LVIA (e.g. baseline descriptions) remain relevant and can be referred to in the October 2023 submission documents.	The revised findings of the AI Landscape and Visual Impact Assessment (LVIA) are presented in this chapter of the AI EIA Report
Technical Appendix 7.1 Landscape and Visual Impact Assessment Methodology	This Appendix remains relevant to the AI LVIA and has not been revised. It can be referred to in the October 2023 submission documents.	n/a
Technical Appendix 7.2 Residential Visual Amenity Assessment	The baseline descriptions in Technical Appendix 7.2 remain relevant and can be referred to in the October 2023 submission documents. The findings of this Appendix have been superseded and are replaced by AI Table 5.5, which is presented subsequently in this chapter. The figures associated with this Appendix have been updated and are listed above, in relation to other LVIA figures.	n/a
Figures		
Figures 5.1 – 5.6b (baseline figures, including landscape character, landscape planning designations and principal visual receptors)	These figures remain relevant to the AI LVIA and have not been revised. They can be referred to in the October 2023 submission documents.	n/a
Figure 5.7a – Figure 5.13b (ZTV figures, including ZTVs with viewpoints, landscape character, landscape planning designations, principal visual receptors, and lighting intensity ZTV)	These figures have been updated to show the new ZTV for the Amended Development. The revised versions included in this submission, prefixed 'AI', should be referred to; the October 2023 versions have been superseded and should not be referred to.	AI Figure 5.7a – AI Figure 5.15bb
Figure 5.14a and Figure 5.14b (cumulative wind farm location plans)	These figures remain relevant to the AI LVIA and have not been revised. They can be referred to in the October 2023 submission documents.	n/a
Figure 5.15a – Figure 5.15bb (cumulative ZTVs)	These figures have been updated to show the new ZTV for the Amended Development. The revised versions included in this submission, prefixed 'AI', should be referred to; the October 2023 versions have been superseded and should not be referred to.	AI Figure 5.15a – AI Figure 5.15bb
Figure 5.16a – Figure 5.48g	These figures have been updated to show the new dimensions of the Amended Development. The	AI Figure 5.16a – AI Figure 5.48g

October 2023 LVIA Component	Status	Revised Name/Number
(viewpoint visualisations)	revised versions included in this submission, prefixed 'AI', should be referred to; the October 2023 versions have been superseded and should not be referred to.	
Technical Appendices Figures		
TA 5.2 Figure 1 (blade tip ZTV with residential properties)	This figure has been updated to show the new ZTV for the Amended Development. The revised version included in this submission, prefixed 'AI', should be referred to; the October 2023 version has been superseded and should not be referred to.	AI TA 5.2 Figure 1
TA 5.2 Figure 2a – TA 5.2 Figure 2j (wireline views from residential properties)	These figures have been updated to show the new dimensions of the Amended Development. The revised versions included in this submission, prefixed 'AI', should be referred to; the October 2023 versions have been superseded and should not be referred to.	AI TA 5.2 Figure 2a – AI TA 5.2 Figure 2j
Design Statement		
Design Statement (DS)	This document remains relevant to the AI LVIA and has not been revised. It can be referred to in the October 2023 submission documents. An addendum ('AI Design Statement') has been produced as part of the AI and this should be referred to in conjunction with the October 2023 DS.	AI Design Statement should be read in conjunction with October 2023 Design Statement.

5.2 Purpose of the AI LVIA

- 5.2.1 This AI LVIA provides a revised assessment that compares the findings of the October 2023 LVIA with an updated assessment of the Amended Development, taking into account the reduction in turbine tip height and hub height from 250 m/164 m to 220 m/134 m respectively.
- 5.2.2 This assessment is presented in the following sections:
- Section 5.3: Revised Viewpoint Assessment;
 - Section 5.4: Revised Night-Time Visual Assessment;
 - Section 5.5: Revised Assessment of Effects on Visual Receptors;
 - Section 5.6: Revised Assessment of Effects on Landscape Character Receptors; and
 - Section 5.7: Revised Residential Visual Amenity Assessment.
- 5.2.3 The AI LVIA also provides clarification on several matters raised by statutory consultees in relation to the October 2023 LVIA, in Section 5.8.

5.3 Revised Viewpoint Assessment

- 5.3.1 The proposed reduction in the tip height and hub height of the turbines will result in changes to the appearance of the Amended Development. This is best illustrated through a revised assessment of effects on the 33 viewpoints that were included in the October

2023 LVIA, with consideration given to potential reduction to the magnitude of change, level of effect and significance of the effect on views.

- 5.3.2 Revised visualisations for the viewpoints are shown in **AI Figures 5.16 – 5.48**.
- 5.3.3 The revised assessment of effects on viewpoints is set out in AI Table 5.3, which is included at the end of this Chapter. This table shows the original findings of the October 2023 LVIA and the updated magnitude of change and significance of effect. Where a change to the magnitude of change and/or significance is assessed, the box is shaded grey. The assessment of sensitivity remains the same as assessed in the October 2023 LVIA.
- 5.3.4 In summary, AI Table 5.3 indicates that the proposed reduction in the dimensions of the ten turbines in the Proposed Development would be beneficial to the appearance of the Amended Development and would secure positive mitigation through design. The key improvements seen at the 33 LVIA viewpoints are:
- a reduction in the vertical impact of turbines, particularly when they are seen on the skyline;
 - when the turbines are seen partly against the skyline, the proportion of turbines seen rising above the skyline is reduced, again reducing vertical impact;
 - an improved relationship between the turbines and the landform on which they stand, as the hubs are more closely related to the landform; and
 - a reduction in the perceived scale of the turbines in relation to the baseline characteristics of the view including, in some cases, specific features (e.g. the Lang Crag).
- 5.3.5 These improvements lead to a general reduction in the visual impact of the Amended Development and, at some viewpoints, a reduction in the magnitude of change, level of effect, and/or significance of the effect. The relevant viewpoints are listed below.
- Viewpoint 10 (Langbank):
 - magnitude of change reduces from medium-high to medium;
 - level of effect reduces from major to major/moderate;
 - effect remains significant;
 - Viewpoint 12 (Endrick Viewpoint):
 - magnitude of change remains medium-low;
 - level of effect remains moderate;
 - effect becomes not significant;
 - Viewpoint 13 (Finlaystone Estate):
 - magnitude of change reduces from medium-high to medium;
 - level of effect reduces from major to major/moderate;
 - effect remains significant;
 - Viewpoint 18 (Port Glasgow):
 - magnitude of change reduces from medium to medium-low;
 - level of effect reduces from major/moderate to moderate;
 - effect remains significant;
 - Viewpoint 19 (Conic Hill):
 - magnitude of change reduces from medium to medium-low;

- level of effect reduces from major/moderate to moderate;
- effect remains significant;
- Viewpoint 20 (Waterbus):
 - magnitude of change remains medium-low;
 - level of effect remains moderate;
 - effect becomes not significant;
- Viewpoint 22 (Balfron Cemetery):
 - magnitude of change reduces from medium to medium-low;
 - level of effect reduces from major/moderate to moderate;
 - effect remains significant;
- Viewpoint 24 (Salloch):
 - magnitude of change remains medium-low;
 - level of effect remains moderate;
 - effect becomes not significant;
- Viewpoint 32 (Tarbet):
 - magnitude of change reduces from low to low-negligible;
 - level of effect remains moderate/minor;
 - effect remains not significant;
- Viewpoint 33 (Ben Ledi):
 - magnitude of change reduces from low to low-negligible;
 - level of effect remains moderate/minor; and
 - effect remains not significant.

5.4 Revised Night-Time Visual Assessment

- 5.4.1 As the turbines in the Amended Development have a blade tip height of over 150 m, visible aviation lighting of turbines is required and an assessment of night-time effects was carried out in the October 2023 LVIA. This is also a requirement for the revised layout due to the tip height of 220 m.
- 5.4.2 As described in the October 2023 LVIA, all of the turbine nacelles will be fitted with visible aviation lighting. Tower lighting will not be required.
- 5.4.3 The October 2023 LVIA included night-time photomontages for five viewpoints:
- Viewpoint 2 (Minor road (John Muir Way/NCR 7) north of site);
 - Viewpoint 14 (WHW Near Drymen);
 - Viewpoint 17 (Balmaha Harbour);
 - Viewpoint 22 (Balfron Cemetery); and
 - Viewpoint 23 (Luss Campsite).
- 5.4.4 Two photomontages were produced for each of these viewpoints, one illustrating theoretical visibility of 2,000 cd and the other of 200 cd light fittings on the turbine nacelles. The October 2023 night-time assessment focussed on the effect that the Proposed Development would have on these five viewpoints, with broad conclusions also drawn as to likely night-time effects at other viewpoints and visual receptors.

- 5.4.5 As noted above, updated guidance (NatureScot, 2024) no longer requires photomontages or an assessment of magnitude of change to be produced for the 2,000 cd lights scenario on the basis that dimming mitigation is incorporated into the Amended Development. This is because Civil Aviation Authority 2017 Policy Statement permits the ability for automatic dimming of the intensity of the nacelle light to not less than 10% of the minimum peak intensity if the horizontal meteorological visibility in all directions from every wind turbine in the group is more than 5 km. Meteorological visibility is measured using a sensor mounted on the turbine nacelle(s). When meteorological visibility is less than 5 km, the lights will operate at 2,000 cd, but a person's ability to perceive the lights at this intensity is likely to be affected by compromised visibility (poor weather conditions).
- 5.4.6 This potentially valuable mitigation option allows for the maximum emitted lighting intensity to be substantially reduced. As the Applicant has committed to this mitigation, the 2,000 cd scenario no longer requires to be illustrated or assessed in the night time assessment and the night-time assessment of visual effects has been updated accordingly.
- 5.4.7 This approach is described in paragraphs 82 and 83 of the guidance (NatureScot, 2024) (emphasis added):
- “We advise that, if automatic dimming is not proposed as mitigation, photomontages should provide an impression of the likely intensity of light emissions from 2000 cd intensity aviation lights. However, where dimming is included as embedded mitigation, the photomontage visualisations can illustrate reduced 200 cd intensity aviation lights only rather than 2000 cd intensity. It is recommended that photomontages do not attempt to illustrate the gradual reduction in light intensity over distance, due to the difficulty in accurately illustrating this characteristic. As discussed in Appendix 4 of this Guidance, the assessment should also acknowledge that, when triggered (typically for around 5% to 10% of the time), 2000 cd lights will normally be perceived at less than full intensity, due to less than optimum visibility, and that triggering of the lights to 200 cd will predominate.*
- The magnitude of change should be described for the maximum case scenario (2000 cd, or 200 cd where dimming of aviation lights proposed as embedded mitigation) in respect of each receptor, using similar terms to the methodology applied in the LVIA and should be based on principles of GLVIA3.”*
- 5.4.8 As a result of this, the updated night-time visualisations do not include 2,000 cd photomontages. Updated versions of the 200 cd photomontages that show the reduced turbine dimensions have, however, been included for the relevant viewpoints, as listed above.
- 5.4.9 Lighting ZTVs (e.g. hub height ZTVs that show theoretical visibility of the hubs of the turbines that would be fitted with visible lights) have also been updated with the reduced turbine dimensions and are shown on AI Figure 5.9a (45 km radius) **and AI Figure 5.9b** (20 km radius).
- 5.4.10 The October 2023 LVIA included a lighting intensity ZTV (Figure 5.9c). This showed the possible reduction in light intensity that could be achieved through vertical directional intensity mitigation, which is effected by the use of lights that have a reduced light intensity

above and below the horizontal plane. This is described in paragraph 84 of NatureScot guidance (emphasis added):

“Vertical directional intensity mitigation could also give rise to reduced lighting intensities depending on the viewpoint location and a ‘lighting intensity ZTV’ could help illustrate this. This Guidance recommends against seeking to portray the resultant light intensity reductions in photomontages, due to the challenge of achieving accurate representation (and committing to a specific bulb type at application stage). Different manufacturer’s light models vary in their intensities at different angles above and below the horizontal plane, so unless the developer is willing to commit to a particular model at application stage (and accept a condition to this effect), the assessment will need to be appropriately cautious about the assumed reductions in brightness.”

- 5.4.11 Since the production of the October 2023 LVIA, advances in technology have altered the outputs or emissions associated with the reduced intensity that can be achieved at different angles above and below the horizontal plane through the use of vertical directional intensity mitigation. As a result of this, the lighting intensity ZTV (Figure 5.9c) that was incorporated in the October 2023 has been updated (**AI Figure 5.9c**) with revised hypothetical lighting intensities as well as showing the reduced hub height.
- 5.4.12 The hypothetical intensities shown on the lighting intensity ZTV are based upon one specific light fitting (CEL-WT-MIC). It is important to note, as described above in paragraph 84 of the NatureScot guidance, that these lighting intensity figures are provided as an illustrative example only, and the Applicant has not committed to using this specific light, or indeed any light that incorporates vertical directional intensity mitigation, as this choice is normally made at turbine procurement stage. The assessment of night-time effects is therefore principally focussed on a 200 cd light intensity, and any assumed reductions in brightness that might be achieved through the use of vertical directional intensity mitigation are referred to in a secondary, supplementary assessment that should be considered as illustrative and treated with caution. However, the Applicant is committed to mitigating the effects of aviation lighting and will endeavour to source the best technology at time of delivery.
- 5.4.13 The updated night-time assessment included in this AI LVIA takes into account all of the updated information, including the updated 200 cd night-time photomontages for the night-time viewpoints, the revised lighting ZTVs (**AI Figure 5.9a** (45 km radius) and **AI Figure 5.9b** (20 km radius)), and the hypothetical lighting intensities as shown on the updated Lighting Intensity ZTV (**AI Figure 5.9c**).
- 5.4.14 The revised night-time photomontages indicate that the number of visible turbine lights will not alter as a result of the reduced tip and hub heights of the revised layout, as all of the nacelles that were previously theoretically visible at the five illustrated viewpoints will remain theoretically visible. At Viewpoint 23 (Luss Campsite), one of the lights is obscured by vegetation in the photomontage but is likely to be visible from nearby locations or would become visible should the vegetation be removed.
- 5.4.15 Whilst all of the lights that were previously visible will remain visible, the 30 m reduction in hub height is likely to reduce the effect of visible aviation lighting through the reduced elevation of the lamps. This reduction will be most noticeable where turbines are seen on the skyline, as lights on the reduced-height hubs will not appear so elevated above the

skyline. This effect, while beneficial, will not reduce the night-time magnitude of change at any of the 33 viewpoints. It might, however, reduce the night-time magnitude of change at some other locations around the study area, where some or all of the turbine hubs, and therefore lights, will no longer be visible due to the reduced height of the hubs. The hub height ZTVs (AI Figure 5.9a (45 km radius) and **AI Figure 5.9b** (20 km radius) show the areas where various numbers of hubs, and therefore lighting, have theoretical visibility.

5.4.16 The revised assessment of night-time effects on viewpoints is set out in AI Table 5.4, which is included at the end of this Chapter. This table shows the original findings of the October 2023 LVIA and the updated significance of effect for the 200 cd scenarios. The October 2023 LVIA assessment of the 2,000 cd scenarios are greyed out in the table and are not reassessed in relation to the reduced turbine dimensions as they are no longer relevant to the assessment, as described above.

5.4.17 In summary, AI Table 5.4 indicates that the reduction in the dimensions of the turbines in the Amended Development will not materially alter the findings of the October 2023 LVIA in relation to visible aviation lighting on the turbine nacelles. However, as a result of updated guidance (NatureScot, 2024), the Applicant's commitment to the use of dimming technology ensures that 2,000 cd scenarios are no longer a requirement of the assessment. As a result of this, the revised assessment indicates a reduction in the significance of the night-time effect at some viewpoints as noted below:

- Viewpoint 5 (A811 Near Balloch): effects on all viewers are now not significant in any scenario (effects on residents were previously significant in the 2,000 cd scenario);
- Viewpoint 10 (Langbank): effects on all viewers are now not significant in any scenario (effects on residents were previously significant in the 2,000 cd scenario);
- Viewpoint 11 (Inchcailloch): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 12 (Endrick Viewpoint): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 13 (Finlaystone Estate): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 14 (WHW Near Drymen): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 15 (Ben Bowie): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 16 (Dumgoyne Hill): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
- Viewpoint 17 (Balmaha Harbour): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario); and
- Viewpoint 18 (Port Glasgow): effects on all viewers are now not significant in any scenario (effects on residents were previously significant in the 2,000 cd scenario).

5.4.18 The removal of the requirement to assess the effects of 2,000 cd scenarios also affects the October 2023 LVIA assessment of night-time effects on a number of settlements and routes, as follows:

- Balmaha: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Croftamie: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Drymen: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Dumbarton: significant effects will now arise (very intermittently) within a maximum of approximately 6 km of the Amended Development (effects beyond this were previously intermittently significant in the 2,000 cd scenario);
- Gartocharn: some significant effects might arise but will be very intermittent and limited (significant effects were previously more widespread in the 2,000 cd scenario);
- Greenock/Port Glasgow: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Killearn: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Langbank: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- Vale of Leven: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
- A82: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
- John Muir Way: a significant effect might arise over one stretch but will be very intermittent (significant effects were previously more widespread in the 2,000 cd scenario);
- Rob Roy Way: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
- Scottish National Trail: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
- Three Lochs Way: a significant effect might arise over one stretch but will be very intermittent (significant effects were previously more widespread in the 2,000 cd scenario);
- West Highland Way: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
- National Cycle Route 7: a significant effect might arise over one stretch but will be very intermittent (significant effects were previously more widespread in the 2,000 cd scenario); and
- Core paths, waterborne routes and roads: significant effects will now arise (very intermittently) within a maximum of approximately 5.9 km of the Amended Development (effects up to approximately 10.7 km away were previously intermittently significant in the 2,000 cd scenario).

5.4.19 Overall, it can be concluded that the reduction in the turbine dimensions of the Amended Development is unlikely in itself to materially alter the findings of the October 2023 LVIA night-time assessment. However, the removal of the requirement to assess the effects of 2,000 cd scenarios indicates, very broadly, that the extent of significant effects of visible aviation lighting on views that gain a clear and open outlook towards the Amended

Development will be considerably reduced, extending up to a maximum of approximately 5.9 – 6 km rather than 10.7 km as previously assessed for the 2,000 cd scenario.

- 5.4.20 The extent of significant effects is likely to be further reduced if vertical directional intensity mitigation is achieved, although the effect of this mitigation should be regarded with caution, and the Applicant has not committed to the use of this type of lighting or any specific light fitting.
- 5.4.21 It is important to note that while it is no longer a requirement to illustrate or assess the effects of 2,000 cd lighting, it is possible that there will be occasions where lighting is apparent at an intensity that is greater than 200 cd, and up to 2,000 cd, for example when weather conditions are patchy around the site. In this event, there is potential for visible aviation lighting to be seen with higher intensity and at greater distances from the Amended Development than is described in the above assessment. Notwithstanding this, the Guidance indicates that *“In terms of the frequency of dimming to 200 cd, submitted lighting studies suggest that nacelle lights will typically sit above the cloud base on several hundred occasions per month but that, when not in cloud, dimming mitigation will typically be triggered for around 90% to 95% of the time (but can vary depending on site specific circumstances).”* The benefits of dimming mitigation are therefore convincing.

5.5 Revised Assessment of Effects on Principal Visual Receptors

- 5.5.1 The revised assessment of effects on viewpoints has indicated that the reduced tip and hub heights of the turbines will result in widespread improvements in the appearance of the Amended Development as well as a reduction in magnitude of change and significance of effects at specific viewpoints.
- 5.5.2 A significant effect has become not significant at three viewpoints – Viewpoint 12 (Endrick Viewpoint), Viewpoint 20 (Waterbus) and Viewpoint 24 (Salloch) - which are 7.46 km, 13.11 km and 14.98 km away from the Amended Development respectively. There are specific circumstances at Viewpoint 12, where vegetation will have an increased screening effect with the smaller turbines. Viewpoints 20 and 24 are, however, more widely representative of open and clear visibility throughout the study area and provide an indication of how effects might vary as a result of the reduced tip and hub heights.
- 5.5.3 At both Viewpoint 20 and Viewpoint 24, the effect has remained of a ‘moderate’ level but has now been assessed, through the application of professional judgement, as being not significant due to the reduction in the visual impact of the Amended Development.
- 5.5.4 In the 2023 LVIA, distances of around 13 km away (for receptors of lower sensitivity) to 15 km away (receptors with higher sensitivity) were noted as broadly being the maximum likely extent of significant effects on principal visual receptors, dependent on levels of sensitivity and local circumstances that might increase or decrease the impact of the Proposed Development. This transitional area around 13 km to 15 km away was therefore the zone where effects were likely to become not significant where there were clear and open views towards the Proposed Development with high visibility of the 250 m turbines.
- 5.5.5 The revised viewpoint assessment of Viewpoints 20 and 24 suggest that the reduced tip and hub heights of the turbines can lead to a reduction of up to several kilometres in the

maximum extent of significant effects on views from principal visual receptors where there is a clear, open view with high visibility of Amended Development. This will depend upon viewpoint-specific factors such as the sensitivity of the receptor, the level of screening of the Amended Development, the context of the view, the main direction of views, and the nature of the viewer (for example, the revised assessment considers that at Viewpoint 22 (Balfron Cemetery) the magnitude of change will reduce but the effect remains significant at 13.31 km away due to the context in which the Amended Development will be seen). Nonetheless, the revised viewpoint assessment does provide a broad rule of thumb for the maximum distance at which significant effects might arise on views from principal visual receptors being reduced by several kilometres from that assessed in the October 2023 LVIA.

- 5.5.6 As a result of this, effects on views from principal visual receptors such as routes and settlements that lie around 13 km to 15 km from the Amended Development, and were assessed as significant in the October 2023 LVIA, might become not significant.

5.6 Revised Assessment of Effects on Landscape Character Receptors

Effects on Landscape Character Types

- 5.6.1 The October 2023 LVIA concluded that significant effects on landscape character types (LCTs) were likely to be contained within a distance of approximately 9 km away from the Proposed Development.
- 5.6.2 While the significance of landscape effects on LCTS is not directly related to the visual effects on viewpoints that lie within those LCTs, the conclusions that have been drawn previously in this chapter with regard to the reduction in visual effects are relevant as they indicate the reduced levels of visibility, and therefore influence, of the Amended Development.
- 5.6.3 As the visual impacts of the Amended Development are assessed to have reduced as a result of the proposed reduced hub and tip height of the turbines, it can be concluded that the influence of the Amended Development on landscape character is also likely to reduce. This means that the maximum extent of significant effects on LCTs is, broadly, likely to be less than the approximately 9 km that was assessed in the October 2023 LVIA. This is, however, unlikely to materially alter the overall findings of the assessment of effects on LCTs.

Effects on Landscape Planning Designations

- 5.6.4 The October 2023 LVIA included a detailed assessment of effects on three landscape planning designations:
- Loch Lomond and the Trossachs National Park (LLTNP), also including the Loch Lomond NSA;
 - Kilpatrick Hills Local Landscape Area (LLA); and
 - Southern Hills LLA.

5.6.5 The implications of the revised turbine dimensions on these designations are discussed below.

Loch Lomond and the Trossachs National Park/Loch Lomond NSA

5.6.6 The Amended Development is outwith these designated areas, with the nearest turbine lying approximately 1.9 km from the southern boundary of the Park and 3.7 km from the southern boundary of the NSA. The assessment of effects on LLTNP incorporates the effects on the Loch Lomond NSA, which lies entirely within the boundary of the Park, and the NSA is therefore not specifically referenced.

