



Technical Appendix 6.7: Grid Connection and Abnormal Indivisible Load Route Appraisal

Dalfad Wind Farm

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Basis of Report

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1.0 Introduction

SLR Consulting Ltd (SLR) was commissioned by the Applicant to carry out an appraisal of the likely significant effects of an assumed grid connection and assumed point of connection (PoC) in relation to the proposed Dalfad Wind Farm (the 'Proposed Development'), located within East Ayrshire, Scotland.

Similarly, an appraisal is also required in relation to the proposed Abnormal Indivisible Load (AIL) route associated with the Proposed Development.

Consent/planning permission is not sought for the grid connection or the AIL as part of the Proposed Development's application, but is considered for completeness, as both of these elements would affect the receiving environment as a consequence of the Proposed Development.

2.0 Proposed Grid Connection Corridor

2.1 Grid Routing Principles

Routeing of the grid connection for the Proposed Development has considered the balance of technical feasibility and economic viability with the least disturbance to the environment and to people as far as practicable.

The grid connection route option has been guided by the principles established by the Holford Rules¹ along with Scottish Power Energy Networks (SPEN) routeing guidance, other relevant guidance, and professional judgement relating to the local environmental conditions, relevant designations, and their sensitivities.

Ecological sensitivities and potential constraints considered during grid route corridor identification included the following:

- the presence and locations of statutory designated sites (e.g. Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs));
- the presence and locations of non-statutory designated sites (e.g. Local Nature Conservation Sites (LNCS) or Local Nature Reserves (LNRs));
- the presence and locations of ancient woodland as listed on the Ancient Woodland Inventory (AWI)², in particular semi-natural stands;

¹ A set of guidelines on overhead line routeing, first formulated in 1959 and subsequently adopted by the National Grid as a basis of the company's approach to overhead line routeing.

² Scottish Government (2026). Ancient Woodland Inventory. Available at: <https://map.environment.gov.scot/sewebmap/?layers=ancientWoodlandInventoryScotland> (Accessed: August 2026).



- the location of Class 1³ and Class 2⁴ peatlands as per the Carbon and Peatland Map 2016⁵;
- areas of sensitive habitat (where this information is publicly available);
- areas of deep peat (where this information is publicly available); and
- the location of natural watercourses and waterbodies.

On that basis, an indicative route corridor for the grid connection has been identified; see **Figure 2.13** and further related details in **Chapter 2: Project Description** of the Environmental Impact Assessment (EIA) Report.

2.2 Overview of Grid Route Corridor Option

It has been assumed that the grid connection for the Proposed Development will likely connect the Proposed Development's substation to a PoC at the consented Glenmuckloch substation, located approximately 8 km to the south-east of the Proposed Development. It is further assumed that the grid connection will be via an overhead line (OHL). An OHL presents a worst-case scenario over the operational life of the Proposed Development and associated grid connection. The technical parameters of the assumed OHL grid connection, e.g., details on structure type and height, span lengths, etc are provided in **Chapter 2**.

The preliminary OHL grid connection corridor identified, for the purposes of this appraisal, is presented in **Figure 2.13**. It varies in width, for instance it is wider in areas where there may be technical difficulties (such as traversing former opencast mine areas) and to allow flexibility in these locations, however it is notably narrower in other sections where there are high/moderate sensitivity constraints on either side of the corridor (such as designated sites). The narrower sections remain wider than the 60 m working corridor SPEN generally requires for constructing an OHL.

The final OHL alignment within this corridor would be confirmed through future detailed design in consultation with SPEN and relevant stakeholders and would be subject to a separate future consenting process.

2.3 Scope of Appraisal

2.3.1 Effects Considered

This appraisal generally follows the methodologies and best practice expressed in **Chapter 6: Ecology** of the EIA Report. The relevant 'study area' is the OHL corridor as presented in **Figure 2.13**.

This appraisal focuses on the potential direct and indirect effects of the OHL on Important Ecological Features (IEFs) during its construction period, as this is the phase where the

³ Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value. Indicative vegetation – Peatland.

⁴ Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential. Indicative vegetation – Peatland or areas with high potential to be restored to peatland.

⁵ SNH. (2016) Carbon and Peatland 2016 map. Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map>



potential for significant effects is most likely, including in-combination with the Proposed Development.

During operation, maintenance checks of the OHL will only be occasional as and when required with sporadic vehicular or on foot access required. Any associated maintenance works are typically of small scale and short duration and overall are unlikely to result in any operational effects on any species or habitats recorded at or around the OHL. Consequently, operation of the OHL is not considered further with respect to ecology.

Upon decommissioning, the infrastructure would be made safe and removed, following best practice and considering any relevant decommissioning species/habitat mitigation or protection plans in place at that time. It is assumed in this appraisal that all decommissioning effects would be considerably less and of shorter duration than construction effects. Consequently, decommissioning of the OHL is not considered further with respect to ecology.

