Galileo 05 Limited

Lynemore Wind Farm

Additional Information Volume 2

Chapter 13: Other Issues

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13 OTHER ISSUES

13.1 Forestry

Introduction

13.1.1 The Applicant is proposing a Revised Layout amending the route of the access track and location of the construction compound, which will reduce the impact of the Revised Proposed Development on the forestry resource.

13.1.2 This section considers the potential impacts and significant effects on the forestry resource for the Revised Layout.

13.1.3 A summary of the predicted effects and mitigation was given in the **EIA Chapter 13: Other Issues Sections 13.4.62** to **13.4.77**.

13.1.4 There were no additional scoping comments relating to forestry further to that detailed in **Table 13.1** of **Chapter 13: Other Issues.**

Methodology

13.1.5 The assessment methodology as described in **Chapter 13: Other issues Paragraphs 13.4.24** and **13.4.25** have been followed for this AI Report.

13.1.6 Data used for estimating areas and tree volume have been derived from a compartment schedule and map provided by Forestry Land Scotland. Aerial mapping has been used to estimate canopy coverage and tree numbers on the Lynemore Estate.

Revised Layout

13.1.7 **AI Figures 13.1** and **13.2** illustrate the location of the Revised Layout within the study area and with regards to baseline tree species. **AI Figures 13.3** and **13.4** detail the new access track route and construction compound area when compared to the National Forest Inventory Scotland and Native Ancient Woodland Survey of Scotland mapped data.

13.1.8 The access track route in the Revised Layout is comprised of straight track lengths through forested areas. These require a tree clearance buffer width of 10 m either side of the track and surrounding the construction compound. This is compared with maximum of 20 m due to the presence of curved track sections in the EIA Report.

13.1.9 Details of the forest compartments and species impacted by the Revised Layout are detailed in **Table 13.1** below and **AI Figure 13.2**.

Table 13.1 AI Revised Layout Compartment Schedule

Compartment Number	Area Gross (ha)	Species	Planting Year	Yield Class	Age
9	25.80	Birch, Juniper	1924	2	101
10	2.69	Birch, Juniper	1924	2	101
27051	3.40	Sitka spruce/Scots pine/Lodgepole pine,/Birch	1992	8/8/8/2	33
27071	1.60	Sitka spruce/Scots pine/Lodgepole pine/Birch	1992	8/8/8/2	33
Total	**33.49**				

13.1.10 The area of proposed tree felling and tree species involved are detailed in the AI felling **Table 13.2** and **AI Figure 13.5**. Most of the Revised Layout felling will occur in FLS compartments 27051 ad 27071.Tree coverage in compartments 1 and 2 is composed of very sparse birch and shrubby juniper of approximately twenty trees overall as indicated by the Small Tree Felling layer on **AI figure 13.5**.

Table 13.2 Felling Proposal

Compartment No. as shown in AI Figure 13.6	Area Gross (ha)	Area Lost to Infrastructure Gross 'Felling Area' (Ha)	Area Lost to Infrastructure Net 'Felling Area' (ha)	Species	Volume per Ha (m3)	Approx Volume to be removed (m3)	Approx Tonnage to be removed *	Wagon Loads (25t per load)	Wagon loads of Brash to be removed at approx.. 25% of timber volume (25t loads)
9	25.8	0.1348	0.0362	SBI, Juniper	7	0.25	0.27	0.01	0.00
10	2.69	0.4062	0.0186	SBI, Juniper	7	0.13	0.14	0.01	0.00
27051	3.40	0.6946	0.5904	SS, SP, LP, BI	120	71.13	76.11	3.04	0.76
27071	1.60	0.1063	0.0904	SS, SP, LP, BI	115	10.36	10.15	0.41	0.10
Total	**33.49**	**1.3419**	**0.7356**			**81.87**	**86.67**	**3.47**	**0.87**

Species: SBI – Sliver birch, BI – Birch, SP – Scots pine, LP – Lodgepole pine, SS – Sitka spruce.

13.1.11 The Revised Layout reduces the net tree felling area from 4.29 ha, proposed in the EIAR, to 0.74 ha. The AI felling area is divided into 0.68 net hectares on Forestry Land Scotland (FLS) land and 0.05 net hectares on the Lynemore Estate land (see **AI figure 13.1**). The effect on ancient semi natural woodland is minimal with the proposed removal of approximately six birch trees (**AI figure 13.4** and **13.5**). This is compared with 4.29 ha detailed in the EIA Report.