5.6.7 In relation to LLTNP, the October 2023 LVIA concluded that the “*objectives of designation and the overall integrity of the areas will not be compromised*”⁴ by the Proposed Development. Significant effects were, however, assessed to arise on two of the special landscape qualities (SLQs) of LLTNP:

- *SLQ2: Wild and rugged highlands contrasting with pastoral lowlands; and*
- *SLQ15: Immensity of loch and landscape.*

5.6.8 The reduced tip and hub height of the turbines in the Amended Development will reduce the level of visibility gained from LLTNP and will also reduce the occurrence of significant effects on views. This is demonstrated at Viewpoints 20 and 24, both of which are within the Park, where the effect has become not significant as a result of the reduced turbine dimensions. Visibility of the Amended Development from LLTNP will, however, remain and the effects on these two SLQs, which are not specifically dependent on levels of visibility or visibility from specific areas of the Park, will remain significant.

5.6.9 The overall reduction in visibility and influence of the Amended Development ensures that while the effect on these two SLQs will remain significant, there will be no change to the October 2023 LVIA conclusion that the “*objectives of designation and the overall integrity of the areas will not be compromised*” by the Proposed Development.

5.6.10 The October 2023 LVIA did not include a night-time assessment of effects on LLTNP. However, new guidance (NatureScot, 2024) notes the following (paragraph 63):

“This [the assessment] should include consideration of the following areas to establish whether they have specific qualities that are sensitive to aviation lighting effects:

- *National Scenic Areas (NSAs)*
- *National Parks*
- *Wild Land Areas (WLAs)*
- *Dark Sky Parks*
- *Local or regional landscape designations”*

⁴ Scottish Government (2023). National Planning Framework 4 (NPF4) (Policy 4)

- 5.6.11 None of the SLQs of LLTNP refer to dark skies, sensitivity to the potential impact of lighting, or the night-time environment. It is therefore considered that the effects of visible aviation lighting will not directly or specifically affect the SLQs of LLTNP.
- 5.6.12 It is relevant to note that the requirement in new guidance (NatureScot, 2024) to assess and illustrate only the 200 cd scenario and not the 2,000 cd scenario when there is a commitment to dimming mitigation will lead to a notable reduction in the effects of lighting on the viewpoints and visual receptors that are located within LLTNP. As described in Table 5.4 and summarised in Section 5.4 of this Chapter, effects of visible aviation lighting at the following viewpoints that are within LLTNP will no longer be significant in any scenario:
- Viewpoint 5 (A811 Near Balloch): effects on all viewers are now not significant in any scenario (effects on residents were previously significant in the 2,000 cd scenario);
 - Viewpoint 11 (Inchcailloch): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
 - Viewpoint 12 (Endrick Viewpoint): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
 - Viewpoint 14 (WHW Near Drymen): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario);
 - Viewpoint 15 (Ben Bowie): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario); and
 - Viewpoint 17 (Balmaha Harbour): effects are now not significant in any scenario (effects on all viewers were previously significant in the 2,000 cd scenario).
- 5.6.13 The removal of the requirement to assess the effects of 2,000 cd scenarios also reduces the October 2023 LVIA assessment of night-time effects on a number of settlements and routes that are within or partially within LLTNP, as follows:
- Balmaha: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
 - Croftamie: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
 - Drymen: effects are now not significant in any scenario (effects were previously intermittently significant in the 2,000 cd scenario);
 - Gartocharn: some significant effects might arise but will be very intermittent and limited (significant effects were previously more widespread in the 2,000 cd scenario);
 - A82: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
 - Rob Roy Way: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
 - Scottish National Trail: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario);
 - West Highland Way: effects are now not significant in any scenario (effects were previously intermittently significant over a short stretch in the 2,000 cd scenario); and

- Core paths, waterborne routes and roads: significant effects will now arise (very intermittently) within a maximum of approximately 5.9 km of the Amended Development (effects up to approximately 10.7 km away were previously intermittently significant in the 2,000 cd scenario).

5.6.14 Overall, the removal of the requirement to assess the effects of 2,000 cd scenarios indicates, very broadly, that the extent of significant effects of visible aviation lighting on clear, open views towards the Amended Development from within LLTNP will be considerably reduced, extending up to a maximum of approximately 5.9 – 6 km rather than 10.7 km as previously assessed for the 2, 000 cd scenario.

5.6.15 The extent of significant effects on these views is likely to be further reduced if vertical directional intensity mitigation is achieved, although the effect of this mitigation should be regarded with caution, and the Applicant has not committed to the use of this type of lighting or any specific light fitting.

Kilpatrick Hills Local Landscape Area

5.6.16 This LLA covers three adjoining local authority areas; East Dunbartonshire Council (EDC), Stirling Council (SC) and West Dunbartonshire Council (WDC) and the SLQs of the LLA are defined separately by the different local authorities, as noted below. The Amended Development lies within the WDC area of the Kilpatrick Hills LLA. The October 2023 LVIA concluded that there would be significant effects on three of the SLQs of the LLA and that the Proposed Development would have “...*significant adverse effects on the integrity of the area or the qualities for which it [the Kilpatrick Hills LLA] has been identified*”⁵.

5.6.17 The relevant SLQs are:

- ‘*Strong sense of remoteness, wildness and open horizons*’ (EDC/WDC) and ‘*Strong sense of wildness*’ (SC);
- ‘*A unique diversity of views*’ (EDC/WDC) and ‘*Variety of Views*’ (SC); and
- ‘*Accessible landscape close to settlements*’ (SC).

5.6.18 While the reduced tip and hub height of the turbines in the Amended Development will reduce the level of visibility gained from the Kilpatrick Hills LLA, the Amended Development will continue to be located within the LLA and there will continue to be visibility of the Amended Development from extensive parts of the LLA. The effects on these three SLQs, which are not specifically dependent on levels of visibility or visibility from specific areas of the LLA, will remain significant.

5.6.19 There will be no change to the October 2023 LVIA conclusion that the Proposed Development would have “...*significant adverse effects on the integrity of the area or the qualities for which it [the Kilpatrick Hills LLA] has been identified*”.

5.6.20 As described above for LLTNP, the October 2023 LVIA did not include a night-time assessment of effects on the Kilpatrick Hills LLA. As with LLTNP, none of the SLQs of the LLA refer to dark skies, sensitivity to the potential impact of lighting, or the night-time

⁵ Scottish Government (2023). National Planning Framework 4 (NPF4) (Policy 4)

environment. It is therefore considered that the effects of visible aviation lighting will not have a direct or specific effect on the SLQs of the Kilpatrick Hills LLA.

Southern Hills LLA

- 5.6.21 The October 2023 LVIA concludes that the effect of the Proposed Development on the Southern Hills LLA would be not significant. These findings will not be altered by the revised dimensions of the Amended Development turbines, and the effect will remain not significant.

5.7 Revised Residential Visual Amenity Assessment

- 5.7.1 The proposed reduction in the tip height and hub height of the turbines will affect the appearance of the Amended Development in views from the residential properties that were included in the RVAA which formed Technical Appendix 5.2 of the October 2023 LVIA.

- 5.7.2 The locations of the relevant properties are shown in relation to the updated ZTV on **AI Technical Appendix 5.2 Figure 1** and revised wirelines for the properties are shown in **AI Technical Appendix 5.2 Figures 2a – 2j**.

- 5.7.3 The revised assessment of effects on the properties is set out in Table 5.5, which is included at the end of this Chapter. This table shows the original findings of the October 2023 RVAA and the updated magnitude of change and significance of effect. Where a change to the magnitude of change and/or significance is assessed, the box is shaded grey. The assessment of sensitivity remains the same as assessed in the October 2023 RVAA.

- 5.7.4 In summary, AI Table 5.5 indicates that the proposed reduction in the dimensions of the ten turbines in the Amended Development would be beneficial to the appearance of the Amended Development. The improvements seen at the residential properties include the following:

- a reduction in the level of theoretical visibility of turbines (including the number of turbines visible, the number of hubs visible, and the proportion of blades visible);
- an improved relationship between the turbines and the landform on which they stand, as the hubs are more closely related to the landform;
- a reduction in the vertical impact of turbines, particularly when they are seen on the skyline; and
- a reduction in the perceived scale of the turbines in relation to the baseline characteristics of the view.

- 5.7.5 These improvements lead to a general reduction in the impact of the Amended Development on residential visual amenity and, for the three properties below, a reduction in the magnitude of change.

- Property 5: Quarrybrae:
 - magnitude of change reduces from medium-low to low;
 - effect remains not significant;
- Property 6: Mid Auchencarroch:
 - magnitude of change reduces from medium-low to low;

- effect remains not significant;
- Property 7: Braeburn:
 - magnitude of change reduces from low to negligible; and
 - effect remains not significant.

5.8 Consultation Responses

5.8.1 This AI is not intended to provide a comprehensive review of the consultation responses that were made to the October 2023 LVIA. There are, however, several issues raised in the consultation responses that merit clarification as this will aid consultees' consideration of this AI information. The matters are set out below under headings for each consultee other than in relation to effects on the SLQs of LLTNP, which is discussed under a specific heading.

Loch Lomond and the Trossachs National Park Authority

5.8.2 The response that Loch Lomond and the Trossachs National Park Authority (LLTNPA) has made to the application is set out in its report 'Planning and Access Committee Meeting: 26 February 2024, Agenda item: 5'. The majority of the report relates to effects on the SLQs of LLTNP and relevant points are therefore covered under the specific LLTNP heading. There are, however, several separate matters that benefit from clarification.

The Assessment of LCTs

5.8.3 Paragraph 6.5 of the LLTNPA report states that *"It is however, of concern that some Landscape Character Types (LCTs) (the characteristics which define what is special about an area – see more at section 8:13) within 20 km from the site have been excluded from the impact assessment."*

5.8.4 This is not the case; all LCTs that lie within a 20 km radius of the Proposed Development are included in the assessment. A preliminary assessment of the potential effects on these LCTs is provided in Table 5.3 of the October 2023 LVIA, and the LCTs that have potential to undergo significant effects as a result of the Proposed Development are then assessed in greater detail subsequently in the LVIA. All LCTs within 20 km are therefore considered in the assessment and none have been excluded.

Infrastructure in Photomontages

5.8.5 Paragraph 6.5 of the LLTNP report states that:

"In addition, the 3 borrow pits and the Battery Energy Storage System do not appear to have been considered in the photomontages. In some viewpoints, the proposed access tracks of up to 9.2km in length have not been shown. Each of these components could often be very noticeable from within the National Park and therefore, these could exacerbate the appearance of the proposed development when compared to what the photomontages indicate."

- 5.8.6 This is not the case; the October 2023 LVIA photomontages do, where relevant, include long-term infrastructure. This is noted as follows in paragraph 5.10.2 of the October 2023 LVIA:

“In line with NatureScot guidance (SNH, 2017), long-term infrastructure (e.g. tracks, hardstandings and substation compound, including BESS) is photomontaged into viewpoints where “these elements are likely to result in permanent significant impacts (for the duration of the consent), either individually and/or collectively”. This infrastructure has been shown in photomontages at Viewpoint 6 (The Whangie); Viewpoint 7 (Dumgoyne Hill), Viewpoint 8 (Dumbarton Rock, and Viewpoint 10 (Langbank). Short-term infrastructure such as construction compounds and borrow pits is not shown in the photomontages as this would be temporary and short term.”

- 5.8.7 The text descriptions for each viewpoint provide a description of the infrastructure that might be visible, where relevant.
- 5.8.8 It should therefore be noted that, contrary to the assertions of LLTNPA, infrastructure has been shown in the photomontages in accordance with NatureScot guidance in both the October 2023 LVIA and this AI.

Aviation Lighting on Turbines

- 5.8.9 Paragraph 8.7 of the LLTNPA report states that *“Due to the height of the proposed turbines there is also a requirement for the turbines to be lit, for aviation purposes. This would mean that each individual turbine would be lit as well as the perimeter of the proposed development.”*
- 5.8.10 It is assumed that this is a typo and should say ‘perimeter’. It should be noted that there are no proposals to light the perimeter of the Proposed Development.

Effects on Recreational Routes

- 5.8.11 The LLTNPA report refers twice to effects on views from ‘recreational routes’.
- 5.8.12 Paragraph 2.1 notes that *“Parts of at least (approximately) 75km of nationally important recreational routes would be subject to significant visual impacts”,* while paragraph 8.24 states *“The National Park Authority’s Landscape Adviser predicts significant effects on road and recreational routes including parts of at least 75km of nationally important recreational routes”.*
- 5.8.13 This does not accord with the assessment provided in the October 2023 LVIA, and it is considered relevant to provide clarification on the findings of the LVIA on this matter. Whilst LLTNPA has not defined its understanding of ‘recreational routes’, it can be assumed that this encompasses long distance paths/trails that might be used for walking and, in some cases, cycling, as well as National Cycle routes (NCRs). It can also be assumed that LLTNPA is referring to routes that lie within LLTNP, and not outwith.
- 5.8.14 On the basis of the assessment carried out in the October 2023 LVIA, significant effects are likely to arise intermittently or very intermittently on views from routes that lie within LLTNP as described below. Many of the paths/cycle routes follow the same route over some sections, and where this is the case, the affected length is counted for only one of

the paths/cycle routes as all users would gain the same visibility of the Amended Development, irrespective of which trail they are following.

- John Muir Way: an intermittent/very intermittent significant effect on a total of approximately 18.5 km of the route within LLTNP;
- Rob Roy Way: an intermittent/very intermittent significant effect on a total of approximately 5.8 km of the route within LLTNP;
- Three Lochs Way: an intermittent/very intermittent significant effect on a total of approximately 1.3 km of the route within LLTNP (a further stretch is covered by the John Muir Way, as included above);
- Scottish National Trail: covered by the John Muir Way and West Highland Way;
- West Highland Way: an intermittent/very intermittent significant effect on a total of approximately 21 km of the route within LLTNP; and
- NCR 7: an intermittent/very intermittent significant effect on a total of approximately 7 km of the route within LLTNP (further stretches are covered by the John Muir Way, Rob Roy Way and West Highland Way, as included above).

5.8.15 This totals approximately 53.6 km of nationally recognised recreational routes within LLTNP that are assessed in the October 2023 LVIA to undergo an intermittent or very intermittent significant visual effect as a result of the Amended Development rather than the “*at least (approximately) 75km*” stated by LLTNPA.

5.8.16 The reduction in theoretical visibility of the Amended Development as a result of the reduced turbine dimensions is likely to reduce this further, as described previously in this chapter.

Gardens and Designed Landscapes

5.8.17 Paragraph 8.26 of the LLTNPA report notes that:

“The LVIA concludes that the effect of the proposed development on the cultural significance of the Gardens and Designed Landscapes, including Balloch Castle and Rossdhu House on west Loch Lomond, would be negligible. However, it appears that the effects on the character and on important views, to, from and within these sites, or the setting of Gardens and Designed Landscapes has not been fully considered, if at all. In addition, the impacts on the Ross Priory Garden and Designed Landscape have not been assessed.”

5.8.18 This is not the case; Gardens and Designed Landscapes (GDLs) are not assessed at all in the October 2023 LVIA, and no conclusion has been drawn as to their cultural significance. As noted in paragraphs 5.5.16 and 5.5.17 of the October 2023 LVIA, Gardens and Designed Landscapes (GDLs) “*are considered as historic assets rather than landscape designations, and effects on GDLs and their settings are considered in Chapter 10: Cultural Heritage*”.

5.8.19 There are, however, LVIA viewpoints located at Balloch Castle GDL (Viewpoint 4) and Finlaystone House GDL (Viewpoint 13) due to the function of these locations as visitor attractions.

NatureScot

- 5.8.20 NatureScot's response in relation to landscape and visual matters focusses solely on the effects of the Proposed Development on the SLQs of LLTNP and is therefore addressed within the SLQ discussion specific to the LLTNP heading below.

West Dunbartonshire Council

- 5.8.21 WDC's response to the application is set out in its 'Report by Chief Officer – Regulatory and Regeneration Planning Committee: 7th August 2024'. This report largely reiterates sections of the October 2023 LVIA and summarises responses received from other consultees, which are addressed above and below. There is, however, one point that requires clarification, relating to the inclusion of infrastructure in the photomontage views.
- 5.8.22 Paragraph 8.23 of the WDC report states (emphasis added) that "*the photomontages focus on the impact arising from the turbines themselves and do not include associated details such as the access tracks and battery storage facility*".
- 5.8.23 In paragraph 8.25, in relation to the view from Viewpoint 1 (Doughnot Hill), the report goes on to state that "*Whilst not included in the visuals, in addition to the turbines themselves, the network of tracks together with the battery storage site would introduce further visual man-made clutter which is not presently experienced in the natural landscape. It is likely that that similar impacts would be experienced from elsewhere within the Kilpatrick Hills*".
- 5.8.24 As noted above in relation to LLTNPA's comments, the October 2023 LVIA photomontages do, where relevant, include long-term infrastructure.
- 5.8.25 In relation to Viewpoint 1 (Doughnot Hill), the October 2023 LVIA notes that "*Infrastructure would be screened by landform, although tall cranes and other construction activity would be visible during the short-term construction phase*".
- 5.8.26 Contrary to the assertions of WDC, infrastructure has been shown in the photomontages in accordance with NatureScot guidance in both the October 2023 LVIA and this AI. The text descriptions for each viewpoint also provide a description of the infrastructure that might be visible, where relevant.
- 5.8.27 With specific reference to Doughnot Hill, the landform screening ensures that "*further visual man-made clutter*" of infrastructure will not be visible.

Effects on the SLQs of LLTNP

- 5.8.28 All of the reports referred to above make reference to the effects of the Proposed Development on the SLQs of LLTNP. The WDC report refers to the LLTNPA and NatureScot reports and raises no additional issues that require clarification. There is, however, disparity between the findings of the LLTNPA and NatureScot reports in terms of the SLQs that each of these parties considers to be significantly affected by the Proposed Development, as well as disparity between them and the findings of the October 2023 LVIA. In order to clarify the various positions, the assessments of the various parties are set out in Table 5.2 below. This indicates that all parties are in agreement over the significant effect on two SLQs; LLTNP and NatureScot are in

agreement over significant effects on a further four SLQs; and LLTNP considers that there are significant effects on a further five SLQs.

- 5.8.29 Paragraph 7.7 of the LLTNP report states that “*The differences come down to NatureScot considering the Special Landscape Qualities that are “most at risk” and the National Park Authority considering all Special Landscape Qualities relating to Loch Lomond*”.
- 5.8.30 The reasoning behind this distinction between SLQs that are “*most at risk*” and “*all Special Landscape Qualities relating to Loch Lomond*” is unclear, and is not clarified in either the LLTNP or NatureScot response. The assessment of effects on SLQs is based on an assumption that a significant effect on an SLQ is more likely to arise when there is a higher level of “*Risk of damage/loss*”⁶ on that SLQ, irrespective of its geographical location, and no distinction is drawn in guidance⁷ between a significant effect on an SLQ that arises as a result of that SLQ being “*most at risk*” or its geographical location.
- 5.8.31 For clarification, it should be noted that the October 2023 LVIA takes into consideration all of the SLQs of the LLTNP, including those “*that are “most at risk”*” and “*all Special Landscape Qualities relating to Loch Lomond*”, making no distinction between these in the assessment.
- 5.8.32 As described in Section 5.6 of this chapter, the effects of the revised layout of the Amended Development, whilst beneficial in views from several parts of the LLTNP, are assessed to remain the same as assessed in the October 2023 LVIA; that is, significant effects on the two SLQs as noted in the table below, and that the “*objectives of designation and the overall integrity of the areas will not be compromised*” by the Amended Development.

Table 5.2: Assessment of Effects on SLQs of LLTNP

SLQ	LLTNP	NatureScot	October 2023 LVIA
General SLQs			
<i>A world-renowned landscape famed for its rural beauty</i>	Significant effect	Significant effect	
<i>Wild rugged highlands contrasting with pastoral lowlands</i>	Significant effect	Significant effect	Significant effect
<i>Settlement nestled within a vast natural backdrop</i>	Significant effect	Significant effect	
<i>Famous through routes</i>	Significant effect		
<i>Tranquillity</i>	Significant effect	Significant effect	

⁶ NatureScot’s Working Draft 11 ‘Guidance for Assessing the Effects on Special Landscape Qualities’ (SNH, November 2018)

⁷ NatureScot’s Working Draft 11 entitled ‘Guidance for Assessing the Effects on Special Landscape Qualities’ (SNH, November 2018)

SLQ	LLTNPA	NatureScot	October 2023 LVIA
<i>The easily accessible landscape splendour</i>	Significant effect	Significant effect	
Loch Lomond sub-area SLQs			
<i>Immensity of the loch and landscape</i>	Significant effect	Significant effect	Significant effect
<i>Two lochs in one</i>	Significant effect		
<i>A multitude of beautiful islands</i>	Significant effect		
<i>Ben Lomond, widely known, popularly frequented</i>	Significant effect		
<i>Banks of broadleaved woodland</i>	Significant effect		

5.9 Summary and Conclusions

5.9.1 The purpose of the AI LVIA is to update the assessment of effects that the Amended Development will have on the landscape and visual resource, taking into consideration the reduced tip height and hub height of the turbines.

5.9.2 While the effect on the majority of the Study Area will be not significant, the October 2023 LVIA indicated that there was potential for the Proposed Development to result in some significant effects on landscape and visual receptors within the detailed 20 km study area. The revised assessment that has been carried out in this AI chapter indicates that the reduction in the tip height and hub height of the turbines will be generally beneficial in a number of respects, including:

- a reduction in the vertical impact of turbines, particularly when they are seen on the skyline;
- when the turbines are seen partly against the skyline, the proportion of turbines seen rising above the skyline is reduced, again reducing vertical impact;
- an improved relationship between the turbines and the landform on which they stand, as the hubs are more closely related to the landform; and
- a reduction in the perceived scale of the turbines in relation to the baseline characteristics of the view.

5.9.3 These benefits will be apparent throughout the study area and, for visual receptors, particularly between approximately 13 km to 15 km away from the Amended Development, as within this range some visual effects that were previously assessed as significant are likely to be not significant. This can be seen, for example, at Viewpoints 20 and 24, where the effects have become not significant as a result of the reduced turbine dimensions.

5.9.4 Night-time effects arising from visible aviation lighting will not be materially affected by the reduction in the turbine dimensions. There will, however, be a notable reduction in the number and extent of significant night-time effects at viewpoints and visual receptors as a result in updated guidance, which no longer requires a 2,000 cd lighting scenario to be illustrated or assessed if the Applicant is committed to the use of dimming mitigation (which is the case at the Amended Development).

- 5.9.5 Effects on residential visual amenity will also reduce, with three properties having a reduced magnitude of change as a result of the reduced turbine dimensions.
- 5.9.6 As the visual impacts of the Amended Development have reduced, it can be concluded that the effect on landscape character is also likely to reduce, meaning that the maximum extent of significant effects on LCTs is generally likely to be less than the approximate 9 km that was assessed in the October 2023 LVIA. This is, however, unlikely to materially alter the overall findings of the assessment of effects on LCTs.
- 5.9.7 Effects on landscape planning designations are also likely to reduce but will not be materially altered due to the nature of the SLQs of the relevant designated areas.
- 5.9.8 Cumulative effects will remain as assessed in the October 2023 LVIA, although the benefits of reduced scale and resultant reduced visibility and influence of the turbines will have a generally beneficial effect in relation to all landscape and visual receptors.

5.10 References

- Landscape Institute and IEMA (2013). Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3). Routledge;
- Landscape Institute (2019). Technical Guidance Note 2/19 Residential Visual Amenity Assessment;
- NatureScot (2021). Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments;
- NatureScot (2024). Guidance on Aviation Lighting Impact Assessment;
- Scottish Government (2023). National Planning Framework 4;
- Scottish Natural Heritage and Loch Lomond and The Trossachs National Park Authority (2010). The special landscape qualities of the Loch Lomond and The Trossachs National Park. Scottish Natural Heritage Commissioned Report, No.376;
- SNH (2017). Visual Representation of Wind Farms, Version 2.2;
- SNH (2018). Working draft Guidance for Assessing the Effects on Special Landscape Qualities;
- Stirling Council (2019). Supplementary Guidance November 2019 Appendix 4 - Citations for Local Landscape Areas;
- West Dunbartonshire Council (2015). Kilpatrick Hills Local Landscape Area Statement of Importance;

5.10.1 Online resources:

- <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions/>;
- <http://portal.historicenvironment.scot/designation/GDL00180/>;
- <https://roadtrips.visitscotland.com/clyde-sea-lochs-trail-route/>;
- <https://www.scotlandsgreattrails.com/>; and
- <https://www.westhighlandway.org/the-route/>.

