# Glenburnie Wind Farm

## Additional Environmental Information

## Volume 4 – Non-Technical Summary

# Contents

# 1 Introduction

## 1.1 Overview

1.1.1 This Non-Technical Summary (NTS) forms part of the Additional Environmental Information (AEI) Report that has been prepared to address the proposed modifications to a Section 36 application to construct and operate 19 wind turbines at 220 m in height (the 'original proposed development'), submitted to the Scottish Ministers in October 2023 (the 'original application'). . The original proposed development is located north-east of the A697, approximately 8.5 km north-north-east of Lauder, within the Scottish Borders.

1.1.2 The original application was accompanied by the Longcroft Wind Farm Environmental Impact Assessment Report (the 'EIA Report October 2023'). A range of consultees were consulted on the original application and, in light of matters raised by consultees, the applicant has undertaken further design and assessment work, which resulted in modifications to the original proposed development.

1.1.3 The layout of the original proposed development has been re-designed reducing it from a 19-wind turbine development to a 12-wind turbine development (the 'revised proposed development'), with a subsequent reduction in the site boundary. In summary, seven wind turbines have been deleted; these are wind turbines numbered T1-T4 and T17-19. The location and site boundary of the revised proposed development are presented in **Figure 1**, whilst the revised proposed development is shown in **Figure 2**.

1.1.4 Following the modifications to the original proposed development, the applicant now proposes that the revised proposed development shall be known as Glenburnie Wind Farm.

1.1.5 The AEI Report has been prepared to provide further information to the EIA Report October 2023 to address the proposed modifications to the original proposed development since the original application was submitted. It also addresses responses received from consultees during the consultation period. This NTS summarises the findings of the AEI Report in non-technical language.

## 1.2 The Applicant

1.2.1 Renewable Energy Systems Ltd (RES) is the world's largest independent renewable energy company, working across 24 countries and active in wind, solar, energy storage, green hydrogen, transmission and distribution. As an industry innovator for over 40 years, RES has delivered more than 28 GW of renewable energy projects across the globe and supports 43 GW of operational assets worldwide for a large client base. Drawing on our decades of experience in the renewable energy and construction industries, RES has the expertise to develop, construct and operate projects of outstanding quality which contribute to a low carbon future by providing a secure supply of sustainable, low cost, clean green energy. RES is committed to finding effective and appropriate ways of engaging with all its stakeholders, including local residents and businesses, and believes that the views of local people are an integral part of the development process. RES is also committed to developing long term relationships with the communities around its projects, proactively seeking ways in which it can support and encourage community involvement in social and environmental projects near its developments.

1.2.2 RES is the power behind a clean energy future where everyone has access to affordable zero carbon energy. We bring together global experience, passion, and the innovation of 4,500 people to transform the way energy is generated, stored and supplied..

## 1.3 The Revised Proposed Development

1.3.1 The site has been reduced from 1,290 hectares (ha) to 831 ha and is now centred on Ordnance Survey grid reference E 356000, N 657000, which places it approximately 9.9 km north-east of Lauder in the Scottish Borders andnorth-east of the A697 road.

1.3.2 The revised proposed development comprises:

- up to 12 three-bladed horizontal axis wind turbines of up to 220 m tip height.
- at each wind turbine, associated low to medium voltage transformers and related switchgear;
- wind turbine foundations;
- hardstand areas for erection cranes at each wind turbine location;
- a network of access tracks including watercourse crossings, passing places, turning heads and site entrance from the D124;
- borrow pits (dependent on availability of stone within the site);
- a substation compound containing electrical infrastructure, control building, welfare facilities and a communications mast;
- a battery energy storage system (BESS), rated at 50MW and associated compound;
- a transfer station;
- public road widening along sections of the D124;
- a network of buried electrical and communication cables;
- temporary construction compounds;
- signage; and
- habitat management and biodiversity enhancement and restoration.

1.3.3 The revised proposed development is expected to operate for up to 50 years following which decommissioning of the wind turbines and other infrastructure would be undertaken or an application may be submitted to repower the site.

1.3.4 The revised proposed development and associated infrastructure are shown on **Figure 2**. A more detailed description of the site and the revised proposed development is provided in **AEI Chapter 3** of the AEI Report.

## 1.4 Need for the Revised Proposed Development

### Renewable Electricity Generation

1.4.1 The revised proposed development would have an anticipated nominal capacity of 79.2 MW[1]. The annual generation from the wind turbines is therefore estimated at approximately 321 gigawatt-hours (GWh) based on a capacity factor of 46.4%. The proposed wind turbines would

[1] Based on the installation of 12 wind turbines with an expected installed capacity of around 6.6 MW each.

therefore supply renewable electricity equivalent to the approximate annual domestic needs of up to 97,243[2] average UK households.

1.4.2 Each unit of renewable electricity transmitted will displace a unit of conventionally generated electricity, therefore displacing carbon dioxide ($CO_2$) emission. It is estimated that the proposed wind turbines will displace approximately 121,249 tonnes of $CO_2$ emissions per year, or 6,071,450 tonnes over the anticipated 50-year lifespan of the revised proposed development.

