Galileo 05 Limited

Lynemore Wind Farm

Grid Connection Appraisal

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APRIL 2026

GALILEO EMPOWER

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1 INTRODUCTION

1.1 Background

1.1.1 Galileo 05 Ltd (the Applicant) is proposing to construct and operate Lynemore Wind Farm (the Proposed Development) located within the Lynemore Estate on the hills 2 km southwest of the A9 at Moy. The Proposed Development would involve the construction and operation of 12 wind turbines (with tip heights of up to 200 m), Battery Energy Storage System, and ancillary infrastructure.

1.1.2 An application for consent for the Proposed Development, which included an Environmental Impact Assessment (EIA) Report, was submitted to the Energy Consents Unit (ECU) under Section 36 of the Electricity Act 1989 (ECU Ref: ECU00005105) on 1st May 2025. Additional Information (AI) for the Proposed Development was published by the Scottish Ministers on 29th January 2026.

1.1.3 As the grid connection for the Proposed Development (the grid connection) will be subject to a separate consenting process, it was not addressed in detail in the EIA Report and AI submitted. This Grid Connection Appraisal has been prepared to provide an overview of the expected connection type, the indicative route and the likely environmental effects, with a focus on identifying any effects that could be significant. It is acknowledged that the Lynemore Wind Farm cannot be operated without a grid connection, and therefore this assessment considers whether this connection can be predicted to result in significant environmental effects over and above those that have been identified for the wind farm.

1.1.4 The Applicant has a NESO (National Energy System Operator) Grid Connection Contract and through this contract has an understanding of the likely grid connection route. Further details of the grid connection would be confirmed through further discussion with Scottish Hydro Electric Transmission plc, operating and known as Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission') who are a subsidiary of the SSE PLC group of companies. SSEN Transmission owns and maintains the electricity transmission network across the north of Scotland. As a licence holder, SSEN Transmission is required under the Electricity Act 1989 to develop and maintain an efficient, coordinated and economical electrical transmission system in its licensed areas. Where there is a requirement to extend, upgrade or reinforce its transmission network, SSEN Transmission's aim is to achieve an environmentally aware, technically feasible and economically viable route while seeking to minimise as far as reasonably practicable any disturbance to the environment and the people who use the area. For SSEN Transmission to comply with its license obligations, it must provide the Proposed Development with a connection to the electricity network.

1.1.5 To obtain consent would be SSEN Transmission's duty to consider the possible environmental effects of the proposals through the provision of environmental information and state what can 'reasonably be done' to mitigate any identified adverse environmental impacts, in accordance with Paragraph 3 to Schedule 9 of the 1989 Act. SSEN Transmission has responsibility for the detailed routeing, environmental assessment and an application to the Scottish Ministers for the grid connection under Section 37 of the Electricity Act 1989. Whilst the application for Section 37 consent would be submitted to the Scottish Ministers, The Highland Council would be a statutory consultee in the decision-making process.

1.2 Proposed Connection and Indicative Study Area

Development description

1.2.1 Based on information provided to the Applicant by NESO, the grid connection would comprise a new 132 kilovolt (kV) continuous overhead line (OHL) between the proposed Lynemore Wind Farm Substation (approximate Grid Reference NH 74829 32415) and Glen Kyllachy Substation (approximate Grid Reference NH 74383 26925) located to the south. The OHL would run through an area that comprises mostly of open moorland.

1.2.2 A study area is shown in Figure 1a which is part of the Farr and Glen Kyllachy Estate. This study area has been defined for this grid connection appraisal – large enough to accommodate all likely route options which would be assessed as part of a Section 37 consent.

1.2.3 The study area comprises the area within which various options for locating the proposed grid connection are likely to be identified and is defined by several high-level constraints. These include:

- The southwestern boundary is defined by the existing 275kV and 132kV pylons;
- The northeastern boundary is defined by the higher elevation land before it drops to the A9;
- The extent of forestry around each boundary; and
- Presenting an opportunity to consider and avoid (if practicable) the existing wind farms of Glen Kyllachy and Farr, environmental designations and on-site constraints.

1.2.4 For the purposes of this appraisal and using the information provided by NESO it is assumed that the Proposed Development would be connected to the electricity transmission network via 132kV overhead line (OHL) supported on single circuit 'Trident' wood poles and underground cables.The specific configuration would be determined by SSE Transmission as part of the Section 37 application process, and would depend on a balance of environmental sensitivity, technical feasibility, operational requirements, maintenance considerations and construction practicalities. A summary of SSE Transmission's approach to the routeing of overhead line grid connections is provided as **Annex A**[1]. The information below in relation to SSE Transmission's approach to the construction of 132kV OHLs is based on publicly available information published by SSE Transmission for similar projects[2].

1.2.5 Single, and double (also known as 'H') poles would be expected to be used for the OHL. There are three types of pole:

- Intermediate: where the pole forms part of a straight-line section;
- Angle: where the OHL requires a change of direction. All angle structures will require to be back stayed; and
- Terminal: where the OHL terminates into a substation or onto an underground cable section.

[1] Available at https://www.ssen-transmission.co.uk/globalassets/projects/2030-projects/2030-project-documents/routeing-overhead-lines.pdf [accessed April 2026]

[2] Examples include the Kyllachy Wind Farm Grid Connection (ECU Ref ECU00001967) available at https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00001967 [accessed April 2026]

1.2.6 Each pole would be topped by galvanised steelwork cross-arm and insulators (likely to be grey metal). The steel cross arm and insulators would carry a single three-phase circuit (three metal alloy conductors) in a flat formation (i.e. all at the same height) along with an earth wire. A typical trident 'H' wood pole is illustrated in Photo 1.1.