2.3.2 Assumptions

The following assumptions have been made when undertaking the appraisal:

- It is assumed the OHL would comprise of Trident 132 kV H-Poles typically 13 m in height (maximum 18 m and minimum 11 m) with span lengths typically of 90 m (maximum 110 m and minimum 70 m). Trident poles are double-wood-pole structures composed of two parallel wooden poles configured into an 'H' shape. The supporting poles are generally in the order of 0.23 m to 0.35 m in diameter.
- The associated working corridor for the OHL construction phase would be a maximum of 60 m in width and therefore there is significant flexibility within the much wider OHL route corridor to microsite and avoid ecological sensitivities and constraints.
- Any construction compounds and any temporary tracks/laydown/hardstanding areas will be temporary infrastructure. Any disturbance or earthworks around permanent infrastructure (i.e. the Trident 132 kV H-Poles) during construction will be temporary and these areas (along with the areas of temporary infrastructure) reinstated or restored before the construction phase ends.
- It is assumed for the purpose of appraisal that if delivery of the grid connection route is by SPEN it will be in its capacity as an electricity licence holder and it will be subject to its statutory environmental duties under the Electricity Act 1989. Schedule 9 of the Electricity Act includes a duty to have regard to the desirability of preserving natural beauty, conserving flora/fauna and features of special interest, and protecting cultural heritage, and to do what they reasonably can to mitigate adverse effects arising from their proposals. These duties apply to the formulation and execution of works such as the installation of electric lines (including underground cables) and associated infrastructure and are reflected in industry practice through formal Schedule 9 compliance arrangements and embedded mitigation during design and construction. Accordingly, it is reasonable to assume that SPEN will apply recognised best practice construction techniques and incorporate environmental mitigation as embedded mitigation within the delivery of the grid connection works, consistent with their published approach.



- If the grid connection is provided by a contractor appointed by the Applicant, it is assumed that the same best practice measures exercised by SPEN in discharging its Schedule 9 duties would be applied in the construction of the grid connection.
- It is further assumed that works would be undertaken in cognisance of embedded mitigation and in line with good practice pre-construction and construction phase mitigation, as per **Section 2.5**.

2.3.3 Limitations, Difficulties and Uncertainties

The primary limitation is that the OHL corridor has been subject to desk based study only, as set out below, and no ecological field based surveys were undertaken specifically for the likely grid connection route. However, the suite of desk based data sources along with knowledge of the local area gained from surveys for the Proposed Development still allow a baseline characterisation to be undertaken for the purposes of the appraisal.

General limitations exist regarding the knowledge base on how some species, and the populations to which they belong, may react to impacts. A precautionary approach is taken in these circumstances, and as such it is considered that these limitations do not affect the robustness of this appraisal.

2.4 Baseline Conditions

The OHL corridor and likely grid connection route was subject to desk based study only. No ecological surveys were undertaken specifically for the OHL corridor and likely grid connection route.

2.4.1 Data Sources

For the OHL corridor and likely grid connection route, and a 500 m buffer thereof, the desk based research comprised a review of the following data sources:

- NatureScot Sitelink⁶ to confirm the location and qualifying features of designated sites;
- LNCS database⁷;
- Ancient Woodland Inventory (AWI) Scotland² for the location of ancient woodland;
- Scotland's Environment Map for the Carbon and Peatland Map 2016⁵;
- The Habitat Map of Scotland (HabMoS)⁸;
- National Biodiversity Network (NBN) Atlas Scotland⁹ for ecological records the last 15 years (i.e. since 2011);

⁶ NatureScot (2026). Sitelink. Available at: <https://sitelink.nature.scot/home> (Accessed: August 2026).

⁷ Scottish Government (2026). Local Nature Conservation Sites – Scotland. Available at: <https://www.data.gov.uk/dataset/c3460656-74ab-435a-8f77-9a528e24beb1/local-nature-conservation-sites-scotland> (Accessed: August 2026).

⁸ Scottish Government (2026). Habitat map of Scotland. Available at: <https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/> (Accessed: August 2026).

⁹ NBN Atlas Scotland (2026). Available at: <https://scotland.nbnatlas.org/> (Accessed: August 2026).



- Saving Scotland's Red Squirrels (SSRS)¹⁰ for local species records;
- Deer Distribution Survey (2023) by the British Deer Society¹¹; and
- Any relevant Environmental Statement (ES), EIA Report, or other technical reports from other developments or proposed developments that overlap with the study area.

2.4.2 Results

2.4.2.1 Designated Sites

The OHL route corridor does not overlap with any statutory designated sites (i.e. SACs/SSSIs). There is only one statutory designated site with ecological qualifying features within 500 m of the boundary envelope of the OHL route corridor, i.e. Muirkirk Uplands SSSI (**Figure 3.2**). The details of, and relevant ecological qualifying features for, this designation is detailed in **Table 2-1**.

Table 2-1: Statutory Designated Sites within 500 m of the OHL Route Corridor

Designated Site	Distance from OHL Route Corridor Boundary	Qualifying feature	Last assessed condition & date
Muirkirk Uplands SSSI	30 m	Blanket bog	Unfavourable, No Change (06 October 2009)
		Upland assemblage	Favourable, maintained (02 June 2009)

There are six non-statutory LNCSs within 500 m of the boundary envelope of the OHL route corridor that are designated (wholly or partially) for ecological interests (**Figure 3.2**). One of these (i.e. Glenmuir Water: Lugar to Kyle Castle) overlaps with the OHL route corridor. The Glenmuir Water: Lugar to Kyle Castle LNCS is a relatively narrow area that follows the route of the Glenmuir Water watercourse. The available details¹² of all six LNCSs are presented in **Table 2-2**.

¹⁰ Saving Scotland's Red Squirrels (2026). Available at: <https://scottishsquirrels.org.uk/squirrel-sightings/> (Accessed: August 2026).

¹¹ British Deer Society (2023). Deer Distribution Survey 2023. Available at: <https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/> (Accessed: August 2026).

¹² Sourced from a combination of East Ayrshire Council (2016) *State of the Environment Report – Chapter 3: Ecology and Nature Conservation (July 2016)* and Scottish Government (2026). Local Nature Conservation Sites – Scotland. Available at: <https://www.data.gov.uk/dataset/c3460656-74ab-435a-8f77-9a528e24beb1/local-nature-conservation-sites-scotland>.



