Scottish & Southern Electricity Networks
TRANSMISSION

TEM-NET-ENV-508

Environmental

Biodiversity Net Gain Assessment Report

Project Name - Carnaig 400 kV Substation

Project Code - 0699566

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Executive Summary

Scottish and Southern Electricity Networks Transmission (SSEN Transmission) (the Applicant) has a business commitment to ensure all projects gaining consent result in a 10% Biodiversity Net Gain (BNG). This is aligned to the Scottish Government's National Planning Framework 4 (NPF4) Policy 3 aim for proposed developments to contribute to the enhancement of biodiversity.

This report sets out the results of the Biodiversity Neg Gain (BNG) calculations and the approach to delivering on SSEN Transmission's BNG commitments for the Project. The SSEN Biodiversity Project Toolkit Excel Sheet was used to produce the BNG calculations for the Project Site.

This report details the BNG assessment undertaken for the proposed Carnaig 400 kV Substation proposed at Loch Buidhe.

This report includes:

- A calculation of baseline Biodiversity Units (BU) for the Proposed Development following the guidance outlined within SSEN Transmission's Biodiversity Net Gain Toolkit User Guide and the SSEN Transmission Assessment Methodology & Associated Guidance.
- A prediction of the post development on-site BU following successful implementation of an Outline Landscape and Ecological Management Plan.
- A qualitative assessment against the Biodiversity Net Gain Good Practice Principles (see **Appendix A**); and
- Details of the required habitat creation or enhancements required to achieve biodiversity enhancements.

The biodiversity units designed in by on-site habitat creation or enhancement are 1026.57 BU, meaning that the Proposed Development is predicted to achieve 27% Net Gain. The creation of an open mosaic of upland heath and moorland is considered to contribute to the conservation and enhancement of hen harrier through the provision of nesting and foraging habitat. This habitat creation would support the conservation objectives of the Strath Carnaig and Strath Fleet Moors SPA and would demonstrate reasonable steps taken to further the conservation and enhancement of the SSSI's notifiable feature. This means the project will achieve positive effects for biodiversity, demonstrating enhancement as required under NPF4.

The Proposed Development is located within the Strath Carnaig and Strath Fleet Moors Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). The SPA and SSSI are notified for supporting a population of breeding hen harrier (*Circus cyaneus*). As detailed in this assessment and in the associated Habitat Regulations Appraisal (HRA), the baseline habitat on site primarily consists of forestry plantation and clear-felled forestry plantation. Both habitats are not considered favourable for breeding or foraging by hen harrier. It is anticipated that the habitat creation and restoration of the plantation areas back to a combination of open moorland with fringing deciduous trees embedded with the Proposed Development will provide suitable habitat for hunting by the species, thereby, in turn, helping towards addressing the current (unfavourable) status of the Strath Carnaig and Strath Fleet Moors SPA.

This project does impact on irreplaceable habitats (blanket bog), please read the "**Biodiversity Net Gain Assessment Report – Irreplaceable Habitat Supplement**" for the assessment of impacts to irreplaceable habitats.

1 Introduction

1.1 Background of the Project

1.1.1 Scottish and Southern Electricity Networks Transmission (SSEN Transmission) (the Applicant) has a business commitment to ensure all projects gaining consent result in a 10% BNG. This is aligned to the Scottish Government's National Planning Framework 4 (NPF4)[1] Policy 3 aim for proposed developments to contribute to biodiversity enhancement.

1.1.2 The Applicant, operating under licence held by Scottish Hydro Electric Transmission plc, owns, operates, and develops the high voltage electricity transmission system in the north of Scotland and remote islands and has a statutory duty under Schedule 9 of the Electricity Act to develop and maintain an efficient, co-ordinated and economical electrical transmission system in its licence areas

1.1.3 The Applicant proposes to construct a new substation at Loch Buidhe, referred to as the Carnaig 400 kV Substation, hereafter referred to as the "Proposed Development".

1.1.4 The Applicant is seeking consent under the provisions of the Town and Country Planning (Scotland) Act 1997 (as amended) from The Highland Council (THC) for the Proposed Development. The application will be supported by an Environmental Impact Assessment (EIA).

1.1.5 The Applicant commissioned Environmental Resources Management Ltd (ERM) to undertake a Biodiversity Net Gain (BNG) assessment for the Proposed Development using the SSEN Biodiversity Project Toolkit (the 'Toolkit') to assess the biodiversity net gains or losses resulting from the impacts of the Proposed Development.

1.1.6 The purpose of this report is to assess the biodiversity net gains or losses resulting from the impacts of the Proposed Development.

1.2 Site Description

1.2.1 The Proposed Development is located approximately 9.5 km north east of Bonar Bridge. The specific location of the proposed Carnaig 400 kV Substation is adjacent to the south western boundary of the existing 275 kV Loch Buidhe Substation at central grid reference NH 65053 97458. The Proposed Development is located within an area of commercial forestry, which has been partially felled. Lochbuie Road runs to the west of the Proposed Development.

1.2.2 The Proposed Development is located within the Strath Carnaig and Strath Fleet Moors SPA and SSSI, which are designated for supporting 12 breeding pairs of hen harrier (*Circus cyaneus*) (further information provided within the HRA). The SPA is currently in unfavourable condition, with pressures relating to agricultural operations, burning, development, forestry operation, game / fisheries management and plant pests and diseases.

1.2.3 The main habitats of the SPA are extensive heather moors and upland acid grasslands. There are also areas of commercially planted conifer and semi-natural broadleaf woodland. The Proposed Development footprint is situated primarily within coniferous plantation and clear fell.

1.2.4 The conservation objectives for the Strath Carnaig and Strath Fleet Moors SPA are:

- To avoid deterioration of the habitats of the qualifying species (breeding hen harrier) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species as a viable component of the site;
  - Distribution of the species within site;
  - Distribution and extent of habitats supporting the species;
  - Structure, function and supporting processes of habitats supporting the species; and
  - No significant disturbance of the species.

1.3 Proposed Development Description

1.3.1 Components of the Proposed Development which are subject to the Town and Country Planning (Scotland) Act 1997 consists of:

- Two new bellmouths and access roads to the Proposed Development from the public highway;
- One new bellmouth and access road from the Proposed Development to the private forestry track;
- A temporary construction compound;
- Drainage and associated SuDS retention basins;
- A new level platform (approximately 530 m by 324 m) to be delivered through cut and fill earthworks. An outdoor AIS, 400 kV substation complete with 400 kV double busbar arrangement;
- Installation of three new SGTs and other associated equipment;
- A new substation control building (approximately 23 m by 48 m by 5.8 m);
- Four Synchronous condenser buildings (approximately 33 m by 32 m by 14.5 m);
- Erection of a 2.4 m high palisade security fencing with a 1.6 m electrified anti-climbing extension security fence around the perimeter of the platform;
- Post construction mitigation measures including peatland restoration and landscape mitigation planting;

[1] National Planning Framework 4 (2023) Available online at: https://www.gov.scot/publications/national-planning-framework-4/. (Accessed August 2024)

- Biodiversity enhancement works including native species planting and habitat creation; and
- Erection of a deer fence around the perimeter of landscape planting and peatland restoration areas.

