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INTRODUCTION

- 15.1 **Chapter 15: Other Issues**, of the Environmental Impact Assessment (EIA) Report assesses the potential impacts of the proposed development in relation to:
- shadow flicker;
 - climate and carbon balance;
 - risk of accidents and other disasters;
 - population and human health;
 - air quality;
 - aviation;
 - telecommunications and other infrastructure;
 - television reception; and
 - waste and environmental management.
- 15.2 This Supplementary Environmental Information (SEI) Chapter supplements **Chapter 15** of the EIA Report. The methodology employed in this SEI Chapter is as set out in EIA Report **Chapter 15** of the EIA Report.
- 15.3 The following key documents should be read in conjunction with this SEI:
- EIA Report Volume 2 - **Chapter 15: Other Issues**.
- 15.4 **Figure 15.1: Potential Zone of Shadow Flicker Influence** of the EIA Report is superseded by **SEI Figure 15.1. Technical Appendix 15.1: Carbon Calculator** of the EIA Report is superseded by **SEI Technical Appendix 15.1**.

CONSULTEE RESPONSES TO THE 2022 KIRKTON APPLICATION

- 15.5 **Table 15-1** below provides a summary of the Other Issues related responses to the 2022 Kirkton Energy Park application, received from key consultees. A reply to the consultee responses is also provided in **Table 15-1**.

Table 15-1: Consultation Responses

Consultee	Comments	Response
Virgin Media 22 November 2022	As it stands these wind turbines would not interfere with any of our microwave links. However, Turbine 1 would be just 187m West of one of our microwave links. Therefore, the location of this turbine cannot be placed further to the West, otherwise	Noted. Turbine No.1 has not moved location.

	we will object to this deployment.	
British Telecom (BT) 23 November 2022	We have studied the proposed windfarm development, with respect to EMC and related problems to BT point-to-point microwave radio links. The conclusion is that, the Project indicated should not cause interference to BT's current and presently planned radio network.	Noted.
NATS Safeguarding 22 November 2022	The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.	Noted.
Joint Radio Company (JRC) 24 November 2022	This proposal is cleared with respect to radio link infrastructure operated by: Scottish Hydro (Scottish & Southern Energy).	Noted.
Vodafone 24 November 2022	Please can you take into account the below link PT130040 which may be impacted by the proposed wind farm – The closest turbines seem to be 1 & 2. Vodafone require 100m clearance from tip of any turbine blade to fixed link radio path. ** In the event of any conflict, we advise performing Fresnel Zone calculations, adhering to the recommended Ofcom methodology. This may indicate that reduced clearance margins at location point are possible.	Noted. Turbines No.1 and No.2 have not moved location. Turbine No.7 has moved approximately 53m, however this move is north, rather than east towards link PT130040. The required clearance remains.
Vodafone 08 December 2022	Regarding the information provided. A current clearance of approximately 148m from the tip of the blade (of T1) to the fixed link radio path, the proposed turbine locations should be acceptable to Vodafone. This is the case even taking into account the potential for up to 25m micro-siting of the proposed turbines. We would find this acceptable – Please could we be updated if any of the wind turbines locations are moved due to micro-siting.	Noted.
Atkins Limited 08 December 2022	I am responding to an email of 05-12-2022, regarding the above named proposed development. The above application has now been examined in relation to UHF Radio Scanning Telemetry communications used by our Client in that region and we are happy to inform you that we have NO OBJECTION to your proposal.	Noted.

REVISED FIGURES

- 15.6 It has not been considered necessary to update the graphic information previously issued with **Chapter 15: Other Issues** the 2022 EIA Report.

ASSESSMENT OF DESIGN AMENDMENT EFFECTS

Carbon Balance

- 15.7 As a result of the amended Turbine No.7 location and also the realigned route of the proposed track to Turbines No.5 – 11, the carbon payback period of the proposed development has been revised. The detail for the proposed development that was input to the Scottish Government Windfarm Carbon Assessment Tool, and presented as **Technical Appendix 15.1: Carbon Calculator** of the EIA Report, has been updated. The calculation spreadsheet is now version LKIV-O3H2-15KW v6 and is presented in **SEI Technical Appendix 15.1: Carbon Calculator**.
- 15.8 A summary of the revised anticipated carbon emissions and carbon payback of the proposed development are provided in **Table 15-2**.