Table 2-2: LNCS within 500 m of the of the OHL Route Corridor

LNCS	Distance to OHL Route Corridor Boundary	Description
Glenmuir Water: Lugar to Kyle Castle	0 m	Woodland and scrub. A variety of woodland habitats including semi-natural gorge woodland, old plantation, dense scrub (birch/willow) and small patches of semi-improved pasture along Glenmuir Water.
Garclaugh Burn	5 m	Woodland. Semi-natural gorge woodlands dominated by birch/alder with oak and some introduced species. Garclaugh is largely unfenced with only inaccessible gorge sections in relatively good condition.
Merkland Wood	13 m	Woodland. This is a semi-natural alder/birch woodland which nestles on the gentle slopes of the Nith Valley adjacent to the floodplain. The ground is very wet, supporting marshy ground flora and flushes. There is stock access despite being fenced. A proportion of the LNCS site overlaps with woodland listed on the AWI.
Corsencon Hill	15 m	Grassland. No further details are available.
Nith Floodplain	21 m	Wetland. This floodplain has been drained and improved but retains areas subject to periodic flooding which provides a good habitat for wildfowl and breeding waders.
Mansfield Burn	23 m	Woodland. Semi-natural gorge woodlands dominated by birch/alder with oak and some introduced species. Mansfield Burn flows through the site and is fenced allowing regeneration and has a good ground flora, relatively undisturbed. A proportion of the LNCS site overlaps with woodland listed on the AWI.

2.4.2.2 Ancient Woodland

The definition of ancient woodland is land that is currently wooded and has been continuously wooded since at least 1750. It is not related to the age of the trees that are currently growing there, and they do not have to be ancient or elderly, as it is the historical continuity of the woodland habitat that makes a woodland ancient. The AWI holds information on the location and extent of ancient woodland within Scotland, and categorises each stand as follows:

- **Ancient Woodland (1a and 2a)** - Interpreted as semi-natural woodland from maps of 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS);
- **Long-established woodlands of plantation origin (LEPO) (1b and 2b)** - Interpreted as plantation from maps of 1750 (1b) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest stands, which may be as rich as ancient woodland; and



- **Other woodlands on Roy maps (3)** - Shown as un-wooded on the 1st Edition of the Ordnance Survey maps (produced in circa 1850) but as woodland on the Roy maps (produced in circa 1750). Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of ancient woodland.

There are no areas of ancient woodland (as present on the AWI) within the OHL route corridor. Several stands of ancient woodland are present within 500 m of the OHL route corridor, mostly located along the southern boundary of the corridor envelope (**Figure 3.2**)

2.4.2.3 Carbon and Peatland Map 2016

The Carbon and Peatland Map 2016⁵ was consulted to determine likely peatland classes present within the OHL route corridor. The map is a predictive tool that provides an indication of the likely presence of peat at a coarse scale. The Carbon and Peatland map has been developed as a high-level planning tool and identifies areas of nationally important carbon-rich soils, deep peat and priority peatland habitat as Class 1³ and Class 2⁴ peatlands.

According to this predictive tool and map there is no Class 1 or Class 2 peatland within the OHL route corridor. The entire OHL route corridor is made up of Class 0 (mineral)¹³ soils with the exception of a very small area of Class 3¹⁴ soil in forestry by Hillend Knowe, south-west of Corsencon Hill.

2.4.2.4 HabMoS

HabMoS is a composite dataset comprising different layers of detailed habitat data and is the national repository for habitat and land use data⁸. The degree of coverage for a habitat or area will vary as HabMoS brings together various different datasets.

There is European Nature Information System (EUNIS) Land Cover Scotland data covering the OHL route corridor. This data is often high-level and broad, it is not a replacement for site-specific surveys, but it can provide a useful indication of the likely baseline habitats/conditions, in combination with a desk based aerial imagery review.

This data set indicates that the primary habitat type within the majority of the OHL route corridor is E2 mesic grassland, this is a category for permanent or semi-natural grasslands that are generally characterised by moderate moisture levels and moderate nutrient levels (i.e. mesotrophic), although the category does extend to heavily fertilised and modified grassland variants often associated with improved farmland. A desk based review of aerial imagery largely confirms that the predominant habitat type within the OHL route corridor appears to be agriculturally managed/grazed improved or semi-improved grassland types. This also corroborates with the likely dominance of mineral soils in the area as noted in **Section 2.4.2.3** above.

Within the OHL route corridor there are small and scattered patches of various other EUNIS habitat types, such as E1 dry grassland, E3 seasonally wet and wet grasslands, G1 broadleaved deciduous woodland, G3 coniferous woodland, and O bare land. There are also some occasional patches of D1 raised and blanket bogs.

¹³ Mineral soil - Peatland habitats are not typically found on such soils (Class 0). Indicative vegetation - no peatland vegetation.

¹⁴ Class 3 - Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.



However, from desk based review and data comparison it would appear there are several discrepancies or out of date information within the EUNIS Land Cover Scotland data in this area, for example there are areas mapped as E1 dry grassland and D1 raised and blanket bogs that are now clearly conifer plantation. In other locations there are instances of areas mapped as D1 raised and blanket bogs that no longer exist, as they have been removed due to historical opencast mine workings, which now remain and persist as the prevailing habitat type.