1.3.2 The Proposed Development, which is the subject of an application under Town and Country Planning (Scotland) Act 1997 is described in **Volume 1: the Non-Technical Summary** of the Carnaig 400 kV Substation EIA and comprises five Phases of works:

- Phase 1 - Forestry Clearance;
- Phase 2 - Enabling works including road improvements and access and a temporary site compound;
- Phase 3 – Construction works which would comprise:
    - Installation of temporary construction drainage;
    - Creation of a level platform through cut and fill earthworks;
    - Relocation of excavated peat in line with the peat management plan;
    - Installation of the control building and other infrastructure foundations;
    - Installation of permanent site drainage (including retention basin);
    - Erection of a control building;
    - Erection of four buildings housing synchronous condensers;
    - Installation of electrical plant (including air insulated switchgear, 400 kV substation complete with 400 kV double busbar arrangement and super grid transformers); and
    - Installation of new 2.4 m palisade security fencing with a 1.6 m electrified anti-climbing extension and new gates.
- Phase 4 – Commissioning; and
- Phase 5 - Reinstatement - Removal of temporary works and site reinstatement including landscape and ecological mitigation planting.

1.4 Scope of Study

1.4.1 This report sets out the results of the BNG assessment and the approach to delivering on SSEN Transmission's BNG commitments for the Proposed Development. This report identifies the baseline biodiversity measured in Biodiversity Units (BU), and the predicted post development BU, to demonstrate enhancement in line with SSEN Transmission's 10% net gain commitment to achieve positive effects for biodiversity.

1.5 Policy and Legislation

1.5.1 National Planning Framework 4 (NPF4) requires significant biodiversity enhancements be provided in addition to any proposed mitigation stating that for national or major development "*Development proposals for national or major development that require an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks, so that they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used*."

1.5.2 A biodiversity site assessment was undertaken early in the project design to inform the site selection process based on the habitats identified through this assessment. The mitigation hierarchy has been applied to avoid impacts to biodiversity, where avoidance is not possible, these impacts have been minimised.

1.5.3 The Proposed Development was selected and developed via an iterative design process as described in **Chapter 3** of the EIA (The Site Selection Process and Alternatives). This chapter outlines the process of applying the mitigation hierarchy for the Proposed Development and how impacts to sensitive receptors were avoided where feasible, and in balance with other competing interests.

1.5.4 The approach to site selection was informed by SSEN Transmission's Substation Site Selection Procedures for Voltages at or above 132 kV^2 guidance document. The guidance document considers the approach to identification and selection of new electricity transmission substation sites and also covers requirements to extend existing substations.

1.5.5 Each stage is an iterative process and involves an increasing level of detail and resolution, bringing cost, technical and environmental considerations together in a way which seeks to achieve the best balance at each stage. The stages that are carried out can vary depending on the type, nature of and size of a project, and consultation is carried out at each stage of the process.

1.5.6 Initial site screening and site selection considered the site options, access constraints, land use impacts and environmental sensitivities. This assessment included a review of the site options location in relation to Strath Carnaig and Strath Fleet Moors SPA / SSSI, habitat with the potential to support hen harrier (a qualifying feature of the SPA / SSSI) and peatland habitat. Historical bird surveys were referenced to assess the site options used by hen harrier.

1.5.7 An Outline Landscape and Ecological Mitigation Plan (OLEMP) and Peat Restoration Plan have been developed to support the EIA and aim to demonstrate the Proposed Development's commitment to contribute to biodiversity enhancement. This is aligned to the Scottish Government's NPF4 Policy 3 for proposed developments to contribute to biodiversity enhancement.

[2] Scottish and Southern Electricity Networks (November 2020). PR-NET-ENV-502. Substation Site Selection Procedures for Voltages at or above 132 kV.

2 Methodology

2.1 Area and Surveys

2.1.1 **Desk Based Assessment -** The following datasets were reviewed to inform this assessment:

- The NatureScot SiteLink[3] and Scottish Government open-source data sets[4] ;
- The Strath Carnaig and Strath Fleet Moors SPA Citation and Conservation Objectives[5];
- Strath Carnaig and Strath Fleet Moors SSSI Site Management Statement and Citation[6];
- The Scottish Biodiversity List[7];
- The Highland Nature: Biodiversity Action Plan (BAP)[8];
- The Scottish Biodiversity Strategy to2045 [9]; and
- The Scottish Government's National Planning Framework 4 (NPF4).

[3] NatureScot: Site Link. Available online at: https://sitelink.nature.scot/home. (Accessed August 2024)
[4] SpatialData.gov.scot Metadata Portal. Available online at: https://spatialdata.gov.scot/geonetwork/srv/eng/catalog.search#/home (Accessed August 2024)
[5] NatureScot Strath Carnaig and Strath Fleet Moors SPA Overview. Available online at: SiteLink - Strath Carnaig and Strath Fleet Moors SPA. (Accessed August 2024)
[6] NatureScot Strath Carnaig and Strath Fleet Moors SSSI Overview. Available online at: SiteLink - Strath Carnaig and Strath Fleet Moors SSSI). (Accessed August 2024)
[7] NatureScot (2010). Scottish Biodiversity List. Available online at: https://www.nature.scot/doc/scottish-biodiversity-list (Accessed August 2024)
[8] The Highland Council (2024). Biodiversity Action Plan 2021-2026. Available online at: Highland Nature Biodiversity Action Plan 2021 to 2026 | Highland Nature Biodiversity Action Plan 2021 – 2026. (Accessed August 2024)
[9] The Highland Council (2018) Scottish Biodiversity Strategy to 2045. Available online at: Development guidance - Forest and Woodland Strategy | The Highland Council. (Accessed October 2024)

2.1.2 **Field Assessment** - The Survey Area included all habitat within the Proposal of Application Notice (PAN) boundary referred to throughout this Chapter as 'the Site' (shown within **Appendix B**).

2.1.3 Surveys were based on the methods described in the UK Habitat Classification (UKHab) User Manual[10] and the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat Survey[11], as extended for use in Environmental Assessment[12]. UKHab Version 2.0[13] was used to assign the alphanumeric UKHab habitat classification codes.

2.1.4 For further detail refer to **Volume 4 Technical Appendix 7.1** Habitat and Protected Species Survey Report of the EIAR.

2.1.5 During the habitat survey, a habitat condition assessment was undertaken for the habitats within the Site based on Natural England's Biodiversity Metric 3.1 Condition Assessment Sheets[14]. Each habitat parcel was assigned a condition score (Good, Moderate, Poor, or N/A).