### Effect on Greenhouse Gas Emissions

1.4.3 The revised proposed development would reduce greenhouse gas emissions through replacing fossil fuel generation. The length of time a wind turbine needs to be in operation before it has, by displacing fossil fuel energy generation, avoided as much carbon dioxide as was released in its lifecycle is known as the carbon payback period.

1.4.4 A carbon balance assessment has been undertaken for the revised proposed development using the Scottish Government's carbon calculator for wind farms[3]. The results from the carbon calculator reveal that the net impact of the revised proposed development will be positive overall, as over its proposed 50 year operational life, it is expected to generate over 48 years' worth of clean energy if it replaced fossil fuel-mix electricity generation and around 49 years' worth of clean energy even if it replaces cleaner grid-mix electricity generation (which includes some fossil fuels and low carbon electricity generation sources such as nuclear, hydro-electric and wind energy).

1.4.5 Over the expected 49 years that the revised proposed development is likely to be generating carbon-free electricity, this could result in over 6 million tonnes of net $CO_2$emission savings when replacing fossil fuel-mix electricity generation.

1.4.6 Overall, the revised proposed development would therefore lead to substantial net carbon savings and reduction of greenhouse gas emissions over its operational life.

# 2 Design Evolution

## 2.1 Design Evolution

2.1.1 As part of the planning process, feedback was gathered from a range of consultees by the Energy Consents Unit (ECU) on behalf of the Scottish Ministers. After reviewing this feedback, the applicant made several changes to the original proposed development. This included further design and assessment work, which led to the revised proposed development. The revised proposed development reduces the number of wind turbines from 19 to 12 and also decreases the overall size of the site, as shown in **Figure 3**.

2.1.2 The proposed wind turbine deletions comprise wind turbines T1 – T4 and T17 – T19. These wind turbines were identified by Historic Environment Scotland (HES) as being of key concern as they considered the that original proposed development would affect the understanding,

[2] Calculated using the most recent statistics from the Department of Energy Security and Net Zero (DESNZ) showing that mean domestic electricity consumption is 3,301kWh (as of December 2024).

[3] At the time of preparing the AEI, the online calculator version was unavailable due to a technical fault. The offline calculator version 2.14.1 has been used in the interim to inform the AEI and present the payback period for the revised proposed development in lieu of the online tool. The applicant will upload to the online version when it becomes available.

appreciation and experience of a number of scheduled monuments, specifically Addinston, Fort (SM362), Longcroft, Fort (SM372), Glenburnie, Fort (SM4473) and Longcroft Hill, Homestead (SM4480).

2.1.3 Through the removal of wind turbines from the original proposed development, this will mitigate the impacts upon the integrity of the setting of the scheduled monuments and adverse effects on cultural heritage have been lessened. The design modifications will enable the cultural significance of the heritage assets to be appreciated and understood, such that the integrity of their setting is retained.

2.1.4 Further details on the design evolution of revised proposed development is presented in **AEI Chapter 2: Design Evolution & Alternatives** and **AEI Chapter 7: Cultural Heritage & Archaeology** provides a summary of assessment of the original proposed development, design amendments, a summary of HES' comments and an assessment of the revised proposed development for each of the scheduled monuments identified above.

# 3 Description of the Revised Proposed Development

3.1.1 The changes to the original proposed development are as follows:

- seven wind turbines have been removed from the original proposed development. These are wind turbines numbered T1 - T4 and T17 - T19;
- the access tracks, hardstands and associated electrical infrastructure that were planned to reach those removed turbines have also been removed from the original proposed development; and
- the addition of an abnormal indivisible load (AIL) turning head to facilitate safe access to T16.

3.1.2 There have been no changes to the size or height of the wind turbines compared to what was outlined in the EIA Report October 2023.

3.1.3 **Figure 2** shows the updated layout of the revised proposed development, and **Table 1** provides details about each wind turbine's location and size.

**Table 1: Wind Turbine Locations**

| Wind Turbine | Easting | Northing | Hub Height (m) | Tip Height (m) |
|---|---|---|---|---|
| T1 | Turbine removed | | | |
| T2 | Turbine removed | | | |
| T3 | Turbine removed | | | |
| T4 | Turbine removed | | | |
| T5 | 355688 | 655868 | 135 | 220 |
| T6 | 356323 | 656104 | 135 | 220 |
| T7 | 355898 | 656509 | 135 | 220 |
| T8 | 356429 | 656886 | 135 | 220 |
| T9 | 356059 | 657276 | 135 | 220 |

| | | | | |
|---|---|---|---|---|
| T10 | 356612 | 657632 | 135 | 220 |
| T11 | 357010 | 658361 | 135 | 220 |
| T12 | 356390 | 658096 | 135 | 220 |
| T13 | 355614 | 657800 | 135 | 220 |
| T14 | 355275 | 657314 | 135 | 220 |
| T15 | 355148 | 656448 | 135 | 220 |
| T16 | 354396 | 656398 | 135 | 220 |
| T17 | Turbine removed | | | |
| T18 | Turbine removed | | | |
| T19 | Turbine removed | | | |

3.1.4

# 4 Environmental Impact Assessment

## 4.1 EIA Approach

4.1.1 Chapter 4: Approach to EIA of the EIA Report October 2023 discusses the broad approach and methodology undertaken to assess the original proposed development in accordance with the EIA Regulations. It also sets out the assumptions that were made in undertaking the EIA for the original proposed development.