A relatively short section of the OHL route corridor from the Proposed Development's substation location to the Site boundary has been covered in habitats and National Vegetation Classification (NVC) surveys for the Proposed Development (for details of these surveys and results see **Technical Appendix 6.1: National Vegetation Classification & Habitats Survey Report** and **Figure 6.3**). As has been indicated by the above desk-based sources, the primary habitat types within this section where there is NVC data corresponds to improved and semi-improved mesic grasslands, which are mainly dry and agriculturally managed but with patches of slightly damper rush pasture, as indicated by the prevalence of MG6 *Lolium perenne* – *Cynosurus cristatus* grassland with patches of MG10 *Holcus lanatus* – *Juncus effusus* rush-pasture. It is likely that the majority of the E2 mesic grasslands within the OHL route corridor identified in the HabMoS data set will largely correspond to MG6 *Lolium perenne* – *Cynosurus cristatus* grassland. MG6 is a habitat of low conservation interest and biodiversity value.

2.4.2.5 NBN Atlas

A search of the NBN Atlas⁹ for data relating to protected and/or notable species recorded over the past 15 years (i.e. from 2011 onwards), within 500 m of the OHL route corridor, returned records of the following protected or notable species:

- Soprano pipistrelle (*Pipistrellus pygmaeus*); and
- Red squirrel (*Sciurus vulgaris*).

Records of grey squirrel (*Sciurus carolinensis*), an invasive non-native species (INNS) listed on Schedule 9 of the Wildlife and Countryside Act, were also noted within the dataset.

Details regarding licences and data providers for these records are included in **Annex A**.

2.4.2.6 Saving Scotland's Red Squirrels (SSRS)

Multiple sightings of red and grey squirrels have been recorded on the SSRS website¹⁰ within the surrounding area of the OHL route corridor over the last 15 years (2011 – 2026). Grey squirrels have been recorded intermittently around the OHL route corridor since 2013, with records mainly concentrated to the south and west of the OHL route corridor. Grey squirrel records have continued regularly in recent years.

The earliest red squirrel records were recorded in 2016 and have since been recorded annually in low numbers, primarily to the south and west of the OHL route corridor. No red squirrels have been recorded within the OHL route corridor.

Overall, both squirrel species are present in the local area; however, records indicate that grey squirrels are more established and widespread around the OHL route corridor and locally, while red squirrel records are fewer and confined to the wider surrounding area.



Much of the OHL route corridor intersects with a Priority Area for Red Squirrel Conservation (PARC)¹⁵.

2.4.2.7 Deer Distribution Survey

The Deer Distribution Survey results¹¹ suggest that the following deer species are likely to be present or have been previously recorded in locality of the OHL route corridor:

- Fallow deer (*Dama dama*);
- Red deer (*Cervus elaphus*); and
- Roe deer (*Capreolus capreolus*).

2.4.2.8 Existing Ecological Information

Ecological records gathered to inform baseline conditions for the following renewable energy development projects, that have some overlap with, or are located within 500 m of, the OHL route corridor, were reviewed to provide further information of relevance to the desk study:

In planning:

- OnPath Energy (2026). *Glen Water Wind Farm Environmental Impact Assessment Report, Chapter 5 Ecology*. Glen Water Wind Farm application boundary has minor overlap with and is adjacent to the OHL route corridor.
- Glenmuckloch Renewable Energy Ltd (2025). *Glenmuckloch Hill Wind Farm Environmental Impact Assessment Report, Chapter 8 Ecology*. This site overlaps with the eastern end of the OHL route corridor.
- Wind Estate UK Ltd (2022). *Drum Wind Farm Environmental Impact Assessment Report, Chapter 11 Ecology*. Drum Wind Farm is proposed to be sited in conifer plantation approximately 450 m to the north-east of the OHL route corridor.

Operational:

- Banks Renewables (2019). *Lethans Wind Farm Environmental Impact Assessment Report, Chapter 6 Ecology*. The access route for Lethans Wind Farm is located to the west of Corsencon Hill and overlaps briefly with the OHL route corridor.

Details of existing and relevant desk based records relating to protected and/or notable species, obtained through previous baseline studies for the above-named developments / proposed developments, are summarised in **Table 2-3**.

Table 2-3 Records of Protected / Notable Species from Developments/Proposed Developments within 500 m of the OHL Route Corridor

Species	Existing Ecological Information
Badger (<i>Meles meles</i>)	Glen Water Wind Farm

¹⁵ The Saving Scotland's Red Squirrel (SSRS) Priority Working Areas dataset is available online at: <https://www.arcgis.com/home/item.html?id=5ba6742d74014b79af77d87e3cc02a50#overview>



Species	Existing Ecological Information
	No evidence of badger identified during field surveys. Woodland habitats within the search area were considered likely to offer suitability for badger setts, particularly where these include steep slopes and border grassland fields. Glenmuckloch Hill Wind Farm The site is not considered to be of importance for badger although suitable habitats are present. Drum Wind Farm No signs of badger were identified during field surveys. Habitats on site were considered to have suitability to support badgers. Lethans Wind Farm Evidence of badger, in the form of setts, guard hair, latrines, foraging signs, was identified within the respective survey area.
Bats	Glen Water Wind Farm <u>Habitat Suitability</u> <i>Commuting and Foraging</i> No specific information available. <i>Roosting Resource</i> No suitability for maternity bat roosts was confirmed in buildings within the site or associated 200 m buffer. No trees with suitability for maternity colonies of bats were identified within 200 m this zone. A number of trees within the wider area were however recorded as having potential roost features (PRFs). The EIA also noted a historic record of a single soprano pipistrelle bat roosting within a tree located approximately 90 m from the main access track in 2012. <u>Bat Activity</u> Bat activity surveys identified at least five species of bat utilising the site: common pipistrelle, soprano pipistrelle and brown long-eared, and species of the genera <i>Myotis</i> and <i>Nyctalus</i>. Varying levels of activity were recorded for each species depending on location and season (no further specific detail on this was however available online). Patterns of activity were clear across all deployments, with lower levels of activity across open ground, and markedly higher activity at locations in closer proximity to woodland features, main watercourses or waterbodies. Glenmuckloch Hill Wind Farm <u>Habitat Suitability</u> <i>Commuting and Foraging</i> The majority of the habitats are open and lack strong commuting features such as hedgerows and tree lined watercourses. However, plantation woodland to the north provides suitable edge habitat that would offer a foraging and commuting route. The small watercourses, although largely devoid of trees or scrub, would also provide some shelter to bats and would be a foraging resource. Overall habitats within the site were assessed as moderate suitability for use by foraging and commuting bats. <i>Roosting Resource</i> Surveys identified no structures, buildings or trees with potential roost features within 200 m plus blade length (c. 285 m) of the proposed turbine locations.