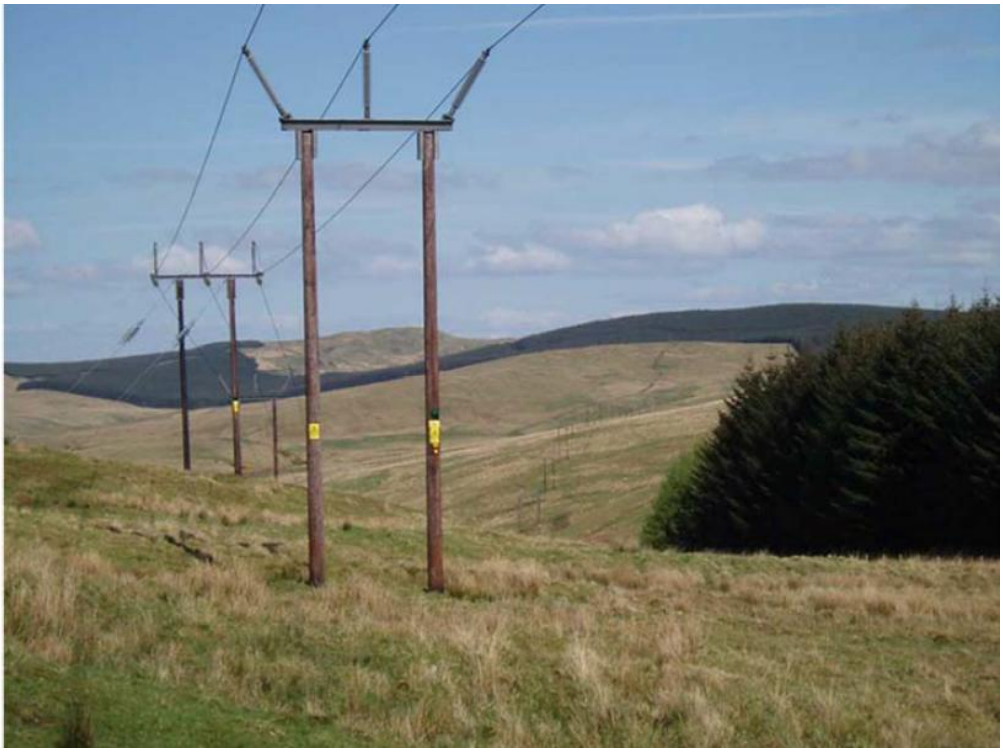

Photo 1.1 – Typical trident 'H' wood pole design

1.2.7 The wood poles would be seasoned and treated with a suitable preservative, resulting in a dark brown appearance, which would weather to a silver/grey colour over a period of approximately five years following installation.

1.2.8 The height of the trident wood poles would typically be between 11 and 15 m above the ground level (including steel work and insulators). Pole heights may be increased locally (up to 18 m) where required to avoid features such as watercourses. The statutory ground level clearance required for a 132 kV OHL is 6.7 m.

1.2.9 The spacing between the poles would vary depending on topography, altitude and land usage. The distance between the poles will be determined later in the design process; an average span of 100 m is estimated; however, the sans could range from 80 m to 120 m to accommodate technical and environmental considerations. Stays (guy lines) will be provided for additional stability for poles on changes in direction or in very poor ground conditions.

Construction

1.2.10 The construction methods and proposed environmental management measures are briefly described below for the purposes of informing this appraisal. A Construction Environmental Management Plan (CEMP) would be developed by the appointed contractor at the pre-construction stage.

Site establishment and temporary construction compounds

1.2.11 It is anticipated that access to the grid connection for vehicles during construction would be without a requirement for new junctions or road widening via existing estate and forestry tracks, or by wind farm tracks. In certain circumstances use will be made of low ground pressure vehicles or All-Terrain Vehicles (ATVs) which do not require a track.

1.2.12 A temporary construction compound is proposed to be located in an area of existing hardstanding adjacent to the on-site wind farm compound substation. This will be required for the storage of material, equipment, site offices and staff welfare facilities. Clearly defined areas for the storage of oil would be identified as part of the site establishment process. Spill kits would be located and maintained at all oil storage and refuelling locations and on all site vehicles. An emergency response procedure would be provided as part of the proposed CEMP.

1.2.13 All waste would be stored securely and disposed of through a licensed waste carrier, in accordance with waste regulations and the Site Waste Management Plan.

OHL Construction

1.2.14 The following process would be followed for wood pole erection:

- pole positions would be microsited during the design phase to minimise positioning in deep peat, areas of forestry and other environmental constraints where possible. Angle poles must be in competent ground to support the line;
- access would be taken using low ground pressure tracked excavators and all terrain personnel vehicles. Stone roads are not required for the construction or maintenance of the wood poles.
- in areas of peat the wood pole will be installed by a wide track excavator by contractors with considerable experience of installing wood poles in the north of Scotland. Bog mats and temporary track mats may be used to cross soft ground where existing access tracks are not available and topography allows this to be undertaken safely;
- turf and topsoil would be removed together to retain the turf root system and placed to one side for later reinstatement;
- foundation excavations for a double pole trident, such as we require to use, would generally be 4 m long, 2 m wide and 2.5 m deep. In soft ground the side of the excavation would be shuttered to avoid collapse and minimise extent of excavations. There may be a requirement for additional stone to be imported for engineering backfill in the foundations. All material excavated for the foundations would be reinstated in the order it was removed, with turves replaced on top. There would be no surplus material to remove from site;
- topsoil, peat and subsoil would be stored in segregated stockpiles at least 1 m from the edge of the excavation;
- the pole would be lifted and lowered into position using a tracked excavator with hydraulic lifting arm;
- the hole would be backfilled with soils replaced in reverse order to the order of excavation. backfilling would be progressed in layers of approximately 300-400 mm deep, with stone hardcore added as required around foundation blocks to ensure adequate compaction and suitable geotechnical conditions are maintained between each layer;

- when replacing the topsoil/turf around the pole it would be left slightly proud of ground level (approximately 150/300 mm) to allow for the excavation to naturally compact further through time;
- multiple tracking of excavators would be avoided where possible by using them in one direction; i.e. in one end and out the other; and
- each pole would take no more than two days to install; most can be installed in one day. As such turves would not be left exposed for long periods of time.