4.1.2 The methodologies used for, and assumptions applied to, the assessments carried out as part of the AEI Report remain consistent with the EIA Report October 2023 unless otherwise stated with the AEI technical chapters.

4.1.3 The EIA Report October 2023 considered the likely effects of a larger scale development scenario on the environment and whether any of these effects could be significant. The AEI Report focuses on outlining the changes in predicted effects arising from the revised proposed development.

## 4.2 Landscape and Visual

4.2.1 **AEI Chapter 6: Landscape and Visual Impact Assessment** considers the potential for significant effects upon landscape and visual receptors associated with the construction, operation and decommissioning of the revised proposed development, as described in **AEI Chapter 3: Revised Proposed Development Description**. The assessment is based on a revised proposed development that supersedes the original proposed development, detailed and assessed in the EIA Report October 2023.

4.2.2 Baseline conditions to inform the design and assessment of the revised proposed development have been established through desk study, site visits and consultation with key consultees.

4.2.3 The site is located predominantly in the western extent of landscape character type (LCT), LCT90 – Dissected Plateau Moorland, which extends eastward along the boundary between East Lothian and Scottish Borders Council. A short section of the access track is located in LCT115 – Upland Valley with Mixed Farmland.

4.2.4 The revised proposed development is located across a series of level-topped hills of moorland in an area predominantly used for sport hunting and sheep/cattle grazing. Whalplaw Burn passes through the site's centre in a steep-sided convex valley before flowing into Cleekhimin Burn and onwards towards Leader Water. The site's topography ranges from around 200 m AOD, at its southern end along the access route adjacent to Cleekhimin Burn, rising to 490 m AOD at its northern end.

4.2.5 The landscape directly to the site's north, east and west is that of the wider Lammermuir Hills, which is characterised, in general, by an upland plateau landscape with level topped hills and steep sided valleys. Immediately to the site's south lie the A68 and A697, which pass along the broad and flat valley floor following the route of Leader Water. The village of Oxton lies on the lower valley slopes approximately 3.6 km west of the nearest wind turbine and is accessed via several minor roads off the A68. Lauder, the nearest town, is located approximately 6.4 km south of the nearest wind turbine on the A68. There are several smaller settlements and farmsteads close to the site, which are generally located to the south and west at the base of valleys or on the lower slopes.

4.2.6 There are multiple operational and consented wind farms within 35 km of the site, particularly along the Moorfoot and Lammermuir Hills. The nearest operational wind farm is Fallago Rig, which lies adjacent to the north-eastern boundary of the site. Further operational and consented wind farms are within the study area of the revised proposed development.

4.2.7 The site is located in the Local Landscape Area, the Scottish Borders LLA6 Lammermuir Hills, a designated landscape documented in the adopted *Scottish Borders Council Local Development Plan* (2024). The site is not in, or near, any Dark Sky Parks or similar.

4.2.8 This assessment indicates that there would be significant effects on parts of the following landscape and visual receptors:

- Daytime effects;
  - Lammermuir Hills around the site visual receptor group; and
  - Scottish Borders LLA6 Lammermuir Hills.
- Daytime cumulative effects; and
  - LCT90 – Dissected Plateau Moorland;
  - Lammermuir Hills around the site visual receptor group;
  - Landscape and settlements along the A68 and A697 corridors from Soutra Hill to Ravenswood Roundabout and Greenlaw visual receptor group;
  - Southern Upland Way; and
  - Scottish Borders LLA6 Lammermuir Hills.
- Night time effects
  - LCT90 – Dissected Plateau Moorland;
  - Recreational landscapes, minor roads and settlements west of the site visual receptor group; and
  - Scottish Borders LLA6 Lammermuir Hills.

4.2.9 The assessment of the likely significant landscape and visual effects associated with the construction, operation and decommissioning of the revised proposed development concludes

that those relevant landscape and/or visual resources potentially affected by the revised proposed development would not be affected to a greater degree than the original proposed development.

## 4.3 Cultural Heritage & Archaeology

4.3.1 Assessments of the relevant potential likely significant effects upon cultural heritage & archaeology are presented in **AEI Chapter 7: Cultural Heritage & Archaeology**. The EIA Report October 2023 concluded that four assets would experience moderate adverse or moderate/major adverse effects from the original proposed development. These comprised Addinston, Fort (SM362), Longcroft, Fort (SM372), Glenburnie, Fort (SM4473) and Longcroft Hill, Homestead (SM4480). Whilst the adverse effects were identified as significant in EIA terms with respect to all but Addinston Fort (SM362), the original proposed development was established to be in compliance with the NPF4 due to a lack of significant impact on the integrity of the setting of the scheduled monuments. However, Historic Environment Scotland (HES) objected to these findings.