2.1.6 **Evidence of technical competence –** The UKHab, National Vegetation Classification (NVC), Groundwater Dependant Terrestrial Ecosystems (GWDTEs) walkover survey of the Proposed Development plus a 250 m buffer was carried out by Heather Green (ERM Ecologist) who has 20 years' experience and Aaron Martin (ERM Ecologist) who has two years' experience. Further UKHab, NVC, GWDTE walkover survey within the Site was carried out by ecologists from Direct Ecology Ltd., commissioned by ERM on behalf of SSEN Transmission, under the supervision of Beccy Osborn (Director and Principal Ecologist), who has over 25 years' experience. UKHab Surveys were conducted in September 2023 and June 2024.

2.2 Approach to Biodiversity Net Gain

2.2.1 A full BNG Assessment was undertaken for the Site. The BNG assessment was completed within the SSEN Biodiversity Toolkit following the SSEN Biodiversity Net Gain Toolkit User Guide (2023)[15] (the 'Toolkit User Guide'). This method has been revised to align with Natural England Biodiversity Metric 3.1[16], adapted to reflect the requirements of Scottish habitats, to quantify losses and gains of biodiversity. The assessment also followed SSEN's updated BNG guidance received June 2023[17].

2.2.2 Data were collected on type, area, and condition of the habitat of the Proposed Development, indicating the biodiversity present on-site before the work begins. The same tool was used to calculate the biodiversity losses and the units resulting from the proposed habitat creation after works. The outcomes have been used to ensure the biodiversity targets are being met for the development.

2.2.3 The SSEN Transmission BNG toolkit assesses losses of area and linear habitat separately. The Toolkit produces a Unit score for three categories of habitat: Biodiversity Units, Linear Hedgerow (H) Units (LU (H)) and Linear Watercourse (W) Units (LU (W)). Linear habitats in the form of running water and ditches were recorded within the Site. There were no hedgerow habitats recorded within the Site.

2.2.4 Irreplaceable habitats are acknowledged for their particular importance and the inability to create similar habitats due to length of time needed to form them, therefore appropriate mitigation will be identified for any impacts on these habitats. The BNG assessment involves assessing any impacts on irreplaceable habitats separately from non-irreplaceable habitats. SSEN Transmission consider irreplaceable habitats within their network to be:

- Ancient Woodland (categories 1a & 2a of the Ancient Woodland Inventory (AWI));
- Ancient or veteran trees; and
- Blanket bog or raised bog in good or moderate condition.

2.2.5 If irreplaceable habitats are present on site, bespoke compensation must be provided for these impacts. Irreplaceable habitat impacts have been quantified by area (ha) so the impact can be fully understood and more habitat can be replaced than was lost to development, in accordance with SSEN Transmission's commitments towards irreplaceable habitats. A separate Toolkit and report have been used to calculate any impacts on irreplaceable habitat. Please read the "**Biodiversity Net Gain Assessment Report – Irreplaceable Habitat Supplement**" for the assessment of impacts to irreplaceable habitats.

2.2.6 Strategic significance gives extra value to habitats that are located in optimum locations for biodiversity and / or that are important for other environmental objectives, such as areas that are designated for their biodiversity importance or listed in local biodiversity plans. **Table 1** details the justification for the strategic significance assigned to each baseline and proposed habitat within the Toolkit.

[10] Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020) *UK Habitat Classification User Manual, Version 1.1*. UK Habitat Classification Working Group, Stockport. Available at: http://ecountability.co.uk/ukhabworkinggroup-ukhab.

[11] Joint Nature Conservation Committee (2010) *Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit*. With minor corrections addressed in 2016. JNCC, Peterborough. Available at: https://hub.jncc.gov.uk/assets/9578d07b-e018-4c66-9c1b-47110f14df2a

[12] Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment, Spon, London.

[13] UKHab Ltd (2023) *UK Habitat Classification 2.0*. UKHab Ltd, Stockport. Available at: https://www.ukhab.org

[14] Natural England: Biodiversity Metric 3.1 Habitat Condition Assessment Sheets. Available online at:https://publications.naturalengland.org.uk/file/5450039124819968

[15] SSEN (2022) TG-NET-ENG-526: Biodiversity Net Gain Toolkit User Guide. Revision 2.00

[16] Natural England Biodiversity Metric 3.1. Available online at: Archive Site for Legacy Biodiversity Metrics (naturalengland.org.uk)

[17] SSEN Transmission – Biodiversity Net Gain (June 2023). PowerPoint presentation

Table 1. Strategic Significance

Toolkit Habitat	Strategic Significance	Justification
Grassland - Upland acid grassland	High	A predominant habitat within the Strath Carnaig and Strath Fleet Moors SPA / SSSI important in supporting breeding and foraging hen harriers.
Heathland and shrub - Upland Heathland	High	A predominant habitat within the Strath Carnaig and Strath Fleet Moors SPA / SSSI important in supporting breeding and foraging hen harriers. Priority habitat on the SBL.
Wetland - Blanket bog	High	
Wetland - Purple moor grass and rush pastures	High	Priority habitat on the SBL.
Wetland - Upland flushes, fens and swamps	High	
Grassland - Other neutral grassland	Medium	Not formally identified in a local plan but serves to maintain connectivity between other higher values habitats.
Heathland and shrub - Mixed scrub	Medium	Not formally identified in a local plan but serves to maintain connectivity between other higher values habitats.
Ditches	Low	Habitat of limited ecological value.
Rivers and Lakes - Eutrophic standing waters	Low	Habitat of limited ecological value (likely an attenuation pond associated with the substation drainage system. No submerged aquatic or emergent vegetation were observed during the field survey).
Urban - Artificial unvegetated, unsealed surface	Low	Habitat of limited ecological value.
Urban - Built linear features	Low	
Urban - Developed land; sealed surface	Low	
Woodland and forest - Other coniferous woodland	Low	Habitat considered unsuitable for planting in the location - within the classification of land sensitivity to woodland expansion the area is noted as 'Sensitive: Land which offers limited potential for woodland types which predominantly deliver biodiversity, landscape and / or amenity objectives'[18].
Woodland and forest - Other Scot's Pine woodland	Low	
Woodland and forest - Other woodland; broadleaved	Low	
Woodland and forest - Other woodland; mixed	Low	

[18] The Highland Council (2018) Scottish Biodiversity Strategy to 2045. Available online at: Development guidance - Forest and Woodland Strategy | The Highland Council. (Accessed October 2024)

2.2.7 Time to target condition (TTTC) is the number of years it is estimated to take before the enhancement or creation of a habitat reaches the desired result. This assessment referred to the time to target condition outlined within the Biodiversity Metric 3.1 Technical Supplement[19]. Any further delay in habitat creation due to the construction of the Proposed Development were added to the TTTC values within the Toolkit. A precautionary three-year delay in habitat creation was applied to reflect the Proposed Development's construction programme.