Watercourse Crossing

1.2.15 Watercourse crossings to facilitate OHL construction would be kept to a reasonable minimum. Access would use existing tracks and watercourse crossings as far as possible. Bog mats would be used to cross minor watercourses without damage to bank integrity.

1.2.16 Where pole installation is required within 20 m of a watercourse, silt traps or other mitigation would be put in place (which would be outlined in the CEMP), with nearby watercourses checked during periods of high rainfall during construction activities. Ground excavation work would temporarily stop work during periods of high rainfall, where a risk to surface water quality is identified.

2 APPRAISAL OF LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

2.1 Introduction

2.1.1 The most effective way to avoid or reduce environmental effects of any grid connection is through its careful routeing and design. It is likely that most significant environmental effects will be effectively designed out by SSEN in its routing and design process, and all judgements set out below are therefore preliminary and precautionary. The appraisal is based on the following additional assumptions/limitations and unless otherwise stated, the assessment broadly adopts and follows, so far as applicable and proportionate, the methodology from the Environmental Impact Assessment Report (EIAR):

- No detailed on-site environmental surveys (including protected species, peat and hydrology and birds) have been undertaken to inform the appraisal, and these would be completed to inform the detailed routing and assessment of the grid connection for which Section 37 consent may be sought.
- The appraisal has drawn on information from other developments within the area, local knowledge as well as constraints information shown in Figures 2a and 2b, the findings of relevant assessments within the Lynemore Wind Farm EIA Report for the Proposed Development, and professional experience of likely significant effects of grid connection projects.
- Software has been used to provide some internal desk-based theoretical visibility mapping to help guide the LVIA.
- No zone of theoretical visibility (ZTV) or viewpoint visualisations are presented, generated and used to analyse and assess the potential visibility of the OHL on nearby cultural heritage assets at this stage, although these are absent from the study area and immediate surroundings as shown on Figure 2a.
- The OHL and any underground cable will be constructed in accordance with well-established good practice, in full compliance with regulatory requirements and in consultation with statutory consultees such as the Scottish Environment Protection Agency (SEPA), NatureScot (NS), Historic Environment Scotland (HES) and the Highland Council.

2.1.2 The Holford Rules[3], which seek to minimise landscape, visual and environmental impacts, provide the basis for the high-level assessment set out in this section. These rules, and their supplementary notes, provide a design framework for OHL routing in the UK and would be followed by SSEN Transmission as part of the consenting process for the Section 37 application for the OHL Landscape and Visual Amenity

Landscape and Visual Amenity

2.1.3 The Landscape and Visual Impact Assessment (LVIA) appraisal accords with the LVIA methodology in the EIA Report, Technical Appendix 5.1. The LVIA appraisal presents a proportionate assessment appropriate for this type of appraisal and

[3] The Holford Rules Guidelines for the Routeing of new high voltage overhead transmission lines with NGC 1992 and SHETL 2003 notes - https://www.dpea.scotland.gov.uk/LibraryDocument.aspx?id=3481

identifies the likely landscape, visual and related cumulative effects that could be significant.

Indicative grid connection route and study area

2.1.4 The indicative grid connection route and study area shown on Figure 1a extends across, and is wholly contained by an upland plateau of *Rolling Uplands – Inverness* Landscape Character Area (LCA) and is bounded to the south by the existing 132kV OHL which is routed through Strathdearn, Glen Kyllachy and Strathnairn to the southwest The eastern part of the study area extends to the B9154 / A9 and railway corridor near Loch Moy and in practical terms includes Strathdearn and the area of Tomatin to the south and west. In the north the study area avoids the proposed Lynemore Wind Farm, the A9 corridor and the steeply sloping ground and forest bounding the Strathairn valley to the northeast. In addition, the study area contains the existing and operational wind farms at Farr and Glen Kyllachy.

2.1.5 Within this area the shortest, straight-line route for the indicative grid connection is identified to accord with the Holford Rules. These rules also advise that the detailed design route should avoid summits and ridge lines as well as other environmental and technical constraints. However, the undulating plateau of the *Rolling Uplands – Inverness* LCA offers several opportunities for alternative route options.

2.1.6 The proposed single or double wood poles supporting the 132 kV OHL typically range between 11-15 m in height and up to 18 m in some circumstances and the intervening spans between poles range between 80 m and 120 m. Typically the detailed LVIA study area for this form of development could extend to approximately 2 km from the centreline of the grid connection. Some discrete sections of the grid connection are likely to be underground. These sections would have no landscape or visual effects during operation and construction phase is unlikely to result in significant landscape or visual effects due the limited geographical extent of construction works and their short duration.

The Holford Rules

2.1.7 The Holford Rules comprise well established design principles which aim to minimise the landscape and visual impact of overhead transmission tower lines, although their principles are generally applicable to overhead power lines too. Their consideration at this stage of the proposed development is relevant to the LVIA appraisal and it may be noted that the indicative grid connection route accords with the Holford Rules as follows:

- Holford Rules 1 and 2: The indicative grid connection route and study area avoids areas of “highest amenity” and “smaller areas of high amenity value”. In this respect, there are no National Parks, National Scenic Areas, Wild Land Areas, Gardens and Designed Landscapes or locally designated Special Landscape Areas within the indicative grid connection route and study area.
- Holford Rules 3, 4 and 5: These relate to detailed design and assessment as part of the Section 37 consent and include aspects of route option and design such as the location of angle points relative to the topography and landscape context.
  - Rules 3 and 4: refer to more detailed design considerations, although Rule 3 promotes a straight-line route as proposed by the indicative grid connection route at this stage *‘Other things being equal, choose the most direct line’*.
  - Rule 5: refers to design options that may limit the apparent height of towers which are not applicable to this grid connection. However, the indicative grid

connection route would be seen in the context of existing wind farm development at Farr and Glen Kyllachy (between 100 and 110m to blade tip height) which would reduce the apparent height of the wood poles as they are of a significantly smaller scale in comparison.