4.3.2 The revised proposed development is the result of the incorporation of further embedded mitigation measures comprising the removal of seven wind turbines (and further consultation with HES). The four assets specified above have been reassessed by SLR in respect to the revised proposed development. It has been concluded that whilst adverse impacts remain, the integrity of the setting of the scheduled monuments would not experience significant adverse impacts. It is concluded by SLR that the revised proposed development would be compliant with NPF4 from a cultural heritage perspective.

## 4.4 Ecology

4.4.1 Assessments of the relevant potential likely significant effects upon terrestrial ecology are presented in **AEI Chapter 8: Terrestrial Ecology**. The assessment provides updated information regarding methods, changes to legislation/guidance and an updated impact assessment, based on design revisions to the proposed development, of ecological receptors of local value or higher. The ways in which ecological features or species could be affected (directly or indirectly) by the construction, operation and maintenance, and decommissioning phases of the revised proposed development are assessed with regards to the significance of these effects.

4.4.2 No additional field surveys were conducted to inform this assessment. A desk-based data search exercise was conducted to identify recent species sightings since the EIA Report October 2023 was compiled; none were identified within the site.

4.4.3 The shadow Habitats Regulations Appraisal (HRA) was reviewed in light of the design changes. No effect was found that would compromise the conservation goals of relevant statutory protected sites, and no adverse effect on the integrity of any such sites was identified (i.e. their ability to meet conservation aims). No effects would result in any breach of the Habitats Regulations on European or RAMSAR sites, either alone or in combination with other identified projects. Potential effects on sites arising from compensation measures were considered and found to have no likely significant effect on qualifying features of any European or RAMSAR site.

4.4.4 Two high sensitivity (EU Habitats Directive Annex 1) habitats would be affected by the revised proposed development: blanket mire; and European dry heaths (upland). Though a small loss of

these habitats will occur, implementation of the proposed outline Biodiversity Enhancement and Restoration Plan (OBERP) (**AEI Technical Appendix 8.6**), will offset these losses.

4.4.5 Additional measures will be put in place during the construction phase to protect key species and will be detailed in the Construction Environment Management Plan (CEMP), OBERP and Species Protection Plans. An Environmental Clerk of Works (ECoW) will be appointed to monitor adherence to such plans.

4.4.6 Potential impacts on fisheries will be mitigated by using best practice and protocols, and the appointment of an ECoW. The ECoW will monitor pollution risks, silt management and manage fish access issues.

4.4.7 Potential significant effects during operation on bats were identified, but following the mitigation, enhancement and compensatory measures detailed in the assessment and the OBERP, no significant effects, including for bats, are considered likely during the construction, operation or decommissioning phases.

4.4.8 Overall, there are not likely to be any significant impacts on ecology resulting from the revised proposed development, assuming that the avoidance, mitigation, compensation and enhancement measures referred to within **AEI Chapter 8** and **AEI Chapter 10: Hydrology, Hydrogeology & Geology** are adopted (and which are required to ensure compliance with the nature conservation legislation and policy).

## 4.5 Ornithology

4.5.1 Assessment of the relevant potential effects upon ornithology is presented in **AEI Chapter 9: Ornithology**. The previous assessment for the original proposed development concluded that there was not likely to be any significant impacts on ornithology resulting from the original proposed development, provided that the proposed mitigation measures were implemented. The assessment presented in **AEI Chapter 9** discusses the methods used to establish the bird species and populations present in the vicinity of the site, together with the process used to determine the nature conservation value of the birds that used the site. The ways in which birds could be affected (directly or indirectly) by the construction and operation of the revised proposed development are explained, and an assessment is made with regards to the significance of these effects.

4.5.2 Desk-based studies and field surveys were carried out in and around the site over respective 'study areas' to establish baseline conditions and the bird populations present. The revised proposed development is not located within any ornithological designation.

4.5.3 The focus of the ornithological impact assessment were the key bird species identified by NatureScot as being at potential risk of impact from wind farms that were recorded at the site. These included six species breeding within the potential disturbance zone; greylag goose (28 pairs), golden plover (15 pairs), lapwing (18 pairs), curlew (27 pairs), merlin (1 pair) and short-eared owl (1 pair, 2022 only).

4.5.4 Key species recorded using the potential disturbance zone outside of the breeding season included red kite, hen harrier, goshawk, golden eagle, golden plover, lapwing, curlew, peregrine and merlin.

4.5.5 Key species recorded at risk of collision (i.e. flying through the site at rotor height) included whooper swan, pink-footed goose, greylag goose, red kite, marsh harrier, goshawk, golden eagle, curlew, golden plover, lapwing, peregrine and merlin.

4.5.6 Overall, there are not likely to be any significant impacts on ornithology resulting from the revised proposed development, assuming that the mitigation measures referred to within **AEI Chapter 9** are adopted. In relation to the key NatureScot (NS) wider countryside test, the revised proposed development would not affect the favourable conservation status of any bird species of conservation importance within the Natural Heritage Zone (NHZ), either alone or in-combination with other schemes. It would also not contribute to any Likely Significant Effect on any SPA-qualifying interests. No effects would result in any breach of the Habitats Regulations.