	Bat Activity Bat activity surveys identified ten species (or genera) including <i>Nyctalus</i> species (either noctule or Leisler's), Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>), soprano pipistrelle, <i>Myotis</i> species, Daubenton's bat (<i>Myotis daubentonii</i>) and brown long-eared bat (<i>Plecotus auritus</i>). Common and soprano pipistrelle accounted for the majority of bat activity. The activity levels and risk to all bats species was considered as negligible – low. Drum Wind Farm Habitat Suitability <i>Commuting and Foraging</i> Woodland edge habitat associated with the peripheries of Glenmuir plantation were considered suitable for commuting and foraging bats. The overall value of habitats within the site for commuting and foraging bats were however classified as 'low'. <i>Roosting Resource</i> No buildings were present within 500 m of any proposed turbine location. Trees within 500 m of proposed turbines (comprised of commercial plantation) were considered to have negligible suitability for roosting bats. No evidence of roosting bats was identified during surveys and the value of roosting resource within the site overall was assessed as 'low'. Bat Activity Bat activity transects identified that the site was used by low numbers of common pipistrelle, soprano pipistrelle and species of the genus <i>Nyctalus</i>. Static detector monitoring identified use of the site by at least three bat species – common and soprano pipistrelle, and species of the genus <i>Myotis</i>. Overall bat activity within the site was assessed as 'low'. Lethans Wind Farm Habitat Suitability <i>Commuting and Foraging</i> No specific information available. <i>Roosting Resource</i> Several trees with PRFs were recorded within the site boundary. A single tree roost (species unconfirmed) was identified to the east of Mansfield Mains in 2012. Former lime kilns to the north of the access track were also noted to support roost suitability, with gaps present within stonework. An individual roosting Daubentons bat was recorded on each of the three survey visits carried out in 2012. Bat Activity Bat activity transects identified that the site was used by low numbers of common pipistrelle, soprano pipistrelle, Daubentons bat, Natterers bat, Leislers bat, and species of the genus <i>Nyctalus</i>, <i>Myotis</i> and <i>Pipistrellus</i>. Static detector monitoring identified use of the site by common and soprano pipistrelle, Leisler's bat, and species of the genus <i>Nyctalus</i>, <i>Myotis</i> and <i>Pipistrellus</i>. Swarming surveys carried out at Craigdullyear Mine did not confirm behaviour associated with autumn swarming, however low numbers of <i>Myotis</i> and
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Species	Existing Ecological Information
	<i>Pipistrellus</i> species may have been roosting in the mine during the survey period.
Otter (<i>Lutra lutra</i>)	Glen Water Wind Farm Otter was found to be active within the general area of the site, and likely to be using the ground to navigate between preferred foraging areas. However, watercourses within the site generally lacked features suitable for resting sites. Glenmuckloch Hill Wind Farm No otter signs were found within the site, low to moderate potential for otter was recorded on a small number of watercourses due to connections to the River Nith. Drum Wind Farm A single otter spraint was recorded along the Gass Water during surveys. Suitable commuting and foraging habitat were recorded within the survey area. Lethans Wind Farm Otter field signs, in the form of resting sites and spraint, were recorded along watercourses that intersect the survey area.
Water Vole (<i>Arvicola amphibius</i>)	Glen Water Wind Farm No evidence of water vole identified during field surveys. Suitable habitat was considered likely to occur where ditch networks intersperse wetter grassland habitats. Glenmuckloch Hill Wind Farm The waterbodies and watercourses within the site generally provide a low potential to support water vole, and no water vole field signs were recorded. Drum Wind Farm Evidence of water vole was recorded along two watercourses within the survey area (burrows, runs, feeding stations and latrines). Lethans Wind Farm No evidence to indicate the presence of water vole was identified during surveys.
Pine Marten (<i>Martes martes</i>)	Glen Water Wind Farm Pine marten scoped out of EIA (assumed no field evidence identified). Glenmuckloch Hill Wind Farm No details pertaining to pine marten available. Drum Wind Farm No field signs of pine marten were recorded within the survey area. The site was however noted to support suitable habitat for pine marten, such as stands of conifer plantation. Lethans Wind Farm No evidence of pine marten recorded during surveys.
Red Squirrel	Glen Water Wind Farm No evidence of red squirrel identified during field surveys. Glenmuckloch Hill Wind Farm No details pertaining to red squirrel available. Drum Wind Farm