AI Table 5.3: Revised Assessment of Effects on Viewpoints

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
1. Doughnot Hill	1.54 km	High	High	High	Major Significant	Major Significant	<ul style="list-style-type: none"> • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
2. Minor road (John Muir Way/NCR 7) north of site	2.89 km	High	High	High	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
3. A82 near Bellsmyre Roundabout (A813 junction)	3.84 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
4. Balloch Castle Country Park access road	4.28 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
5. A811 Near Balloch	4.32 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
6. The Whangie	4.82 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
7. Duncryne Hill	5.18 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
8. Dumbarton Rock	5.54 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (most notably in relation to the Lang Craigs which rise to the right of the Amended Development) • No material change to October 2023 LVIA findings
9. Cameron House seaplane jetty	5.85 km	High	Medium-high	Medium-high	Major Significant	Major Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (most notably in relation to Auchincarroch Hill which rises to the left of the Amended Development) • No material change to October 2023 LVIA findings
10. Langbank	7.37 km	High	Medium-high	Medium	Major Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (most notably in relation to the Lang Craigs which rise to the right of the Amended Development)

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and level of effect, although the effect remains significant
11. Inchcailloch	9.85 km	High	Medium-low	Medium-low	Moderate Not Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height has limited effect at this Viewpoint due to the limited and filtered visibility of the turbines • The filtered movement of the turbines, which largely leads to the effect on the view, will still be apparent • No material change to October 2023 LVIA findings
12. Endrick Viewpoint	7.46 km	High	Medium-low	Medium-low	Moderate Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the level of theoretical visibility and vertical impact • Reduced theoretical visibility combined with screening/ filtering by vegetation ensures that visibility of moving turbines above the woodland will decrease • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (most notably in relation to Duncryne Hill) • This, combined with the distance from the Viewpoint, leads to the moderate effect becoming not significant
13. Finlaystone Estate	8.48 km	High	Medium-high	Medium	Major Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and level of effect, although the effect remains significant

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
14. WHW Near Drymen	8.70 km	High	Medium	Medium	Major/moderate Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on this horizontal skyline • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
15. Ben Bowie	9.12 km	High	Medium	Medium	Major/moderate Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, which in turn notably reduces the vertical prominence of turbines • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
16. Dumgoyne Hill	10.11 km	High	Medium	Medium	Major/moderate Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, which in turn reduces the vertical prominence of turbines • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
17. Balmaha Harbour	10.22 km	High	Medium	Medium	Major/moderate Significant	Major/moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on this horizontal skyline

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (including in relation to Duncryne Hill) • No material change to October 2023 LVIA findings
18. Port Glasgow	10.67 km	High	Medium	Medium-low	Major/moderate Significant	Moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on the horizontal skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view (most notably in relation to the Lang Craigs/Kilpatrick Hills and Ben Bowie, which rise to the right and left of the Amended Development respectively) • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and level of effect, although the effect remains significant
19. Conic Hill	11.49 km	High	Medium	Medium-low	Major/moderate Significant	Moderate Significant	<ul style="list-style-type: none"> • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, which in turn notably reduces the vertical prominence of turbines on this horizontal skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and level of effect, although the effect remains significant
20. Waterbus	13.11 km	High	Medium-low	Medium-low	Moderate Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines on this horizontal skyline • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, which also reduces vertical impact • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • These factors, combined with the distance from the Viewpoint, lead to the moderate effect becoming not significant
21. Bat a Charchel	12.60 km	High	Medium-low	Medium-low	Moderate Significant	Moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on this horizontal skyline • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
22. Balfron Cemetery	13.31 km	Medium-high	Medium	Medium-low	Major/moderate Significant	Moderate Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical prominence of turbines on this horizontal skyline • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and level of effect • The effect remains significant due to the appearance of the Amended Development on the open part of the skyline in the view
23. Luss Campsite	14.62 km	High	Medium-low	Medium-low	Moderate Not Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduced theoretical visibility combined with screening/ filtering by vegetation ensures that actual visibility of turbines will decrease • Reduction in tip/hub height reduces the vertical impact of turbines that are seen at full height • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
24. Sallochay	14.98 km	High	Medium-low	Medium-low	Moderate Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines on this horizontal skyline • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, which also reduces vertical impact • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • These factors, combined with the distance from the Viewpoint, lead to the moderate effect becoming not significant
25. Lyle Hill, Greenock	17.23 km	High	Medium-low	Medium-low	Moderate Not Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines on this horizontal skyline

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> • Turbines relate more closely to the horizontal landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
26. Beinn Dubh	17.55 km	High	Medium-low	Medium-low	Moderate Not Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Turbines relate more closely to the landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
27. Inverbeg	19.20 km	High	Medium-low	Medium-low	Moderate Not Significant	Moderate Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines on this horizontal skyline • Reduction in tip height also reduces the proportion of turbines that are seen rising above the skyline, further reducing vertical impact • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
28. Misty Law	21.77 km	High	Low	Low	Moderate/minor Not Significant	Moderate/minor Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
29. Ben Lomond	23.13 km	High	Low	Low	Moderate/minor Not Significant	Moderate/minor Not Significant	<ul style="list-style-type: none"> • Turbines relate more closely to the landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
30. Dunoon	24.60 km	High	Low	Low	Moderate/minor Not Significant	Moderate/minor Not Significant	<ul style="list-style-type: none"> • Reduced theoretical visibility ensures that actual visibility of turbines will decrease • Reduction in tip/hub height reduces the vertical impact of turbines that are seen at full height • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
31. Ben Venue	25.72 km	High	Low	Low	Moderate/minor Not Significant	Moderate/minor Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines • Reduction in tip height also reduces the proportion of turbines that are seen rising above the skyline, further reducing the vertical impact • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • No material change to October 2023 LVIA findings
32. Tarbet	26.54 km	High	Low	Low-negligible	Moderate/minor	Moderate/minor	<ul style="list-style-type: none"> • Reduced theoretical visibility ensures that actual visibility of turbines will decrease

Viewpoint	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Level of Effect and Significance of Effect		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
					Not Significant	Not Significant	<ul style="list-style-type: none"> • Reduction in tip/hub height reduces the vertical impact of turbines that are seen at full height • Reduction in tip height also reduces the proportion of turbines that are seen rising above the skyline, further reducing vertical impact • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and the effect remains not significant
33. Ben Ledi	31.69 km	High	Low	Low-negligible	Moderate/minor Not Significant	Moderate/minor Not Significant	<ul style="list-style-type: none"> • Reduction in tip height reduces the proportion of turbines that are seen rising above the skyline, thus reducing vertical impact • Turbines relate more closely to landform due to reduction in tip and hub height • Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view • These factors, combined with the distance from the Viewpoint, lead to a reduction in the magnitude of change and the effect remains not significant

AI Table 5.4: Revised Night-Time Assessment of Effects on Viewpoints

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
1. Doughnot Hill	Significant	n/a	Significant	Significant	Significant	n/a	Significant	Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain significant • No material change to October 2023 LVIA findings
2. Minor road (John Muir Way/NCR 7) north of site	Significant	n/a	Significant	Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
3. A82 near Bellsmyre Roundabout (A813 junction)	Road-users: Not Significant Residents: Significant	n/a	Road-users: Not Significant Residents: Significant	Road-users: Not Significant Residents: Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
4. Balloch Castle Country Park access road	Significant	n/a	Significant	Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
5. A811 Near Balloch	Road-users: Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
	Residents: Significant								<ul style="list-style-type: none"> Effects on residents become not significant in any relevant scenario
6. The Whangie	Significant	n/a	Significant	Significant	Significant	n/a	Significant	Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
7. Duncryne Hill	Significant	n/a	Significant	Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
8. Dumbarton Rock	Significant	n/a	Significant	Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
9. Cameron House seaplane jetty	Significant	n/a	Significant	Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
10. Langbank	Road-users: Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
	Residents: Significant								<ul style="list-style-type: none"> Effects on residents become not significant in any relevant scenario
11. Inchcailloch	Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed Effects become not significant in any relevant scenario
12. Endrick Viewpoint	Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed Effects become not significant in any relevant scenario
13. Finlaystone Estate	Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed Effects become not significant in any relevant scenario
14. WHW Near Drymen	Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed Effects become not significant in any relevant scenario
15. Ben Bowie	Significant	n/a	Not Significant	Not Significant	Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed Effects become not significant in any relevant scenario

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
16. Dumgoyne Hill	Significant	n/a	Not Significant	Not Significant	Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • Effects become not significant in any relevant scenario
17. Balmaha Harbour	Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • Effects become not significant in any relevant scenario
18. Port Glasgow	Road-users: Not Significant Residents: Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • Effects on residents become not significant in any relevant scenario
19. Conic Hill	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
20. Waterbus	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
21. Bat a Charchel	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
									<ul style="list-style-type: none"> No material change to October 2023 LVIA findings
22. Balfron Cemetery	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
23. Luss Campsite	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
24. Sallochay	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
25. Lyle Hill, Greenock	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings
26. Beinn Dubh	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
27. Inverbeg	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
28. Misty Law	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
29. Ben Lomond	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
30. Dunoon	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
31. Ben Venue	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed • No material change to October 2023 LVIA findings
32. Tarbet	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> • Effects in 200 cd scenarios remain as previously assessed

Viewpoint	Significance 2,000 cd Scenario		Significance 200 cd Scenario		Significance 2,000 cd scenario with Vertical Directional Intensity Mitigation		Significance 200 cd scenario with Vertical Directional Intensity Mitigation		Updated Assessment
	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	October 2023 LVIA 164 m Hub Height	AI LVIA 134 m Hub Height	
									<ul style="list-style-type: none"> No material change to October 2023 LVIA findings
33. Ben Ledi	Not Significant	n/a	Not Significant	Not Significant	Not Significant	n/a	Not Significant	Not Significant	<ul style="list-style-type: none"> Effects in 200 cd scenarios remain as previously assessed No material change to October 2023 LVIA findings

AI Table 5.5: Revised Residential Visual Amenity Assessment

Property	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Significance of Effect and Residential Visual Amenity Threshold		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
Property 1: Blairquhamrie Farm	1.91 km	High	Medium	Medium	Significant Threshold not reached	Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from eight to six turbines (three hubs and three blade tips) Increased screening of towers Turbines relate more closely to landform due to reduction in tip and hub height Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view No material change to October 2023 RVAA findings
Property 2: 3 and 4 Blairquhamrie Cottages	1.93 km	High	Medium-high	Medium-high	Significant Threshold not reached	Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from seven to six turbines (two hubs and four blades) Increased screening of towers Turbines relate more closely to landform due to reduction in tip and hub height Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view No material change to October 2023 RVAA findings
Property 3: 1 and 2 Blairquhamrie Cottages	1.95 km	High	Medium-high	Medium-high	Significant Threshold not reached	Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from seven to six turbines (two hubs and four blades) Increased screening of towers Turbines relate more closely to landform due to reduction in tip and hub height Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view

Property	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Significance of Effect and Residential Visual Amenity Threshold		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
							<ul style="list-style-type: none"> No material change to October 2023 RVAA findings
Property 4: Unnamed Property	1.89 km	High	Medium	Medium	Significant Threshold not reached	Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility remains as four turbines (one hub and three blades) but the extent of visibility has reduced considerably, with the hub just visible and two blades seen as tips only Reduced height/visibility of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view No material change to October 2023 RVAA findings
Property 5: Quarrybrae	1.94 km	High	Medium-low	Low	Not Significant Threshold not reached	Not Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from three to two turbines (two blades) Removal of theoretical visibility of hubs considerably reduces the impact on the view This leads to a reduction in the magnitude of change and the effect remains not significant
Property 6: Mid Auchencarroch	1.98 km	High	Medium-low	Low	Not Significant Threshold not reached	Not Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from one hub and one blade to two blades (one of which is a blade tip extremity) Removal of theoretical visibility of the hub considerably reduces the impact on the view This leads to a reduction in the magnitude of change and the effect remains not significant
Property 7: Braeburn	1.77 km	High	Low	Negligible	Not Significant Threshold not reached	Not Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from one blade to one blade tip extremity This leads to a reduction in the magnitude of change and the effect remains not significant

Property	Approx distance to nearest turbine	Sensitivity	Magnitude of Change		Significance of Effect and Residential Visual Amenity Threshold		Updated Assessment
			October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	October 2023 LVIA 250 m Tip Height	AI LVIA 220 m Tip Height	
Property 8: West Auchencarroch	1.90 km	High	Low	Low	Not Significant Threshold not reached	Not Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from one hub and one blade tip to one blade Removal of theoretical visibility of the hub reduces the impact on the view No material change to October 2023 RVAA findings
Property 9: The Cuddies, West Auchencarroch	1.92 km	High	Low	Low	Not Significant Threshold not reached	Not Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from one hub and one blade tip to one blade Removal of theoretical visibility of the hub reduces the impact on the view No material change to October 2023 RVAA findings
Property 10: Highdykes Farm	1.86 km	High	High	High	Significant Threshold not reached	Significant Threshold not reached	<ul style="list-style-type: none"> Theoretical visibility reduced from ten turbines with all hubs theoretically visible to visibility of nine hubs and one blade Reduction in tip/hub height reduces the vertical prominence of turbines on the skyline Turbines relate more closely to landform due to reduction in tip and hub height Reduced height of turbines reduces their overall perceived scale in relation to the baseline characteristics of the view No material change to October 2023 RVAA findings

6 ECOLOGY AND BIODIVERSITY

6.1 Introduction

- 6.1.1 This Chapter of the Additional Information (AI) Report has been prepared to present information in relation to an assessment of potential effects on Local Nature Conservation Sites (LNCS) from the Amended Development and respond to recommendations and requests by relevant consultees for further information and clarifications with respect to ecology and biodiversity. It supplements Chapter 6, the ecology chapter, included as part of the EIAR submitted with the application for the Proposed Development and dated October 2023. This Chapter was prepared by MacArthur Green.
- 6.1.2 The proposed reduction in turbine tip height of all ten turbines from 250 m to 220 m with no changes to wind turbine blade length or other infrastructure does not affect the findings with respect to ecology as already described and assessed within Chapter 6 of the EIAR.
- 6.1.3 This Chapter of the AI Report is supported by a revised and updated Outline Biodiversity Enhancement Management Plan (OBEMP) and Biodiversity Net Gain (BNG) assessment (included as **AI Technical Appendix 6.1**).
- 6.1.4 This Chapter is further supported by the following AI Figures:
- **AI Figure 6.1: Ecological Designated Sites and Ancient Woodland within 5 km;** and
 - **AI Figure 6.2: Outline Biodiversity Enhancement Management Plan (OBEMP) Areas.**

6.2 Scope of Assessment

- 6.2.1 West Dunbartonshire Council (WDC) submitted a **holding objection** for the Proposed Development in respect to the absence of an assessment with regards LNCS relative to the Proposed Development. This Chapter considers the potential effects of construction of the Amended Development upon those LNCS identified by WDC as requiring further consideration and assessment.
- 6.2.2 Potential effects include direct (i.e., derived from land-take or disturbance to habitats) and indirect (i.e., habitat fragmentation and modification, including through changes caused by pollution or effects to supporting systems such as groundwater or overland flow).

Elements Scoped-Out of Assessment

- 6.2.3 Potential operational effects on LNCS are scoped-out. Maintenance of the Amended Development will involve vehicular access along the access tracks only, and any maintenance of turbines will be occasional, typically carried out by a small number of maintenance staff inside the turbines during normal working hours. This is unlikely to result in any operational effects on any LNCS not already considered as part of predicted construction effects.
- 6.2.4 Any further potential effects scoped-out are detailed in paragraphs 6.7.3 - 6.7.5, following further consideration of the locations, and interest features, of relevant LNCS.

6.3 Baseline Conditions

- 6.3.1 Ecological surveys to establish baseline conditions at the Site were undertaken from 2020 to 2022, as fully described within Chapter 6 of the Environmental Impact Assessment Report (EIA Report) and associated Technical Appendices. No further baseline surveys have been carried out for the Amended Development and therefore, given the absence of any changes in land use or management in the intervening period, the baseline conditions at the Site remain as described within Chapter 6 of the EIA Report.
- 6.3.2 However, the key aim of this Chapter is to provide an assessment with regards potential effects on LNCS identified by WDC in their consultation response dated 09 August 2024. LNCS were not described within Chapter 6 of the EIA Report and therefore consideration of the impacts on the LNCS is now provided.
- 6.3.3 WDC identified five LNCS in their consultation response for consideration/assessment, as follows (see **AI Figure 6.1** for the location of these LNCS in relation to the Amended Development):
- Auchenreoch Muir LNCS;
 - Blairvault Burn and Pappert Muir LNCS;
 - Bonhill Muir and Pappert Hill LNCS;
 - Murroch Glen LNCS; and
 - West Dumbarton Muir LNCS.
- 6.3.4 Available information on these LNCS was gathered from a report drafted by Central Environmental Surveys (CES, 2008)⁸ for WDC as part of a review of LNCS for the West Dunbartonshire Local Plan. It is stated in the report “*The review is idealistic in that virtually every significant area of semi-natural habitat has been proposed as a Local Nature Conservation Site*”. Thus, virtually all large areas of semi-natural habitats in West Dunbartonshire have been included within LNCS, with the aim to maintain as complete a habitat network as possible.
- 6.3.5 Auchenreoch Muir LNCS: the identified interest features stated within Auchenreoch Muir LNCS are Upland Calcareous Grassland, Upland Heathland, and Blanket Bog.
- 6.3.6 Blairvault Burn and Pappert Muir LNCS: the identified interest features stated within Blairvault Burn and Pappert Muir LNCS are Blanket Bog, Fen and Upland Calcareous Grassland. It is noted that areas of these high priority habitats only make up an estimated 20% of the cover within this LNCS.
- 6.3.7 Bonhill Muir and Pappert Hill LNCS: the identified interest features stated within Bonhill Muir and Pappert Hill LNCS are Upland Heathland and Blanket Bog.
- 6.3.8 Murroch Glen LNCS: the identified interest features stated within Murroch Glen LNCS are Upland Heath, Fen, Upland Mixed Ashwood, Upland Flushes, Fens and Swamps, and Upland Calcareous Grassland.

⁸ Central Environmental Surveys (2008). West Dunbartonshire Local Plan: Review of Local Nature Conservation Sites.

6.3.9 West Dumbarton Muir LNCS: the identified interest features stated within West Dumbarton Muir LNCS are Upland Heath, Fen (calcareous springs, flushes and grassland), and Blanket Bog.

6.4 Legislation, Policy and Guidance

6.4.1 Relevant legislation, policy and guidance is listed within Chapter 6 of the EIA Report, however in the intervening period since submission of the EIA Report in October 2023 there have been some new guidance releases and minor updates or revisions to a small number of relevant documents. Those of relevance to this Chapter and its specific scope of assessment are as follows (all other legislation, policy and guidance remain as per Chapter 6 of the EIA Report):

- Scottish Government (November 2023). Draft Planning Guidance on Biodiversity⁹;
- Chartered Institute for Ecology and Environmental Management (CIEEM) (revised July 2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.3). Chartered Institute of Ecology and Environmental Management, Winchester;
- NatureScot (revised November 2023). Advising on peatland, carbon-rich soils and priority peatland habitats in development management;
- NatureScot (version November 2024). NatureScot pre-application guidance for onshore wind farms; and
- Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), Historic Environment Scotland & AEECoW (version July 2024). Good Practice During Windfarm Construction.

6.4.2 Local and national policies of particular relevance to the consideration of LNCS in this Chapter include Policy E3A of the WDC Local Plan¹⁰, Policy ENV1 of the WDC Proposed Plan¹¹ and NPF4 Policy 4 (d).

6.4.3 Policy E3A states the Council will seek to maintain and enhance the environmental resources of the Plan area by the protection of habitats, species and natural features which are vulnerable and/or specifically protected; this includes LNCS shown on the proposals map. The policy further states that proposals should not have an adverse effect on the integrity or character of a LNCS. However, this does not necessarily preclude development within a LNCS as it is further stated that satisfactory arrangements for habitat creation/site enhancement elsewhere should be made to compensate where development would cause the total or partial loss of a LNCS, and the creation of new habitats will also be encouraged.

⁹ This guidance has been written and designed by the Scottish Government to be a living document with the intention that it will be updated as practice beds in across Planning Authorities (inc. WDC).

¹⁰ West Dunbartonshire Council (2010). West Dunbartonshire Local Plan. www.west-dunbarton.gov.uk/media/811177/west_dunbartonshire_local_plan_-_web.pdf

¹¹ West Dunbartonshire Council (2020). Proposed West Dunbartonshire Local Development Plan (LDP2) (as modified 2020). <https://www.west-dunbarton.gov.uk/council/key-council-documents/local-development-planning/development-plan/>

- 6.4.4 Similarly, Policy ENV1 states development proposals should conserve and enhance onsite biodiversity and habitat networks within and adjacent to sites of special designation (including LNCS). Development that adversely affects the integrity of sites designated for nature conservation or harms protected species will not be permitted except, in the case of LNCS, where adverse effects are offset or compensated in a way that adequately maintains the integrity of the interests affected and maintains the involvement of people.
- 6.4.5 NPF4 Policy 4 (d) states that proposals that affect a LNCS in the respective LDP will only be supported where the development will not have significant adverse effects on the integrity of the area or the qualities for which it has been identified, or any significant adverse effects on the integrity of the area are clearly outweighed by social, environmental or economic benefits of at least local importance.

6.5 Assessment Methodology and Significance Criteria

- 6.5.1 The relevant assessment methodology and significance criteria are set out within Chapter 6 of the EIA Report and there has been no change to these in the intervening period, and as such they continue to apply to this Chapter.

6.6 Consultation

- 6.6.1 As noted above, WDC submitted a **holding objection** for the Proposed Development, requesting that five LNCS identified by WDC be considered and assessed relative to the Proposed Development. An assessment is made with regards these LNCS in the Assessment of Effects section below.
- 6.6.2 The Woodland Trust **objects** to the Proposed Development due to direct loss of veteran trees and long-established woodland; this is discussed in the sections below.
- 6.6.3 Consultation responses of relevance to this Chapter were also received from NatureScot. NatureScot does not object to the Proposed Development on the grounds of ecology and biodiversity but offers several **recommendations** and seeks certain **clarifications**. These are considered and discussed below.

Consultation Response by The Woodland Trust

The Woodland Trust

- 6.6.4 The Woodland Trust objects due to the loss of two veteran beech trees along with the predicted loss of 0.06 hectares (ha) of Barr Wood. Barr Wood being an area of woodland designated on NatureScot's Ancient Woodland Inventory (AWI) as 2b Long Established woodland of Plantation Origin (LEPO).

Response:

- 6.6.5 It is acknowledged that ancient woodland is considered an irreplaceable habitat. Barr Wood is 15.12 ha in size and adjoins and is contiguous with a larger area of ancient woodland to the north (i.e., Murroch Glen).
- 6.6.6 It is predicted that 0.06 ha of this woodland area would be required to be removed to facilitate access to the Amended Development, this is based on the predicted 20 m felling

corridor required to contain the running width of the proposed track plus a safe access corridor to accommodate for abnormal load vehicles. This would result in the felling of a maximum number of 28 mature/semi-mature beech hedgerow trees and three mature downy birch, some of which are already partially windblown and/or suffering from extensive decay (as per Appendix 14.1 of the EIA Report). As further described within Chapter 6 of the EIA Report, Barr Wood is generally in poor condition and primarily comprised of two rows of large beech trees (non-native to this particular area of Scotland and likely historically planted hedgerows rather than semi-natural origin) with a limited range of other tree species sparsely infilling the ground between the two rows of beech, including Scots pine (outwith its native range at this location). The woodland is ageing and declining due to a lack of natural regeneration, with few younger or immature trees present locally, and no seedling or saplings present due to the heavily grazed field layer; there is also no understorey/scrub layer present. There is unlikely to be natural regeneration here considering current conditions and ongoing grazing.