- Holford Rules 6 and 7 are not applicable for the following reasons:
  - Holford Rule 6 applies to flat landscapes and the need to separate high voltage lines from smaller lines to avoid the creation of 'wirescape'. Although wind farms are not referenced, this appraisal has considered the Scottish Natural Heritage, *Siting and Design of Windfarms in the Landscape, Version 3a*, August 2017 which seeks to avoid the creation of a 'cluttered' landscape with the aim of maintaining a simple landscape context for wind farm development. This aspect has been considered as part of the appraisal and concludes that adverse effects in this regard would be unlikely.
  - Holford Rule 7 applies to urban, industrial and residential areas which are not applicable in this case.

Baseline summary

2.1.8 In landscape terms the baseline of existing landscape and visual receptors within the study area (Figure 1a) are illustrated in the EIA Figures 5.9 to 5.11. There are relatively few landscape and visual receptors within this area as follows:

- Landscape Character Area Receptors:
  - *Rolling Uplands – Inverness* LCA, which is bounded to the west by the
  - There are no landscape designations within the study area.
- Visual Receptors:
  - Settlement: There are no settlements or residential properties within the study area and the closest residences are to the north of the proposed Lynemore Wind Farm and within Glen Kyllachy and Strathdearn to the south.
  - Transport routes: There are no 'A' or 'B' class roads, or other minor roads within the study area. The study area is surrounded by the A9, B9154, B851, minor roads and railway lines although these are all located within the glens and straths beyond the study area.
  - Recreational routes: There are no national level recreational routes (including Scotland's Great Trails, Sustrans, Core Paths, and Heritage paths) or other promoted recreational routes within the study area. The closest includes the General Wade's Military Road heritage path to the north of the proposed Lynemore Wind Farm and Core Path IN27.02 to the south of Tomatin. A non-promoted hill track is however located within the eastern part of the study area and represents the only visual receptor within this area, likely to view the indicative grid connection.
  - Recreational and Tourist Destinations: There are no Gardens and Designed Landscapes, well walked hill summits, or other promoted recreational or tourist destinations within the study area.

2.1.9 In summary there is one landscape character area receptor and one hill track that may be used for informal recreational access within the study area.

Rolling Uplands – Inverness LCA

2.1.10 The landscape character and key characteristics of the *Rolling Uplands – Inverness* LCA is described within the NatureScot, *Landscape Character Assessment* (2019) and the EIA Report, Volume 1, pages 5-21 to 5-22. This is a large-scale upland plateau of open, rolling or undulating moorland characterised by existing wind farm development at Farr and Glen Kyllachy wind farms. This undesignated landscape is judged to be of medium value and susceptibility in the EIA Report, resulting in an overall sensitivity to wind farm development of Medium. This assessment has been adopted for this appraisal although it is likely that the LCA is of less susceptibility to the smaller scale grid connection and associated wood poles.

2.1.11 Construction of the grid connection would occur progressively along the selected route, affecting a small scale and geographical area of the *Rolling Uplands – Inverness* LCA. The magnitude of change is likely to be no more than Low and result in a Minor level of landscape effect of short duration (not significant).

2.1.12 During operation the completed, indicative grid connection would appear as a small line of wood poles within a large-scale landscape, with intermittent topographical screening, indicating very few areas where the whole grid connection would be visible. Although the grid connection would introduce vertical features to the moorland it will be small scale, with wind farm development and associated infrastructure is an established characteristic of this landscape. At most a medium to low magnitude of change would result in a non-significant, Moderate – Minor level of effect, of long-term / permanent duration.

Cumulative effects

2.1.13 The indicative grid connection is unlikely to add further additional or combined cumulative effects to those already identified in respect of the Proposed Development. Rather these cumulative effects would overlap with the landscape character effects of the Proposed Development, identified in the EIA Report, Volume 1, Table 5.20.

2.1.14 Considering other existing, consented and application wind farms within the study area, the cumulative effects are likely to be similar. Wireline analysis of the existing Farr and Glen Kyllachy wind farms, and the Lynemore and Kyllachy wind farm applications indicates that the small scale of the indicative grid connection in comparison to the large scale landscape and the existing and proposed turbines would be absorbed and overlapped by these larger developments, resulting in a non-significant, Moderate – Minor level of effect, of long-term / permanent duration.

2.1.15 To conclude, the *Rolling Uplands – Inverness* LCA is unlikely to be significantly affected on a solo basis or cumulatively by the indicative grid connection during construction or operation.

Visual Assessment of indicative route option

2.1.16 An existing hill track within the eastern part of the study area may be informally accessed for recreational purposes (walking or stalking). It is routed between Dalmagarry in Strathdearn, approximately 3 km to the north of Tomatin, west, along the Allt a' Chuil gulley and onto the moorland plateau near Carn Moraig (558 AOD). The hill track then continues south towards Beinn Bhreac (601 m AOD) before descending further south into Strathdearn near Auchintoul in the River Findhorn valley. Much of this route is unlikely to be visible with the closest point with theoretical visibility of the indicative grid connection likely to be near Carn Moraig over 1km away. The wood poles would be visible as small features; mostly viewed against the

background landscape and below the horizon in line with the Holford Rules. Even allowing for high sensitivity receptors (walkers), a Low or Very Low magnitude would result in a non-significant Moderate or Moderate – Minor level of effect (short duration during construction and long duration / permanent during operation). The effects would not be significant.