13.1.12 Note that the net felled area (**Table 13.2**) is taken as a standard area of tree cover at 85% of the gross area. A 15% reduction is deducted from the gross area to allow for internal open space such as rides. This has been applied to the Forestry Land Scotland (FLS) compartments 27051 ad 27071. Where woodland areas have a low density canopy cover,

such as in compartments 9 and 10, then a percentage canopy cover has been estimated from the most clear and recent aerial mapping.

Potential Effects

13.1.13 The FLS forest area effected by the revised layout is classed as Wind Hazard Class (WHC) 3. Therefore, there is a moderate to low risk of retained trees being impacted by windthrow once trees are felled to install the new infrastructure. There will be no requirement to fell trees back to a windfirm edge, thus no requirement to restock. The retained birch and juniper of small stature and open crown structure in compartments 1 and 2 are at minimal risk of being windblown.

13.1.14 There are approximately six trees effected by the installation of the track infrastructure in the area mapped as ancient woodland (see **AI Figure 13.4**). It should be noted that although the trees in this area have an estimated planting date of 1924, the area is deemed to have had continuous woodland cover since at least 1750.

Mitigation

13.1.15 In line with the Scottish Government's Policy on the Control of Woodland Removal there would be a requirement to provide an area of compensatory tree planting equivalent to that lost in the felling proposal.

13.1.16 Therefore, an area of 0.74 ha will be planted alongside the upgraded A9 and consist of Scots pine, birch and common alder species (see **AI Figure 13.6**).

Summary of findings

13.1.17 The Revised Layout considerably reduces the amount of felling required to install the access track infrastructure and construction compound. There will be no necessity to fell back to windfirm edges and thus no restocking requirement.

13.1.18 An area of 0.74 ha of compensatory planting will form part of the Revised Layout which is equivalent to the net area of tree removal.

13.1.19 No significant adverse direct or indirect effects are anticipated because of the Revised Layout (see **Table 13.3**). There is a significant reduction in impact on the woodland resource when comparing the AI Revised Layout compared with the EIA Report.

Table 13.3 Summary of findings

Forestry Resource	EIA – Significance of Residual Effect	Change	AI – Resulting Significance of Residual Effect	Evaluation
Felling to accommodate infrastructure	**Negligible, not significant**	Reduced felling area	**Negligible, not significant.**	Reduction of tree felling
Compensatory planting/restocking	**Negligible, not significant.**	Reduced area required to plant. No requirement to restock	**Negligible, not significant.**	Reduction of planting area

13.2 Shadow Flicker

Introduction

13.2.1 This section of the chapter considers the potential for shadow flicker effects on receptors as a result of the operation of the Revised Layout. The EIA Report chapter assessed the potential effects of shadow flicker on receptors arising from the EIA Proposed Development as submitted in the application to the ECU in May 2025. Following post-submission consultation responses issued by statutory and non-statutory consultees on the 14-turbine layout referred to as the EIA Layout, the Applicant has decided to reduce the number of turbines for the Revised Proposed Development to a 12-turbine layout. Further design amendments are presented in detail in **Chapter 2 Updated Description of the Proposed Development** of the AI Report.

13.2.2 While the shadow flicker assessment methodology and referenced guidance from the EIA Report remain applicable, the study area and assessment results presented in the EIA Report have changed, as the Revised Proposed Development and Revised Layout replace the previously considered EIA Layout (14-turbine layout).

13.2.3 The purpose of this Additional Information (AI) chapter is to provide an updated study area and shadow flicker assessment for the 12-turbine layout of the Revised Proposed Development. This AI chapter is supported by the following figures:

- **AI Figure 13.7**: Revised Shadow Flicker Assessment Study Area.
- **AI Figure 13.8:** Revised Shadow Flicker Assessment Results – 'Theoretical' worst-case scenario.

Potential Effects

13.2.4 The significance of effects of the Revised Proposed Development on potential receptors, in relation to shadow flicker, remains as reported in the EIA i.e., no adverse significant effects. However, the study area and assessment of effects have been updated in line with consultation responses received and design amendments.

Consultation Responses

13.2.5 Further to the submission of the EIA Report, consultation responses have been received from stakeholders residing in the locality of the EIA Proposed Development, which have been addressed by the latest layout design, namely the Revised Layout. Details of responses related shadow flicker are provided in **Table 13.4**.