4.5.7 Whilst there are no significant effects predicted, additional controls will be put in place during the construction phases and will be detailed in the CEMP and Breeding Bird Protection Plan. The detailed measures will be implemented during construction to protect species within the site, and an ECoW will be appointed to monitor adherence to such plans.

## 4.6 Geology, Hydrology and Hydrogeology

4.6.1 An updated assessment of the likely significant effects on hydrology, hydrogeology and geology receptors from the revised proposed development, considering the effects during construction, operation, and decommissioning phases is outlined in **AEI Chapter 10: Hydrology, Hydrogeology, and Geology**. This chapter confirms that the EIA Report October 2023 findings are largely unchanged, with minimal changes to the baseline conditions as the findings of the initial peat and hydrological surveys are still valid for this assessment. The impacts to hydrological, hydrogeological and geological receptors during the construction, operation and decommissioning phase of the revised proposed development is considered to be minor to negligible and therefore, not significant, with implementation of guidance and best practice measures. This excludes potential impacts to Private Water Supply (PWS) Longcroft and PWS Cleekhimin House, where impacts are considered to be moderate and therefore significant, with additional mitigation proposed including water quality monitoring. The significance of residual effects on impacts to PWS receptors following the implementation of these additional mitigation measures and monitoring are considered to be minor and therefore not significant.

## 4.7 Traffic and Transport

4.7.1 As with the original proposed development, the revised proposed development would lead to a temporary increase in traffic volumes on the study area during the construction phase. These would fall considerably outside the peak period of construction. This is detailed in **AEI Chapter 11: Traffic and Transport**.

4.7.2 The peak of construction activity is expected to occur in month 8, when there will be 94 two-way HGV movements and 48 cars / LGV movements. These figures are less than those presented in the EIA Report October 2023 for the original proposed development.

4.7.3 The greatest potential impact would occur along the A697, D124 and the Core Path / Public Rights of Way (PRoW) / Path network within the site.

4.7.4 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or

insignificant but as they will occur during the construction phase only, they are considered temporary and reversible.

4.7.5 The results indicate that the overall traffic impact will be marginally less than assessed in the EIA Report October 2023. All proposed mitigation set out in the EIA Report October 2023 therefore remains valid.

## 4.8 Acoustics

4.8.1 An assessment of the acoustic impact from the operation of the revised proposed development has been undertaken taking into account the identified nearest residential properties. This is detailed in **AEI Chapter 12: Acoustic Assessment.**

4.8.2 The operational acoustic impact was assessed using the same guidance as detailed in the original acoustic assessment within the EIA Report October 2023.

4.8.3 Representative baseline conditions (the background sound levels) at nearby residential properties were established by undertaking background sound surveys, as detailed in the original acoustic assessment.

4.8.4 An updated propagation model was used to predict the sound levels due to the revised proposed development at nearby residential properties over a range of wind speeds, taking into account the layout of the revised proposed development and a candidate wind turbine model.

4.8.5 The sound limits for the revised proposed development remain consistent with those presented in the original acoustic assessment. The predicted operational sound levels determined as part of the revised acoustic assessment are less than or equal to those in the original acoustic assessment. Therefore, the updated sound levels remain within the limits at nearby residential properties at all considered wind speeds. The revised proposed development remains compliant with the relevant guidance on sound from wind farms and the impact on the amenity of all nearby properties would be regarded as acceptable as part of current planning policy.

4.8.6 An investigation of the nearby residential properties has been carried out to identify if cumulative operational acoustic impacts are to be expected. No properties were identified as having the potential to be cumulatively impacted by the sound from nearby wind farms.

## 4.9 Socio-economics, Tourism and Recreation

4.9.1 The revised proposed development would lead to an increase in net gross value added (GVA) output and employment during the construction phase within each of the spatial areas assessed. However, the number of jobs created during the operational phase would be lower than that of the EIA Report October 2023, reflective of the lower number of wind turbines.

4.9.2 The estimated net GVA output during the construction phase within the Scottish Borders' economy as a result of the revised proposed development would increase from £4.4 million to approximately £7.3 million (per year), which would increase the size of the Scottish Borders' economy by around 0.25%.

4.9.3 The revised proposed development would lead to a temporary increase of between 64 and 78 net jobs to the Scottish Borders' labour market per year during construction. This equates to an increase in the number of jobs by 0.14%.

4.9.4 The number of jobs created during the operational phase would be lower than what was detailed in the EIA Report October 2023, reflective of the lower number of wind turbines. The revised proposed development would create approximately 13 - 18 net additional jobs during operation, compared to the 21 - 29 net additional jobs predicted for the original proposed development.

4.9.5 **AEI Chapter 13: Socio-economics, Tourism and Recreation** confirms that, in relation to the revised proposed development, the original assessment within the EIA Report October 2023 remains largely valid, with minimal changes to the baseline conditions. The impacts on local economy and labour market receptors during the construction and operation phase of the revised proposed development are considered to be Minor to Negligible and therefore, not significant, with the implementation of mitigation and best practice measures set out within the EIA Report October 2023 still considered to be appropriate.

