Scottish & Southern Electricity Networks
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Biodiversity Net Gain Assessment Report

Project Name - Fort Augustus 400kV Substation Upgrade

Project Code - LT519 (60713884)



	Biodiversity Net Gain Assessment Report	Applies to
		Transmission ✓

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Executive Summary

This report sets out the results of the Biodiversity Net Gain (BNG) calculations and the approach to delivering on SSEN Transmission's BNG commitments for the Project. This report should be read alongside the SSEN Biodiversity Project Toolkit Excel Sheet for the Project Site.

This report details the BNG assessment undertaken for a substation extension at Auchterawe, Fort Augustus, Inverness-shire.

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 a Landscape & Habitat Management Plan.
- A qualitative assessment against the Biodiversity Net Gain Good Practice Principles; and
- Details of the habitat creation or enhancements required to achieve biodiversity enhancements. The Proposed Development will result in an overall gain in BU within the Site itself, with no need for off-site measures, provided the proposed habitat creation/enhancement measures described are implemented. The calculated gain for area-based habitats is +14%. There are no hedgerows in the Site and only very minor, short-term temporary and recoverable impacts on watercourses.

This project does not impact on any irreplaceable habitats.

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1 Introduction

1.1 Background of the Project

1.1.1 Scottish and Southern Electricity Networks (SSEN Transmission), operating under licence held by Scottish Hydro Electric Transmission plc, to operate and develop the high voltage electricity transmission system in the north of Scotland and remote islands commissioned AECOM to undertake a Biodiversity Net Gain (BNG) assessment for Fort Augustus 400 kV Substation Upgrade using the SSEN Transmission Biodiversity Net Gain Toolkit[1] (hereafter 'SSEN Transmission Toolkit'). SSEN Transmission, hereafter referred to as "the applicant", propose to extend the substation at Auchterawe, Fort Augustus, Inverness-shire, hereafter referred to as the "Proposed Development". The purpose of this report is to assess the biodiversity net gains or losses resulting from the impacts of the Proposed Development.

1.1.2 The applicant seeks planning permission under the Town and Country Planning (Scotland) Act 1997, (as amended) (hereafter the '1997 Act') to construct and operate electricity infrastructure which will form an extension to the existing Fort Augustus 400 kV Substation. The application will be supported by a Voluntary Environmental Appraisal (EA).

1.2 Site Description

1.2.1 The extent of the wider 'Project Site' is defined by the 'Red Line Boundary' shown on the Baseline and Post-development habitat plans in Annex B and Annex D respectively.

1.2.2 The Project Site is approximately 53.49 ha, measuring approximately 750 x 830 m, and is located at OS Grid Reference: NH 35667 08290. The Project Site is within Glen Mor (the Great Glen), in the valley of the River Oich. The surrounding land largely comprises species-poor commercial forestry plantation, mostly of Sitka spruce *Picea sitchensis*, but with localised stands of pine woodland dominated by Scots pine *Pinus sylvestris*. These woodland types are also present within the Project Site, in addition to semi-natural deciduous woodlands along watercourses (the Auchteraw Burn and the Allt na Feàrna). Existing substation infrastructure is present at the centre of the Project Site. The Project Site also contains localised patches of degraded blanket bog, wet heath, dry heath, dense scrub, upland acid grassland and neutral grassland.

1.1

[1] SSEN Transmission (2022). SSEN Transmission Toolkit

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1.3 Proposed Development Description

1.3.1 The applicant is proposing to upgrade the existing Beauly-Denny 275 kV circuit to 400 kV to mirror the ratings of the existing 400 kV circuit which runs along the route. This upgrade can make use of the existing overhead line (OHL) infrastructure but requires alterations/additions to the associated substations along the route, namely at Beauly, Fasnakyle, Fort Augustus, Tummel/Errochty/Kinardochy and Cambushinnie (Braco West).

1.3.2 The applicant proposes to replace the existing transformers at Fort Augustus substation, which will require an extension of the existing substation platform and the installation of 400 kV infrastructure within the Substation Area. In addition, the applicant proposes to remove some existing 275 kV equipment and a Sustainable Drainage System (SuDS) basin. Felling of woodland is required to accommodate an overhead line wayleave – this is referred to as the 'Wayleave Felling Area'. A 'Temporary Compound / Laydown Area' within the north-east of the Site will be used during construction and will not be subject to permanent habitat change.