Table 13.4: Consultation Responses

Consultee	Summary of key issues
Strathnairn and Farr residents	Have raised concerns in relation to anticipated shadow flicker effects reported in the EIA Report (May 2025).
Strathnairn Community Council	The Community Council has expressed concerns about the cumulative impact of shadow flicker on health.

Matters Arising from Consultation Responses

13.2.6 To address concerns relating to peat and landscape and visual impact two turbines have been removed (T04 and T05) from the Revised Proposed Development and several turbines (T02, T03, T06, T07, T11, T12, and T13) have been repositioned. Although some concerns have been raised in relation to shadow flicker from the above community councils this did not require turbines to be moved as shadow flicker effects were addressed as not significant.

Methodology

13.2.7 The assessment methodology, as referred to in **Chapter 13: Other Issues** in the EIA Report has been followed for the updated study area and impact assessment. Similarly, with **Chapter 13: Other Issues**, alongside the updated 'theoretical' worst-case assessment scenario, an additional 'realistic' worst-case scenario has been assessed. This scenario incorporates climatic variables that limit the duration of shadow flicker events.

13.2.8 As in **Chapter 13: Other Issues**, a correction factor of **0.28** was applied to the revised total annual hours of shadow flicker to provide an estimate of the time when the correct meteorological conditions would be present for shadow flicker to occur, ultimately creating a 'realistic' worst-case scenario. The results of this are shown in **Table 13.7**. However, these shadow flicker durations are still likely to be conservative as no account is taken of the orientation of the turbine rotor, when turbine blades are not turning, the presence of screening between the receptor and turbine, or additional climatic conditions.

Significance Criteria

13.2.9 The significance criteria applied in the EIA Report remain identical for the revised assessment. The same thresholds of 30 hours per year or 30 minutes per day continue to define whether shadow flicker effects are considered significant.

Baseline Assessment

13.2.10 For the updated assessment of effects, a revised baseline has been modelled to identify an updated list of receptors to be considered in the shadow flicker assessment. As specified in the EIA Report, a distance equivalent to 11-rotor diameters (1,782 m) was applied as the maximum separation distance between a turbine and a receptor for potential shadow flicker effects. No new receptors were identified within the updated study area.

13.2.11 The receptors identified within the study area of the Revised Proposed Development are shown in **AI Figure 13.7** and are listed in **Table 13.5**Table 13.4: Consultation Responses, along with their updated distances from the nearest turbine.

Table 13.5: Receptors with Updated Distance from Nearest Turbine.

ID	Easting	Northing	Distance from nearest turbine (m)	Nearest turbine
1	276293	833947	1,470	T12

2	276368	834034	1,572	T12
3	276551	833979	1,568	T12
4	276579	833974	1,573	T12
5	276615	833959	1,570	T12

Updated Impact Assessment

'Theoretical' worst-case scenario results

13.2.12 The results of the updated 'theoretical' worst-case scenario shadow flicker assessment are shown in **Table 13.6** and in **AI Figure 13.8[1].**

Table 13.6: Updated 'Theoretical' Worst-case Scenario Shadow Flicker Results.

ID	Easting	Northing	Days per year of Shadow Flicker	Maximum hours per day	Mean hours per day	Total hours per year
1	**276293**	**833947**	**97**	**0.45**	**0.35**	**33.5**
2	276368	834034	63	0.43	0.31	19.8
3	276551	833979	0	0.00	0.00	0.0
4	276579	833974	9	0.10	0.08	0.7
5	276615	833959	19	0.21	0.17	3.2

13.2.13 Based on the 'theoretical' worst-case scenario, only one identified receptor (1) is predicted to experience shadow flicker effects above the threshold of 30 minutes per day and 30 hours per year[2]. After repositioning of the turbines, Receptor 1 now has 33.5 hours of shadow flicker per year, compared to 48.6 in the EIA Report. Receptor 2 was above the threshold at 46.8 hours per year, however, after repositioning the turbines, this value is now 19.8 hours per year which is under the threshold. This is the 'theoretical' worst-case scenario, meaning that it does not take into consideration the physical intervening objects and/or weather conditions such as cloud cover which may prevent or reduce the duration of shadow flicker effects.

13.2.14 The updated results for the 'theoretical' worst-case scenario shown in **Table 13.6** are lower than what has been presented in the EIA Report. This is due to the repositioning of turbines resulting in less shadow flicker impact on identified receptors.

[1] A new figure has been presented in the AI to allow receptors to be numbered for clarity and to show removal of T04 and T05.