2.1.17 A connecting branch of this hill track extends west between Carn Moraig and Carn na h-Easgainn (619 m AOD) on the southern edge of the proposed Lynemore Wind Farm. The hill track also extends south to connect into the existing Farr Wind Farm. The route of this part of the hill track 'zig-zags' along the indicative grid connection route and would cross underneath the indicative OHL three times whilst also viewing along the route of the wood poles for approximately 1 – 2 km. Assuming a high sensitivity, the extent of affected hill track, viewing the wood poles at close range (within 100 m) indicates a higher magnitude of change and potentially a **significant** visual effect. Moderating factors would relate to the presence of existing wind farm infrastructure and the likely infrequent use of the hill track by walkers. Detailed route design would also for mitigation through the increasing of separation distance.

Cumulative effects

2.1.18 As noted previously, the indicative grid connection route is unlikely to add further additional or combined cumulative effects to those already identified by the proposed Lynemore Wind Farm. Rather these cumulative effects would overlap with the significant visual effects of the proposed Lynemore Wind Farm.

2.1.19 Considering other existing and application wind farms within the study area, the additional and combined, cumulative visual effects, identified for part of the hill track overlapping with the indicative grid connection route, are also likely to overlap with, and be absorbed by the visual effects of the existing and proposed wind farm development. A Moderate or greater and **significant** cumulative effect is however likely as the wood poles would be viewed at close range, occurring repeated along the hill track. reinforcing their presence in this landscape. The duration of these effects would be short-term / temporary during construction and long-term / permanent during operation.

2.1.20 To conclude, there is the potential for significant, and negative, solo and cumulative visual effects experienced by walkers from approximately 1.5 km of hill track, corresponding with the indicative grid connection route, during construction and operation.

Key constraints and Likely significant effects

2.1.21 The LVIA appraisal has identified an existing hill track that corresponds with the indicative grid connection route as a possible key constraint. There is the potential for significant, solo and cumulative visual effects that would be experienced by walkers on approximately 1.5 km of this hill track, during construction and operation.

2.1.22 Mitigating factors relate to the presence of existing wind farm infrastructure and the likely infrequent use of the hill track by walkers.

2.1.23 There would be no significant effects on the landscape character of the *Rolling Uplands – Inverness* LCA and the LVIA appraisal has identified no other landscape or visual receptors within the indicative study area.

Cultural Heritage

2.1.24 The grid connection has the potential to affect cultural heritage assets in the following ways:

- Direct physical impacts during construction, whereby the underground cable or OHL poles and infrastructure intersect with upstanding or buried archaeological remains; and
- Direct setting effects during operation of the OHL through theoretical intervisibility.

2.1.25 Figure 2b shows the indicative route of the grid connection passing through the Site boundary. As shown in Figure 9.1 the grid connection would not have any interaction with any of the known heritage assets (non-designated assets) which have been identified within the Site.

2.1.26 There are no designated heritage assets or known non-designated heritage assets located within the wider study area for the indicative route. No direct physical impacts upon known heritage assets as a result of the grid connection are anticipated.

2.1.27 In line with the assessment of the Proposed Development in Chapter 9, there is potential that ground disturbing works associated with the underground cable and OHL infrastructure could disturb any previously unrecorded buried archaeological remains along the length of the grid connection route, however, given the study area's upland character and topography, it is considered that there is a very limited potential that the grid connection would be likely to result in a high magnitude impact upon archaeological remains of medium or more importance which could result in potential significant effects.

2.1.28 In line with good practice, a professionally qualified Archaeological Contractor would be appointed to act as an Archaeological Clerk of Works (ACoW) for the duration of the construction phase. The role of the ACoW would be to provide advice to the appointed Construction Contractor regarding micrositing of development components to ensure preservation of assets in-situ where there is a possibility of intersecting with identified heritage assets, and to undertake archaeological monitoring of topsoil stripping operation in areas designated and approved by The Highland Council. The activities of the ACoW would be carried out according to the scope of work and terms specified under a Written Scheme of Investigation (WSI) approved by The Highland Council. In addition, written guidelines will be issued or used by all construction contractors, outlining the need to avoid causing unnecessary damage to known heritage assets. The guidelines will set out arrangements for calling upon retained professional support in the event that buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts, etc.) are discovered in areas not subject to archaeological monitoring.

2.1.29 The theoretical intervisibility of the OHL with nearby heritage assets has been analysed for this appraisal; there are no designated or known non-designated assets within close proximity of the indicative route whose settings are likely to be changed as a result of the operational OHL (particularly through a lack of screening or the assets having a prominent hilltop position) thereby affecting their cultural significance.

2.1.30 Any significant effects on the setting of cultural heritage assets will be reduced as far as possible through the detailed routeing and design process. The detailed assessment will be informed by extensive field survey to determine those assets to be assessed in detail, photography and visualisations and consultation with HES and The Highland Council Historic Environment Team.

2.1.31 In terms of cumulative effects in combination with the Proposed Development, any direct physical impacts as a result of the grid connection upon previously unrecorded buried archaeological remains would be discrete and mitigated separately, with no potential for in-combination effects. No setting effects upon cultural heritage as a result of the grid connection are anticipated and as such there is no potential for cumulative setting effects.

2.1.32 At this preliminary stage, it is not considered that significant effects on Cultural Heritage are likely.

Ecology and Ornithology

2.1.33 No baseline ecology or ornithology surveys of the indicative grid connection have been undertaken to date although surveys have historically been undertaken for the adjacent wind farms A review of aerial imagery indicates the habitats present are contiguous, and likely to be comparable, with the habitats within the areas surveyed for the Proposed Development and the adjacent wind farms. Therefore, the community of birds and protected faunal species present can also reasonably be expected to be very similar.