## 4.10 Aviation and Radar

4.10.1 The Civil Aviation Authority (CAA) requires any structure equal to and taller than 150 m in height to be fitted with visible aviation warning lighting. The CAA has been consulted and an aviation lighting scheme has been agreed.

4.10.2 Under the usual planning conditions expected in the consent, if granted, the Ministry of Defence (MOD) would be informed of the dates of commencement, completion, final wind turbine locations and heights. In addition, infrared lighting will be agreed with the Defence Infrastructure Organisation (DIO) for the MOD low flying requirements.

4.10.3 The revised proposed development will potentially impact the MOD radar at Brizlee Wood and the NERL radar at Great Dun Fell. In both cases it is expected that the impact can be mitigated with a suitable mitigation scheme that could be secured through an appropriately worded suspensive planning condition.

4.10.4 In summary, it is concluded in the AEI Report that with this mitigation in place there are no significant residual effects from the revised proposed development upon aviation interests.

## 4.11 Shadow Flicker

4.11.1 Wind turbines are tall structures which can cast long shadows when the sun is low in the sky. Given a conjunction of certain meteorological conditions (clear skies, enough wind for the wind turbines to be rotating and a low angle of the sun in the sky), observers close to a wind farm could experience a phenomenon commonly known as shadow flicker, where the rotating wind turbine blades pass between the sun and the observer, usually through narrow openings such as doors or windows, creating an intermittent shadow.

4.11.2 The revised proposed development is predicted to create shadow flicker for one property within the 2,100 m assessment area. Should it be required, mitigation can be provided, including shutting down individual wind turbines during periods when shadow flicker could theoretically occur.

## 4.12 Climate and Carbon Balance

4.12.1 The results of the Climate and Carbon Balance Assessment (**AEI Technical Appendix 14.2**) reveal that the net impact of the revised proposed development will be positive overall.

4.12.2 Peatland is an important carbon store, and the revised proposed development has potential to impact peat, despite mitigations proposed to limit disturbance to peat and bog habitats. A carbon balance assessment report has been produced and the Scottish Government's carbon calculator tool completed to determine the carbon payback time for the revised proposed development (see **AEI Technical Appendix 14.2** for full details). The results from the carbon calculator reveal that the net impact of the revised proposed development will be positive overall, as over a 50-year lifespan of the revised proposed development, it is expected to generate over 49 years' worth of clean energy if it replaced fossil fuel-mix electricity generation and nearly 48 years' worth of clean energy even if it replaces cleaner grid-mix electricity generation.

4.12.3 In addition, over the expected 48 years that the wind farm is likely to be generating carbon-free electricity, this could result in over 5.8 million tonnes[4] of net C02 emissions savings when replacing fossil fuel-mix electricity generation. Since, in the worst case (maximum scenario), when replacing fossil fuel-mix generation, the payback period represents approximately 2% (1 year) of the operational period (50 years) and the positive contribution through clean energy production is 98% (49 years), it is possible to conclude that the positive contribution is statistically significant. The revised proposed development therefore illustrates a significantly positive net impact in terms of its contribution towards the reduction of greenhouse gas emissions from energy production.

# 5 Next Steps and Further Information

## 5.1 Next Steps

5.1.1 The Scottish Government Energy Consents Unit will process the application on behalf of Scottish Ministers. At this stage, there will be an opportunity to make representations on the application to:

Scottish Government

Energy Consents Unit

5 Atlantic Quay

150 Broomielaw

Glasgow G2 8LU

5.1.2 Email: representations@gov.scot Online: http://www.energyconsents.scot/

## 5.2 Further Information

5.2.1 The AEI Report comprises the following:

- Volume 1: Main Text
- Volume 2a: Figures
- Volume 2b: LVIA Figures & Visualisations
- Volume 3: Technical Appendices

[4] Calculation is 48 years x 121,429t$C0_2$ (as shown in AEI Technical Appendix 14.2)

- Volume 4: Non-Technical Summary

5.2.2 Hard copies of the NTS, AEI Report and EIA Report October 2023 will be available for viewing in the following locations:

- Lauder Library, Mid Row, Lauder, TD2 6SZ
- Oxton War Memorial Hall, Station Road, Oxton, TD2 6PL

5.2.3 The NTS is available free of charge, and a limited number of hard copies of the AEI Report is available for £1,500 per copy. The price of the hard copy reflects the costs of producing the Landscape and Visual visualisations.