Species	Existing Ecological Information
	No details pertaining to red squirrel available. Lethans Wind Farm Squirrel dreys were identified in woodland habitat during field surveys.
Reptiles	Glen Water Wind Farm Suitable habitats for all three of common lizard (<i>Zootoca vivipara</i>), slow-worm (<i>Anguis fragilis</i>) and adder (<i>Vipera berus</i>) were noted within the site. Incidental records of common lizard were recorded within the survey area. It was considered likely that such reptiles would be present at a low density. Glenmuckloch Hill Wind Farm No information relating to reptiles available. Drum Wind Farm No evidence of reptiles was recorded during surveys. Suitable habitat (moorland) was however noted immediately adjacent to the site boundary. Lethans Wind Farm No information relating to reptiles available.
Fish & Macroinvertebrates	Glen Water Wind Farm The site had limited habitats present on watercourses with the potential to support fish populations. However, watercourses to the north and south of the site (Muirfoot Burn, River Nith catchment and Glenmuir Water) are known/likely to support salmonid populations. No data relating to presence/absence and population available. Glenmuckloch Hill Wind Farm Salmonid species (Atlantic salmon (<i>Salmo salar</i>) and trout (<i>Salmo trutta</i>)) were present in many of the electrofishing sites surveyed in relation to this site. Non-salmonid species, including minnow (<i>Phoxinus phoxinus</i>), eel (<i>Anguilla anguilla</i>), and stone loach (<i>Barbatula barbatula</i>), were also recorded. Macroinvertebrate sampling at seven sites revealed water quality classifications ranging from moderate to high. Drum Wind Farm No details pertaining to fish available. Lethans Wind Farm No details pertaining to fish available.

2.4.2.9 Summary

In summary, the desk based study has generally indicated the following with regards to the OHL route corridor:

- there is no overlap with statutory designated sites;
- there is overlap with one non-statutory designated site (i.e. Glenmuir Water: Lugar to Kyle Castle LNCS);
- there is no ancient woodland within the OHL route corridor;
- there is no Class 1 or Class 2 peatland within the OHL route corridor, and it is almost entirely comprised of Class 0 (mineral soils);



- there is likely a mix of habitats within the OHL route corridor, but the predominant habitat type appears to be low conservation value mesotrophic improved and semi-improved grassland;
- a number of protected species may be present locally and may utilise sections of the OHL route corridor where suitable habitats for them exist. The most likely species to be present locally when considering habitats present would appear to be badger, bats, otter and red squirrel; and
- fish are likely to be present in many of the watercourses capable of supporting them.

2.5 Embedded Design and Standard Mitigation

Embedded design mitigation is mitigation achieved through implementing changes during the design process.

2.5.1 Iterative Design Process

Relevant guiding principles and the desk-based identification/avoidance of potential ecological sensitivities/constraints have been described in **Section 2.1** regarding grid routing principles. Those design considerations have materially influenced the location and extent of the proposed OHL route corridor.

It is assumed site based ecological baseline surveys will be undertaken in due course along the proposed grid connection route should the Proposed Development receive Section 36 consent.

SPEN will, in its capacity as the electricity licence holder and regarding its statutory environmental duties, be responsible for commissioning/undertaking future surveys of the grid connection route as deemed necessary, and will likely include, but not be limited to habitats and protected species surveys. Ecological constraints identified through those baseline survey results would be considered to avoid or reduce potential negative effects on ecological features where possible, in line with relevant legislation, policy, guidance and best practice (e.g. the incorporation of buffers from any protected features and watercourses).

These routing and design principles would ensure the OHL will be typically placed in areas with a lower environmental and ecological sensitivity.

2.5.2 Good Practice Mitigation Measures

It is assumed all OHL works would be carried out in line with good industry practice construction measures, guidance and legislation. For example, it is assumed that a comprehensive, site-specific and robust Construction Environmental Management Plan (CEMP) will be in place which would be discharged in advance in consultation with SEPA and the local planning authority. The CEMP will detail how SPEN or any other appointed principal contractor and/or their subcontractors will manage the works in accordance with statutory consents and authorisations, and good industry practice and guidance for environmental management, including implementation of appropriate pollution prevention (e.g. under the Guidance of SEPA Guidance for Pollution Prevention (GPP) publications), consistent with their published approach.

It is also assumed that to ensure all reasonable precautions are taken to avoid adverse effects on habitats, protected species and aquatic interests, a suitably qualified Ecological



Clerk of Works (ECoW) will be appointed prior to the commencement of construction to monitor site works and advise on all ecological matters.

It is assumed a Species Protection Plan (SPP) will be implemented during the construction phase. The SPP will detail measures to safeguard protected species known or likely to be in the area. The SPP would include the requirement for pre-construction surveys and adherence to good practice measures during construction.

2.6 Appraisal of Potentially Significant Effects

Only potential construction effects are considered in this section. Operation and decommissioning are not considered, as per **Section 2.3.1**.

2.6.1 Designated Sites and Ancient Woodland

The OHL route corridor does not overlap with any statutory designated sites or areas of ancient woodland. Should buffers be required to be maintained from any designated site or area of ancient woodland the OHL route corridor is sufficiently large to retain substantial micro-siting and routing design flexibility. No adverse effects are predicted on statutory designated sites or ancient woodland.