- 6.6.7 In the context of Barr Wood alone, the loss of 0.06 ha represents a 0.4% loss of the stand. The significance of the effect continues to be considered minor adverse and not significant as already and more fully described within paragraphs 6.6.29 to 6.6.36 of Chapter 6 of the EIA Report.
- 6.6.8 It is noted that Scottish Forestry does not object to the proposal, but notes the Proposed Development will have a direct, though limited, impact on woodland interest, and compensatory planting will be required.
- 6.6.9 The OBEMP prepared for the Amended Development includes extensive proposals relating to woodland, including native broadleaved and mixed scrub enhancement, creation and expansion to enhance the existing broadleaved woodland and the assisted regeneration and enhancement of ancient woodland areas at Barr Wood, with the aim also to increase woodland connectivity and join up fragmented stands locally. The OBEMP has been revised and replaces the OBEMP included as TA 6.6 in the EIAR. The AI Report OBEMP includes expanded woodland enhancement/creation areas, resulting in proposals to enhance 15.05 ha of existing woodland (primarily ancient woodland at Barr Wood, Hazel Glen and Gallangad Glen) and the creation of up to 99.46 ha of new native broadleaved woodland and 7.25 ha of new native species-rich mixed scrub, with proposals focussed on expanding and connecting areas of existing woodland cover. These proposals are discussed further below and fully detailed within **AI Technical Appendix 6.1**.
- 6.6.10 Considering the significant areas of woodland enhancement and creation proposed, including the assisted regeneration, enhancement and protection of ancient woodland at Barr Wood which is currently in decline and on a negative trajectory, it is considered the 0.06 ha loss of ancient woodland (0.4% of Barr Wood) is both mitigated and compensated for and overall there will be a beneficial effect resulting in habitat enhancement.

Consultation Response by NatureScot

- 6.6.11 This section of the Chapter outlines the main points raised, and focuses on the recommendations and requested clarifications, from NatureScot's consultation response.

NatureScot:

- 6.6.12 NatureScot recommend that it would be helpful to obtain clarification on whether the standard form of mitigation relating to a 50 m buffer between blade tips and high-value bat habitats has been included.

Response:

- 6.6.13 A minimum 50 m buffer between blade tips and high-value bat habitats (here comprising woodland edges and watercourses) has been maintained.

NatureScot:

- 6.6.14 NatureScot recommend that a detailed post-construction bat monitoring plan should be submitted to and approved by the planning authority prior to development commencing.

Response:

- 6.6.15 In accordance with standard practice, it is expected the requirement for a Bat Mitigation Monitoring Plan (BMMP) would be a condition of consent and would be prepared to discharge any such condition in advance of construction commencing. The BMMP would follow relevant NatureScot *et al.* (2021)¹² guidance and include acoustic monitoring and carcass searches.

NatureScot:

- 6.6.16 NatureScot recommend greater ambition in terms of the extent of proposed peatland restoration and if less peatland restoration is proposed than as advised in their guidance (NatureScot, 2023)¹³ then they recommend that rationale for this is provided.

Response:

- 6.6.17 The OBEMP included with the EIA Report included 89.94 ha of peatland restoration/enhancement. NatureScot however suggest approximately 200 ha of bog restoration should be sought to achieve offsetting and enhancement when applying a compensation ratio of 1:10 (lost:restored) to all potential direct, indirect, and temporary effects, with a further 10% restoration of the Site baseline extent of priority peatland habitats, to deliver additional enhancement (N.B. current Scottish Government guidance¹⁴ does not specify any ratios, instead taking a more holistic view regards biodiversity and a project/site-specific characteristics or circumstances).

¹² NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT). (2019, updated 2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation.

¹³ NatureScot (2023). Advising on peatland, carbon-rich soils and priority peatland habitats in development management.

¹⁴ Scottish Government (2023). Biodiversity: draft planning guidance. <https://www.gov.scot/publications/scottish-government-draft-planning-guidance-biodiversity/pages/1/>

- 6.6.18 Following the consultation response further desk-based assessment has been undertaken with regards the extent of peatland restoration possible within the OBEMP search area in conjunction with observations made during the baseline habitat surveys. This exercise has included the delineation of drainage lines from aerial imagery, correlated to the National Vegetation Classification (NVC) and peat depth data, and subsequent calculation of an approximate restoration footprint. The restoration footprint being based on the extent of drain plus a 10 m indirect effect buffer as recommended by NatureScot in their consultation response; this is in effect to apply the same indirect enhancement buffer to restoration proposals as was applied to potential indirect adverse drainage effects on wetland habitats in the ecological impact assessment (EclA). Clusters of drains and their respective buffers have been amalgamated into the revised peatland restoration areas as shown on **AI Figure 6.2**. In some instances, some of these restoration areas have also been extended to cover the extent of clearly visible and medium-high density self-seeded non-native conifers trees which are encroaching onto and invading peatland habitats within certain parts of the Site, in particular in the south-east of the OBEMP search area commensurate with Dumbarton Muir SSSI where there is abutting commercial conifer plantation and an abundant seed source to the east. From review of aerial imagery there may also be a small number of peat hags or banks present, if these are confirmed during further field survey undertaken for finalisation of the BEMP then restoration of these would be included, however it appears their extent is small and overall it would only marginally increase the area of the restoration proposals. The revised extent of the peatland restoration proposals which cover priority peatland habitats (i.e. NVC communities M17, M19 and M25a at the Amended Development) is 108.25 ha; these being part of Habitat Management Area A (see **AI Figure 6.2**). Habitat Management Area A also includes 3.07 ha of wet dwarf shrub heath and 8.71 ha of marshy grassland and flush habitats that may also benefit from peatland restoration proposals.
- 6.6.19 As noted above, the 200 ha restoration figure suggested by NatureScot also includes for compensation of indirect effects. As discussed in Chapter 6 of the EIA Report, indirect drainage effects are not certain, and if they do occur, are unlikely to be fully realised for various reasons. Consequently, it is considered that if the 1:10 ratio be applied it would be more appropriately applied to the known direct permanent and temporary losses. In this regard, the compensation and enhancement requirements for priority peatland at the Amended Development would be in the region of 113.20 ha. As per above, peatland restoration and enhancement measures that will be applied to priority peatland habitats cover up to approximately 108.25 ha. Therefore, for predicted direct losses for permanent and temporary infrastructure, peatland restoration/enhancement proposals at the Amended Development would be slightly less than the 1:10 compensation ratio plus 10% enhancement.
- 6.6.20 Therefore, overall, the extent of proposed peatland restoration measures has been expanded, although it is acknowledged it does not meet the 200 ha suggested by NatureScot. However, such a figure is also not achievable at the Amended Development (as discussed further below), and it is also noted that there is precedence from recent relevant applications whereby consent has been granted where peatland restoration has been maximised for the respective site, even though it was not possible to meet the 1:10 ratio.

- 6.6.21 The areas selected and delineated for peatland restoration have been identified as the areas within the OBEMP search area where suitable restoration work is possible for peatland habitats, through practices such as drain blocking/reprofiling and tree/scrub removal etc. The blanket bog areas not covered by the restoration proposals do not appear to have clear damage features that could be restored and are therefore considered by NatureScot Guidance¹³ as unsuitable areas for restoration works, as a result peatland restoration proposals have been maximised in the area available to the Applicant. Areas not covered by the peatland restoration proposals are subject to year-round grazing by livestock and would likely largely be considered ‘modified’¹⁵ as a result. The key and likely only measure available for enhancement of these areas would relate to grazing management, however as noted in NatureScot guidance¹³, “*proposals to only manage/reduce grazing and browsing levels or other impacts on peatland is not considered as offsetting*”. Consequently, such areas are considered not to be available for offsetting in line with NatureScot guidance¹³. Nonetheless, to understand the overall ecological benefit of the restoration proposals, it is necessary to consider the larger, hydrologically connected, peatland unit (macrotope) that the proposed restoration works sit within. This is because peatland erosion and tree/scrub invasion, if not addressed, will progressively worsen at an increasing rate across the site in the future. The peatland code¹⁶ notes that blanket bogs are likely to lose 1 cm depth per annum from eroding surfaces. As this erosion continues, the surface area of eroding peat (unprotected catotelmic peat) increases, and the rate of loss increases¹⁷. Thus, whilst the proposed management works cover an extent of 108.25 ha the wider peatland unit of several hundred hectares will ultimately be secured in the longer-term.
- 6.6.22 Therefore, it is considered peatland restoration proposals have been maximised. Additionally, these proposals should not be viewed in isolation and should also be considered in the wider context of the longer-term benefit (above paragraph), the OBEMP and biodiversity enhancement proposals for the Amended Development which sets out extensive plans for habitat enhancement and creation and subsequent net gain for biodiversity (see **AI Appendix 6.1**).

NatureScot:

- 6.6.23 NatureScot recommend that further Site-specific supporting information is provided as set out at Annex 2 of their peatland guidance¹³, and that this should include a calculated restoration footprint to illustrate more clearly what can and will be restored.

¹⁵ www.nature.scot/sites/default/files/2023-02/Guidance-Peatland-Action-Peatland-Condition-Assessment-Guide-A1916874.pdf

¹⁶ IUCN UK Committee (October 2024). [Peatland Code V2.1 - Web Final.pdf](#)

¹⁷ IUCN UK Committee (November 2014). Peatland Programme Briefing Note No. 9: Weathering, Erosion and Mass Movement of Blanket Bog <https://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/9%20Erosion%20final%20-%205th%20November%202014.pdf>
<https://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/9Erosion final - 5th November 2014.pdf>

Response:

- 6.6.24 Annex 2 of NatureScot's peatland guidance sets out Site-specific information/assessment requirements, overarchingly these being the inclusion of: peat depth survey; habitat survey & report (NVC); Habitat Management Plan (HMP); Peat Management Plan (PMP); Peat Landslide Hazard Risk Assessment (PLHRA); and Construction Environmental Management Plan (AA). These documents were provided with the original application, noting that the OBEMP takes the place of and fulfils the requirements of an HMP.
- 6.6.25 The OBEMP has been revised and expanded for this AI Report (**AI Appendix 6.1**). A peatland restoration footprint has been calculated as set out in paragraph 6.6.18 above, and this has been considered in revising the OBEMP.

NatureScot:

- 6.6.26 NatureScot recommend the peatland restoration footprint be calculated using the same buffer distance as has been used to calculate the indirect loss of peatland habitat (in this case, therefore, a 10 m buffer around any identified restoration features, e.g. drains requiring blocking).

Response:

- 6.6.27 A peatland restoration footprint has been calculated as set out in paragraph 6.6.18 above in cognisance of NatureScot's recommendation.

NatureScot:

- 6.6.28 NatureScot recommend that supporting rationale is provided for not calculating indirect losses associated with temporary habitat loss (e.g. due to borrow pit creation), but only permanent habitat loss.

Response:

- 6.6.29 Work on the Amended Development is predicted to last for approximately 21 months in total, comprising civil works (9 months), wind turbine delivery and erection (5 months) and wind turbine commissioning and Site reinstatement (18 months), with overlap in these respective phases. For instance, Site reinstatement will be on an as-you-go basis when works are completed in an area to ensure areas are restored as soon as practicable and temporary working areas will be restored as soon as they are no longer required. In many instances temporary working areas will be restored before the construction phase ends, i.e., within the time frame of the 9-month civil works phase.
- 6.6.30 All works would be carried out in accordance with industry good practice construction measures and guidance and follow a Site-specific robust CEMP. The CEMP will detail how the successful Principal Contractor would manage the works in accordance with all commitments and mitigation detailed in the EIA Report, the PMP, statutory consents and authorisations, and industry good practice and guidance for environmental management, including implementation of appropriate peat and soils management, water management, and pollution prevention measures.
- 6.6.31 As discussed with Chapter 6 of the EIA Report, potential indirect losses relate to potential drying effects upon neighbouring wetland habitats following excavation for, and

construction of, infrastructure. A precautionary 10 m indirect drainage buffer was assumed, in line with carbon calculator assumptions (SEPA, 2018)¹⁸. As previously discussed, drainage effects and draw-down of the water table from permanent drainage features in blanket bogs tend to be observed in the zone closest to the drain and the effects can take many years to materialise. The effect also tends to initially affect the acrotelm or near-surface zone rather than the catotelm. Prolonged drying of the acrotelm will likely result in the progressive loss of peat-forming conditions and peat-forming species. The catotelm responds to drainage in a different way, with water movement in the catotelm being extremely slow. A drain therefore has relatively little immediate effect on the water held in the main body of catotelm peat, with the long-term effect likely being related to shrinkage, compression and consolidation of the peat mass (IUCN, 2014)¹⁹.

- 6.6.32 Temporary infrastructure will be in place for a relatively short time period and reinstated in line with best practice as soon as practicable, as noted above. It is expected that any potential indirect drainage effects from this temporary infrastructure are therefore short in duration and may only affect a narrow zone closest to the temporary infrastructure feature and be limited to near surface effects. With reinstatement and appropriate consideration of hydrology it is considered these potential effects are short-term and reversible and that potential long-term drying or consolidation effects can be avoided. As such potential short-term indirect drainage effects from temporary infrastructure are not considered to likely result in a loss of habitat.

NatureScot:

- 6.6.33 With respect to the OBEMP, NatureScot seek clarification on the habitat loss figures used in the biodiversity net gain (BNG) metric calculation, clarification on the predicted extent of habitat measures (noting that figures appear to be based on entire 'search areas', and that delivery may encompass less than their full extent), and information on historical, current and also future grazing management.

Response:

- 6.6.34 Habitat loss figures are further explained and clarified in the revised OBEMP (**AI Appendix 6.1**). With respect to the predicted extent of habitat measures, the OBEMP search areas in several cases have been refined, and it is also intended that the entirety of these areas would be used for the respective biodiversity enhancement proposals – the respective areas have been renamed as 'habitat management areas' rather than 'search areas' to better reflect OBEMP proposals. Information on grazing is also included in the revised OBEMP.

¹⁸ SEPA (2018). Windfarm Carbon Calculator Web Tool User Guidance. Available at: https://informatics.sepa.org.uk/CarbonCalculator/assets/Carbon_calculator_User_Guidance.pdf.

¹⁹ IUCN (2014). Impacts of Artificial Drainage on Peatlands. IUCN UK Committee Peatland Programme Briefing Note No. 3 www.iucn-uk-peatlandprogramme.org/sites/default/files/2019-05/3%20Drainage%20final%20-%205th%20November%202014.pdf

NatureScot:

6.6.35 NatureScot have requested information on how off-site delivery is expected to be secured.

Response:

6.6.36 All areas proposed for habitat management within and outwith the Application Boundary are contained within the wider OBEMP search area boundary (as per **AI Figure 6.2**). The OBEMP search area boundary area is all under the ownership of one landowner, whom the Applicant has agreements in place with to utilise this wider area as required for biodiversity enhancement purposes.

NatureScot:

6.6.37 With respect to the proposed bracken control in Auchenreoch Glen Site of Special Scientific Interest (SSSI) as outlined in the OBEMP, NatureScot recommend that the proposed approach to bracken control is confirmed and further information on grazing is included.

Response:

6.6.38 Bracken control will not utilise any chemical treatments but instead be primarily controlled using mechanical means, however in areas where this may not be feasible or appropriate (for example on steep slopes or areas inaccessible to machinery) then bracken control would be undertaken manually. Further information on bracken control and grazing is provided in the revised OBEMP (**AI Appendix 6.1**).

6.7 Assessment of Effects

6.7.1 This section provides an assessment of the likely effects of the Amended Development on the LNCS identified through the WDC consultation response.

Ecological Features and Effects on Ecological Features Scoped-Out of the Assessment

6.7.2 With consideration of the locations of the relevant LNCS (**AI Figure 6.1**), the relevant features of interest as described in the Baseline Conditions section above, and following the embedded mitigation measures and project assumptions as previously described within Chapter 6 of the EIA Report, several potential effects can be scoped-out of further assessment based on the professional judgement of the EIA team and experience from other relevant projects and policy guidance or standards. The following paragraphs detail the ecological features and effects that have been scoped-out.

6.7.3 Murroch Glen LNCS is situated to the north of the Site Access for the Amended Development (**AI Figure 6.1**). A very small area of Murroch Glen LNCS overlaps with the Application Boundary (approximately 0.14 ha); however, no infrastructure is proposed within the LNCS area and there would be no habitat loss. The closest proposed infrastructure to Murroch Glen LNCS is the Site Access track (6 m distant) and a borrow pit search area (16 m distant). The interest features noted within this LNCS are Upland Heath, Fen, Upland Mixed Ashwood, Upland Flushes, Fens and Swamps, and Upland

Calcareous Grassland. The only one of these interest features recorded locally to the Amended Development and with potential connectivity due to proximity is Upland Mixed Ashwood; however, given the nature of construction works and the type of feature (i.e., non-hydrologically dependent woodland) and with good practice embedded mitigation (as previously described and per above) it is not expected there would be any adverse effects on the interest features of this LNCS and it is scoped-out of the assessment.

- 6.7.4 Blairvault Burn and Pappert Muir LNCS is situated to the north-west of the Amended Development and does not overlap with the Application Boundary (**AI Figure 6.1**). The closest proposed infrastructure to this LNCS is Turbine 1 and associated hardstanding, located 180 m distant. The natural topography and contours of the land between Turbine 1 and the LNCS suggest the natural hydrological flow-paths, and therefore pathways, are to the south and west and away from the LNCS. The interest features within this LNCS are Blanket Bog, Fen and Upland Calcareous Grassland, which only cover approximately 20% of the LNCS area⁸. Given distance, flow-paths, and the respective interest features, combined with good practice embedded mitigation it is not expected there would be any adverse effects on the interest features of this LNCS and it is scoped-out of the assessment.
- 6.7.5 Bonhill Muir and Pappert Hill LNCS is situated to the west of the Amended Development and does not overlap with the Application Boundary (**AI Figure 6.1**). The closest proposed infrastructure to this LNCS are Turbine 1 and associated hardstanding (located 77 m distant) and the hardstand associated with Turbine 5 (89 m distant). The interest features within this LNCS are Upland Heathland and Blanket Bog, these habitats are relatively patchy within the LNCS boundary, as the LNCS features to relate to the areas of open ground within the larger conifer plantation of Nobleston Wood. There is no connectivity between the LNCS and Turbine 5 infrastructure (or any other infrastructure east and south of here) due to hydrological separation (due to the presence of the of the upper Murroch Burn) and the topographical situation. The only area with potential for connectivity to this LNCS is around Turbine 1. However, the natural topography and contours of the land between Turbine 1 and this LNCS suggest the natural hydrological flow-paths, and therefore pathways, initially flow east and west respectively towards each other and would converge on a flowline approximately commensurate with the eastern edge of the LNCS boundary, before changing direction and flowing south. Furthermore, the eastern section of the LNCS is dense conifer plantation, and the distance from Turbine 1 to the nearest interest feature (Upland Heathland) is approximately 297 m. Given distance, flow-paths, and the respective interest features, combined with good practice embedded mitigation it is not expected there would be any adverse effects on the interest features of this LNCS and it is scoped-out of the assessment.

Important Ecological Features (IEFs)

- 6.7.6 The remaining IEFs identified which have been scoped-in to the assessment comprise:
- Auchenreoch Muir LNCS; and
 - West Dumbarton Muir LNCS.
- 6.7.7 Both LNCS are shown on **AI Figure 6.1**. Auchenreoch Muir LNCS overlaps with the south-west of the Application Boundary, including a proportion of the Site Access and other proposed infrastructure, including Turbine 8, part of the hardstanding for Turbine 9,

substation, temporary construction compound and one of the borrow pit search areas. West Dumbarton Muir LNCS overlaps with the majority of the Site, including all turbines (except for Turbine 8) and two borrow pit search areas. The LNCSs are a local designation and as such NPF4 Policy 4 (Natural places) will be relevant.

6.7.8 These LNCS are, by definition, of 'Local' Nature Conservation Value.

Construction Impacts

6.7.9 This section provides an assessment of the likely effects of the construction of the Amended Development upon the two scoped-in IEFs.

Predicted Construction Impacts

6.7.10 The most tangible effect during construction of the Amended Development in respect of both IEFs would be direct habitat loss due to the construction of infrastructure such as new access tracks, turbines, hardstandings, laydown areas, compounds, borrow pits and substation. Much of this infrastructure would be permanent, however the temporary construction compound, temporary crane pad sections and borrow pits would be restored at the end of construction.

6.7.11 There may also be some indirect habitat modification to wetland habitats in the long-term due to drainage effects. For the purposes of this assessment, it is assumed that habitat modification to wetland habitats due to indirect drainage effects may extend out to 10 m from infrastructure (i.e., in keeping with precautionary indirect drainage assumptions within the carbon calculator guidance¹⁸). It is expected that any indirect drainage effects would only impact wetland habitat such as blanket bog, wet modified bog, flushes etc. No indirect drainage effects are expected to impact or alter the quality or composition of non-wetland habitats, such as dry heath, bracken²⁰, acid grassland etc., as such only direct habitat loss applies to these habitats. It is also expected that any indirect drainage effects would only apply to permanent infrastructure and not temporary infrastructure, as discussed above. Indirect habitat modification may alter habitat types or vegetation composition, however there is no overall loss in habitat extent.

6.7.12 Temporary and direct habitat losses due to the creation of a temporary infrastructure and borrow pit search areas have been calculated separately. These have been considered separately to permanent infrastructure as although these areas would be restored at the end of the construction period and therefore would not show a loss in habitat extent, the habitat type resulting after restoration may not be the same as the original due to changes in topographical or hydrological conditions. Areas of direct impact for this temporary infrastructure may represent permanent losses for certain habitat types such as blanket bog due to the effects on the structure and function of the habitat type, and the

²⁰ Removal and management of bracken as part of proposals contained within the OBEMP will result in restoration and recreation of other 'dry' habitat types, i.e. acid and calcareous grasslands which would not be subject to indirect drainage losses, so removal is considered an opportunity rather than a loss.

complexities and long timescales involved in restoring or re-creating these particular habitat types.

- 6.7.13 **Table 6.1** (for Auchenreoch Muir LNCS) and **Table 6.2** (for West Dumbarton Muir LNCS) detail the estimated habitat losses/modifications predicted to occur within each respective LNCS for all new permanent and temporary infrastructure associated with the Amended Development.

Table 6.1: Auchenreoch Muir LNCS Estimated Loss/Modification for Permanent & Temporary Infrastructure

Phase 1 Habitat Type (Code)	Direct Habitat Loss (ha)	Indirect Habitat Modification (ha)	Temporary Habitat Loss (ha)
Broadleaved Semi-Natural Woodland (A1.1.1)	<0.01	N/A	0.00
Dense/Continuous Scrub (A2.1)	0.03	N/A	0.00
Unimproved Acid Grassland (B1.1)	0.05	N/A	0.35
Marsh/Marshy Grassland (B5)	2.31	4.72	1.91
Wet Dwarf Shrub Heath (D2)	0.09	0.27	0.00
Wet Modified Bog (E1.7)	0.33	0.29	0.23
Total	2.82	5.28	2.49

Table 6.2: West Dumbarton Muir LNCS Estimated Loss/Modification for Permanent & Temporary Infrastructure

Phase 1 Habitat Type (Code)	Direct Habitat Loss (ha)	Indirect Habitat Modification (ha)	Temporary Habitat Loss (ha)
Broadleaved Semi-Natural Woodland (A1.1.1)	<0.01	N/A	0.00
Unimproved Acid Grassland (B1.1)	0.13	N/A	0.13
Marsh/Marshy Grassland (B5)	1.03	1.52	0.74
Continuous Bracken (C1.1)	<0.01	N/A	0.00
Acid Dry Dwarf Shrub Heath (D1.1)	<0.01	N/A	0.03
Wet Dwarf Shrub Heath (D2)	0.23	0.70	0.45
Blanket Bog (E1.6.1)	5.00	8.37	3.76
Wet Modified Bog (E1.7)	0.13	0.19	0.12
Acid/Neutral Flush (E2.1)	0.17	0.44	0.04
Total	6.69	11.22	5.26

- 6.7.14 The following sections assess the effect of these losses/modifications for each IEF scoped-in.