[2] For reference, a typical limit, which has been utilised in Northern Ireland, Republic of Ireland, Germany and Belgium, is 30 hours per year with a maximum of 30 minutes per day. For the purposes of this assessment, these limits are considered to be the criteria for a significant effect.

'Realistic' worst-case scenario

13.2.15 In the 'theoretical' worst-case scenario model, Receptor 1 is the only residential receptor predicted to receive shadow flicker effects greater than 30 minutes per day or 30 hours per year. The 'realistic' worst-case scenario considers weather statistics, as explained in **Paragraph 13.2.8**, which were analysed and applied to adjust the 'theoretical' worst-case scenario results in **Table 13.6**. The results for the 'theoretical' worst-case shadow flicker scenario were multiplied by a factor of **0.28** to reflect the proportion of total annual daylight hours at the Revised Proposed Development which are considered 'sunny'. This adjustment provided a more realistic estimate of shadow flicker effects for Receptor 1.

13.2.16 Following the consideration and analysis of annual daylight and sunshine data, the 'realistic' worst-case scenario assessment resulted in the anticipated shadow flicker effects shown in **Table 13.7**. Receptor 1 now has 9.4 hours of shadow flicker per year, compared to 13.6 hours in the EIA Report.

Table 13.7: 'Realistic' Worst-case Scenario Shadow Flicker Results.

ID	Easting	Northing	Days per year of Shadow Flicker	Mean hours per day	Total hours per year
1	276293	833947	97	0.10	9.4

Cumulative Effects

13.2.17 As stated in **Chapter 13: Other Issues**, the closest turbines to the residential receptors identified for the Revised Proposed Development are located at Moy Wind Farm and are outwith the area within which shadow flicker effects could occur. It is therefore expected that there would be no cumulative shadow flicker effects.

Summary and Conclusions

13.2.18 Based on the 'realistic' worst-case' scenario assessment results, **no significant** effects are predicted for the Revised Proposed Development, therefore, no mitigation is required.

13.3 Climate

Introduction

13.3.1 A Greenhouse Gas (GHG) assessment was carried out for the EIA Layout submitted in May 2025 utilising the Scottish Government's Carbon Calculator Tool to assess the GHG emissions and savings of the project. This chapter of the AI presents the results of the recalculation of the carbon savings of the Revised Proposed Development using the updated parameters. The results of the two assessments are summarised below in **Table** 13.8**.** The key changes to the Revised Proposed Development which relate to Carbon and Climate are:

- A reduced number of wind turbines from 14 to 12 reduces the total lifetime energy output and GHG savings of the Revised Proposed Development.
- Changes to access tracks length, which is reduced as a result of the reduced number of turbines and the access track realignment to the revised location of the remaining turbines.

- Reductions in the area of forestry plantation to be felled reduces the total carbon losses due to construction of the Revised Proposed Development.

Table 13.8 GHG Assessment Summaries

	Original GHG Assessment	Revised Proposed Development
Grid mix electricity generation		
Lifetime GHG Savings	2,481,469 tCO_2e	1,682,692 tCO_2e
Carbon payback time	5.0 years	7.0 years
Fossil fuel electricity mix generation		
Lifetime GHG Savings	4,614,787 tCO_2e	3,735,686 tCO_2e
Carbon payback time (years)	2.8 years	3.4 years

13.3.2 This chapter of the AI presents the results of the recalculation of the carbon savings of the Revised Proposed Development using the updated parameters. Guidance and methodology remain identical to that used for the Original GHG Assessment and is detailed in **Chapter 13: Other Issues** of the EIA Report, which should be consulted for further information.

Methodology

13.3.3 The Original EIA GHG Assessment and the Revised Proposed Development used version 2.14.1 of the Scottish Government's Carbon Assessment Tool, which was the only available version at the time of assessment. The latest online version of the Scottish Government Carbon Calculator Tool (V1.8.1) was unavailable at the time of both assessments owing to maintenance and a server upgrade. Thus, version 2.14.1 of the Calculator was provided (as an Excel spreadsheet calculator) by the Scottish Government's Energy Consents Unit as a suitable alternative. Despite the numbering convention, Version 2.14.1 is an older version of the tool, as the numbering scheme reset once the tool was moved online.

13.3.4 The assessment methodology used, guidance followed, and significance criteria assessed against, have not been altered since the EIA Proposed Development assessment presented in the EIA Report. For further information please refer to Chapter 13: Other Issues of the EIA Report.