The OHL route corridor overlaps with one LNCS, Glenmuir Water: Lugar to Kyle Castle. This LNCS is present along the length of the Glenmuir Water. The key interest feature of this LNCS is the gorge woodland along the watercourse. The woodland in this LNCS and along the Glenmuir Water where there is overlap with the OHL route corridor is discontinuous, with many breaks in woodland cover, it is also for the most part a narrow corridor with the trees only extending out to a few tens of metres in width. The nature of OHL design also means that significant areas can be spanned with no effects to the area underneath or around the OHL. It is assumed, and expected, that given the nature of OHL design and the sizeable tree free gaps in the discontinuous woodland along Glenmuir Water and in the LNCS and its narrow nature, that any removal or lopping of trees or scrub within the LNCS can be readily avoided through further detailed design work. Therefore, no significant adverse effects are considered likely on the Glenmuir Water: Lugar to Kyle Castle LNCS.

2.6.2 Habitats

The Carbon and Peatland Map indicates there is unlikely to be Class 1 or Class 2 peatland within the OHL route corridor, and it is predicted to be primarily comprised of Class 0 (mineral soils).

The HabMoS data combined with a review of aerial imagery and verified where possible against locations where there is contemporary data from the Proposed Development that overlaps with the OHL route corridor would indicate the majority of the corridor is mesotrophic improved/semi-improved grasslands that are agriculturally maintained and of low conservation/biodiversity value. Several other habitat types may be present in relatively small extents and scattered throughout the OHL route corridor, including patches of broadleaved and coniferous woodland, wet grassland, former opencast mine areas and potentially small patches of remnant mire/blanket bog.

Given the extensiveness and predominance of low conservation value habitats within the OHL route corridor it is expected with the consideration of future baseline data to be collected and the flexibility the size of the OHL route corridor offers along with the characteristics of OHL infrastructure, that any sensitive or high conservation value habitats



can be readily avoided. Furthermore, during construction most impacts will be short-term and temporary and restricted to a relatively narrow working corridor, with all temporary infrastructure and working areas reinstated or restored before the construction phase ends. The only permanent habitat loss will be the very small footprint associated with the double-wood-pole Trident structures. The diameter of the supporting poles is generally in the order of 0.23 m to 0.35 m in diameter. Given the very small amount of permanent land-take required for these pole structures, and in cognisance of embedded design and standard mitigation as described above, any likely effects on habitats (irrespective of conservation value) are considered to be negligible and not considered to be significant.

2.6.3 Protected Species

A number of protected species may be present within or periodically utilise the area within the OHL route corridor. Baseline surveys of the likely grid connection route will be undertaken in the future, the results of which will feed into the iterative design process to ensure, where possible, the avoidance of any protected species sensitivities.

The iterative design process in combination with assumed embedded and standard mitigation, e.g. a SPP, will ensure the safeguarding of protected species known or likely to be in the area and ensure compliance with protected species legislation. With such measures in place, no likely significant effects on protected species are considered likely.

2.6.4 Combined Effects

Given the limited nature of the potential ecological effects of the likely grid connection route, the combined effects of the grid connection OHL construction with the effects reported in the EIA Report in respect of the Proposed Development's construction are not likely to be significant because disturbance to habitats and species is minimised via adopting the assumptions and principles detailed above along with embedded and standard mitigation measures. Therefore, there is no likely increase in significance of effect when considered together with Proposed Development's construction.

2.6.5 Summary

No significant effects to designated sites, habitats, or protected species are expected during construction of the OHL within the corridor identified.

3.0 Proposed AIL Route

3.1 Overview of AIL Route

The results from the swept path assessments are presented in **Technical Appendix 10.1: Turbine Component Delivery Feasibility Assessment**.

For ecology, the relevant stretch of AIL route considered here, for the Proposed Development, relates to the section of highway from the Site entrance on the A70 (an existing access which previously served the Dalfad opencast mine) to the A76 (as set out within **Technical Appendix 1.1: EIA Approach and Methodology** and as shown on **Figure 2.14**).

Technical Appendix 10.1 indicates that overrun works/areas adjacent to the existing carriageway would be required at the six locations detailed in **Table 3-1** (see also **Figure 2.14**) between the A76 and the Site entrance. The Site entrance is not considered



within this AIL appraisal, as the Site entrance and associated overrun area is included in the Site boundary and is therefore already included in the related assessment of the effects of the Proposed Development on ecology (i.e. **Chapter 6: Ecology**).

It should also be noted that this section of AIL route for the Proposed Development also follows the same route as the AIL route for the Hare Craig Wind Farm (EnergieKontor), which is located further along the A70 to the north-east. The Hare Craig Wind Farm application was approved in July 2022 (East Ayrshire Council (EAC) reference: 20/0001/PP) with construction anticipated to start in 2027. The AIL overrun works associated with Hare Craig Wind Farm, which would be the same for the Proposed Development, have been subject to a series of individual planning applications which are available on the EAC planning website and which have been approved.

It is possible that these works could remain in place after construction of the Hare Craig Wind Farm is complete and be used by the AIL vehicles travelling to the Proposed Development. However, should these works be removed after construction of the Hare Craig Wind Farm is complete, then they would have to be reinstated to allow access to the Proposed Development by AIL vehicles.

Table 3-1 AIL Swept Path Locations¹⁶

Location No.	Location Description	Summary of Works Anticipated	Related Hare Craig Wind Farm EAC Planning Reference
22	Loganhill Road at Railway Bridge	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 23/0315/PP.	23/0315/PP
25	Loganhill Road, 300m north of Craighens Road	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 24/0283/PP.	24/0283/PP
27	Loganfield Road at Muirfield, Glendale, and Stonepark	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 24/0281/PP.	24/0281/PP
28	Loganhill Road / Glenmuir Water Road junction	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 23/0317/PP.	23/0317/PP
30	Glenmuir Road / A70 Muirkirk Road junction	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 23/0316/PP.	23/0316/PP

¹⁶ See also **Technical Appendix 10.1** and **Figures 2.14** and **10.1.2**.