2.1.34 As shown in Figure 2b, the indicative OHL route crosses headwater tributaries of the Uisge Dubh, which drains into the River Farnack. In the zone of influence of the OHL, these are likely to be similar in character to the peaty headwaters within the area of the Proposed Development, and so of a similar suitability for fish as detailed in Chapter 6: Ecology and Biodiversity and Technical Appendix 6.4.

2.1.35 It is considered that due to the nature of the grid connection development, and its limited footprint, impacts to important ecological and ornithological features will be localised.

2.1.36 During construction, potential impacts may include, permanent loss of terrestrial habitat, indirect effects potentially arising from impacts such as construction dust, soil and water pollution, injury/mortality of protected species, permanent effects on protected species relating to habitat loss/severance and temporary impacts associated with construction disturbance (e.g. via noise, vibration and lighting). The construction of the indicative route will not result in any forestry loss.

2.1.37 It is expected that a limited extent of the development is likely to comprise underground cable (UGC). With full implementation of appropriate mitigation measures and restoration following laying of the UGC, habitats are likely to recover to baseline conditions within a short time period following construction and reinstatement works. As such it is assumed there would be no measurable permanent habitat loss associated with the UGC element of the proposed grid connection and that any impacts associated with this element would be short-term temporary disturbance during construction, to be mitigated via standard good practice.

2.1.38 Fully considering impacts relating to habitat loss requires a ‘frozen’ design detailing the precise location of areas of excavation, overlaid with baseline habitats data, in order to quantify likely direct and indirect loss of habitat to the footprint of a proposed development. It is however expected that the Proposed Grid Connection Development will include appropriate habitat restoration proposals to accord with guidance and NPF4.

2.1.39 Given the nature of the development and the limited footprint, direct significant adverse effects for sensitive ecological features (such as habitat loss and disturbance) would not be anticipated to occur during the operational period for the Proposed Grid Connection. The potential adverse operational effects are likely to be

related to the risk of collision with the cables of the OHL for birds and associated impacts to statutory sites for which they may be qualifying features.

2.1.40 It is considered that 'embedded' mitigation will be implemented for any works for the Proposed Grid Connection, including standard good practice, such as implementing a Construction Environmental Management Plan (CEMP), presence of an Ecological/Environmental Clerk of Works (ECoW), Species Protection Plans (SPPs) and use of good practice construction techniques to minimise environmental impacts. Good practice mitigation also includes measures to prevent disturbance impacts relating to noise and lighting, and pollution of the water environment. Such embedded mitigation and standard good practice, to be secured by planning condition, are considered sufficient under most circumstances to prevent impacts to protected mammal species during the construction and operation phases, and to prevent further loss or damage to habitats during maintenance activities for the operational phase.

2.1.41 Protected ornithological and faunal species are mobile and presence and density may change with time. As such assessment of the likelihood of significant effects for protected species is dependent on an understanding of whether these species are present or likely to be present, and if so how regularly they are likely to use the study area,, as well as understanding what habitat resources are present and may be a) important to support local populations and b) potentially impacted and/or altered by the proposed development.

2.1.42 Any required ecological and ornithological surveys would be undertaken along the length of the route to identify any protected species and/or habitats that could be affected, as well as important bird species which are considered to fly at 'risk-height' and which could be susceptible to collision mortality. This would be used to inform the design of the proposed grid connection and inform any decisions to adjust the routeing of the infrastructure to avoid any identified constraints, which in turn would help to minimise any effects.

2.1.43 In the current absence of quantitative baseline ornithological and ecological data, and of the finalised design for the proposed grid connection, effects on ecology and ornithology cannot be confirmed at this stage. However, as there is flexibility during the route selection process (routeing and detailed design) to address any key constraints and any required species related mitigation (such as the implementation of bird diverters to minimise collision risks from birds), and given the nature of the development, at this preliminary stage it is not considered that significant effects on ecology or ornithology are likely.

Geology, Hydrology, Hydrogeology and Peat

2.1.44 The construction of the grid connection could have several potential effects, including:

- disruption to the hydrogeological and groundwater system, including groundwater dependent terrestrial ecosystems (GWDTEs);
- increased sediment loading to streams;
- the risk of ground and surface water contamination, including of private water supplies;
- increased flood risk;
- potential effects on ground stability; and
- potential effects on disturbance of deep peat

2.1.45 The indicative route of the grid connection crosses (~3.15 km length) an area of 'Class 1 peatland' as shown in the NatureScot (formerly SNH) Carbon and Peatland Mapping (2016) "Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value" as shown in Figure

2b. This will form a key design and routeing consideration to avoid the loss and disturbance of peatlands of high conservation value, an approach that has been successfully employed when designing the Proposed Development wind turbines and infrastructure within a similar area. Peat surveys will also be undertaken across the route, and it is likely that this will target those areas where there is confirmed peatland habitat i.e. blanket bog. Peat, deeper peat unmodified peatland habitat and areas of higher peat landslide hazard risk will be avoided through design to reduce potential effects. All excavated peat will be appropriately reused to backfill tower excavations and disturbance of peat kept to a minimum. Considerations for design for peat are discussed earlier in the construction Section.

2.1.46 The indicative route falls within three main hydrological catchments: River Fantack in the north, River Farnack in the central section and River Findhorn in the southern section. The indicative route crosses four watercourses: the Caochan na Callich and two it's smaller tributary streams, which are part of the Uisge Dubh and River Farnach catchment; and the Caochan Dubh, tributary of the Allt na Mharcaidh, part of the River Findhorn catchment. None of these watercourses are designated. Nevertheless, it will be good practice to avoid watercourses and minimise crossings as far as possible through the careful location of poles, working areas and access tracks to minimise potential surface water pollution and sedimentation.

2.1.47 The indicative route does not pass in close proximity to any residential properties, which could have private water supplies (PWS) and the footprint of the proposed grid connection is on a scale that no impacts on PWSs are anticipated.