1.3.3 Components of the Proposed Development which are subject to consent under the 1997 Act consist of:

- Construction of a substation platform of 4.60 ha to accommodate a Gas Insulated Switchgear (GIS) substation by means of cut and fill earthworks and importation of materials as required;
- New Gas Insulated Switchgear building, approximately 70 min in length, 32m in width and up to approximately 14.5m in height;
- Construction of approximately 950m of new access track within the existing substation site and upgrade of the existing perimeter track;
- Upgrade of the existing SuDs pond, comprising any upgrades or modification to the existing basin adjacent to the substation platform and associated drainage modifications. Includes infill of one existing SuDs pond at the southwest corner of the site;
- Removal of existing 275/132kV 240 Megavolt-amperes (MVA) transformers at Fort Augustus, which will be replaced with 400/132kV 240MVA transformers;
- Replacing all 275kV switchgear and infrastructure within the substation to facilitate the upgrade of the Fasnakyle and Tummel circuits to 400kV (the overhead line is constructed to 400kV specification but is presently operating at 275kV);
- Installation of four 400kV bays for interconnector circuits (two at the existing busbar and two at the new busbar);
- Two 400kV reactors and associated switchgear bays;
- Two bus coupler bays and a bus section bay;
- Two bays for future connections;
- Further space provision for two future bays;
- Installation of two new EV chargers for four parking bays and two standard parking bays; and
- Replacement of the existing 2.5m substation security fencing with a new 3.5m security fence to meet the upgraded security specifications for critical national infrastructure projects. The new fencing around the proposed platform extension will be built to meet the same specification.

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1.3.4 The substation upgrade will also accommodate electricity infrastructure for the Coire Glas Grid Connection Project (ECU Reference ECU00004736). The scope of works will include:

- Extension to the substation platform for the overhead line landing gantries; and
- Two new gantries and Air Insulated switchgear (AIS) bays.

1.3.5 Additional underground connection works between infrastructure within the substation will be progressed under Permitted Development, namely:

- Connection of two circuits from the proposed Loch Lundie Substation into new bays within the existing 400 kV Gas Insulated Switchgear building; and
- Underground connections between the existing SGTs no's. 5 and 6 and their respective GIS bays which are within the substation existing footprint.

1.4 Scope of Study

1.4.1 This report sets out the results of the BNG assessment and the approach to delivering on the applicants BNG commitments for the Project. This report identifies the baseline biodiversity measured in Biodiversity Units (BU), to achieve positive effects for biodiversity.

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1.5 Policy and Legislation

1.5.1 National Planning Framework 4[2] (NPF4) requires significant biodiversity enhancements be provided in addition to any proposed mitigation stating that "*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*." By carrying out a BNG Assessment and implementing measures to achieve net gain, the Proposed Development will achieve compliance with this aspect of NPF4.

1.5.2 The location of the Proposed Development (comprising substation improvements) is fixed by the current position of the existing substation, which it must be located beside. There are also no irreplaceable or notable habitats (including Highland Council Local Biodiversity Action Plan (LBAP)[3] habitats or areas highlighted in the Highland-wide Local Development Plan (LDP)[4], or of note through biodiversity-related policies of the LDP) in the proposed footprint of the Proposed Development. There were no habitats adjacent to the existing substation for which avoidance was a consideration under the mitigation hierarchy, with the exception that direct impacts on watercourses have been avoided and access routes across a watercourse for the proposed temporary compound are minor, short-term temporary and recoverable. The Proposed Development is thus aligned to the Scottish Government's NPF4 Policy 3 for proposed developments to contribute to biodiversity enhancement.

1.1

[2] Scottish Government (2023). National Planning Framework 4
[3] The Highland Council (2021). Highland Nature: Biodiversity Action Plan 2021 – 2026
[4] The Highland Council (2012). Highland-wide Local Development Plan

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2 Methodology

2.1 Area and Surveys

Desk Based Assessment

2.1.1 A desk study to help establish baseline conditions was completed. The desk study sought to identify ecological features within the Project Site that may be affected by its construction and operation. Ecological features searched for included:

- Any designated nature conservation sites, including locally-designated sites listed in the LDP or LBAP;
- Priority habitats listed in the LBAP or Scottish Biodiversity List (SBL) that might be reasonably occur within the Site;
- Records of protected and/or notable habitats and species.

2.1.2 The following sources were used for the desk study :

- Highland Council Website[5]
- NatureScot SiteLink webpage[6]
- NatureScot Natural Spaces webpage[7]
- National Biodiversity Network (NBN) Atlas Scotland[8]
- Ordnance Survey (OS) 1:25,000 maps and aerial photography[9]
- Scottish Environment Protection Agency (SEPA) Water Classification Hub[10]
- Scottish Forestry Open Data[11]

1.1

[5] The Highland Council (2012). Highland-wide Local Development Plan. [Online] available from: Highland-wide Local Development Plan | Highland-wide Local Development Plan | The Highland Council
[6] Nature Scot. SAC, RAMSAR and SSSIs. [Online] available from: https://sitelink.nature.scot/home
[7] Nature Scot. Natural Spaces webpage. AWI and NWSS for Scotland [Online] available from: https://cagmap.snh.gov.uk/natural-spaces/
[8] NBN Atlas Scotland. Commercially available records of protected species. [Online] available from: https://scotland.nbnatlas.org/
[9] Bing Maps. OS 1:25,000 maps and aerial photography. [Online] available from: https://www.bing.com/maps/
[10] SEPA Water Classification Hub. Watercourse classification data. [Online] available from: https://www.sepa.org.uk/data-visualisation/water-classification-hub/.
[11] Scottish Forestry Open Data. Caledonian Pinewood Inventory. [Online] available from: https://open-data-scottishforestry.hub.arcgis.com/

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Field Assessment

2.1.3 Baseline habitat data was recorded using UK Habitat Classification (UKHab) categories[12]. However, Phase 1 categories[13] and relevant habitat details (including dominant, characteristic, and notable flora and ecological characteristics, particularly those pertaining to condition), as well as National Vegetation Classification[14] (NVC) types, were also recorded. Condition of baseline habitats was assessed in the field by the field surveyor using the condition criteria set out for Defra Biodiversity Metric 3.1[15].