Location No.	Location Description	Summary of Works Anticipated	Related Hare Craig Wind Farm EAC Planning Reference
31	A70 Muirkirk Road, east of Lugar	Overrun and oversail and new area of hardstanding required. Works would be within the envelope of works consented under consent 23/0314/PP.	23/0314/PP

3.2 Scope of Appraisal

The approach to considering the likely significant effects of upgrade works that may be required along the AIL route at six overrun locations between the A70 and A76 during construction of the Proposed Development has been set out within **Technical Appendix 1.1**. The Rochdale Envelope approach has been applied to the appraisal, and the appraisal takes account of publicly available information.

Where appropriate, information relating to other recent planning consents (e.g. Hare Craig Wind Farm) for the overrun areas along the AIL route was used to inform the appraisal of likely significant effects at the six overrun locations relating to the Proposed Development's AIL route (**Figure 2.14**). Furthermore, any other relevant and available information was used to inform the appraisal.

3.2.1 Assumptions

The following assumption has been made when undertaking the appraisal:

- Works would be undertaken in cognisance of embedded mitigation and in line with good practice pre-construction and construction phase mitigation, e.g. CEMP, SPP (which would include relevant pre-construction surveys) etc.

3.2.2 Limitations, Difficulties and Uncertainties

The AIL overrun areas have been subject to desk based study only for this appraisal, and no ecological field based surveys were undertaken specifically for AIL route.

However, the existing information and subsequent planning approvals from the same locations as planned and presented as part of the Hare Craig Wind Farm AIL, along with a number of relevant desk based data sources still allow a baseline characterisation and subsequent appraisal to be undertaken.

3.3 Baseline Conditions

Various desk-based sources were reviewed, alongside the above noted planning application documents, including NatureScot Sitelink⁶, the LNCS database⁷, AWI Scotland², Scotland's the Carbon and Peatland Map 2016⁵, HabMoS⁸, and aerial/Streetview imagery.

The areas of overrun on the AIL route considered here do not overlap with any statutory or non-statutory designated sites, ancient woodland, or areas of Class 1 or Class 2 peatlands. Soils along the route are Class 0 (mineral) soils. Review of existing habitats databases along with aerial/Streetview imagery show that these overrun areas are generally agriculturally



improved and intensively managed grasslands of low conservation value (e.g. likely NVC types are MG6/MG7). The associated roadside verges mostly appear to be unmanaged or infrequently managed typical neutral grassland communities (e.g. NVC MG1) with small patches of common weedy/ruderal vegetation. There also appears to be a gappy managed hedgerow around Location 28. No mature or semi-mature trees appear to be within these areas of overrun.

Overrun areas, by their nature, generally abut or are in close proximity to the existing carriageway. This means they are typically located in areas with a lower environmental and ecological sensitivity, where there are existing background levels of traffic/noise/light disturbance and where the verge habitats are managed (at least periodically) and likely subject to diffuse road pollution impacts, and which also may include some existing partly made or disturbed ground due to factors such as roadside drainage, other cables and services etc.

Given the location of overrun areas beside the existing carriageways, in combination with the habitat types present and the likely baseline conditions as set out above, the likelihood of protected species being present in these areas is very low.

3.4 Appraisal of Potentially Significant Effects

There are three scenarios in which the AIL for the Proposed Development needs to be considered:

1. The AIL works are carried out as proposed and consented as part of Hare Craig Wind Farm construction, and the works are considered temporary and removed, and the associated areas reinstated following completion of Hare Craig Wind Farm construction.
2. The AIL works are carried out as proposed and consented as part of Hare Craig Wind Farm construction, and the works remain in place, and are reused during the construction of the Proposed Development.
3. Hare Craig Wind Farm construction does not proceed, and the AIL works are undertaken by the Proposed Development (utilising the same areas and approach as has already been consented, which would imply works, if undertaken by the Proposed Development, would be equally acceptable).

Under scenario one, works will have been undertaken as part of Hare Craig Wind Farm construction and subsequently restored. Any subsequent reuse of overrun areas for the Proposed Development will involve construction within and affect already previously disturbed, and now secondary non-semi-natural, habitat types. This is not expected to result in likely significant effects on any IEF as a result of the Proposed Development.

Under scenario two, works will have been undertaken as part of Hare Craig Wind Farm construction and remain in place, therefore there are no additional effects arising from the Proposed Development's AIL route.

Under scenario three, works will be undertaken by the Applicant for the Proposed Development. However, given the relatively small size of areas involved, the baseline conditions as noted above, in particular the habitat types present in these areas and the unlikely presence of protected species, and in cognisance of embedded and good practice mitigation measures and construction best practice which would be in place, it is not anticipated that the construction and use of the AIL route for the Proposed Development would



result in likely significant effects on any IEF, either standalone or in-combination with the Proposed Development.



Annex A NBN Atlas Data Providers and Licences



Table A-1: Data Providers and Licence Details for NBN Atlas Scotland Records Used

Species	Data Citation	License
Soprano pipistrelle	NatureScot (Tom Hastings)	OGL ¹⁷
Grey squirrel	Scottish Wildlife Trust	CC-BY ¹⁸
Red squirrel	Scottish Wildlife Trust	CC-BY ¹⁸

¹⁷ Open Government Licence (OGL) <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/> [Accessed August 2026].

¹⁸ Creative Commons with Attribution 4.0 (CC-BY) <https://creativecommons.org/licenses/by/4.0/> [Accessed August 2026].





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