Auchenreoch Muir LNCS

- 6.7.15 **Impact:** Impacts upon Auchenreoch Muir LNCS will be direct (through permanent and temporary habitat loss) and indirect (through potential drying effects upon neighbouring wetland habitats) occurring from the construction period into the operational period.
- 6.7.16 Direct permanent loss would occur in areas where permanent infrastructure such as access tracks, turbine foundations, and hardstandings are sited. The excavation of certain habitat types, such as blanket bog, for temporary infrastructure may also lead to losses due to the long-term effect on the ecological and hydrological structure and function. As noted above, these temporary works areas would be restored at the end of the construction period and therefore would not show a loss in habitat extent, instead the habitat type resulting after restoration may not be exactly the same type as the original due to changes in topographical or hydrological conditions. However, reinstated areas will be restored on the 'like-for-like or better' principle where possible and these areas would still contribute to the overall habitat mosaic and diversity of habitats. Temporary effects do not result in an overall loss of habitat extent.
- 6.7.17 There may be some indirect habitat modification to certain wetland habitats because of the zone of drainage around infrastructure. As detailed and discussed fully within Chapter 6 of the EIA Report it is considered unlikely that indirect drainage effects would either occur, or if they do occur, would not have such an effect on the habitat as to result in any notable effect on the type of habitat present. Potential indirect effects do not result in a loss of habitat extent.
- 6.7.18 Therefore, the primary impact is related to the direct and permanent loss of the extent of the LNCS.
- 6.7.19 **Nature Conservation Value:** Local.
- 6.7.20 **Magnitude of Effect:** Auchenreoch Muir LNCS covers 231.2 ha. Direct and permanent habitat losses within this LNCS cover 2.82 ha, the breakdown of habitat loss by habitat type is presented in **Table 6.1**, indicating the majority of these losses (82%) relate to marshy grassland. The marshy grassland here being non-NVC rush dominated grasslands and areas of dry and grassy NVC type M25b *Molinia caerulea - Potentilla erecta mire, Anthoxanthum odoratum* sub-community. The permanent loss of 2.82 ha of habitat equates to 1.2% of the LNCS area.
- 6.7.21 The main interest features stated within Auchenreoch Muir LNCS are Upland Calcareous Grassland, Upland Heathland, and Blanket Bog. As per **Table 6.1** there will be no losses of calcareous grassland or blanket bog. In terms of upland heathland, 0.09 ha of direct loss and potentially up to 0.27 ha of indirect modification are predicted. Minor direct, temporary, and indirect losses/modifications to wet modified bog of the NVC type M25a *Molinia caerulea - Potentilla erecta mire, Eric tetralix* sub-community totalling up to 0.85 ha are also predicted.
- 6.7.22 The combined potential direct losses (permanent and temporary) to the LNCS interest feature habitats are therefore approximately 0.65 ha (i.e., 0.3% of the LNCS area).
- 6.7.23 The combined potential indirect modifications to the LNCS interest feature habitats are therefore approximately 0.56 ha (i.e., 0.2% of the LNCS area).

- 6.7.24 When considering the scale of the above habitat loss and/or modification, and considering the relative abundance, distribution and quality of the habitats of interest within the LNCS and connected immediately adjacent, an effect magnitude of low spatial and long-term temporal is appropriate.
- 6.7.25 **Significance of Effect:** Given the above consideration of Nature Conservation Value and Magnitude of Effect, the effect significance is considered to be **Minor adverse and Not Significant**.

West Dumbarton Muir LNCS

- 6.7.26 **Impact:** As per Auchenreoch Muir LNCS above.
- 6.7.27 **Nature Conservation Value:** Local.
- 6.7.28 **Magnitude of Effect:** West Dumbarton Muir LNCS covers 1244.5 ha. Direct and permanent habitat losses within this LNCS cover 6.69 ha, the breakdown of habitat loss by habitat type is presented in **Table 6.2**, indicating the majority of these losses (75%) relate to blanket bog (NVC types M17 and M19). The permanent loss of 6.69 ha of habitat equates to 0.5% of the LNCS area.
- 6.7.29 The main interest features stated within West Dumbarton Muir LNCS are Upland Heath, Fen (calcareous springs, flushes and grassland), and Blanket Bog. With respect to upland heath (including both wet and dry heaths) it is predicted there may be up to 0.71 ha of direct impact/loss (permanent and temporary) and potentially up to a further 0.70 ha of indirect effects on wet heath. With respect to the fen interest feature, there may be up to 0.21 ha of direct impact/loss (permanent and temporary) and potentially up to a further 0.44 ha of indirect effects on acid/neutral flush habitats. For blanket bog (including wet modified bog) there may be up to 9.01 ha of direct impact/loss (permanent and temporary) and potentially up to a further 8.37 ha of indirect effects on these habitat types.
- 6.7.30 The combined potential direct losses (permanent and temporary) to the LNCS interest feature habitats are therefore approximately 9.93 ha (i.e., 0.8% of the LNCS area).
- 6.7.31 The combined potential indirect modifications to the LNCS interest feature habitats are therefore approximately 9.70 ha (i.e., 0.8% of the LNCS area).
- 6.7.32 When considering the scale of the above habitat loss and/or modification, and considering the relative abundance, distribution and quality of the habitats of interest within the LNCS and connected immediately adjacent, an effect magnitude of low spatial and long-term temporal is considered appropriate.
- 6.7.33 **Significance of Effect:** Given the above consideration of Nature Conservation Value and Magnitude of Effect, the effect significance is considered to be **Minor adverse and Not Significant**.

6.8 Mitigation, Compensation and Enhancement

- 6.8.1 General and embedded mitigation measures, such as complying with best practice, micro-siting provisions, presence of an (EcoW) and adherence to a detailed CEMP, PMP and Species Protection Plan (SPP) are included in Chapter 6 of the EIA Report.

- 6.8.2 No significant construction effects were identified for IEFs within this AI Report assessment (nor with respect to the assessment of IEFs in Chapter 6 of the EIA Report). However, several additional mitigation, compensation and significant biodiversity enhancement measures are proposed as part of the Amended Development's OBEMP as now revised.
- 6.8.3 The OBEMP has been revised and updated for this AI Report (in cognisance of the NatureScot consultation response), and now includes increased extent of peatland restoration, increased extent of broadleaved woodland creation/enhancement, and an additional proposal relating to wider bracken control for grassland restoration, as detailed in **AI Appendix 6.1** and outlined below.
- 6.8.4 Overall, the OBEMP achieves significant biodiversity enhancement and net gain at the Amended Development, in line with objectives outlined in NPF4 Policy 3 (Scottish Government, 2023)²¹. In summary the OBEMP includes the following proposals:
- 108.25 ha of priority peatland restoration/enhancement in Habitat Management Area A, primarily delivered through drain blocking and removal of non-native self-seeded conifer trees (an increase of 18.31 ha compared to the OBEMP submitted with the EIAR);
 - Up to 99.46 ha of native broadleaved woodland creation (via planting) (an increase of 3.10 ha compared to the OBEMP submitted with the EIAR) and 15.05 ha of woodland enhancement (including enhancement of ancient woodland) in Habitat Management Area B. The ancient woodland at Barr Wood will primarily be enhanced through enrichment planting, soil translocation, and deadwood creation from trees requiring felling for Site Access construction;
 - Restoration of qualifying grassland habitats within the Auchenreoch Glen SSSI (Habitat Management Area C, 12.20 ha) through the mechanised and/or manual removal and management of encroaching dense bracken;
 - 7.25 ha of native species-rich mixed scrub creation/enhancement in Habitat Management Area D, via planting;
 - 25.99 ha of mechanised and/or manual removal and management of dense bracken in Habitat Management Area E to restore local acid and calcareous grassland habitats (new proposal not previously included within the OBEMP submitted with the EIAR); and
 - Creation of approximately 2000 m of new native species-rich hedgerows in Search Area F.
- 6.8.5 Full details of the proposals and associated monitoring and reporting schedules are provided in **AI Appendix 6.1**.
- 6.8.6 The OBEMP contributes to local strategies and policies, for instance Policy E6 Woodland Strategy in the WDC Local Plan¹⁰ and ENV4 Forestry, Trees and Woodland in the WDC Proposed Plan¹¹.
- 6.8.7 As noted in **paragraphs 6.4.3** and **6.4.4** with respect to WDC Local Plans, the presence of a LNCS does not necessarily preclude development, and development may be

²¹ Scottish Government (2023). National Planning Framework 4. <https://www.gov.scot/publications/national-planning-framework-4/>

permissible, where arrangements are in place and adverse effects are offset or compensated in a way that adequately maintains the integrity of the interests; the creation of new habitats is also encouraged.

- 6.8.8 Several of the OBEMP proposals are partially or wholly located within LNCS, and will therefore restore, enhance and create habitats of conservation and biodiversity value within the respective LNCS as well as provide linkages and connectivity between different LNCS. For example, the majority of the peatland restoration and enhancement proposals are located within West Dumbarton Muir LNCS, and the proposals will restore and enhance the blanket bog feature of this LNCS. An additional example is the woodland creation/enhancement proposals which will extend the woodland feature of Murroch Glen LNCS and expand this into Auchenreoch Muir LNCS to connect with isolated and fragmented stands of woodland there (including ancient woodland) in the areas around Hazel Glen. The OBEMP proposals, and respective areas, that overlap with LNCS are summarised in **Table 6.3**.

Table 6.3: OBEMP Proposals Within each LNCS

LNCS	OBEMP Proposal	Area (ha)
Auchenreoch Muir	Peatland Restoration/Enhancement	0.01
	Woodland Enhancement/Creation	47.48
	SSSI Grassland Restoration	3.31
	Native Mixed Scrub Enhancement/Creation	4.04
	Bracken Control	21.12
Bonhill Muir & Pappert Hill	Native Mixed Scrub Enhancement/Creation	3.19
Murroch Glen	Woodland Enhancement/Creation	12.96
	SSSI Grassland Restoration	3.69
	Bracken Control	1.19
West Dumbarton Muir	Peatland Restoration/Enhancement	73.73
	Woodland Enhancement/Creation	44.09
	Bracken Control	0.88

- 6.8.9 As detailed above, there will be restoration, enhancement and creation of habitats within Auchenreoch Muir LNCS, Bonhill Muir & Pappert Hill LNCS, Murroch Glen LNCS and West Dumbarton Muir LNCS, as well as within Auchenreoch Glen SSSI, Dumbarton Muir SSSI, and other areas of non-designated habitat within and adjacent to the Site. The suite of proposals within the OBEMP are together considered to mitigate, compensate and offset impacts on habitats predicted as a result of the Amended Development with an overall gain for biodiversity, as per below.
- 6.8.10 As part of the revised OBEMP a revised Biodiversity Net Gain (BNG) assessment was undertaken using the latest Scottish & Southern Energy Renewables (SSER) BNG

metric²². This demonstrates the measures proposed for the creation and enhancement of habitats would result in a significant increase in the biodiversity value of the Site, including affected LNCS, post-construction. The BNG metric was applied to the Amended Development's baseline habitats, predicted habitat losses, and the habitat creation and enhancement measures as proposed in the revised OBEMP. The BNG metric indicates that following construction, Site restoration, BEMP implementation and subsequent habitat management, the Amended Development would compensate for predicted habitat and biodiversity losses and on top of this provide further enhancement that would result in an increase and net gain for biodiversity of +20% over and above the baseline and pre-development value (see **AI Appendix 6.1**).

- 6.8.11 The detailed and final BEMP would be agreed with the WDC and NatureScot in advance of construction and would ensure the Amended Development secures significant biodiversity enhancements through restoring degraded habitats and strengthening nature networks.

6.9 Residual Effects

- 6.9.1 The significance of effects on IEFs assessed within this chapter are considered to be Minor adverse and Not Significant, considering embedded mitigation and best practice. However additional mitigation, compensation and enhancement are proposed for the Amended Developments operational phase as part of biodiversity enhancements detailed in the OBEMP (as summarised in the preceding section above).
- 6.9.2 Enhancement, restoration and creation of habitats through the delivery of a BEMP during the operational phase would reduce effects on habitats further and, overall, would achieve significant biodiversity enhancement at the Amended Development (as identified through the BNG metric).
- 6.9.3 The OBEMP includes provisions for the maintenance, restoration/enhancement, and creation of habitats of conservation and biodiversity value locally, and within the respective LNCS assessed (**Table 6.3**).
- 6.9.4 For Auchencroch Muir LNCS, OBEMP proposals cover 75.96 ha (32.9%) of the LNCS area (correlating to an effect magnitude of high spatial and long-term temporal). The long-term residual effect significance following successful implementation of the OBEMP is therefore considered to be **Moderate beneficial** and **Significant**.
- 6.9.5 For West Dumbarton Muir LNCS, OBEMP proposals cover 118.70 ha (9.5%) of the LNCS area (correlating to an effect magnitude of low spatial and long-term temporal). The long-term residual effect significance following successful implementation of the OBEMP is therefore considered to be **Minor beneficial** and **Not Significant**.

²² SSER BNG Project Toolkit Version 2-3. Downloaded 06/01/2025 from <https://www.sserenewables.com/sustainability/nature-positive/>

6.10 Summary

- 6.10.1 No significant adverse effects are identified. All scoped-in LNCS IEFs have been assessed as having Minor adverse effects which are Not Significant, in the short-term. These adverse effects are mitigated, offset and compensated for through the proposals contained within the OBEMP, which overall delivers significant biodiversity net gain and is predicted to result in overall beneficial residual effects with respect to ecology and biodiversity.

7 ORNITHOLOGY

7.1 Introduction

- 7.1.1 This Chapter presents an updated assessment of effects upon Important Ornithological Features (IOFs) presented in Chapter 7: Ornithology of the EIA Report, in response to the reduction of turbine tip heights for the Amended Development; and consultation responses to the EIA Report on ornithological matters.

7.2 Scope of Assessment

- 7.2.1 The main component of this Chapter is an updated assessment of potentially significant operational phase effects upon IOFs presented within Chapter 7 of the EIA Report.
- 7.2.2 This is on the basis of updated collision mortality risks estimated for the Amended Development, and which results from a reduction in tip height of all ten turbines from 250 m to 220 m, achieved by a reduction in turbine hub height from 164 m to 134 m.
- 7.2.3 There have been no changes to wind turbine blade length or other turbine parameters, the development layout and footprint or construction and operational timelines, which would otherwise result in the potential for change in significance of construction or operational displacement effects upon IOFs assessed within Chapter 7 of the EIA Report.
- 7.2.4 Further consideration of construction and operational displacement effects upon IOFs is therefore not required and scoped-out of assessment within this Chapter of the AI.
- 7.2.5 The updated assessment presented within this Chapter is therefore restricted to considering change in the potential for operational collision mortality risks, or significance of such effects, upon those IOFs for which flight activity was recorded during baseline studies, or collision risks estimated for the previously proposed ten-turbine Merkins Wind Farm within the Site (see Table 7.8 and 7.9 of Chapter 7 of the EIA Report).

7.3 Baseline Conditions

- 7.3.1 Within the EIA Report, Section 7.5 of Chapter 7, Technical Appendices 7.1 and 7.2 and Figures 7.1 to 7.16 provide full details of baseline methods and ornithological conditions, which have informed the design and assessment of the Amended Development.
- 7.3.2 The description of baseline conditions remains applicable, with the exception of the identification of “at collision risk” flight activity and collision mortality risks estimated for the Amended Development, on the basis of the flight activity survey data collected for the between March 2019 and March 2020.
- 7.3.3 An updated Annex D (Table D1. Flight Activity Records: Target Species) and Annex E: Collision Risk Assessments of Technical Appendix 7.1: Ornithology of the EIA Report are therefore presented in Volume 3, and which supersede those which accompany the EIA Report.
- 7.3.4 Collision mortality risks for the Merkins Wind Farm as presented within Chapter 7 of the EIA Report, based on data collected at the Site between September 2008 to August 2009, are also unchanged and remain as originally presented in the Merkins Wind Farm

Ornithology Technical Report (Arcus 2011). Although the planned layout and specifications of the Merkins project differs from that of the Amended Development (modelled turbines were smaller at 82 m rotor diameter, 69-79 m hub height), these risks, provide a useful additional indication of potential collision risks associated with a ten-turbine project within the Site.

Flight Activity

- 7.3.5 **Table 7.1** below supersedes Table 7.9 of Chapter 7 of the EIA Report and presents updated collision mortality risks for the Amended Development, based on a change in turbine parameters (tip height) and identification of “at collision risk” flight activity. Collision mortality risks predicted for the previously proposed ten-turbine Merkins Wind Farm are also presented.
- 7.3.6 For ease of comparison, updated collision mortality risks are present in bold in **Table 7.1** and those previously presented for the Amended Development within Table 7.9 of Chapter 7 of the EIA Report are italicised.
- 7.3.7 Consistent with the results of analysis presented within Table 7.9 the EIA Report, some species had no “at collision risk” flight activity recorded for the baseline period (March 2019 to March 2020) and therefore it follows that collision mortality risks have again not been predicted. This was the case for flight activity of black grouse, curlew, Greenland white-fronted goose, hen harrier, lapwing, merlin, peregrine, red kite and whooper swan.

Table 7.1: Updated Estimated Collision Mortality Risks.

Species	Merkins Wind Farm (Unchanged)				Amended Development			
	2008-09 NBR C.R. §	2009 BR C.R. §	2008-09 Annual	Years Per Collision	2019 BR C.R. §	2019-20 NBR C.R. §	2019-20 Annual	Years Per Collision
Curlew	<i>0</i>	<i>0.093</i>	<i>0.093</i>	<i>10.7</i>	0	0	-	-
Golden plover	<i>0</i>	<i>0</i>	-	-	0	0.021	0.021	20.4
Goshawk	<i>0</i>	<i>0</i>	-	-	0.011	0	0.011	50.0
Greylag goose	<i>0.165*</i>	<i>0.000</i>	<i>0.165</i>	<i>6.0</i>	0	0.003	0.003	333.3
Herring gull**	-	-	-	-	0.307	0	0.307	1.4
Osprey	<i>0</i>	<i>0</i>	-	-	0.021	0	0.021	27.0
Peregrine	<i>0.004</i>	<i>0.005</i>	<i>0.009</i>	<i>111</i>	0	0	-	-

Species	Merkins Wind Farm (Unchanged)				Amended Development			
	2008-09 NBR C.R. §	2009 BR C.R. §	2008-09 Annual	Years Per Collision	2019 BR C.R. §	2019-20 NBR C.R. §	2019-20 Annual	Years Per Collision
Pink-footed goose	0	0	-	-	0 0	0.339 0.238	0.339 0.238	3 4.2

§ collision Rate (C.R.) per season: BR = Breeding Season; NBR = Non-breeding Season

* calculated using a 99 % avoidance rate. NatureScot now recommends a 99.8 % avoidance rate for this species (SNH 2018a).

** herring gull was not considered to be a target species in 2008-09.

7.4 Legislation, Policy and Guidance

7.4.1 Legislation, policy and guidance relevant to the assessment of effects upon IOFs, as provided in Section 7.4 of Chapter 7 of the EIA Report remains valid, with no material changes identified.

7.5 Assessment Methodology and Significance Criteria

7.5.1 The methodology for identifying IOFS and determining the significance of potential effects upon IOFs, as set out in Section 7.2 of Chapter 7 of the EIA Report is unchanged and remains valid.

7.6 Consultation

7.6.1 Consultation responses to the submission of the application and EIA Report that raised matters in relation to ornithological interests are summarised in **Table 7.2**.

Table 7.2: Ornithological EIA Consultation Responses.

Consultee	Summary of Consultation Response	Response to Consultee
<p>NatureScot 22nd March 2024</p>	<p>Loch Lomond Special Protection Area (SPA) / Ramsar site</p> <p>Advised that despite the proposal lying within potential foraging range of Greenland white-fronted goose, in practice connectivity with the Site is very limited, and therefore displacement, barrier effects or collision impacts are unlikely.</p> <p>Advised that it is therefore unlikely the proposal will have a significant effect on any qualifying interests either directly or indirectly, and an appropriate assessment is not required.</p>	<p>Noted and agreed.</p> <p>No collision mortality risk for Greenland white-fronted goose was predicted for the Proposed Development within the EIA Report. The single flight (one flock of five birds) recorded passing over the Site during baseline surveys (in October 2008) is similarly not identified as being ‘at collision risk’ to the updated turbine specification for the Amended Development (see Table 7.1, Figure 3.1a and Paragraph 1.1.3).</p> <p>It can therefore remain reasonably concluded that there would be no adverse effects on the integrity of Loch Lomond SPA / Ramsar site, as a result of collision mortality risk to Greenland white-fronted geese and no further consideration is required.</p>
	<p>Endrick Mouth and Islands Site of Special Scientific Interest (SSSI)</p> <p>No impacts on the SSSI’s Greenland white-fronted goose population are predicted for the reasons outlined above, and no connectivity with the breeding bird assemblage is likely due to the distance from the Site (over 5 km).</p> <p>Advised that the greylag goose feature is unlikely to be adversely affected due to low likelihood of disturbance-displacement impacts, the low level of suitability of the habitats within the site, the low level of recorded site activity, and the very low collision rate predicted.</p>	<p>Noted and agreed.</p> <p>Collision mortality risks for greylag goose predicted for the updated turbine specification for the Amended Development remain very small and unlikely to adversely affect the designation’s population.</p>

Consultee	Summary of Consultation Response	Response to Consultee
	<p>Concluded that the notified interest features of the SSSI will not be adversely affected by the proposal.</p>	
	<p>Black grouse</p> <p>Notes that the substation is located within 500 m of a historical lek location and acknowledges mitigation and enhancement measures included as part of the Proposed Development to address potential operational disturbance effects predicted for the species.</p> <p>However, considers that distance is the underlying issue affecting the viability of the historical lek site, and recommends a supporting explanation as to why the substation needs to be sited closer than 500m, and encourages that, if possible, the layout is adapted to maintain a 500 m buffer.</p>	<p>It is NatureScot’s advice in the design of onshore wind farms (2024), that a 500 m buffer for proposed turbine locations should be adopted around known black grouse lek sites, in order to avoid the potential for operational disturbance to lekking black grouse. This has been achieved for the Amended Development; including historical, likely extinct locations identified during baseline studies.</p> <p>The optimal location for the substation was selected based on a number of design principles which included consideration of peat depth, maintaining a 50m separation from watercourses , topography, the presence of bedrock at or near the surface and being located within appropriate proximity of a suitable connection point to the electricity grid network.</p> <p>It has therefore not been possible to avoid the siting of the substation in this general area.</p> <p>The potential for significant effects to occur on black grouse, due to the selection of an optimal location for the substation, has therefore been considered in view of the current and potential future status of the historical lek site recorded in 2009 i.e. likely extinct with a low likelihood of re-establishment, in the absence of a reversal in wider population declines (see Table 7.11 of Chapter 7 of the EIA Report).</p> <p>The application of a 500 m avoidance buffer around black grouse lek sites for all wind farm development infrastructure, as advised by NatureScot for turbine locations (2024), is a generalised approach and precautionary. Evidence for black grouse displacement at onshore wind farms remains conflicting and general mobility of lekking males has been well studied.</p> <p>Evidence collected from studies in Scotland for example, has found no obvious effects on black grouse behaviour within wind farm sites; with lekking areas being recorded within 250 m and 420 m of operational turbines and black grouse activity recorded across wider wind farm areas (e.g. Nevis 2015 and 2016 at the Berry Burn Wind Farm).</p> <p>A study by Zwart <i>et al.</i> (2015) also concluded no detectable effects on the abundance of lekking black grouse at several Scottish wind farm sites, but with</p>