5.2.4 Alternatively, a DVD or USB memory stick containing PDF files of the AEI Report are available for £15 per CD / USB memory stick. These PDF files can also be downloaded for free from the Glenburnie Wind Farm website at:

www.glenburnie-windfarm.co.uk

# GLENBURNIE WIND FARM

## FIGURE 1

## SITE LOCATION



KEY:

SITE BOUNDARY

SITE LOCATION - NOT TO SCALE

| | |
|---|---|
| LAYOUT DWG: N/A | T-LAYOUT NO.: N/A |
| DRAWING NUMBER: 04728-RES-LAY-DR-LE-001 | REV: 5 |
| SCALE - 1:200,000 @ A3 | |

**ADDITIONAL ENVIRONMENTAL INFORMATION 2025**

# GLENBURNIE WIND FARM

## FIGURE 2

## PROPOSED DEVELOPMENT



KEY:

- TURBINES
- SITE BOUNDARY (CENTRE OF LINE DENOTES BOUNDARY)
- UPGRADED SITE TRACKS
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- EXISTING PUBLIC ROAD
- BORROW PIT SEARCH AREA
- TEMPORARY BATCHING PLANT
- SUBSTATION LOCATION
- TEMPORARY CONSTRUCTION COMPOUND
- BATTERY STORAGE COMPOUND
- TRANSFER STATION
- HARDSTANDING
- SITE ENTRANCE LOCATION

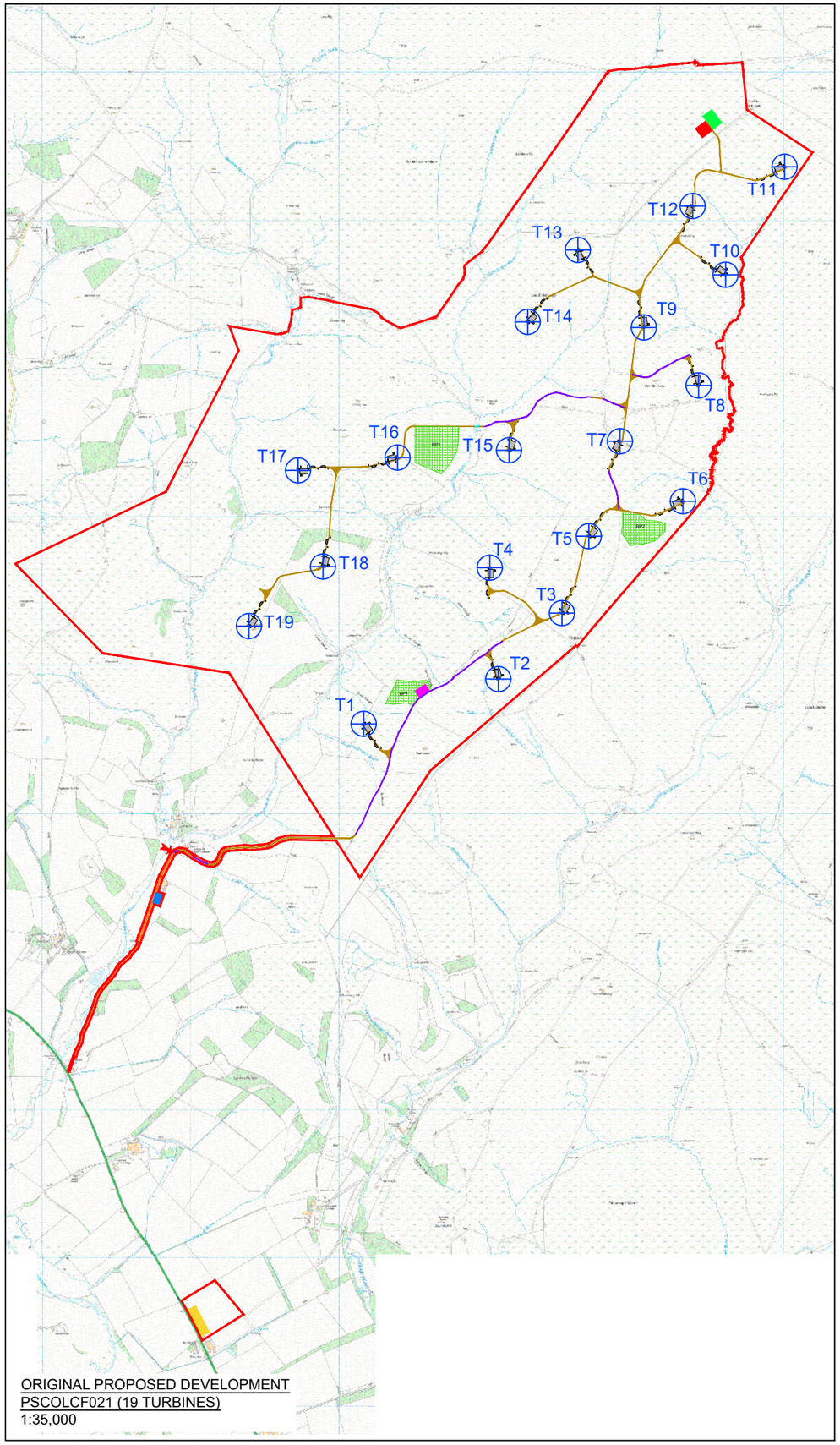
T11 T12 T13 T10 T14 T9 T8 T16 T15 T7 T6 T5