13.3.5 The accuracy of a GHG assessment depends on the quality of the data provided. Conservative benchmarks/assumptions have been applied if necessary. Where secondary data has been used, it has been clearly set out**, AI TechnicalAppendix 13.1**.

Parameter Changes

13.3.6 Updated area of forestry plantation to be felled, and access tracks have been used to account for the repositioning/removal of turbines and associated infrastructure. The

updated figures indicate reduced peat removal and forestry felling than those predicted in the Original EIA GHG Assessment.

Revised Impact Assessment

13.3.7 The revised input parameters and results outputs are displayed in **Volume 4 AI Technical Appendix 13.1: The Scottish Government's Carbon Assessment Tool Table 1.1** and **Table 1.2** respectively.

Assessment of Effects

13.3.8 The potential effects with regards to GHG emissions will remain unchanged. The Revised Proposed Development will result in a **Significant** and **Beneficial** effect based on IEMA's Guidance To Assessing GHG Significance (2022) Framework for Assessment of Significant Effects.

Mitigation

13.3.9 As no adverse effects are predicted, no additional mitigation measures are proposed.

Summary and Conclusions

13.3.10 GHG emissions are predicted to be offset 3.4 years (40.8 months) after the Revised Proposed Development becomes operational against a fossil fuel mix of electricity, and 7.0 years (84 months) against a grid-mix of electricity. The Revised Proposed Development is predicted to deliver total emissions savings of 3,735,686 tCO_2e over its 50-year operational lifetime against a fossil fuel mix of electricity, and 1,682,692 tCO_2e against a grid-mix of electricity.

13.4 Aviation and Radar

Introduction

13.4.1 The Applicant is proposing a Revised Layout as part of this submission of Additional Information. The Revised Layout will reduce the total number of turbines from 14 to 12 with some minor movement of the retained turbines. The height above sea level of the highest turbine blade tips will increase from 2478 feet to approximately 2498 feet above mean sea level (amsl).

Methodology and Assessment

13.4.2 This chapter considers changes to potential effects on aviation as reported in the EIA Report submitted in May 2025, and it follows the same methodology as the EIA report.

Potential Effects

13.4.1 The Revised Layout is assessed as having the same effects on Inverness Airport Instrument Flight Procedures (IFPs) as those reported in the EIAR.

13.4.2 The Revised Layout is assessed as having the same effects on the Inverness Airport primary surveillance radars (PSRs) as those reported in the EIAR, albeit with two less turbines visible to the radars.

13.4.3 The Revised Layout is assessed as having the same effects on the RAF Lossiemouth PSR – that is, none - as reported in the EIA Report.

13.4.4 The revised layout is assessed as having the same effects on military low flying as those reported in the EIAR.

Summary and Conclusions

13.4.5 The Revised Layout will require amendments to Inverness Airport IFPs. These will be delivered through a suspensive planning condition requiring approval and implementation of an IFP mitigation scheme prior to the construction of the Proposed Development.

13.4.6 All turbines in the Revised Layout will generate adverse effects on the Inverness Airport PSRs. A planning condition will be agreed which requires approval and implementation of required radar mitigation measures prior to operation of the Revised Proposed Development.

13.4.7 The Revised Layout will have no effects on the RAF Lossiemouth PSR.

13.4.8 Any effects on military low flying will be mitigated by prior notification of the Revised Proposed Development to the MoD and the provision of aviation lighting, as required by the Air Navigation Order.

13.4.9 These conclusions are summarised in **Table 13.9**

Table 13.9 Comparison of Residual Effects

Topic/Receptor	EIA – Significance of Residual Effect	Change	AI – Resulting Significance of Residual Effect	Evaluation
Construction, Operation, and Decommissioning: Increase required in minimum altitudes of Inverness Airport Instrument Flight Procedures.	**Negligible, adverse and not significant.**	Reduced no. of turbines, repositioning of some turbines	**Negligible, adverse and not significant.**	Unchanged
Operation: False plots and reduced probability of detection in Inverness Airport PSRs	**Negligible, adverse and not significant.**	Reduced no. of turbines, repositioning of some turbines	**Negligible, adverse and not significant.**	Unchanged
Construction, Operation, and Decommissioning: Hazard to low flying military aircraft	**Negligible, adverse and not significant.**	Reduced no. of turbines, repositioning of some turbines	**Negligible, adverse and not significant.**	Unchanged