Consultee	Summary of Consultation Response	Response to Consultee
		<p>evidence of some lek locations moving locally after construction. It was concluded that these movements could be driven by several factors aside from the operation of those developments, including changes in land management, such as species-specific habitat enhancement measures in areas away from operational infrastructure (Zwart <i>et al.</i> 2015). The study also did not find that black grouse did not use the wind farm sites at all, with frequent use of areas within 500 m of turbines and occasional use of the areas beneath turbines reported (Zwart <i>et al.</i> 2015).</p> <p>The mobility of breeding male black grouse has similarly been demonstrated in several UK studies; up to 1 km from natal sites, as per studies by Warren and Baines (2002), but up to 27.1 km, as per Warren <i>et al.</i> (2017). This has been particularly the case for single males or males in low density populations, and which is likely the case at the Site (see Table 7.11 of Chapter 7 of the EIA Report). In low population densities males do not generally have fixed lek sites, and are more mobile; most likely to increase chances of securing a mating by locating females (Warren <i>et al.</i> 2015 and 2017 and SNH 2017).</p> <p>A precautionary assessment was however presented within Chapter 7 of the EIA Report, which considers that lekking birds may be displaced from the historical lek site during the construction and operational lifetime of the Amended Development, due to the proximity of the substation (within 500 m).</p> <p>In this case, displacement of lek locations should it occur, would most likely be localised (as demonstrated in Scotland by Zwart <i>et al.</i> 2015) or to other known lek locations in the wider area (see e.g. Paragraphs 7.5.14-15 of Chapter 7 of the EIA Report), given the demonstrated mobility of breeding males.</p> <p>Embedded Mitigation measures, in accordance with NatureScot guidance (2024) are outlined within the EIA Report (paragraph 7.2.32), for inclusion of the Amended Development, to avoid the potential for disturbance to lekking black grouse during construction works, as informed through pre-commencement surveys. Displacement effects would therefore not be predicted to occur during the construction phase of the Amended Development.</p> <p>It is additionally considered that habitat management measures proposed for inclusion within the Amended Development's Outline Biodiversity Enhancement Management Plan (OBEMP) will serve to sufficiently mitigate the potential displacement of birds from the historical lek site. Once finalised the BEMP will</p>

Consultee	Summary of Consultation Response	Response to Consultee
		<p>provide species enhancement for black grouse, by enabling habitats within the Site, including away from operational infrastructure, to be improved and remain suitable for breeding and lekking birds over the Amended Development's operational lifetime.</p> <p>The approach to the design and assessment of the Amended Development is therefore considered to be precautionary, in accordance with NatureScot's general advice (2024) and good EIA practice, with sufficient justification presented above and within the EIA Report on the absence of potentially significant effects upon black grouse.</p> <p>The conclusions of the EIA remain unchanged, in that construction and operational effects upon black grouse are Not Significant, in the context of the EIA Regulations.</p>
RSPB Scotland	<p>Loch Lomond Special Protection Area (SPA) / Ramsar site</p> <p>Agreed that there would be no adverse affect on the integrity of the designation.</p>	Noted and agreed. See above.
	<p>Endrick Mouth and Islands SSSI.</p> <p>Agreed that there will be no significant effects.</p>	Noted and agreed. See above.
	<p>Outline Biodiversity Enhancement Management Plan (OBEMP)</p> <p>Welcomed the submission of the OBEMP. Agreed measures proposed should deliver benefits for local ecological networks and proposed native woodland creation may benefit black grouse remaining in the area.</p>	Noted and welcomed.
West Dunbartonshire Council	<p>Bird Species</p> <p>Noted that there are breeding snipe close to proposed locations of turbines and a black grouse lek site located 300 m from proposed battery storage</p>	<p>The EIA Report does not predict the potential for significant effects upon any IOF and which includes raptor species established to be present in the area during baseline studies.</p> <p>Snipe are not identified as a priority species for consideration in the assessment of onshore wind farms (SNH, 2018), and have therefore been scoped out of</p>

Consultee	Summary of Consultation Response	Response to Consultee
	<p>area, against the recommended distance of at least 500 m.</p> <p>A number of raptor species have been identified using the site through the ornithology studies.</p>	<p>assessment on the basis of industry good practice and enabling a proportionate approach to EIA. Habitat management measures to be included within the Amended Development's BEMP would however likely result in beneficial effects upon snipe, through the improvement of nesting and foraging habitats within the Site.</p> <p>Matters in relation to black grouse are considered above, in response to comments provided by NatureScot.</p>

7.7 Updated Assessment of Effects

- 7.7.1 The updated assessment presented within this Chapter is restricted to the consideration of change in the potential for operational collision mortality risks to IOFs, or significance of such effects concluded within Chapter 7 of the EIA Report.
- 7.7.2 All construction and other operational impacts (disturbance/displacement), remain unchanged and **Not Significant** in the context of the EIA Regulations, as assessed within Chapter 7 of the EIA Report.

Ornithological Features Scoped out of the Assessment

Designated Sites

- 7.7.3 It was agreed during consultation with NatureScot (see Table 7.6 of the EIA Report) that all designated sites, with the exception of the Loch Lomond SPA/ Ramsar site (based on its Greenland white-fronted goose qualifying feature) and Endrick Mouth and Islands SSSI (based on its Icelandic greylag goose qualifying feature) could be scoped out of assessment for the Amended Development, due to a lack of potential connectivity.
- 7.7.4 Subsequently, in its response to the assessment presented within Chapter 7 of the EIA Report (summarised in **Table 7.2**), NatureScot concluded that despite the Proposed Development lying within potential foraging range of the Greenland white-fronted geese associated with the Loch Lomond SPA/ Ramsar site (5-8 km; SNH 2016), collision impacts are unlikely and an appropriate assessment is not required.
- 7.7.5 In updating collision mortality risks for the Amended Development, collision mortality risks to Greenland white-fronted goose have again not been predicted. Based on limited presence of the species recorded during baseline studies, the unsuitability of habitats within and directly surrounding the Amended Development and the species relatively sedentary nature and restricted distribution of feeding areas throughout the winter, it can remain reasonably concluded that there would be no adverse effects on the integrity of the Loch Lomond SPA / Ramsar site and further consideration can be scoped out of this Chapter.
- 7.7.6 For similar reasoning, and the very low level of flight activity and updated collision mortality risk predicted for greylag goose (**Table 7.1**), it can also remain reasonably concluded that the notified greylag goose interest features of the Endrick Mouth and Islands SSSI would not be adversely impacted by the Amended Development and further consideration can be scoped out of this Chapter.

Non-designated Ornithological Features

- 7.7.7 For all other non-breeding species recorded during baseline flight activity surveys (including hen harrier, merlin, peregrine falcon, red kite, golden plover, pink-footed goose, whooper swan and herring gull), collision mortality risks estimated for the ten-turbine Merkins Wind Farm (**Table 7.1**) and updated estimated collision mortality risks for the Amended Development (**Table 7.1**) suggest that additional mortality due to collisions within operational turbines, would remain sufficiently small (or absent) at a population level to scope them out of the requirement for assessment. This is unchanged and consistent with the conclusions of the EIA Report.

- 7.7.8 No “at collision risk” flight activity of curlew, lapwing and black grouse is identified for the updated turbine specification and therefore no updated collision mortality risks for these species have been predicted. This is consistent with the conclusions of Chapter 7 of the EIA Report the potential for significant operational collision risks for these species is scoped-out of assessment within this Chapter.
- 7.7.9 In relation to black grouse, there is considered to be no change in the potential for collisions with other infrastructure, such as any new fencing. The Amended Development, as industry standard good practice, includes the commitment to adding visible markers to these forms of infrastructure, thereby reducing the likelihood of collision for the species. This is unchanged.
- 7.7.10 The following updated assessment is therefore restricted to the potential for significant operational collision risks upon goshawk and osprey.

Operation – Collision Risk

- 7.7.11 Birds that utilise the airspace within the Site at potential collision heights during the lifetime of the Amended Development will be at risk of collision with turbines. The risk of collision with moving wind turbine blades may be related to various factors including the amount of flight activity over the site, the topography of the site, the species’ behaviour, and the ability of birds to detect and manoeuvre around rotating turbine blades.
- 7.7.12 Collision risk modelling has been updated to reflect the change in turbine specification for the Amended Development (refer to **Table 7.1** and **AI Technical Appendix 7.1 updated Annex D and E**). This has resulted in a change in predicted annual collision mortality risks for the Amended Development, which is assessed here.
- 7.7.13 In general, estimated collision mortality risks for species with “at collision risk” flight activity recorded, have increased very slightly. This is due to the change in turbine hub height reducing the lower level of the collision risk area for the proposed turbine specification, and resulting in additional target species’ flight activity recorded at lower elevations during baseline surveys being identified as “at collision risk”.

Goshawk

- 7.7.14 **Sensitivity:** medium nature conservation importance (see Table 7.10 of Chapter 7 of the EIA Report) and favourable conservation status (see Table 7.11 of Chapter 7 of the EIA Report); overall medium sensitivity.
- 7.7.15 **Magnitude of Impact:** goshawks were recorded on six occasions during flight activity surveys in 2019-20, with an annual collision mortality risk of 0.02 birds, or one bird every 50 years, predicted for the updated turbine specification of the Amended Development.
- 7.7.16 This is a very small increase from the risk of 0.011 birds (or one bird every 88 years) presented within the EIA Report.
- 7.7.17 No flights were recorded in 2008-09. This very small increase in baseline population mortality is therefore predicted to result in a long-term, negligible impact magnitude.

7.7.18 **Significance of Effect:** the effect on the NHZ 17 goshawk population as a result of collisions is considered to remain no more than **Minor** adverse and therefore **Not Significant** in the context of the EIA regulations.

7.7.19 This is unchanged from the conclusions of assessment within Chapter 7 of the EIA Report.

Osprey

7.7.20 **Sensitivity:** medium nature conservation importance (see Table 7.10 of Chapter 7 of the EIA Report) and favourable conservation status (see Table 7.11 of Chapter 7 of the EIA Report); overall medium sensitivity.

7.7.21 **Magnitude of Impact:** osprey flights were recorded on seven occasions during flight activity surveys in 2019-20. For the updated turbine specification of the Amended Development, an estimated annual collision mortality risk of 0.037 birds, or one bird every 27 years (a very small increase from a risk of 0.021 presented within the EIA Report).

7.7.22 Only three flights were recorded in 2008-09, and no collision rate estimate was provided for the Merkins Wind Farm assessment.

7.7.23 As the predicted collision risk would remain very small, at most one or two birds during the operational lifetime of the Amended Development, this small increase in baseline mortality is therefore predicted to result in no more than a long-term, negligible impact magnitude.

7.7.24 **Significance of Effect:** the unmitigated effect on the Natural Heritage Zone (NHZ) 17 osprey population as a result of collisions is considered to be **Minor** adverse and therefore **Not Significant** in the context of the EIA regulations.

7.7.25 This is unchanged from the conclusions of assessment within Chapter 7 of the EIA Report.

7.8 Mitigation

7.8.1 The predicted conclusions are unchanged from the EIA Report, with no significant effects upon IOFs identified.

7.8.2 No additional mitigation is therefore required in the context of the EIA Regulations.

7.9 Cumulative Effects

7.9.1 Updated collision risks predicted for IOFs remain very low, and so the Amended Development can be concluded to contribute very little, if anything to the long-term cumulative collision effects on these species' NHZ 17 populations.

7.9.2 As such, a cumulative assessment of collision risk can also be scoped out as significant effects are very unlikely to occur.

7.10 Summary

- 7.10.1 There are no changes to the predicted significance of effects on IOFs assessed in Chapter 7 of the EIA Report (i.e., no significant effects) and no additional mitigation measures are required due to the planned change in turbine rotor tip height.

7.11 References

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8 CULTURAL HERITAGE AND ARCHAEOLOGY

8.1 Introduction

- 8.1.1 This chapter has been prepared by Headland Archaeology following Historic Environment Scotland's (HES) objection to the Proposed Development in February 2024. The Proposed Development as submitted in October 2023 comprised 10 turbines with tip heights of up to 250 m. HES objected to the Proposed Development as they considered that it would have a significant adverse impact on the integrity of the setting of Dumbarton Castle (SM90107). The Proposed Development as amended (see AI Chapter 3) is referred to throughout this chapter as 'the Amended Development'. Following HES's objection the Amended Development comprises a 10 turbine scheme, with the same layout and infrastructure as the Proposed Development but with blade tip heights reduced from up to 250m to up to 220 m for all turbines.
- 8.1.2 In light of the design change made, this chapter considers the impact of the Amended Development layout on cultural heritage and archaeology, provides further analysis of the contribution made by setting to the cultural significance of Dumbarton Castle (SM90107) in light of HES's objection based on the EIA Report layout and responds to HES's comments provided in their February 2024 objection. This includes the addition of a new cultural heritage viewpoint from Westferry (**AI Fig8.7i**).
- 8.1.3 This chapter should be read in conjunction with the following sections of Chapter 10: Cultural Heritage and Archaeology of the EIA Report:
- Section 10.6: Predicted Impacts, paragraphs 10.6.1-10.6.22 (construction effects) and paragraphs 10.6.23-10.6.138 (operational effects)
 - Section 10.7: Mitigation, paragraphs 10.7.1-10.7.16
 - Section 10.8: Summary of Residual Effects, paragraphs 10.8.1-10.8.10

8.2 Methodology

- 8.2.1 The methodology employed for assessment of potential impacts remains unchanged from that outlined in paragraphs 10.2.1-10.2.44 of the EIA Report.
- 8.2.2 All previously submitted Cultural Heritage visualisations which supported the assessment of potential operational effects in the EIA Report have been re-produced to show the Amended Development layout (**AI Figures 8.3-8.15**). One additional photomontage visualisation (**AI Figure 8.7i**) has been produced in order to demonstrate views towards the AI layout from Westferry on the south side of the River Clyde.

8.3 Stakeholder Consultation

Consultee	Contact	Date Received	Consultee Comment	Action Taken
HES	Urszula Szupczynska	22/02/2024	<p>HES object to the Proposed Development as they considered it would have a significant adverse impact on the integrity of the settings of Dumbarton Castle (SM90107).</p> <p>HES stated that</p> <p><i>'...the proposed development would have a significant adverse impact on the setting of the monument, adversely affecting key views from directly to its south (Figure 10.7 - Viewpoint 5 - View towards Dumbarton Castle from Langbank). As demonstrated by the visualisations provided in support of the application, the turbines would appear above and be framed in wider views of monument. In some of these key views from the south the turbines would appear directly behind the monument. From the point of view of those traversing along this stretch of the A8, the turbines would pass from being directly within wider views to being directly behind the monument and then pass to being in wider views again. Although the proposed development is sufficiently inland to be offset from the monument in many views from further along the Clyde, the sensitivity of the southern view and the scale of impact means that the turbines would create a very large visual distraction and become the most dominant features in these views. They would</i></p>	<p>Further analysis of the importance of views of Dumbarton Castle (SM90107) from the south of the Clyde is provided in paragraphs 8.22-8.30. HES's points regarding the dominance of the castle from the A8 and this being the location from which <i>'...most people appreciate, experience and understand the castle in its most commanding and dominant aspect'</i> is addressed in paragraphs 8.6.18-8.6.43.</p> <p>Whilst HES do not consider that the impact of the Proposed Development on the integrity of the setting of Dumbarton Castle (SM90107) can be sufficiently mitigated through changes to the layout, the tip heights of the EIA Report layout were reduced from 250 m to 220 m.</p>

Consultee	Contact	Date Received	Consultee Comment	Action Taken
			<p><i>diminish the castle's prominence and distract from and undermine its dominance over the Clyde and the lands to its south.</i></p> <p><i>The visualisation provided shows the potential impact on views from the A8, which would be appreciated and experienced by people travelling along an approximately 500m stretch of this main road. Although relatively limited when compared to the full extent of the A8 along the southern shore of the Clyde, the stretch where the development would backdrop the monument represents one of the most prominent and reproduced views of the castle and rock and is the location where the most people appreciate, experience and understand the castle in its most commanding and dominant aspect.</i></p> <p><i>Consequently, the development would significantly and adversely impact on the ability to experience, understand and appreciate this key feature of the setting of the monument.</i></p> <p><i>The scale of impacts would significantly adversely affect the integrity of the setting of the monument when viewed from the south and would be of a magnitude to raise issues of national interest.</i></p> <p><i>Relocation of turbines within the proposed development area might prevent them backdropping and dominating views of Dumbarton Rock</i></p>	

Consultee	Contact	Date Received	Consultee Comment	Action Taken
			<p><i>from a given location along the south side of the Clyde. However, turbines anywhere within the proposed development area would still appear directly behind the castle when viewed from a slightly different location along the south side of the Clyde. Any such redesign would merely relocate the issue rather than mitigating against it.</i></p> <p><i>Consequently, it is unlikely that mitigation of impacts through redesign of site layout is possible at this location.'</i></p>	
HES	Urszula Szupczynska	14/11/2024	<p>Headland Archaeology sent HES a consultation letter on 11/11/2024 outlining the design changes made to the EIA Report layout and provided updated cultural heritage visualisations which show the AI layout for HES's review.</p> <p>HES stated that following review of the revised cultural heritage visualisations they considered that the reduction in tip heights has not made a material difference in terms of impacts on the setting of Dumbarton Castle (SM90107) and that should an addendum be submitted based on the AI layout that their position would remain unchanged.</p> <p>HES stated that if Headland Archaeology considered that a meeting to discuss their response would be useful then Headland should let them know. HES asked that in this event the rationale behind the AI layout and a proposed meeting agenda should be provided in the first</p>	<p>Headland Archaeology requested a meeting with HES to discuss their response on 14/11/2024, which was declined on the grounds that there was insufficient information or change to the Proposed Development design to warrant a meeting (see following row detailing correspondence dated 26/11/2024).</p> <p>Headland Archaeology stated in an email to HES dated 25/11/2024 that the rationale behind the AI layout was to address consultee objections including those of HES and provided a proposed agenda for the meeting.</p>

Consultee	Contact	Date Received	Consultee Comment	Action Taken
			instance.	
HES	Urszula Szupczynska	26/11/2024	HES stated that it was unclear how the design changes made addressed their concerns and that there was insufficient information or change from the EIA Report layout that would warrant a meeting. They stated they would be happy to receive further information on how the design changes were made to address their concerns and reconsider a meeting at that stage.	Headland Archaeology responded on 27/11/2024 stating that further information would be presented in the AI submission. No further requests for a meeting were made.

8.4 Statutory and Planning Context

- 8.4.1 The statutory and planning context for this AI remains unchanged to that outlined in Part 2 of Volume 3 Appendix 10.1 of the EIA Report.
- 8.4.2 For the purposes of this AI, the concept of ‘integrity of setting’ as outlined in National Planning Framework 4 (NPF4) Policy 7 h) in relation to Scheduled Monuments follows a shared definition recommended by HES which emerged from the Rigghill Wind Farm Public Inquiry (DPEA Reference: PPA-310-2034):

‘changes to factors of setting that contribute to cultural significance such that the understanding, appreciation and experience of an asset are not adequately retained will affect the integrity of setting.’

8.5 Baseline Conditions

- 8.5.1 The baseline conditions as outlined in paragraphs 10.5.1-10.5.12 of Chapter 10: Cultural Heritage and Archaeology of the EIA Report remain unchanged.

8.6 Identification and Evaluation of Key Impacts

Construction Effects

- 8.6.1 The AI layout has not resulted in any change to the location of any development infrastructure. As such no additional direct or indirect (physical) impacts beyond those predicted in paragraphs 10.6.1-10.6.22 of Chapter 10: Cultural Heritage and Archaeology in the EIA Report are predicted. No additional construction phase effects as a result of the AI layout are therefore predicted.

Operational Effects

8.6.2 This section primarily provides further analysis of the overall contribution made by setting to the cultural significance of Dumbarton Castle (SM90107) and responds to HES's analysis provided in their objection letter dated to 22/02/2024. It also considers the impact of the AI layout on the cultural significance of the monument.

8.6.3 All other heritage assets considered for Operational Effects in Chapter 10: Cultural Heritage and Archaeology of the EIA Report are assessed in paragraphs 8.6.44 below in relation to the Amended Development.

Dumbarton Castle (SM90107)

8.6.4 The factors of setting which contribute to the cultural significance of Dumbarton Castle (SM90107) are presented in paragraphs 10.6.47-10.6.56 of Chapter 10: Cultural Heritage and Archaeology of the EIA Report. These can be summarised as follows:

- Its location on an easily defensible volcanic plug;
- Its strategically important location on the Firth of Clyde and the confluence of the River Clyde and River Leven, with the castle sited in order to control and monitor maritime movement along both watercourses and project an image of wealth and power;
- The relationship between the castle and the town of Dumbarton which forms the hinterland that the inhabitants of the castle intended to control and dominate

8.6.5 Chapter 10: Cultural Heritage and Archaeology of the EIA Report considered that these factors of the monument's setting can be understood, appreciated and experienced through:

- Outward views from Dumbarton Castle (SM90107), overlooking the town of Dumbarton, the River Leven and along the Clyde
- Views towards the monument from the town of Dumbarton, from the A8 on the south of the Clyde, including from the environs of Newark Castle near Port Glasgow which, as agreed with HES, acts as a proxy location for maritime views of the monument on approach from the west.

8.6.6 Chapter 10 of the EIA Report considered that the proposed turbines would challenge the dominance of Dumbarton Castle (SM90107) in views towards it from Langbank (paragraph 10.6.57) but that taking into consideration the experience of the monument from its environs, from Langbank, the A8 and from Newark Castle this would result in an overall low magnitude of impact resulting in **minor** adverse effect, which is **not significant**. The chapter noted that key views from the monument itself would be retained.

8.6.7 HES's analysis of the setting of Dumbarton Castle (SM90107) as outlined in their objection letter of 22/02/2024 is as follows:

'Dumbarton Rock and the castle on it is the pre-eminent feature in this part of the Clyde estuary. The twin peaks - the Beak and White Tower Crag - are particularly conspicuous landmarks when viewed throughout the Clyde and surrounding area.

Throughout its long history of human occupation, Dumbarton rock has primarily been a defensive fortress embodying power, wealth, and control over this part of the Clyde. Its physical dominance in inward views and commanding views from the rock to the south

allowed the fortress to control passage along the Clyde, both by sea and along the land on either side, as well [as] wider routeways along Scotland's western seaboard, and access to the confluence of the Clyde and the Leven, with its safe harbour and passage into Loch Lomond and the southern Highlands.

Whilst the town of Dumbarton has expanded around its base, affecting the castle's immediate surroundings, its physical dominance, and over the Clyde in particular, remains undiminished.

When viewed from the south, and from east and west along the Clyde, the rock and castle form the most dominant feature in the area. The area immediately in front of the castle, between it and the Clyde is currently largely open parkland, relatively clear from modern development, except around its peripheries, meaning it is still possible to appreciate the southern aspect of the castle, with the entrance framed by the high peaks on either side and where the castle is perhaps the (sic) more prominent than in any other view, and its relationship with the Clyde. The town forms a subservient backdrop around the base of the Rock in these views. This backdrop extends outward to the distant hills and skyline. The hills are predominantly rural in character and again, do not compete with or reduce the Rock's dominance.

Due to the dominance of the castle in views from the south, this prospect of the castle in particular has been captured in innumerable Romantic and bucolic images. This, slightly romanticised, view of the castle is still the dominant feature in the public imagination, despite it now being amongst more modern development.

The view of the castle from the Clyde and the south is perhaps the principal engagement that the many people who daily traverse the A8 in this area have with the monument.'