TRANSFER STATION LOCATION
1:25,000

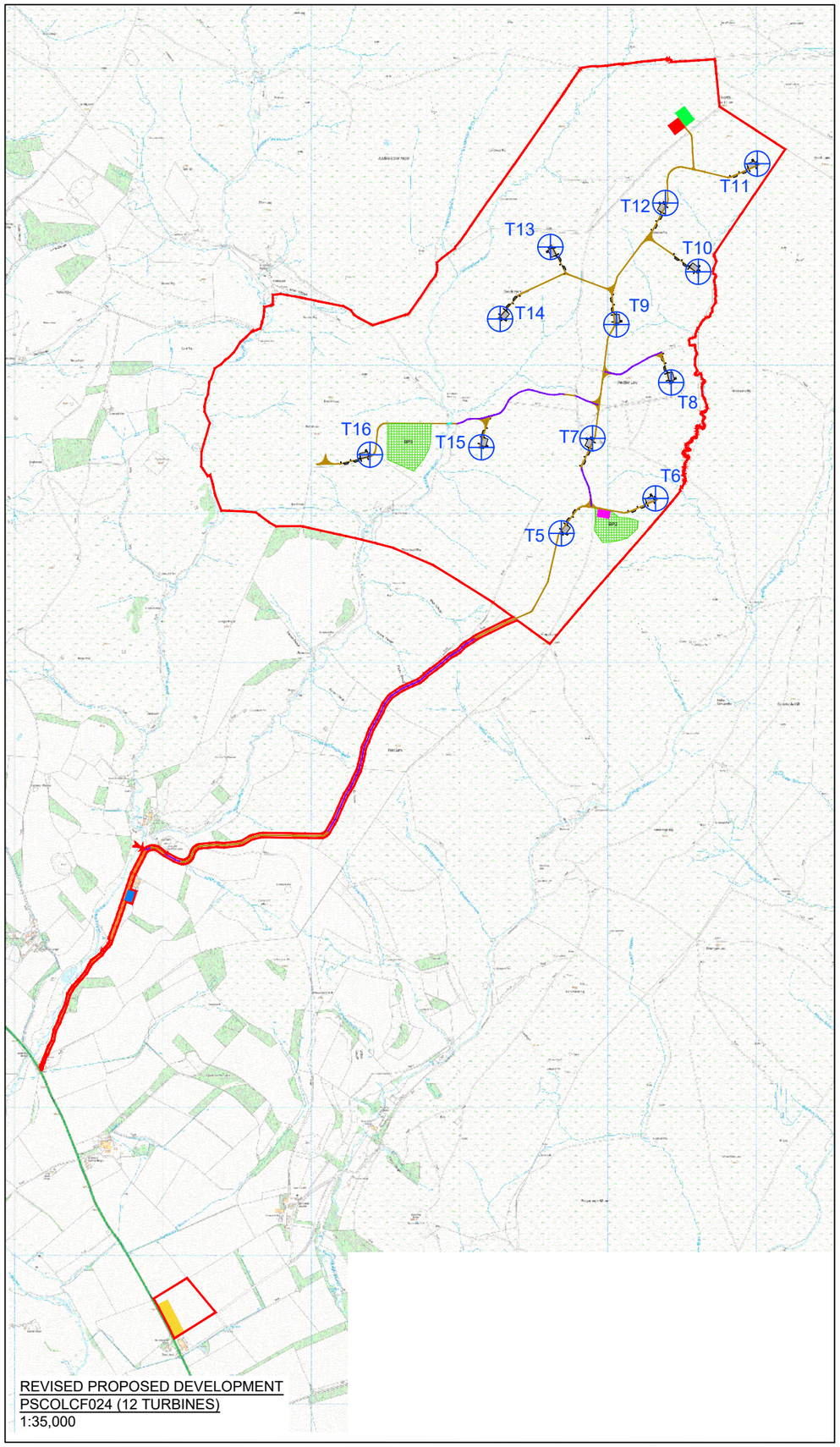
| | |
|---|---|
| LAYOUT DWG: N/A | T-LAYOUT NO.: PSCOLCF024 |
| DRAWING NUMBER: 04728-RES-LAY-DR-PE-003 | REV: 9 |

**SCALE - 1:25,000 @ A3**

**ADDITIONAL ENVIRONMENTAL INFORMATION 2025**




ORIGINAL PROPOSED DEVELOPMENT
PSCOLCF021 (19 TURBINES)
1:35,000




REVISED PROPOSED DEVELOPMENT
PSCOLCF024 (12 TURBINES)
1:35,000

# GLENBURNIE WIND FARM

## FIGURE 3

## EVOLUTION OF PROPOSED DEVELOPMENT



KEY:

- TURBINES
- SITE BOUNDARY (CENTRE OF LINE DENOTES BOUNDARY)
- UPGRADED SITE TRACKS
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- EXISTING PUBLIC ROAD
- BORROW PIT SEARCH AREA
- TEMPORARY BATCHING PLANT
- SUBSTATION LOCATION
- TEMPORARY CONSTRUCTION COMPOUND
- BATTERY STORAGE COMPOUND
- TRANSFER STATION
- HARDSTANDING
- SITE ENTRANCE LOCATION

| | |
|---|---|
| LAYOUT DWG: N/A | T-LAYOUT NO.: AS SHOWN |
| DRAWING NUMBER: 04728-RES-LAY-DR-PT-002 | REV: 1 |

SCALE - 1:35,000 @ A3

**ADDITIONAL ENVIRONMENTAL INFORMATIONN**