2.3 Limitations and Assumptions

2.3.1 To produce this assessment, certain assumptions have been made:

- Habitats which fall under an 80 m operational corridor of the Spittal to Loch Buidhe to Beauly (SLBB) 400 kV Connection have been excluded from this assessment.
- Habitats which fall under the Red Line Boundary (RLB) of the proposed communications mast (22/05825/FUL)[20] have been excluded from this assessment.
- Habitats with an area of less than 0.01 ha were excluded from the Toolkit on the basis that the SSEN Toolkit guidance considers they are not large enough to be a viable habitat effectively managed for biodiversity.
- Area calculations were rounded to three decimal places for input into the Toolkit.
- Areas of plantation woodland which were felled at the time of survey were classified as Other coniferous woodland of Poor condition within the Toolkit. This follows the guidance set out in Biodiversity Metric 3.1 Technical Supplement which states that "*If the habitat type of the felled woodland is known (either through data records, imagery or field survey) then the area should be entered into the metric as the relevant woodland type*".
- A mosaic of blanket bog and wet and dry heath surrounding the bunded peat relocation areas are proposed within a 'Peatland Restoration Area'. The distribution of these three habitats within the Peatland Restoration Area will be further defined and developed as the design of the Peatland Restoration Area progresses as discussed in the Peat reuse consultation letter dated July 2024. The quantity in hectares of the three habitats within the Peatland Restoration Area have been quantified for this assessment using a high-level assumption informed by peat depths and topography of the area alongside the aim to retain and enhance any existing areas of peat or heath habitat.
- An area of 2.232 ha of other coniferous woodland which is within the Peatland Restoration Area has been excluded from the after-work actions section of the Toolkit, to prevent double counting, as this area has been identified to compensate for the area of irreplaceable blanket bog that is impacted by the Proposed Development (see the **Irreplaceable Habitat Supplement** for further detail).

[19] Natural England Biodiversity Metric 3.1 Technical Supplement. Available online at: (https://publications.naturalengland.org.uk/file/6059060118683648)

[20] 22/05825/FUL | Erection of 25-metre-high lattice tower ancillary development | Land 1800M NE Of Sleastray Bonar Bridge (highland.gov.uk)

- The time to target condition and difficulty for blanket bog creation was adjusted from the Natural England Biodiversity Metric v3.1 recommendation and based on previous Scottish and Southern Energy Renewables (SSER) wind farm blanket bog restoration project experience and guidance[21].
- This assessment followed the SSE Renewables (SSER) BNG Toolkit User guidance[22] to assign condition for ditches. Ditches recorded within the Proposed Development were classified within the Toolkit as 'Rivers and lakes – Other rivers and streams (Low)' following the approach set out in Appendix E of the SSER guidance document. Within Section 2.2.5.3 of the SSER guidance it is recommended that the condition of a watercourse is related to its distinctiveness therefore a Low condition was assigned to ditches.
- Ditches recorded on-site are considered to be retained apart from sections which will be culverted to allow for the construction of access tracks to the west and north of the proposed substation. To show such changes for these ditch sections within the Toolkit, the culverted sections were entered into the post-development section of the Toolkit as 'Rivers and lakes – Other rivers and streams (Low)' of no biodiversity value.
- The woodland habitats proposed within the OLEMP include upland birch woodland and native pine woodland. These habitats have been entered into the Toolkit as 'Woodland and forest - Other woodland; broadleaved' and 'Woodland and forest - Other Scot's Pine woodland'. The UKHab classifications Upland birchwoods (w1e) and Native pine woodlands (w2a) were not applied as these are priority woodland habitats unlikely to be achieved within the Proposed Development.

2.3.2 Limitations appropriate to this Chapter mainly pertain to the field survey element which are detailed in **Volume 4 Appendix 7.1** of the EIA and summarised below:

- Wet, boggy ground conditions throughout the Survey Area (impeded access into discrete areas).
- Density of some coniferous woodland plantations and the presence of areas of wind-blown trees (prevented access to some forestry blocks).
- Ongoing forestry operations – harvesting (prevented access to some forestry blocks).

2.3.3 Due to survey coverage and access being generally good across the Survey Area, good characterisation of habitats present was possible. These limitations, both individually and in combination, are therefore not considered to be significant and do not undermine the validity of the survey.

[21] SSE Renewables (2022) Positive for the planet: Renewable energy with a Biodiversity Net Gain Report. Available at: https://www.sserenewables.com/media/vgsdoav3/sser-biodiversity-net-gain-report-nov-2022-final.pdf

[22] SSE Renewables Biodiversity Net Gain Toolkit User Guide Version 1.2. Available online at: Biodiversity Net Gain | SSE Renewables

3 Results

3.1 Biodiversity Baseline

3.1.1 The non-irreplaceable baseline habitats within the Site are summarised in **Table 2** and **Table 3** and presented in **Appendix B**.

3.1.2 The non-irreplaceable baseline habitats impacted by Proposed Development are entered into the Toolkit to calculate the non-irreplaceable baseline BU.

3.1.3 The non-irreplaceable baseline BU for habitat within the Site are 806.08 BU.

3.1.4 The non-irreplaceable baseline LU (W) for habitat within the Site are 0.20 LU (W).

3.1.5 No hedgerows were recorded on-site, as such no LU (H) have been calculated.

3.1.6 Impacts on habitats which are reversible and can return to same extent and ecological condition within two years of the initial impact can be considered temporary. No such temporary impacts relating to the Proposed Development have been identified.

3.1.7 Habitats within the Site which are not subject to any expected change in habitat type or condition due to direct or indirect impacts are considered to be retained. Retained habitats have not been included in the Toolkit calculations as there are no predicted permanent adverse impacts (summarised in **Table 2** and **Table 3**).

Table 1 Baseline (non-irreplaceable) area habitats within the Site

Habitat Type for Toolkit Input	UKHab Classification	Condition	Area
Baseline habitats impacted by the Proposed Development - included in the Toolkit			
Grassland - Other neutral grassland	g3c - Other neutral grassland	Poor	0.454 ha
	g1b - Upland acid grassland	Moderate	3.763 ha
Heathland and shrub - Upland Heathland	h1b6 - Wet heathland with cross-leaved heath; upland (H4010)	Good	0.165 ha
		Moderate	1.464 ha
		Poor	0.374 ha
Urban - Artificial unvegetated, unsealed surface	u1c - artificial, unvegetated unsealed surface	N/A - No biodiversity value	0.117 ha
Wetland - Blanket bog	f1a6 - Degraded blanket bog	Poor	25.944 ha
Wetland - Purple moor grass and rush pastures	f2b - Purple moor-grass and rush pastures	Moderate	0.053 ha
Wetland - Upland flushes, fens and swamps	f2c - Upland flushes, fens and swamps	Good	3.751 ha
Woodland and forest - Other coniferous woodland	w2c - Other coniferous woodland	Poor	216.828 ha
Subtotal			**252.913 ha**
Retained habitats - excluded from the Toolkit			