8.6.8 HES assessed the impact of the proposed turbines as follows:

'However, the proposed development would have a significant adverse impact on the setting of the monument, adversely affecting key views from directly to its south (Figure 10.7 - Viewpoint 5 - View towards Dumbarton Castle from Langbank). As demonstrated by the visualisations provided in support of the application, the turbines would appear above and be framed in wider views of monument. In some of these key views from the south the turbines would appear directly behind the monument. From the point of view of those traversing along this stretch of the A8, the turbines would pass from being directly within wider views to being directly behind the monument and then pass to being in wider views again. Although the proposed development is sufficiently inland to be offset from the monument in many views from further along the Clyde, the sensitivity of the southern view and the scale of impact means that the turbines would create a very large visual distraction and become the most dominant features in these views. They would diminish the castle's prominence and distract from and undermine its dominance over the Clyde and the lands to its south

The visualisation provided shows the potential impact on views from the A8, which would be appreciated and experienced by people travelling along an approximately 500m stretch of this main road. Although relatively limited when compared to the full extent of the A8 along the southern shore of the Clyde, the stretch where the development would backdrop the monument represents one of the most prominent and reproduced views of

the castle and rock and is the location where the most people appreciate, experience and understand the castle in its most commanding and dominant aspect.

- 8.6.9 There is agreement between the analysis of the contribution of setting to the cultural significance of Dumbarton Castle (SM90107) provided in the EIA Report and HES's analysis provided in their objection letter. There is further agreement between the EIA Report and HES in that it is in changes to the views of Dumbarton Castle (SM90107) from the south of the River Clyde that any adverse impact will occur.
- 8.6.10 There is, however, a difference of professional opinion between HES and that presented in the EIA Report over the extent to which the setting of Dumbarton Castle (SM90107) when viewed from the south would be adversely affected by the proposed turbines and the degree to which these views, in particular those in which the proposed turbines would backdrop the monument, contribute to the overall understanding, appreciation and experience of the monument.
- 8.6.11 This AI considers that HES's assessment of the impact of the proposed turbines on the overall contribution of setting to the cultural significance of Dumbarton Castle (SM90107) is too narrowly based on predicted change to views from a limited section of the A8 to the south of the Clyde. It is considered that HES's assessment has not been proportionately balanced against other views which provide an understanding, appreciation and experience of the monument's setting (and thus its overall cultural significance) which would undergo limited or no change.
- 8.6.12 It is considered that HES's statement that the '*...stretch where the development would backdrop the monument represents one of the most prominent and reproduced views of the castle and rock and is the location where the most people appreciate, experience and understand the castle in its most commanding and dominant aspect*' also overstates the extent to which this particular view (CHVP5, AI Figure 8.7d) has been reproduced and the extent to which this in reality shows the monument '*...in its most commanding and dominant aspect*'. It is considered that this has consequently resulted in the importance of this particular view to the overall cultural significance of Dumbarton Castle (SM90107) and the overall impact of the Amended Development on the monument's cultural significance through change to its setting being overstated.
- 8.6.13 The following sections present further analysis of the relative importance of views looking towards Dumbarton Castle (SM90107) from the south (including additional views to those which form the focus of HES's analysis) and also from the town of Dumbarton in terms of how these contribute to the overall cultural significance of the monument. Further consideration of the extent to which these views would be changed by the Amended Development and the predicted changes to setting which would impact the overall cultural significance of Dumbarton Castle (SM90107) is provided.

Views from the South of the Clyde

- 8.6.14 As noted above it is not disputed that views from the south contribute to an understanding, appreciation and experience of the setting of Dumbarton Castle (SM90107) . It is also acknowledged that, as HES state, many people will experience the monument from this limited stretch of the A8 as representatively shown on **AI Figure 8.7d** which shows the view from the eastern extent of Langbank and **AI Figure 5.25e** which shows how the proposed turbines would appear from roughly the centre of the village.

- 8.6.15 However, it is considered that the extent to which the monument would appear ‘...*in its most commanding and dominant aspect*’ from a limited stretch of the A8 from where the proposed turbines would backdrop Dumbarton Castle (SM90107) has been overstated. It is considered there are other locations south of the River Clyde from where the monument appears as a commanding and dominant feature.
- 8.6.16 For example, when travelling west along the M8, Dumbarton Castle (SM90107) is largely screened from view by trees but comes into view from the motorway at roughly the location marked as ‘AI Location 1’ on **AI Figure 8.1**. This location marks the start of a gentle decline in the topography which, coupled with a break in the tree cover which lines the M8, allows the viewer to see Dumbarton Rock projecting above the landform behind it, with distant views towards the hills on the western side of Loch Lomond beyond the castle also possible. From this location and as one continues to progress westwards along the M8 to the area marked as ‘Location 2’ on **AI Figure 8.1**, views of the Firth of Clyde open up and Dumbarton Rock appears as the dominant landform from this location, allowing the viewer to understand, appreciate and experience the dominance of Dumbarton Castle (SM90107) overlooking the routeway of the Clyde²³. Its important strategic location also becomes readily apparent in this view, with the castle sited in order to control movement along the Clyde. Visibility of the hills at the west of Loch Lomond allow the viewer to understand, appreciate and experience the monument’s control of the routeway along the River Leven to Loch Lomond and the southern Highlands. The projection of Dumbarton Rock above the landform which backdrops it in views from these locations highlights its dominance and as the first engagement a visitor has with the monument when travelling west along the M8 forms an important part of experiencing this factor of its setting.
- 8.6.17 As one continues west along the M8, there is a car park at Westferry, approximately 1.5 km east of Langbank, a location can be used as a stop off point when travelling along this section of the A8/M8. From this location, the closer range from which the visitor experiences Dumbarton Castle (SM90107) (as shown in **AI Figure 8.7i**, CHVP5b) allows the factors of its setting as outlined above to be appreciated. The monument appears as the most dominant feature in this view, with Dumbarton Rock clearly projecting above the landforms which backdrop it. This emphasises the castle’s easily defensible location and its intended dominance over both the Clyde and the town of Dumbarton, which is visible to the east of Dumbarton Rock in views from Westferry. The clear views east and west along the Clyde further highlight the strategically important location of the castle and its intended control over this routeway.
- 8.6.18 In their objection letter HES stated that the ‘...*stretch where the development would backdrop the monument represents one of the most prominent and reproduced views of the castle and rock*’ and that ‘*Due to the dominance of the castle in views from the south, this prospect of the castle in particular has been captured in innumerable Romantic and*

²³ There are no safe locations from this stretch of the M8 from where it was possible to take photographs for the purposes of photomontages.

bucolic images. This, slightly romanticised, view of the castle is still the dominant feature in the public imagination, despite it now being amongst more modern development.'

- 8.6.19 There are several historic images of Dumbarton Castle (SM90107) which depict views looking towards the monument from the south of the River Clyde, however, it is the view from Westferry that most closely resembles the portrayal of Dumbarton Castle (SM90107) in many of these illustrations, not the view in which the monument would be backdropped by the proposed turbines as it would appear from Langbank.
- 8.6.20 For example, historic illustrations such as Farington's 1788 'Dumbarton Rock from the South' (**AI Appendix 8.1**, Plate 1), Beattie's 1838 'Dumbarton Castle on the River Clyde' (**AI Appendix 8.1**, Plate 2), and McLea's 1868 'Dumbarton Castle, Dunbartonshire, Scotland' (**AI Appendix 8.1**, Plate 3), show views from the south with the Governor's House located between the two crags of Dumbarton Rock. A similar, view is shown in Nasmyth's 1810 'Dumbarton Castle and Town with Ben Lomond' (**AI Technical Appendix 8.1**, Plate 10). This may be seen as the 'classic view' of Dumbarton Castle (SM90107) which, despite the artistic license taken in portraying the castle in these historic illustrations, can still easily be reconciled with the view of the monument as it is experienced when looking towards it from Westferry. This view of the castle has also been captured in numerous historic and modern photographs and it is arguably this view as opposed to the view as seen from CHVP5 (**AI Figure 8.1**) that has been more extensively reproduced and forms the dominant feature in the public imagination in terms of how the monument is perceived in views from the south of the Clyde. Taking these factors into consideration, it is therefore considered that the key view of Dumbarton Castle (SM90107) from the south is the view from Westferry.
- 8.6.21 From the stretch of the A8 where the proposed turbines would backdrop Dumbarton Castle (SM90107), whilst Dumbarton Rock remains a notable feature in views towards it (as shown on **AI Figure 8.7d CHVP5**) it is backdropped by the site of the Amended Development (Auchenreoch Muir) and to an extent blends into this landform, only very slightly projecting above it. This has the effect of lessening the perceived dominance and commanding nature of Dumbarton Castle (SM90107) when compared to how the monument appears when viewed on approach from the west at AI Locations 1 and 2 and in particular from Westferry (CHVP5b, **AI Figure 8.1**). This effect becomes greater as the visitor progresses west along the A8 as representatively illustrated by **AI Figure 8.7h** (CHVP5a, see **AI Figure 8.2**) which illustrates that from Newark Castle in Port Glasgow Dumbarton Rock is not a dominant feature and is somewhat difficult to discern over this distance.
- 8.6.22 It is therefore considered that whilst CHVP5b (**AI Figure 8.7**) is illustrative of the location from which the impact of the Amended Development on the setting of Dumbarton Castle (SM90107) is greatest (and thus why this viewpoint was used as the basis for assessing the operational effects of the Proposed Development in the EIA Report), it is considered that it does not in reality represent Dumbarton Castle (SM90107) in its most commanding and dominant aspect, particularly when compared to how it appears from AI Locations 1, 2 and from Westferry (CHVP5b, **AI Figure 8.1**). It is considered that this defines, in combination with the ability of the visitor to reconcile the view from Westferry with historical representations of Dumbarton Castle (SM90107) (which allows the visitor to understand and appreciate how the monument featured in the public imagination in the

past), the Westferry view as being the key view of the monument when viewed from the south of the River Clyde.

Views from Dumbarton

- 8.6.23 The predicted change to the setting of Dumbarton Castle (SM90107) setting as seen from any single location must be understood in the context of the asset's wider setting and balanced against the extent to which changes to specific views will or will not impact overall cultural significance. In the case of Dumbarton Castle (SM90107), it is considered that HES has not adequately considered the wider setting of the monument, particularly in terms of how it is experienced from within the town of Dumbarton. This section therefore provides further analysis of how the monument is experienced from Dumbarton and the contribution this makes to overall cultural significance.
- 8.6.24 Whilst Dumbarton Castle (SM90107) is in many places screened from view by the urban environment of Dumbarton, there are locations from where the factors of setting which contribute to its cultural significance can be clearly understood, appreciated and experienced. Turning again to locations from where the monument appears at '*...its most commanding and dominant aspect*' there are locations within Dumbarton from where Dumbarton Castle (SM90107) arguably appears equally if not more dominant and commanding compared to views from the south and in particular from the stretch of the A8 from where the proposed turbines would backdrop the monument.
- 8.6.25 For example, from Dumbarton Bridge (Bridge Street) ('AI Location 3' on **AI Figure 8.1**) which spans the River Leven, Dumbarton Castle (SM90107) appears as the most dominant landmark, situated as it is at the mouth of the River Leven and at its confluence with the River Clyde. The strategic location of the monument and its control over the River Leven which acted as a routeway to Loch Lomond and the southern Highlands is readily understood, appreciated and experienced through this view. The dominance of the castle over the town of Dumbarton, which formed the hinterland that was under the control of the castle can also be understood, appreciated and experienced from Dumbarton bridge, itself a busy thoroughfare from where the public can readily experience the castle. The view of the monument from this location therefore also contributes to its perception in the public imagination.
- 8.6.26 Similar views of Dumbarton Castle (SM90107) as seen from Dumbarton Bridge have also been reproduced in historic images albeit with varying degrees of artistic license. Some of these, such as Clerk's 18th century 'Dumbarton Castle from the West' (**AI Appendix 8.1**, Plate 4), Clark's 1825 'The Town of Dumbarton' (**AI Appendix 8.1**, Plate 5), and Turner's 1830s painting of Dumbarton Castle (**AI Appendix 8.1**, Plate 6), all show similarly to how it appears when viewed from Dumbarton Bridge, with the monument shown in relation to the River Leven, emphasising the dominant appearance of the monument over this watercourse which served as an important routeway to Loch Lomond and the southern Highlands. Clark and Turner's paintings show a bridge spanning the river similar, reflecting the approximate location of the modern day Dumbarton Bridge over the southern extent of the Leven. The modern view of Dumbarton Castle (SM90107) from Dumbarton Bridge, despite the presence of modern development, can still be reconciled with these historic images. This perspective of the monument as well as allowing for a clear understanding, appreciation and experience of the factors of setting which contribute to the monument's cultural significance, can also be seen as one which

has featured in the consciousness of artists in the past and continues to contribute to the public's perception of Dumbarton Castle (SM90107) in the present day.

- 8.6.27 The Amended Development would not feature in any views looking towards Dumbarton Castle (SM90107) from AI Location 3.
- 8.6.28 In terms of other views of the monument from Dumbarton, the dominant and commanding nature of Dumbarton Castle (SM90107) is perhaps most obvious in views towards it from Dumbarton Castle Park, immediately to the south of the monument ('AI Location 4' on AI Figure 8.1). From this location, the monument dominates views north, blocking any views of the town, highlighting its easily defensible nature which is further emphasised by the close range views of the Governor's House, the castle walls and King George's Battery. The open views east and west along the Clyde highlight the commanding position of the monument and its strategic positioning. This location is a public park and therefore another location from where the public experience the castle, allowing them to form a perception of the monument.
- 8.6.29 As with Dumbarton Bridge, similar views of the monument to how it appears from Dumbarton Castle Park have been produced. Stodart's 1800 painting, for example, shows a similar perspective to that which the visitor has from Dumbarton Castle Park, further demonstrating that the monument has historically been depicted from a number of different perspectives which show the castle in a dominant and commanding position.²⁴
- 8.6.30 The Amended Development would not feature in any views looking towards Dumbarton Castle (SM90107) from AI Location 4.

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- 8.6.31 The above analysis of different viewpoints looking towards Dumbarton Castle (SM90107) demonstrates that the monument can be understood, appreciated and experienced in a multitude of ways and from numerous different locations. Public perception of the monument is similarly varied and informed by historic representations of Dumbarton Castle (SM90107) and how it is experienced not just from the south but from within the town of Dumbarton.
- 8.6.32 Views from the south undoubtedly contribute to a visitor's understanding, appreciation and experience of Dumbarton Castle (SM90107), however, the wider setting of the monument must be borne in mind when coming to conclusions as to how visual change experienced from different views might impact the monument's overall cultural significance and impact the overall integrity of its setting.
- 8.6.33 The following figures are illustrative of how Dumbarton Castle (SM90107) would appear in relation to the proposed turbines when viewed from the south:

²⁴ There are other examples of historic depictions of the monument as it appears from both the east and the west of Dumbarton such as Slezer's 1693 images 'The Castle of Dumbrition from Kilpatrick' (AI Appendix 8.1, Plate 7), 'Their Ma'ties Castle of Dumbrition from the West' (AI Appendix 8.1, Plate 8), and Prospect of Ye Castle of Dumbrition from Ye East' (AI Appendix 8.1, Plate 9). This further demonstrates the variety of perspectives which featured in the consciousness of artists in the past albeit many of these views are embellished and cannot now be readily experienced due to modern development.

- **AI Figure 8.7i** CHVP5b which illustrates how the proposed turbines would appear from Westferry
- **AI Figure 8.7d** CHVP5 which illustrates how the proposed turbines would appear from the eastern extent of the village of Langbank
- **AI Figure 5.25e** Viewpoint 10 which illustrates how the proposed turbines would appear from roughly the centre of Langbank
- **AI Figure 8.7h** which illustrates how the proposed turbines would appear from Newark Castle in Port Glasgow and is also illustrative of how Dumbarton Castle (SM90107) would appear when approached by sea from the west

- 8.6.34 The extent to which views of Dumbarton Castle (SM90107) as seen from AI Locations 1, 2 and from Westferry (CHVP5b) would undergo visual change as a result of the Amended Development turbines are representatively shown on **AI Figure 8.7i**. This viewpoint from Westferry illustrates that all of the AI turbines would be visible from this location but would be considerably offset from Dumbarton Castle (SM90107) outwith the field of view when looking towards the monument from this location and do not visually challenge the dominance of the monument, distract away from its control over the Clyde or its relationship with the town of Dumbarton. The ability of the visitor to reconcile the view of the monument from Westferry with views portrayed in historic images would remain unchanged and it would remain possible to understand, appreciate and experience this view of the monument as one which inspired artists and photographers in the past. This ‘classic’ view of the monument from Westferry and its importance to the public imagination of the monument would undergo no change.
- 8.6.35 In terms of views from ‘AI Location 1’ where Dumbarton Castle (SM90107) would come into view when travelling west along the M8, the Amended Development turbines would be screened by trees which line the road, however, even assuming these trees were to be removed, the turbines would, given the angle of view towards Dumbarton Castle (SM90107) from this location be considerably offset from the monument, appearing behind a quarry located to the east of the town of Dumbarton. The Amended Development turbines would appear similarly in views from ‘AI Location 2’ and in both cases, the ability of the visitor to understand, appreciate and experience the dominant aspect of the monument, its strategic importance and its control over the Clyde would remain undiminished by the presence of the proposed turbines.
- 8.6.36 **AI Figure 8.7d** CHVP5 illustrates that by the time one enters the village of Langbank, approximately 1.4 km to the east of Westferry the proposed turbines would backdrop Dumbarton Castle (SM90107) in views from Langbank as shown in **AI Figure 8.7d**, with the proposed turbines appearing in close proximity to the monument from roughly the centre of the village as illustrated on **AI Figure 5.25e** Viewpoint 10. Comparison of these viewpoints demonstrates how the appearance of the Amended Development turbines would change in relation to Dumbarton Castle (SM90107) between these locations over a distance of approximately 400 m. It is therefore likely the Amended Development turbines would also appear in close proximity to Dumbarton Castle (SM90107) from approximately 400 m east of CHVP5.
- 8.6.37 The 30 m reduction in tip height has, compared to the Proposed Development, reduced the overall scale of how the Amended Development would appear when viewed in combination with Dumbarton Castle (SM90107) from Langbank (CHVP5). However,

whilst an appreciable change, it is considered this has not reduced the magnitude of impact on the cultural significance of the monument. The Amended Development does not therefore change the findings stated in paragraph 10.6.57 of Chapter 10 of the EIA Report. This must, however, be read in the wider context of how setting contributes to the cultural significance of Dumbarton Castle (SM90107) as outlined in this AI.

- 8.6.38 A comparison of views from CHVP5 at the east of Langbank and CHVP5b at Westferry located approximately 1.5 km to the east illustrates the extent to which the proposed turbines would become offset from Dumbarton Castle (SM90107). The impact is therefore found to be limited to a short distance over which the Amended Development turbines would be either close to or backdrop Dumbarton Castle (SM90107). It is found that within a short distance the Amended Development turbines would no longer materially challenge the monument's dominant and commanding appearance. The proposed turbines would become more offset in views as one travels east along the A8/M8. The effect would be the same when travelling west towards Port Glasgow from where the proposed turbines would be considerably offset from the monument as illustrated in **AI Figure 8.7h** CHVP5a. As such, in terms of views from the south, it is considered that in the round, Dumbarton Castle (SM90107) would continue to appear as a commanding and dominant feature.
- 8.6.39 In terms of Dumbarton Bridge and Dumbarton Castle Park, there would be no views of the proposed turbines in combination with Dumbarton Castle (SM90107) from either of these locations and the ability of the visitor to understand, appreciate and experience the cultural significance of Dumbarton Castle (SM90107) would remain undiminished when viewed from either Dumbarton Bridge (AI Location 3, **AI Figure 10.1**) or Dumbarton Castle Park (AI Location 4, **AI Figure 8.1**).
- 8.6.40 It is concluded that the findings set out in Chapter 10 (10.6.60) of the EIA Report remain unchanged. However, the assessment made of impacts on Dumbarton Castle (SM90107) from Westferry, confirm that the extent of visual change when looking towards Dumbarton Castle (SM90107) from the south is limited to a stretch of the A8 in the environs of the village of Langbank. Whilst it is acknowledged that the monument can be perceived as a dominant and commanding landmark which controls the Clyde from this stretch of the A8, this factor of the monument's setting which contributes to its cultural significance is also readily understood, appreciated and experienced from other locations from the south and from within the town of Dumbarton. Overall the cultural significance and the understanding, appreciation and experience of the monument's setting would be adequately retained.
- 8.6.41 It is therefore concluded that the low adverse magnitude of impact and **minor** adverse effect on the cultural significance of Dumbarton Castle (SM90107), which is **not significant**, as predicted in paragraph 10.6.60 of Chapter 10 of the EIA Report remains valid.
- 8.6.42 It is considered that in terms of NPF4 Policy 7 (h), the integrity of the setting of Dumbarton Castle (SM90107) would not be significantly adversely affected by the introduction of the Amended Development into the views of the monument as assessed in the EIA Report and this AI. It is considered that the understanding, appreciation, and experience of Scheduled Monument Dumbarton Castle (SM90107) would be retained.

Other Heritage Assets assessed for Operational Effects

- 8.6.43 The Amended Development design would result in no change to the assessment of the following heritage assets assessed for operational effects in Chapter 10: Cultural Heritage and Archaeology of the EIA Report:
- SM2911 Knockupple, long cairn (**AI Figure 8.3** CHVP1)
 - SM2329 Lang Cairn, chambered cairn and cairn, Gallangad Muir (**AI Figure 8.4** CHVP2)
 - SM2281 Stockie Muir, long cairn 2000m NNW of Burncrooks Reservoir (**AI Figure 8.5** CHVP3)
 - GDL00306 / LB24907 Overtoun House (**AI Figure 8.8** CHVP6)
 - GDL00180/ LB13641 Finlaystone House (**AI Figure 8.10** CHVP8)
 - GDL00330 / LB14469 Rossdhu (**AI Figure 8.11** CHVP9)
 - GDL00042/LB123 Balloch Castle (**AI Figure 8.12** CHVP10)
 - LB42920 Renton, Alexander Street, Trinity Parish Church, Church Of Scotland with Boundary Wall and Gatepiers (**AI Figure 8.14** CHVP12)
 - LB43911 Auchenlarich With Stables and Gatepiers (**AI Figure 8.15** CHVP13)

Cumulative Effects

- 8.6.44 Cumulative operational effects are considered in cases where an effect of minor or greater significance has been predicted on the cultural significance of a heritage asset caused through change to its setting. The EIA Report predicted effects of **minor** significance on SM2911 Knockupple, long cairn; SM2329 Lang Cairn, chambered cairn and cairn, Gallangad Muir; and SM90107 Dumbarton Castle.
- 8.6.45 No additional developments have been added to the list of cumulative schemes outlined the EIA Report. As such no cumulative effects are predicted in relation to the Amended Development.

8.7 Mitigation Measures

- 8.7.1 Mitigation measures for direct (physical) impacts as outlined in paragraphs 10.7.1 – 10.7.15 of the EIA Report remain valid and appropriate for the Amended Development. No mitigation measures for operational effects were proposed in the EIA Report as no significant effects were predicted. These conclusions remain unchanged in relation to the Amended Development layout.

8.8 Residual Effects

Residual Construction Phase Effects

- 8.8.1 The Amended Development layout has not changed the locations of the proposed turbines or any associated infrastructure compared to the EIA Report layout. As such the residual construction phase effects predicted in the EIA Report are considered to remain valid.

Residual Operational Effects

- 8.8.2 The residual operational phase effects predicted in the EIA Report are considered to remain valid in relation to the Amended Development.

8.9 Summary (comparison of effects of EIA Report Layout and FEI Layout)

- 8.9.1 In all cases, the predicted construction phase, operational phase and cumulative effects as presented in the EIA Report remain unchanged in relation to the Amended Development.