2.1.48 The indicative route does not encroach on any mapped SEPA mapped river flood zones (SEPA Flood Risk Areas at 0.5% chance of flooding or above from rivers with catchments >10 km2).

2.1.49 The indicative route does not encroach on a surface water Drinking Water Protection Area (DWPA), however the River Findhorn has a surface water DWPA approximately 4.5 km downstream for an abstraction near Tomatin (approx. NGR NH 80616 28856).

2.1.50 The indicative route does not encroach any designated sites or Geological Conservation Review (GCR) areas.

2.1.51 In addition to mitigation through design, the grid connection will be constructed in accordance with established good practice to avoid pollution, flood risk and ground instability in full compliance with regulatory requirements and in consultation with SEPA. This will include measures such as those listed in Technical Appendix 8.1 of EIA Report.

2.1.52 At this preliminary stage, it is not considered that significant effects on geology, hydrology, hydrogeology and peat are likely.

Traffic and Transport

2.1.53 The project area is serviced by a number of major and minor roads, which provide access and transport routes to settlements, individual residences and the wider strategic road network. Existing access points from the public road network will be utilised during the construction of the grid connection OHL, before utilising on site tracks.

2.1.54 The construction of the OHL will require temporary access to each wood pole location. This will involve the use of a tracked excavator and low ground pressure vehicles to deliver, assemble and erect each wood pole structure at each pole location. Due to the nature, design and rate of construction of the OHL, it is anticipated that vehicle movements at any one pole location would be limited to three or four visits per day over the course of the construction period which will not lead to

any noticeable increase in traffic volumes on the surrounding road network, albeit there will be a slight change in traffic composition as more HGVs will be required to deliver materials for any short underground cable sections required. Traffic movements associated with the grid connection may interact with the traffic generated by the construction of the Development on the A9(T). The environmental assessment of the Proposed Development construction, which represents a "worst-case" scenario, concluded that the transport-related impacts will be Minor/Negligible and not significant. The nominal additional vehicle trips associated with the construction of the OHL would not be substantial enough to change the conclusions of the Lynemore Wind Farm EIA Report assessment. In any event, it is likely that a Construction Traffic Management Plan (CTMP) will be implemented for the grid connection to manage traffic movements on the surrounding public road network, and this would be coordinated with the construction of the Proposed Development should construction works overlap. Whilst it is anticipated that small amounts of forestry will be felled during construction of the Proposed Development, it is not considered likely that this will generate significant levels of forestry HGV traffic and is unlikely to have any interaction with construction activities for the OHL.

Noise

2.1.55 The indicative route passes through a remote environment that is rural in nature and located approximately 2 km or more from the nearest noise-sensitive receptors in the area. The existing baseline noise environment along the route is likely to be characterised mainly by 'natural' sources such as wind and disturbed vegetation, with some contribution from anthropogenic sound such as distant road traffic from the A9 and agricultural or forestry activity.

2.1.56 Grid connection works are linear in geographical extent and of short duration at any one location. Due to the short term and localised nature of the construction processes for the proposed grid connection, any temporary noise created is likely to be minimal and concentrated in small areas at any one time as the contractors progress along the course of the proposed route. Given the limited traffic expected to be generated on local roads, it is not considered that construction traffic noise will represent a noticeable increase in noise.

2.1.57 Good practice measures for controlling/minimising construction noise may include the following, as appropriate:

- restricted hours of construction to avoid sensitive periods;
- the use of equipment with appropriate noise control measures (e.g. silencers, mufflers and acoustic hoods);
- the positioning of temporary site compounds as far as practicably possible from neighbouring residential properties; and
- additional good practice measures as set out in BS5228:2009.

2.1.58 Operating OHLs can generate audible noise, the level of which depends upon the operating voltage and the choice of conductor system. Noise from OHLs is produced by the phenomenon of 'corona discharge', this being a very limited breakdown of the air at points around the surface of the conductor. With the type of construction and operating voltage proposed, even during certain weather conditions, audible noise would likely only be perceptible to an observer standing in very close proximity to the line. Given separation distances from the indicative route and the nearest noise-sensitive receptors, the associated operational noise levels will be negligible.

2.1.59 Therefore, it is unlikely that significant operational noise effects would occur.

Forestry

2.1.60 The indicative route does not pass through any areas of coniferous and broadleaf woodland, or Ancient Woodland, as shown in Figure 2b, and no impact on Forestry is anticipated.

Socio-economics, Tourism, Recreation and Land Use

2.1.61 The indicative 132kv OHL Grid Connection Route would traverse an area of open moorland and there are no formal tourism or recreation receptors along the route or within a 250m buffer that could be directly impacted. There is an existing track, which may provide recreational amenity, connecting the Glen Kyllachy Wind Farm with the Lynemore Wind Farm site that the indicative grid connection route would cross and temporary diversions or closures may be required during construction of the OHL for health and safety reasons. The track would remain open during operation of the OHL.

2.1.62 Due to the short term and localised nature of the construction of the grid connection, any temporary disturbance created during construction is likely to be minimal and concentrated in small areas at any one time as the contractors progress along the course of the route. Once the OHL is in place, there will be no further works required unless maintenance works are needed and use of the land can continue as normal, with the exception of the relatively small area of landtake along the route.

2.1.63 In relation to recreation and tourism, no receptors are noted within the local area. Furthermore, it is recognised that there are already existing wind farms and OHLs within the area which are not considered to have adversely affected tourism within the area. On this basis, potential effects on tourism are not considered likely to be significant.

2.1.64 As wood poles have a very small footprint, existing land uses can continue as per current activity.

2.1.65 As the construction processes require only a small labour force employed by SSEN Transmission, and is short in duration, this means it is unlikely that the employment created will materially affect local employment levels, although there will be some local spending by construction workers leading to some positive direct economic benefits.