Grassland - Other neutral grassland	g3c - Other neutral grassland	Good	1.299 ha
		Moderate	0.253 ha
		Poor	2.412 ha
	g3c8 - Holcus-Juncus neutral grassland	Moderate	0.295 ha
		Poor	1.241 ha
Grassland - Upland acid grassland	g1b - Upland acid grassland	Good	1.939 ha
		Moderate	3.829 ha
Heathland and shrub - Mixed scrub	h3h - Mixed scrub	Moderate	0.838 ha
		Poor	0.174 ha
Heathland and shrub - Upland Heathland	h1b - upland heathland	Moderate	1.296 ha
	h1b5 - Dry heaths; upland (H4030)	Moderate	0.516 ha
		Poor	0.98 ha
	h1b6 - Wet heathland with cross-leaved heath; upland (H4010)	Good	0.23 ha
		Moderate	3.65 ha
		Poor	0.46 ha
Rivers and Lakes - Eutrophic standing waters	r1g - Other standing water	Moderate	0.314 ha
Urban - Artificial unvegetated, unsealed surface	u1c - artificial, unvegetated unsealed surface	N/A - No biodiversity value	10.716 ha
Urban - Developed land; sealed surface	u1b - developed land, sealed surface	N/A - No biodiversity value	4.093 ha
Wetland - Blanket bog	f1a6 - Degraded blanket bog	Poor	49.256 ha
Wetland - Purple moor grass and rush pastures	f2b - Purple moor-grass and rush pastures	Good	2.628 ha
		Moderate	0.48 ha
Wetland - Upland flushes, fens and swamps	f2c - Upland flushes, fens and swamps	Good	7.795 ha
Woodland and forest - Other coniferous woodland	w2c - Other coniferous woodland	Poor	150.307 ha
Woodland and forest - Other woodland; mixed	w1h - Other woodland; mixed	Poor	3.757 ha
Woodland and forest - Other woodland; mixed	w1h6 - Other woodland; mixed; mainly conifer	Poor	8.998 ha
Subtotal			**257.756 ha**
Total			**510.669 ha**

Table 2 Baseline linear habitats within the Site

Habitat Type for Toolkit Input	UKHab Classification	Condition	Area
Baseline habitats impacted by Proposed Development - included in the Toolkit			
Rivers and lakes – Other rivers and streams (Low)	G1 - Standing water	Poor	0.096 km
Subtotal			**0.096 km**
Retained habitats - excluded from the Toolkit			
Rivers and lakes – Other rivers and streams (Low)	G1 - Standing water	Poor	2.269 km
Subtotal			**2.269 km**
Total			**2.365 km**

3.2 Post-development Biodiversity Units

3.2.1 The post-development units have been calculated within the Toolkit using the difference between the baseline and after works impact on the habitat. Post-development actions are discussed further in the following sections.

3.2.2 The post-development units for (area) are 1026.57 BU .

3.2.3 The post-development units for (linear – watercourses) are 0.00 LU (W).

3.3 Habitat Creation (Within the Development Boundary)

3.3.1 Opportunities for habitat creation and enhancement on site have been identified and presented within the OLEMP dated 31 October 2024 (see **Appendix C**).

3.3.2 The OLEMP was developed to incorporate the interests of several topics in addition to BNG:

- proposed planting plans to address any significant landscape and visual effects as a result of the Proposed Development, in conjunction with other developments;
- the creation of bunded peat relocation areas to reuse excavated peat arising from the Proposed Development and the creation of a wider peat restoration area: and
- habitat creation to support hen harrier as the qualifying species of the Strath Carnaig and Strath Fleet Moors SPA and SSSI.

3.3.3 **Volume 2 Chapter 5** (Landscape and Visual Impact Assessment (LVIA)) of the EIAR assesses the landscape and visual effects which may result from additional changes to the baseline landscape or visual resources, as a result of the Proposed Development, in conjunction with other developments. Planting plans such as the planting of upland birch which could be established relatively quickly and provide screening for the Proposed Development were incorporated within the OLEMP.

3.3.4 It is understood for this assessment that whilst it is unavoidable to locate the Proposed Development on deep peat, peat reuse should be within the development boundary where possible[23], therefore there is a requirement, as discussed in the peat reuse consultation letter dated July 2024, for the creation of bunded peat relocation areas and a wider Peat Restoration Area within the Proposed Development.

3.3.5 As detailed above and in the HRA for the Proposed Development, the baseline habitat on site primarily consists of forestry plantation and clear-felled forestry plantation. Both habitats are not considered as favourable habitat for breeding or foraging hen harrier. It is anticipated that the habitat creation / restoration of the plantation areas back to a combination of open moorland with fringing deciduous trees embedded with the Proposed Development will provide suitable habitat for hunting by the species, thereby, in turn, supporting the conservation objectives of the Strath Carnaig and Strath Fleet Moors SPA and helping towards addressing its current (unfavourable) status.

3.3.6 The OLEMP has been developed to incorporate the above requirements and includes:

- The restoration and enhancement of “Poor” condition blanket bog;
- The enhancement of upland heathland;
- The creation of an open mosaic of upland heath and moorland to provide nesting and foraging habitat for hen harrier;
- On-site peatland storage and restoration areas;
- Native pine woodland planting;
- Upland birch woodland planting to promote habitat connectivity;
- The design of SuDS to maximise biodiversity and habitat creation through the establishment of seasonally wet grassland; and
- Where possible, the retention of GWDTEs.

[23] in compliance with NPF4 Policy 5.

3.3.7 The biodiversity units designed in by on-site habitat creation or enhancement (shown in **Appendix D**) are 1026.57 BU. The post development Biodiversity Area Units are predicted to be 27%.

3.3.8 The creation of an open mosaic of upland heath and moorland is considered to contribute to the conservation and enhancement of hen harrier through the provision of nesting and foraging habitat thereby supporting the conservation objectives of the Strath Carnaig and Strath Fleet Moors SPA and demonstrate reasonable steps taken to further the conservation and enhancement of hen harrier.

3.3.9 Peatland restoration, native tree planting and creation of a mosaic of open and wooded habitats on-site aims to support the Scottish Biodiversity Strategy and provide positive effects on biodiversity as outlined in NPF4, Policy 3.

3.3.10 The creation / enhancement of blanket bog, native pine woodland and upland birchwood will contribute to the conservation action for these Scottish Biodiversity List habitats.

3.3.11 The proposed creation of native pine woodland and upland birchwood with a mosaic of species rich-grassland, bog and upland heathland within the Proposed Development also aims to support targets within the Highland Nature Biodiversity Action Plan 2021 – 2026 relating to these habitats.

3.4 Habitat Creation (Off-site)

3.4.1 Off-site habitat creation is only required when all options for on-site biodiversity enhancement provision have been explored. If no on-site opportunities can be identified, off-site habitat creation will be undertaken but kept within the Local Planning Authority (LPA) of the Proposed Development. No off-site habitat creation is required to deliver BNG for the Proposed Development.