Table 15-2: Carbon Calculator

Result	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO ₂ eq.)	125,304	114,172	138,799
Carbon Payback Time			
Coal-fired electricity generation (years)	0.7	0.6	0.8
Grid-mix of electricity generation (years)	3.5	3.2	3.9
Fossil fuel - mix of electricity generation (years)	1.6	1.4	1.8
Ratio of CO ₂ eq. emissions to power generation (g / kWh) (TARGET ratio by 2030 (electricity generation) < 50 g / kWh)	22.69	20.42	25.32

- 15.9 The calculations of total carbon dioxide emission savings and payback time for the proposed development indicates the overall payback period of a wind farm with 11 turbines with an average (expected) installed capacity of 4.8MW each would be approximately 1.6 years, when compared to the fossil fuel mix of electricity generation.
- 15.10 The potential savings in CO₂ emissions due to the proposed development replacing other electricity sources over the lifetime of the wind turbines (assumed to be 30 years for the purpose of the carbon calculator) are approximately:
- 184,454 tonnes of CO₂ per year over coal-fired electricity (approximately 5.53 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator);
 - 35,599 tonnes of CO₂ per year over grid-mix of electricity (approximately 1.07 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator); and
 - 79,525 tonnes of CO₂ per year over a fossil fuel mix of electricity (2.39 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator).
- 15.11 The overall anticipated carbon payback time for the amended proposed development (compared to a fossil fuel mix of electricity generation) is 1.6 years. This remains very similar to the 1.5 year anticipated carbon payback time as assessed and presented in the EIA Report. The potential CO₂ emissions savings are also similar for the amended proposed development, compared to what was presented in the EIA Report.

- 15.12 The slightly higher carbon payback period of 1.6 years compared to 1.5 years does not materially alter the proposed development's expected carbon saving potential. It is also important to consider that the Scottish Government Windfarm Carbon Assessment Tool is continually being updated and the assessment presented in this SEI was carried out on version 1.7.0, compared to the assessment presented in the EIA Report which was carried out on version 1.6.1.

Shadow Flicker

- 15.13 The amended Turbine No.7 location has been assessed in the shadow flicker model. There is no change in the hours of shadow flicker as assessed and presented in the 2022 EIA Report, which occur as a result of the amended Turbine No.7 location. Turbine No.7 was not identified as a cause of potential shadow flicker to nearby residential receptors in its original location, and this continues to be the case for its amended location.
- 15.14 **Figure 15.1: Potential Zone of Shadow Flicker Influence** of the EIA Report, has not been updated, as the results / extent of shadow flicker shown on the Figure would not change.

Other Topics

- 15.15 The following topics have been considered with regards the amendments to the site layout of the proposed development:
- risk of accidents and other disasters;
 - population and human health;
 - air quality;
 - aviation;
 - telecommunications and other infrastructure;
 - television reception; and
 - waste and environmental management.
- 15.16 However, due to the relatively minor nature of the amendments, there would be no changes to what was assessed and presented in Chapter 15 of the EIA Report.

SUMMARY OF CHANGES TO THE SIGNIFICANCE OF EFFECTS

- 15.17 Due to the minor nature of the proposed amendments (relocation of Turbine No.7 by 53m, and realignment of access track to Turbines No.5 – 11), it has not been considered necessary to reassess the effects of the proposed amendments on 'risk of accident and other disasters', 'population and human health', 'air quality', 'aviation', 'telecommunications and other infrastructure', 'television reception' and 'waste and environmental management', therefore the effects on these areas remain unchanged from what has been set out in Chapter 15 of the EIA Report. Taking into account

the relocation of Turbine No. 7, shadow flicker effects are assessed as being unchanged from those presented in the EIA Report and are therefore considered to be Negligible and not significant.

- 15.18 The purpose of the carbon balance calculation has been to determine the carbon payback period, and therefore the benefits of the proposed development in this regard, rather than an effect as such. As stated above, the slightly higher carbon payback period. For the amended proposed development, of 1.6 years compared to 1.5 years as presented in the EIA Report, does not materially alter the proposed development's expected carbon saving potential.

CONCLUSIONS

- 15.19 The design amendments will not result in any change to the significance of effects as presented in Chapter 15 of the EIA Report.
- 15.20 The design amendments do not materially alter the proposed development's expected carbon saving potential.