8.10 References

Historic Images of Dumbarton Castle

Beattie 1838 'Dumbarton Castle on the River Clyde' <https://britton-images.com/product/dumbarton-castle-on-the-river-clyde/>

Clerk, J 1770-1782 'Dumbarton Castle from the West' <https://www.nationalgalleries.org/art-and-artists/29446/dumbarton-castle-west>

Clark, J 1825 'The Town of Dumbarton' <https://artcollection.dcms.gov.uk/artwork/3944/>

Farington, J 1788, 'Dumbarton Rock from the South' <https://www.metmuseum.org/art/collection/search/641300>

McLea 1868, 'Dumbarton Castle, Dunbartonshire, Scotland' <https://www.antiquemapsandprints.com/categories/prints-and-maps-by-subject/town-views-buildings/secular-buildings/product/dumbarton-castle-dunbartonshire-scotland-mclea-1868-old-antique-print/P-6-075297~P-6-075297>

Nasmyth, A 1810 'Dumbarton Castle and Town with Ben Lomond' <https://oldwaysnewroads.co.uk/object/dumbarton/>

Slezer, J 1693 'The Castle of Dumbritton from Kilpatrick' <https://maps.nls.uk/view/91169105>

Slezer, J 1693 'Their Ma'ties Castle of Dumbritton from the West' <https://maps.nls.uk/view/91169108>

Slezer, J 1693 'Prospect of Ye Castle of Dumbritton from Ye East' <https://maps.nls.uk/view/91169111>

Turner, J 1834-1836 'Dumbarton Castle' <https://www.tate.org.uk/art/artworks/turner-dumbarton-castle-t04728>

9 AVIATION AND RADAR ASSESSMENT

9.1 Introduction

- 9.1.1 This Chapter presents an updated assessment of effects on aviation receptors associated with the construction, operation and decommissioning of the Proposed Development presented in Chapter 13: Aviation and Radar of the EIA Report, in response to the reduction of turbine tip heights for the Amended Development; and consultation responses to the EIA Report on aviation matters.
- 9.1.2 The Amended Development will consist of ten turbines with maximum tip heights of 220 metres above ground level (m agl) at the locations in **Table 9.1**. The locations remain unchanged from those described in the EIA Report.

Table 9.1 Vale of Leven wind farm turbine details

<i>Turbine no.</i>	<i>Easting</i>	<i>Northing</i>	<i>Tip height (m AOD)</i>	<i>Tip height (ft amsl)</i>
1	242765	680409	468	1536
2	243513	680750	460	1509
3	243839	680273	483	1585
4	244381	680187	472	1549
5	243030	679926	440	1444
6	243358	679635	461	1513
7	244174	679536	493	1618
8	242788	679247	461	1513
9	243220	679022	468	1536
10	243765	678865	524	1719

9.2 Aviation consultee responses

Statutory consultees

- 9.2.1 Statutory aviation consultee responses to the Application are as shown in **Table 9.2**. The Applicant's responses to the issues raised by each of these consultees are set out in the following section of this report.

Table 9.2 Consultee responses to the Application

<i>Consultee (date)</i>	<i>Response</i>
NATS En Route plc (1 November 2023)	Holding objection on grounds of effects on primary surveillance radars at Lowther Hill, Cumbernauld and Glasgow, subject to agreement on technical mitigation.

<i>Consultee (date)</i>	<i>Response</i>
Glasgow Airport (7 December 2023)	The proposed development has been examined from an aerodrome safeguarding perspective and could conflict with safeguarding criteria. Accordingly, a more detailed assessment requires to be undertaken regarding the potential impact on Glasgow Airport.
Prestwick Airport (22 November 2023)	Following more detailed Safeguarding analysis since the Airport's first consultation in May 2022 and further discussions with the Developer's Aviation Consultant in March 2023, the airport no longer has any Safeguarding concerns over Vale Of Leven Wind Farm and would have No Objection to the development.
Ministry of Defence (9 November 2023)	Subject to conditions requiring pre-construction submission of an aviation lighting scheme and notification of the details of the development, the MOD has no objection to the proposed development.
Civil Aviation Authority Airfield Advisory Team (26 July 2024)	We recommend that in addition to fully considering CAP 764 throughout the assessment that local pilots are consulted who can provide further context to the specific routes referenced in this letter. We are poised to support should you require any further understanding of the issues raised and indeed with regards to further engagement of the GA sector.

Non-statutory consultee

- 9.2.2 The British Microlight Aircraft Association (BMAA) who are a non-statutory aviation consultee were not consulted directly by the ECU but submitted an objection on grounds of turbulence effects on light aircraft.

9.3 Applicant responses to issues raised by aviation consultees

NATS En Route plc (NERL)

- 9.3.1 The NERL consultation response in November 2023 was based on turbines with a maximum blade tip height of 250 m above ground level . Following the reduction of the proposed tip height to 220m agl, revised modelling of the radar line of sight has been undertaken. **Table 9.3** provides a comparison of the results for 250m and 220m blade tips for each of the potentially affected NERL radars.

Table 9.3 Calculated line of sight from NERL radars

<i>Radar</i>	<i>Turbines calculated to be within line of sight</i>	
	<i>at 250m blade tip height</i>	<i>at 220m blade tip height</i>
Lowther Hill	T1-T10 inclusive	T1-T10 inclusive
Cumbernauld	T1-T10 inclusive	T1-T10 inclusive
Glasgow Terma	T6, T8, T9, T10	T8, T9, T10
Glasgow NASR-10	T6, T8, T9, T10	T6, T8, T9, T10

9.3.2 It can be seen that the reduction in tip height makes no difference to the number of turbines that are within line of sight of the Lowther Hill, Cumbernauld and Glasgow NASR-10 radars. The number of turbines within line of sight of the Glasgow Terma radar reduces from four to three.

9.3.3 Following receipt of the NERL response in November 2023 the Applicant has engaged with NERL to discuss options for technical mitigation of the effects of the Amended Development on their radars. As a result of these discussions NERL has intimated that a means of mitigation has been identified and has been approved by internal NERL engineering and air traffic control stakeholders. The Applicant will enter into a commercial agreement with NERL to deliver the mitigation.

Glasgow Airport

9.3.4 The EIAR identified the following potential impacts on Glasgow Airport:

- infringement of Obstacle Limitation Surfaces (OLSs);
- non-compliance with the obstacle clearance requirements of instrument flight procedures (IFPs); and
- effects on the NASR-10 and Terma primary surveillance radars (PSRs) at the airport.

9.3.5 As regards IFPs, the Applicant has funded an assessment of the effects of the Amended Development on Glasgow Airport's IFPs. The assessment report was delivered to Glasgow Airport in April 2024. A copy has not yet been provided to the Applicant. However Glasgow Airport has indicated that it finds that only one turbine – T10 – infringes the climb gradient requirements of the CLYDE, LOMON, NORBO and ROBBO Standard Instrument Departure (SID) procedures from runway 05 by a vertical margin of 34m (on the basis of turbines with a 250m tip height). Reduction of the blade tip heights to 220m will reduce this infringement to 4m. The Applicant continues to engage with Glasgow Airport to resolve this issue and is confident that the required 4m reduction in tip height can be resolved.

9.3.6 As regards impacts on PSR, Glasgow Airport advised the applicant in December 2023 that these may be able to be addressed through the use of the airport's Terma radar, which is designed to filter out radar returns from wind turbines. The Applicant continues to engage with Glasgow Airport to confirm the feasibility of the mitigation and, on confirmation, will enter into a commercial agreement with Glasgow Airport to deliver the mitigation.

9.3.7 Impacts of the Proposed Development on Glasgow Airport's OLSs – specifically, the Outer Horizontal Surface (OHS) – were assessed in paragraphs 13.6.2 to 13.6.10 of the EIAR. Paragraph 13.7.2 of the EIAR proposed that mitigation of the effects of the Proposed Development on Glasgow Airport's OHS would be achieved by:

- notification of the details of the Proposed Development, prior to construction, to the CAA as required by Article 225A of the Air Navigation Order (ANO), in order

to ensure that it is marked on aeronautical charts and listed in the United Kingdom Aeronautical Information Publication (UK AIP);

- listing of the location and height of the Proposed Development in the Aerodrome Obstacles section of the Glasgow Airport entry in the UK AIP; and
- installation of a CAA-approved lighting scheme on the Proposed Development.

9.3.8 Glasgow Airport advised in June 2024 that it was considering the operational implications of the breach of the OHS. The Applicant continues to engage with the airport to address this issue.

British Microlight Aircraft Association (BMAA)

9.3.9 The BMAA response was written by the owner and operator of Strathaven airfield and states that “at Strathaven Airfield, BMAA members have more experience than any other pilots in the UK of GA and microlight flying in the vicinity of wind energy schemes”. It notes that Strathaven airfield applies a 20 rotor diameter turbulence safeguarding zone around any wind turbine application; and proposes that the same criterion should be applied in relation to the Amended Development.

9.3.10 The BMAA response also states that the CAA advice on the effects of wind turbine turbulence on aircraft, as set out in the current (2016) edition of CAP 764 – the CAA’s guidance on wind turbines – is “based on unverified computer simulations” and that “there is no known published scientific research involving real-life flight trials to examine the turbulence caused by wind turbines.”

Civil Aviation Authority Airfield Advisory Team (CAA AAT)

9.3.11 The CAA AAT is an advisory body within the Civil Aviation Authority that was set up to provide advice to General Aviation (GA)²⁵ airfields and local planning authorities on issues affecting those airfields.²⁶ It is set to be disbanded in March 2025.²⁷ The AAT is not part of the CAA’s safety regulatory role. The regulatory role for the airspace containing the Amended Development rests with the CAA Safety and Airspace Regulation Group and in particular the nominated CAA aerodrome inspector for Glasgow Airport. The Applicant will discuss the concerns raised by the BMAA relating to turbulence with Glasgow Airport and local light aircraft operators.

9.3.12 The Applicant has carried out a review of academic and aviation practitioner research on wind turbulence effects on light aircraft which has concluded that the effects of the Proposed Development are not significant.

²⁵ The term ‘General Aviation’ refers broadly to all civil aviation other than commercial air transport. In the UK, ‘GA airfields’ are almost exclusively those used by light aircraft.

²⁶ <https://www.caa.co.uk/general-aviation/the-ga-unit/airfield-advisory-team/>

²⁷ <https://flyer.co.uk/is-the-cao-being-forced-to-disband-its-airfield-advisory-team/>

9.4 Conclusions

- 9.4.1 Following implementation of mitigation, the residual effects of the Amended Development on aviation remain negligible as presented in Table 13.3 in the 2023 EIA Report. It is acknowledged that BMAA (a non statutory consultee) have raised some concerns in relation to potential turbulence being created from the wind turbines on light aircraft. Although the Applicant consider such risks to be negligible this will be discussed with Glasgow Airport and local light aircraft operators to ensure that safety is not compromised.

9.5 References

CAA (2016), CAA Policy and Guidelines on Wind Turbines, CAP 764, Sixth Edition (Gatwick: CAA)

NATS (2025), UK Aeronautical Information Publication.

UK (2016), The Air Navigation Order 2016, Statutory Instruments 2016 No.765 (London).

10 SOCIOECONOMICS

10.1 Introduction

- 10.1.1 A report on net economic impact prepared by Biggar Economics (February 2025) is provided as a separate document to accompany this AI submission. The report on net economic impact considers how the Vale of Leven Wind Farm (the Amended Development) will maximise its net economic development. The main findings from this report are presented in this chapter.
- 10.1.2 The Amended Development aligns with Policy 11(c) of the NPF4 by maximising net economic impact and delivering local and community socio-economic benefits.
- 10.1.3 The socio-economic structure of West Dunbartonshire highlights significant socioeconomic challenges, including higher levels of deprivation, lower educational attainment and a workforce concentrated in lower-skilled service roles. Future demographic pressures are expected to exacerbate these trends making job creation a priority to retain the existing population and attract more working age people to the area.
- 10.1.4 The Applicant has undertaken a tailored, collaborative, and transparent approach to maximise economic, social, and community benefits associated with the Amended Development. This approach has evolved through engagement with local stakeholders, educational institutions, and public and private sector bodies. Key activities and initiatives have been proposed, demonstrating the Applicant's commitment to addressing local needs and aspirations. These are summarised in the following sections.

10.2 Key activities and initiatives proposed

Bespoke initiatives to support local businesses and communities:

- Active collaboration with Dunbartonshire Chambers of Commerce and local business networks to identify and map economic opportunities, including participation in events such as the 'President's Club' launch in September 2024, providing a platform for strategic business collaboration.
- Conducting detailed assessments of supply chain gaps and diversification opportunities, alongside the proactive creation of a comprehensive database of local subcontractors.
- Funding support to help communities develop objectives for the Community Benefit Fund, including consultations with groups like the Bellsmyre Development Trust and Community Councils, such as Balloch and Haldane CC and Kilmarnock CC, through focused meetings held from 2022 to 2024.
- Investing in local sports and wellbeing through sponsorship of Renton and Craigandro 2009s football team and Loch Lomond Rugby Club, strengthening community connections. Offering a community ownership option through a

partnership with Ripple, enabling local residents to benefit from reduced electricity costs.

Innovative practices for inclusive economic and community growth:

- Promoting wider participation in community ownership models by enabling low-income households to invest in the Amended Development using community benefit funding. Partnering with West College Scotland and the University of the West of Scotland to develop industry-relevant training pathways and explore scholarship opportunities in renewable energy and construction fields.

Collaborative efforts to enhance workforce and supply chain management:

- Partnering with Tier 1 contractors to ensure local Small and Medium Enterprises (SMEs) understand and meet insurance and accreditation requirements, giving them time to adapt and prepare.
- Organising ‘Meet the Developer’ events to foster engagement with businesses that have relevant or transferable skills for project opportunities.
- Supporting workforce development through initiatives like West College Scotland’s targeted training programs and the Chamber’s Building Bridges program.

Transparent and flexible governance:

- Establishing an index-linked Community Benefit Fund of £5,000 per MW, paid throughout the project’s lifetime, and maintaining clear reporting mechanisms with Tier 1 contractors to track local content.
- Ensuring governance frameworks align with best practices, allowing for regular review and updates to the Fund’s objectives based on evolving community priorities.

10.3 Conclusions

- 10.3.1 Based on these community and economic benefits expected and the approach being taken by the Applicant, it can be concluded that the Amended Development will maximise the local net economic benefit. Therefore, it will meet the requirement for renewable energy proposals set out in Policy 11(c) of NPF4.
- 10.3.2 Through its support for employment, opportunities for local businesses, and contributions to public sector finances, the project demonstrates a strong commitment to sustainable economic development and community wellbeing.

10.4 References

Scottish Government (2023) National Planning Framework 4

Audit Scotland (2024), Local Government Budgets 2024/25

ONS (2023), Annual Population Survey Jan 2022 – Dec 2022.



Annual Population Survey, Data for Oct 2022 – Sept 2023

Scottish Government (2020), Scottish Index of Multiple Deprivation 2020.

11 OTHER CONSIDERATIONS

No significant changes to noise other issues such as telecommunications, shadow flicker, trees and woodland or carbon balance as a result of the reduction in turbine height are predicted.

Full details of impact identified can be found in the updated assessment of effects on noise and shadow flicker provided as Technical Appendix 11a and 11b and in Chapter 14: Other Issues of the 2023 EIA Report.

11.1 Shadow Flicker

Introduction

11.1.1 This section of the chapter considers the potential for shadow flicker effects on receptors as a result of the operation of the Amended Development.

11.1.2 Shadow flicker may occur under certain combinations of geographical position and time of day when the sun passes behind the rotors of a wind turbine and casts a shadow over neighbouring properties. Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. As the blades rotate, the shadow flicks on and off, an effect known as shadow flicker. The effect is most likely to be an issue inside buildings, where the flicker appears through a window opening. This can result in a nuisance when the shadow is cast over the windows of residential properties. Shadow flicker can be a cause of annoyance at residences in the vicinity of wind turbines if it occurs for a significant period during the year.

Legislation, Policies and Guidance

11.1.3 The Shadow Flicker assessment has been carried out in accordance with the same legislation, policies and guidance contained in the articles and publications outlined in paragraph 14.3.3 of the EIA Report.

Consultation

11.1.4 In their scoping response, WDC welcomed the proposed approach to shadow flicker which involved undertaking a detailed assessment if there were any receptors within 10 rotor diameters.

Scope and Methodology

11.1.5 The magnitude of shadow flicker effects varies spatially and temporally, depending on environmental factors such as the sun's position and height, wind speed and direction, cloud cover, and the proximity of turbines to sensitive receptors. The shadow flicker assessment uses information on the Amended Development, potential residential receptors, and other parameters within a computer model to predict and quantify impacts on receptors near the Amended Development. This model is based on a 'theoretical' scenario in which the following assumptions are made:

- The sun is shining from sunrise to sunset (cloudless sky).

- The turbine blades are turning 100% of the time.
- The turbine rotor is oriented directly between the sun and the sensitive receptor.
- There is no screening between the turbine and the receptor (excluding topography).

11.1.6 The shadow flicker study area was defined following the **method outlined in paragraph 14.3.6 of the EIA Report**. With a reduced tip height of 220 m, a study area of 10 rotor diameters (170 m) plus a 50 m micro-siting buffer was established, equating to a 1,750 m buffer from each of the proposed turbines. This remains the same as the study area for the EIA and is shown in Figure 14.1 of the EIA Report.

Existing Environment

11.1.7 The study area for the AI Report (shown in Figure 14.1 of the EIA Report) is unchanged from the previous assessment. As such, there are no receptors within the shadow flicker study area and therefore, no updates to the shadow flicker assessment undertaken for the EIA Report are required.

Predicted Impacts

11.1.8 Since no impacts on residential receptors within the vicinity of the Proposed Development are expected to occur following the revision to the site layout, no impacts are predicted.

Mitigation

11.1.9 No impacts on residential properties are predicted and as such, no mitigation is proposed or needed. Therefore, the effects remain the same as previously assessed for a larger wind turbine in the EIA Report.

11.2 Noise

11.2.1 RSK Acoustics has undertaken a noise impact assessment for the Amended development Vale of Leven Wind Farm. The operational assessment has been carried out according to the recommendations of ETSU-R-97, the Assessment and Rating of Noise from Wind Farms (ETSU-R-97), and the best practice guidance published by the Institute of Acoustics, A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (GPG) and its associated Supplementary Guidance documents.

11.2.2 Baseline noise measurements have been undertaken at 2no. residential properties in the vicinity of the Proposed Development and correlated with on-site wind speed measurements. Noise targets have been derived in accordance with ETSU-R-97 and refined by the GPG. Predictions of the noise levels associated with the operation of the Amended Development, based on the installation of Vestas EnVentus 172-7.2 wind turbines, have been compared with noise impact targets, as derived from the baseline monitoring.

11.2.3 The assessment indicates a negligible impact at noise sensitive receptors; the effect of the proposals are therefore not significant.

11.2.4 Further details can be found in **AI Technical Appendix 11.1: Noise Technical note**.

12 CONCLUSION

12.1.1 Based on the responses submitted to the application by the consultees identified above, provided below is a summary of the key points included in this Additional Information report in relation to the particular themes and topics addressed in the EIA, along with an update on the planning policy as it has evolved since the submission of the EIA report (October 2023).

12.2 Landscape and Visual Assessment

12.2.1 The revised assessment indicates that the reduction in the tip height and hub height of the turbines will be beneficial in a number of respects, including:

- a reduction in the vertical impact of turbines, particularly when they are seen on the skyline;
- when the turbines are seen partly against the skyline, the proportion of turbines seen rising above the skyline is reduced, again reducing vertical impact;
- an improved relationship between the turbines and the landform on which they stand, as the hubs are more closely related to the landform; and
- a reduction in the perceived scale of the turbines in relation to the baseline characteristics of the view.

12.2.2 These benefits will be apparent throughout the study area and, for visual receptors, particularly between approximately 13 km to 15 km away from the Amended Development, as within this range some visual effects that were previously assessed as significant are likely to be not significant.

12.2.3 Night-time effects arising from visible aviation lighting will not be materially affected by the reduction in the turbine dimensions. There will, however, be a notable reduction in the number and extent of significant night-time effects at viewpoints and visual receptors as a result in updated guidance, which no longer requires a 2,000 cd lighting scenario to be illustrated or assessed if the Applicant is committed to the use of dimming mitigation (which is the case at the Amended Development).

12.2.4 Effects on residential visual amenity will also reduce, with three properties having a reduced magnitude of change as a result of the reduced turbine dimensions.

12.2.5 As the visual impacts of the Amended Development have reduced, it can be concluded that the effect on landscape character is also likely to reduce, meaning that the maximum extent of significant effects on LCTs is generally likely to be less than the approximate 9 km that was assessed in the October 2023 LVIA. Effects on landscape planning designations are also likely to reduce but will not be materially altered due to the nature of the SLQs of the relevant designated areas.

12.2.6 Cumulative effects will remain as assessed in the October 2023 LVIA, although the benefits of reduced scale and resultant reduced visibility and influence of the turbines will have a generally beneficial effect in relation to all landscape and visual receptors.

12.3 Cultural Heritage and Archaeology

- 12.3.1 In all cases, the predicted construction phase, operational phase and cumulative effects as presented in the EIA Report remain unchanged in relation to the Amended Development.
- 12.3.2 In relation to SM90107 Dumbarton Castle, it is worth noting that even assuming a higher magnitude of impact on the monument's cultural significance and an effect which would be significant in EIA terms were to be assessed, it does not necessarily follow that this would result in a significant adverse impact on the integrity of the monument's setting (as per the wording of NPF4).

12.4 Ecology and Biodiversity

- 12.4.1 No significant adverse effects are identified. All scoped-in LNCS IEFs have been assessed as having Minor adverse effects which are Not Significant, in the short-term. These adverse effects are mitigated, offset and compensated for through the proposals contained within the OBEMP, which overall delivers significant biodiversity net gain and is predicted to result in overall beneficial residual effects with respect to ecology and biodiversity.

12.5 Ornithology

- 12.5.1 There are no changes to the predicted significance of effects on IOFs assessed in Chapter 7 of the EIA Report (i.e., no significant effects) and no additional mitigation measures are required due to the planned change in turbine tip height.

12.6 Aviation and Radar Assessment

- 12.6.1 Following implementation of mitigation, the residual effects of the Amended Development on aviation remain negligible as presented in the 2023 EIA Report. It is acknowledged that BMAA (a non statutory consultee) have raised some concerns in relation to potential turbulence being created from the wind turbines on light aircraft. Although the Applicant consider such risks to be negligible this will be discussed with Glasgow Airport and local light aircraft operators to ensure that aircraft safety is not compromised.

12.7 Socio-economics

- 12.7.1 The Applicant has undertaken a tailored, collaborative, and transparent approach to maximise economic, social, and community benefits associated with the Amended Development. This approach has evolved through engagement with local stakeholders, educational institutions, and public and private sector bodies. Key activities and initiatives have been proposed, demonstrating the Applicant's commitment to addressing local needs and aspirations. These are summarised in the following sections.
- 12.7.2 Based on these community and economic benefits expected and the approach being taken by the Applicant, it can be concluded that the Amended Development will maximise the local net economic benefit. Therefore, it will meet the requirement for renewable energy proposals set out in Policy 11(c) of NPF4.

- 12.7.3 Through its support for employment, opportunities for local businesses, and contributions to public sector finances, the project demonstrates a strong commitment to sustainable economic development and community wellbeing.

12.8 Other Issues

Shadow flicker

- 12.8.1 No impacts on residential properties are predicted, and no mitigation is proposed or needed.

Noise

- 12.8.2 The assessment indicates a negligible impact at noise sensitive receptors; the effect of the proposals are therefore not significant.

12.9 Summary of Environmental Commitments

- 12.9.1 The environmental mitigation included in Chapter 15 of the EIA Report would continue to be committed to by the Applicant.