3.4.2 Compensation is targeted at delivering biodiversity net gains that are ecologically equivalent in type and condition to the habitats lost, following the 'like for like or better' principle.

3.4.3 The off-site identified will be assessed using the Toolkit to take into consideration the existing biodiversity present and aims to maximise benefits for biodiversity in accordance with local and national biodiversity strategies.

4 Summary

4.1.1 The biodiversity units designed in by on-site habitat creation or enhancement are 1026.57 BU, meaning that the Proposed Development is predicted to achieve 27% Net Gain.

4.1.2 It is understood for this assessment that whilst it is unavoidable to locate the Proposed Development on deep peat, peat reuse should be within the development boundary where possible, therefore there is a requirement for the creation of bunded peat relocation areas on site. These bunded locations are proposed within existing areas of managed coniferous plantation. Such forestry plantation and clear-felled forestry plantation are not considered as favourable habitat for breeding or foraging hen harrier therefore wider Peat Restoration Area is proposed to link the bunded peat areas and create an open mosaic of upland heath and moorland, restoring functional peat forming habitats.

4.1.3 It is anticipated that the habitat creation / restoration of the plantation areas back to a combination of open moorland with fringing deciduous trees embedded with the Proposed Development will provide suitable habitat for hunting by hen harrier, thereby, in turn, supporting the conservation objectives of the Strath Carnaig and Strath Fleet Moors SPA and helping towards addressing its current (unfavourable) status.

4.1.4 The Landscape and Visual Impact Assessment (LVIA)) assessed the landscape and visual effects which may result from changes to the baseline landscape or visual resources as a result of the Proposed Development, in conjunction with other developments. Planting plans such as the planting of upland birch which could be established relatively quickly and provide screening for the Proposed Development were incorporated within the outline Landscape and Ecology Management Plan and BNG assessment.

4.1.5 The habitat creation / enhancements have been designed to be achieved within a reasonable timeframe and with reasonable certainty as the outcomes from the toolkit have been informed by the Natural England Biodiversity Metric 3.1. The restoration and enhancement plans were informed by local and national guidance (see **Section 3.5***).* It is believed that these measures are appropriate to the nature and scale of development.

4.1.6 The above approach will deliver BNG for the Proposed Development and achieve positive effects for biodiversity, leaving the natural environment in a demonstrably better state than before development work began.

4.2 Summary of Results

Table 4. Summary of biodiversity units

Habitat Type	Base Line BU	Post-Development BU	Difference in BU	Difference in BU (%)	BU required off-site to achieve 10% NG
Area	806.08 BU	1026.57 BU	220.49 BU	27 %	0 BU
Linear (Watercourses)	0.20 LU (W)	0 LU (W)	-0.2 LU (W)	-100 %	0.02 LU (W)

4.3 Biodiversity Outcomes

4.3.1 The outcome of the proposed habitat works and further biodiversity enhancement measures will be:

- The restoration and enhancement of "Poor" condition blanket bog;
- The enhancement of upland heathland;
- The creation of an open mosaic of upland heath and moorland to provide nesting and foraging habitat for hen harrier;
- On-site peat storage and peatland restoration areas;
- Native pine woodland planting;
- Upland birch woodland planting to promote habitat connectivity;
- The design of SuDS to maximise biodiversity and habitat creation through the establishment of seasonally wet grassland; and
- Where possible the retention of GWDTEs.

4.4 Implementing and Monitoring

4.4.1 Biodiversity enhancements will be achieved within the following estimated timeframe following the completion of works:

- Grassland - Other neutral grassland (poor condition): 2 years;
- Wetland - Blanket bog (moderate condition): 10 years;
- Woodland and forest - Other Scot's Pine woodland (poor condition): 10 years;
- Woodland and forest - Other woodland; broadleaved (poor condition): 5 years; and
- Heathland and shrub - Upland Heathland (poor condition): 10 years.

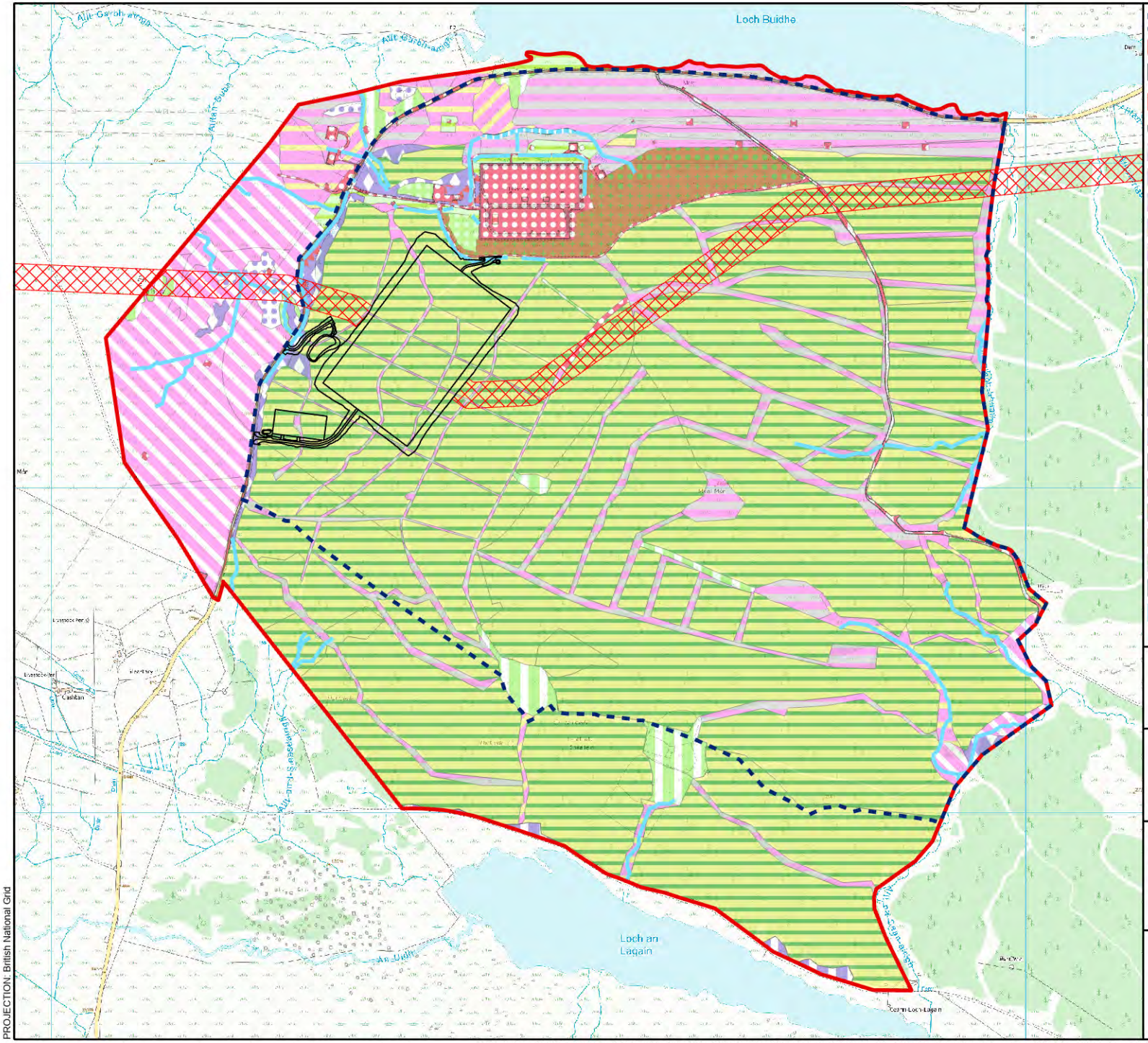
4.4.2 To ensure positive enhancements are achieved long term, monitoring and maintenance procedures will be implemented and managed by the Applicant.