2.2 Summary

2.2.1 This Grid Connection Appraisal has been prepared to provide an overview of the connection, the indicative route and the likely environmental effects, , with a focus on identifying any effects that could be significant. As the exact grid connection route is not yet known, the environmental effects have been assessed in a proportionate manner, based on what can reasonably be predicted in the circumstances and at this stage, and data limitations are recognised. However, on the basis of the information available, including of SSEN Transmission's approach to the routeing, good practice and mitigation of grid connections, at this stage, it is not considered that the construction and operation of a proposed grid connection would be likely to result in significant environmental effects.

ANNEX A: SSE TRANSMISSION: ROUTEING OVERHEAD LINES

Scottish & Southern Electricity Networks

TRANSMISSION

Routeing Overhead Lines

SSEN Transmission, as a licensed electricity Transmission Operator, has a legal duty to develop and maintain a technically feasible and economically viable transmission system in our license area in the north of Scotland. We must fulfil this duty by also having regard, and seeking to protect, environmental and community interests when developing and operating our infrastructure.

Our approach to routeing overhead lines is to seek to minimise the impacts of new infrastructure on both the environment (including designated areas, wildlife, habitats, cultural heritage and biodiversity) and on communities who live, work and spend time in these areas. We seek to find the best balance between these whilst also ensuring the proposal is technically feasible and economically viable.

All new overhead lines require consent from Scottish Ministers under the Electricity Act 1989 in order to construct them. Applications for consent are accompanied by an appropriate level of environmental assessment which identifies the potential impacts and details the route selection considerations and decisions to support the chosen alignment. We follow internal guidance, based around the Holford Rules, to enable us to consistently and rigorously select routes and alignments. The Optioneering process has a number of key stages, with each increasing in detail. As well as technical and environmental reviews, consultation is also undertaken with the public, landowners, consenting authorities and statutory and other consultees. Feedback from this consultation helps to inform which option achieves the best balance across environmental (including people), technical and cost considerations. The selected option is then taken forward to the next stage.

Our Optioneering Process

Stage.0: Routeing Strategy

The project team start the process of routeing by defining and agreeing the overall approach to be taken for the individual project, including specific consultation requirements. This allows a tailored approach to be taken based on the scope and scale of the proposed development (for example, smaller/shorter overhead lines may not require to undertake corridor selection and can proceed straight to route selection).

Stage.1: Corridor Selection

This stage aims to identify possible corridors (up to several kilometres wide) capable of providing a continuous corridor between the defined end points. Corridors may vary in width along their length and they may overlap or diverge. Corridor options are identified and appraised by our engineering and environment teams against a consistent set of criteria set out in our guidance (often using external specialist consultants). Consultation with the public, statutory and other consultees is undertaken on the options to help inform a decision on which corridor is to be taken forward to Stage 2. The chosen corridor may include a single option or may be a hybrid of one or more options to help avoid environmental and community constraints.

Stage.2: Route Selection

The purpose of this stage is to identify possible route options within the chosen corridor. Route options may vary in width along their length, typically from 500 metres to 1 kilometre, depending on the scale of the project, the nature and extent of constraints, and the character of the area through which they pass. Route options are identified and appraised by our engineering and environment teams in the same way that corridor options are, using set criteria. As with Stage 2, consultation with the public, statutory and other consultees is undertaken on the options to help inform a decision on which route to be taken forward to Stage 3. In addition, we may start to have conversations with landowners along the routes at this stage.

Stage.3: Alignment Selection

This is the final stage in the routeing process and aims to identify an alignment which can be taken forward into the formal consenting process. Alignments can be influenced by more localised constraints, such as topography, location of properties and other infrastructure, farming and other land use activities, ground conditions and local natural and cultural heritage. Access requirements to construct and operate the infrastructure will also be designed and reviewed at this stage, which considers the nature and extent of temporary and permanent access tracks and possible public road improvements. Alignments are identified and appraised by our engineering and environment teams to identify specific constraints that may influence the decision-making process. In addition to public and consultee consultation, discussions with landowners will also progress to discuss alignment options and agree tower positions and access requirements. The chosen alignment will be taken forward to detailed design and be subject to formal environmental assessment prior to an application for consent.

Consent Application

How we assess options

During each Stage, we undertake a comparative appraisal that seeks to distinguish between options, so that a chosen option can be identified. The appraisal considers which option achieves the best balance across environmental (including people), technical and cost considerations. Depending on the project, it may not always be necessary or possible to identify multiple alignment options however it will be clearly stated how the decision has been reached on balance, with reference to the different considerations.

When undertaking comparative appraisals, Environmental (including people), Engineering and Cost considerations are assigned a Red/Amber/Green (RAG) rating. The RAG ratings for each topic are used to examine differences between the options being considered. The appraisal compares the wider implications of each option on those topics (both individually and combined) and reaches a reasoned conclusion, on balance across all topics.

Colour	Comparative Appraisal
Green	Low potential for the option to be constrained
Amber	Intermediate potential for the option to be constrained
Red	High potential for the option to be constrained

Who we consult with

Here is an overview of the external stakeholders we consult with during each stage of our Optioneering process.

Statutory Stakeholders (examples)

- Energy and Consents Unit (ECU)–Scottish Government
- Local Planning Authorities
- Scottish Environment Protection Agency
- NatureScot
- Historic Environment Scotland
- Scottish Forestry

Other Stakeholders (examples)

- Local communities
- Landowners
- Utility companies
- Transport Scotland
- Network Rail
- General public
- Non-governmental organisations
- Local businesses
- Elected officials

FIGURE 1A INDICATIVE GRID CONNECTION ROUTE LOCATION

FIGURE 2A APPRAISAL CONSTRAINTS – ENVIRONMENTAL DESIGNATIONS

FIGURE 2B APPRAISAL CONSTRAINTS – ONSITE ENVIRONMENTAL CONSTRAINTS