Appendix A Good practice principles for biodiversity net gain

The project has applied the UK good practice principles for biodiversity net gain (CIRIA C776a Biodiversity net gain. Good practice principles for development. Part A: A practical guide) below:

Principle	Summary of project actions
Apply the mitigation hierarchy	**Volume 2 Chapter 3** (The Site Selection Process and Alternatives) of the EIAR, outlines the approach to the mitigation hierarchy and outlines how impacts to sensitive receptors were avoided where feasible and in balance with other competing interests.
Avoid losing biodiversity that cannot be offset elsewhere	Irreplaceable habitats in the form of blanket bog were identified on-site and are discussed in the Biodiversity Net Gain Assessment Report – Irreplaceable Habitat Supplement.
Be inclusive and equitable	At Initial Site Selection (Stage 1) a Report on Consultation (RoC) was developed for the Proposed Development. Following this, stakeholder engagement was undertaken at Detailed Site Selection (Stage 2) and a Pre-Application Consultation (PAC) report will be developed to support the Application.
Address risk	Revision 2.0 in October 2022 of the Biodiversity Net Gain Toolkit User Guide informed this assessment along with the completion of Version 3 of the SSEN Biodiversity Project Toolkit. The assessment applied the Biodiversity Metric 3.1 Habitat Condition Assessment sheets. The Creation / Enhancement risks and Time To Target Condition from Biodiversity Metric 3.1 Technical Supplement informed the assessment apart from for blanket bog habitat Creation / Enhancement risks and Time To Target Condition which were informed by Scottish and Southern Energy Renewables (SSER) wind farm blanket bog restoration project experience and guidance.
Make a measurable net gain contribution	Through the restoration and creation of blanket bog, and creation of native pine woodland and upland birchwood with a mosaic of species rich-grassland, bog and upland heathland the Proposed Development is predicted to deliver a measurable net gain contribution.
Achieve the best outcomes for biodiversity	It is anticipated that the habitat creation / restoration of the plantation areas back to a combination of open moorland with fringing deciduous trees embedded with the Proposed Development will provide suitable habitat for hunting by the hen harrier, thereby, in turn, helping towards addressing the current (unfavourable) status of the Strath Carnaig and Strath Fleet Moors SPA.
Be additional	Without development the Site would be retained at its current predominantly plantation woodland baseline. In line with the Proposed Development, significant habitat creation would occur providing enhancements on Site due to increased areas of open moorland to support hen harrier and peatland restoration.
Create a net gain legacy	The restoration works would be monitored and reviewed to assess the progress to achieve the targets set out in this report and accompanying Toolkit and an adaptive management process would be adopted to allow any amendments to be made as appropriate to reflect changes in circumstances.

Optimise sustainability	As outlined in **Volume 2 Chapter 1** (Introduction and Background) of the EIAR, renewable energy generation volumes connecting to the SSEN Transmission licensed area, particularly offshore wind, are expected to increase towards the end of the decade and into the 2030s. Most of this is likely to connect to the far north of the SSEN Transmission network and because of this increase there is a requirement for additional transmission system capacity to the north of Beauly to meet this demand. The Network Options Assessment (NOA) undertaken by the National Grid Electricity System Operator (NGESO) is one of the documents that sit under the Pathway to 2030: A Holistic Network Design (HND) to support offshore wind deployment for net zero. The NOA 2021/22 Refresh is an update to the NOA 2021/22 that was published in January 2022 in accordance with standard condition C27 of the NGESO transmission licence. It now fully integrates the HND's offshore network and confirms the wider onshore network requirements. Together, the HND and the NOA 2021/22 Refresh have identified 94 schemes that are required to meet the Government's ambition for 50 Gigawatt (GW) of offshore wind by 2030. This comprises 56 schemes that have been identified as HND essential options (options needed for 2030 for delivery of 50 GW offshore wind), and 38 optimal schemes from this NOA 2021 / 22 Refresh analysis. NOA Option Beauly to Loch Buidhe 400 kilovolt (kV) reinforcement (BLN4) identifies the requirement to reinforce the electricity transmission network between Beauly Substation and the existing Loch Buidhe Substation and the need to create new electricity transmission between Loch Buidhe Substation and Spittal Substation. This network reinforcement and creation also triggers the requirement to construct new standalone substations at Spittal (Banniskirk), Loch Buidhe (Carnaig) and Beauly (Fanellan) capable of operating at 400 kV.
Be transparent	To demonstrate our transparency in meeting targets to our regulator, we publish annual reports containing data on biodiversity enhancements for every project gaining consent.



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DATE: 31/10/2024	APPROVED: SC

Appendix B
Baseline Habitats

PROJECTION: British National Grid

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N

Native woodland planting implemented as part of the Loch Buidhe Substation

Upland birch woodland planting to promote habitat connectivity

SLBB OHL landscape and ecological proposals to tie into and meet substation landscape and ecological proposals. Approach and extent of proposals to be discussed with SSEN

Retained blanket bog

Upland birch woodland planting to create a visual buffer between the substation and users of the Loch Buidhe Road, and promote habitat connectivity

Deer proof gate

Native woodland planting implemented as part of the Loch Buidhe Substation

Existing habitats to be retained

Native pine woodland planting to create buffer between the substation and heathland/hen harrier foraging areas

SuDS design to maximise biodiversity and habitat creation

Deer proof gate

Deer proof gate

Communications mast 22/05825/FUL - area excluded from peatland restoration proposals

A

B

C

D

E

Peat restoration area

Upland birch woodland planting to create a visual buffer between the substation and users of the Loch Buidhe Road, and promote habitat connectivity

Native pine woodland planting to create buffer between the substation and heathland/hen harrier foraging areas

Upland heath/moorland with scrub planting to provide nesting and foraging habitat for hen harrier and promote a mosaic of habitat types

Deer proof gate

0 100 200 300 400 500
Metres

PROJECTION: British National Grid

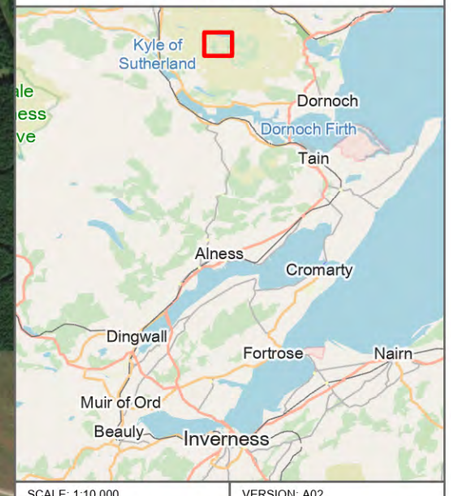
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

Planning Application Boundary
Peat Restoration Area
Bunded Peat Relocation Area
Indicative OHL Corridor Excluded from Habitat Restoration

Proposed Infrastructure:
Substation Platform
Access Track
Earthworks
SUDs Pond
Former Site of Construction Compound
Substation Layout
Indicative Deer Fence Location

Landscape and Ecological Mitigation:
Blanket Bog to be Retained
Heath / Heather Moorland
Native Birch Woodland
Native Pine Woodland
Existing Native Mixed Woodland
Existing Habitats to be Retained

Note: Safety standoff between all woodland planting and the substation security fence to be 30-40m.



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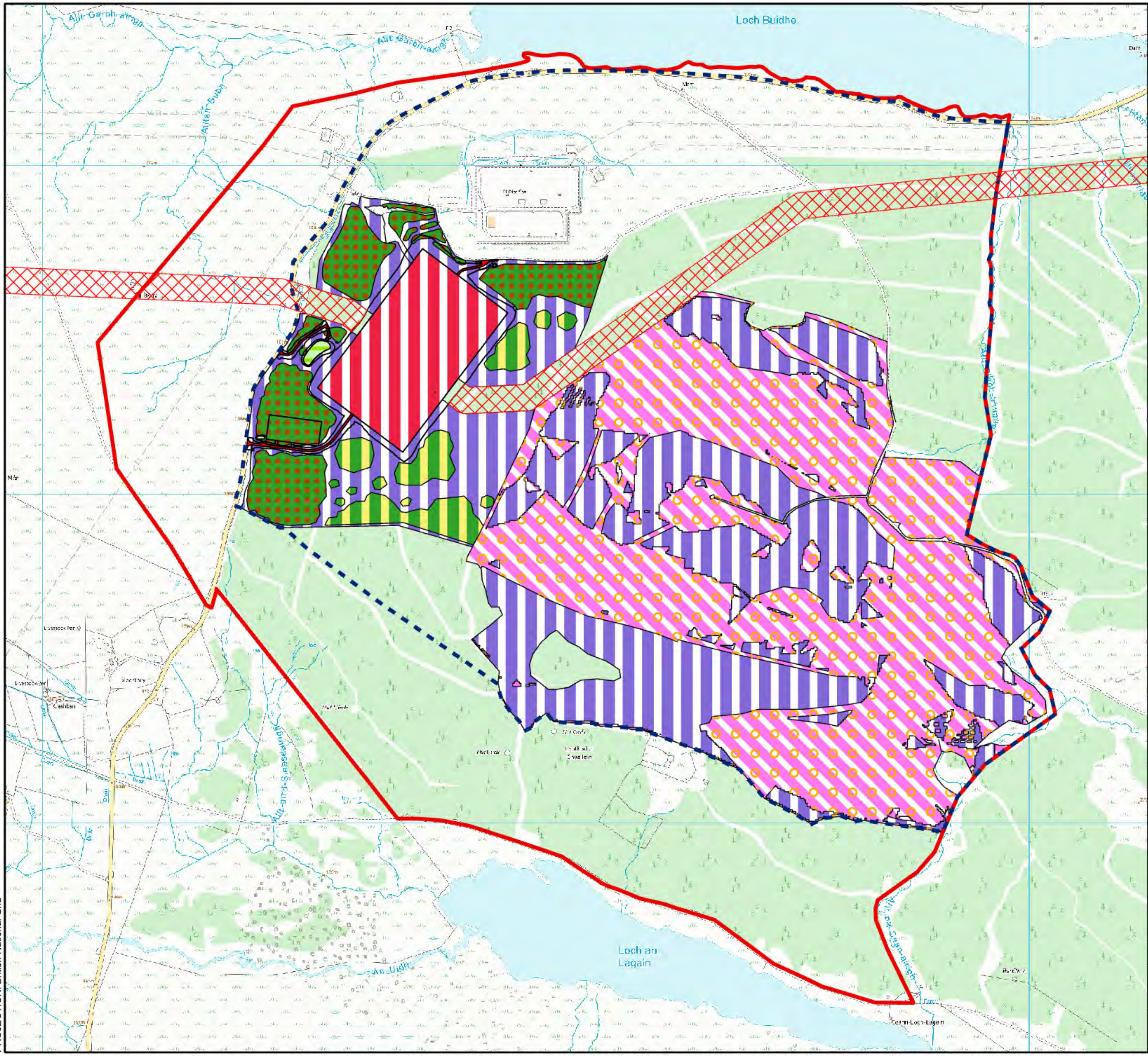
Appendix C
Landscape and Ecological Mitigation Plan

ERM

Scottish & Southern Electricity Networks TRANSMISSION

Path: \\uksprdgisfs01\Data\London\Projects\0699566 - SSE Carnaig Substation\MAPS\0699566 - SSE Carnaig Substation - Final\0699566 - SSE Carnaig Substation - Final.aprx / 0699566 - CS - BNG - Appendix C - ECoW - Landscape and Ecological Mitigation - A01



Planning Application Boundary

Proposal of Application Notice (PAN) Boundary

Proposed Infrastructure

Area Cannot be Included in Habitat Restoration - Falls Under Proposed SLBB OHL 80 m Working Corridor

Areas Shown are Proposed to be a Moderate Habitat Condition Score. All Other Proposed Habitat Creation will be Poor

Proposed Habitat Creation

UK Habitat Classification:

f1a - blanket bog

g3c - other neutral grassland

h1b - upland heathland

u1b - developed land, sealed surface

u1e - built linear features

w1g - other woodland, broadleaved

w2b - other scots pine woodland

0 100 200 300 400 500

Meters

N

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PROJECT: 0699566	CHECKED: KO
DATE: 31/10/2024	APPROVED: SC

Appendix D
Proposed Habitat Creation

ERM

Scottish & Southern Electricity Networks

TRANSMISSION

Path: \\uksprdgisfs01\Data\London\Projects\0699566 - SSE Carnaig Substation\MAPS\0699566 - SSE Carnaig Substation - Final\0699566 - SSE Carnaig Substation - Final.aprx\0699566 - CS - BNG - Appendix D - ECoW - BNG - Proposed Habitat Creation - A01