2.1.4 Collection of habitat data was carried out on 23-25 May 2023, by a suitably experienced ecologist, using a GPS-enabled tablet running ESRI FieldMaps loaded with recent aerial photography. The habitat data were refined as necessary using desktop ESRI ArcGIS and recent aerial photography, to maximise habitat mapping accuracy.

2.1.5 Relevant attribute data were extracted from ESRI ArcGIS, including area/length, habitat category and habitat condition, and entered into the SSEN Transmission Toolkit. Connectivity and strategic significance were added (see 2.2 below), to enable the SSEN Transmission Toolkit to calculate baseline biodiversity units.

Evidence of technical competence

2.1.6 The primary field surveyor and report author is an Associate member of CIEEM with over 16 years' professional experience as an ecologist with specialism in habitats. The report was checked by a full member of CIEEM also specialising in habitats, with over 20 years' professional experience.

1.1

[12] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). UK Habitat Classification V1.1 http://ukhab.org
[13] Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough.
[14] Averis et al (2004) An Illustrated Guide to British Upland Vegetation; Averis, B. and Averis A., (2015) Plant Communities Found In Surveys By Ben And Alison Averis But Not Described In The UK National Vegetation Classification. Unpublished document; British Plant Communities Volume 3 Grassland and Montane Communities. Cambridge University Press, Cambridge.; Rodwell, J.S. (ed.). (1991a). British Plant Communities Volume 1 Woodlands and Scrub. Cambridge University Press, Cambridge.; Rodwell, J.S. (ed.) (1991b). British Plant Communities Volume 2 Mires and Heaths. Cambridge University Press, Cambridge.
[15] Natural England (2022). Biodiversity Metric 3.1 - Habitat Condition Assessment Sheets

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2.2 Approach to Biodiversity Net Gain

2.2.1 A full BNG Assessment was undertaken for the Project Site. The BNG assessment was completed within the SSEN Biodiversity Toolkit following the SSEN Biodiversity Net Gain Toolkit User Guide (2023). This method has been revised to align with Natural England Biodiversity Metric 3.1, adapted to reflect the requirements of Scottish habitats, to quantify losses and gains of biodiversity. 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.

2.2.2 The SSEN Transmission 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 and Linear Watercourse (W) Units. Area-based habitats are necessarily impacted by the footprint of the Proposed Development, therefore area-based Biodiversity Units are always relevant. Linear Hedgerow Units are irrelevant in this case because there are no hedgerows in the Site. Watercourses will not be affected with the exception of minor, short-term temporary and recoverable impacts on bankside vegetation caused by temporary vehicular/pedestrian access routes from the proposed temporary compound to the works area. Since the bankside vegetation is expected to recover within two years of removing the small access crossing points, with no impact on the channel itself, there is considered to be no net impact on watercourses, thus Linear Watercourse Units are not relevant in this case.

2.3 Limitations and Assumptions

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

Habitat within the footprint of the Proposed Development is assumed to be completely and permanently lost (except for temporary compounds where most of the habitat is expected to recover within two years following removal of the compounds, in which cases the habitats are not including in the BNG calculation);

- The applicant has advised that with very limited exceptions, all woodland that has suffered windblow, and previous tree planting that has not established as intended and requires remediation, will be replanted according to a woodland management plan (Appendix G of accompanying EA), and that this would be implemented regardless of whether the development proceeded. Therefore, proposed woodland planting / remediation offers no additionality for BNG purposes and has not been included in the BNG calculation;
- There are two proposed crossing points across the Allt na Fearna for vehicles and pedestrians from the proposed temporary compound to the construction area. However, these crossing points are narrow and temporary, and under the woodland management plan there will be remediation of woodland along this stream. Consequently, the impact on condition of the Allt na Fearna from the temporary crossing will be negligible and likely to largely recover within two years, and woodland remediation along the stream will more than compensate for any very minor loss of trees/shrubs. Therefore, there is assumed to be no net effect on the Allt na Fearna and linear watercourse BNG calculations have thus not been included;
- It is assumed that sufficient soil removed from the footprint of the Development will be available to spread on baseline poor quality grasslands (often with poor to semi-

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absent soil) at the on-site locations where it is proposed that better quality grasslands be created by sowing (as shown in the Post-development Habitat Plan in Annex D). If there is insufficient soil during construction, it assumed that similar soil will be imported from elsewhere.

- all baseline habitat areas/lengths have been calculated in ESRI ArcGIS from the digitised features of the baseline habitat map. Where habitat boundaries coincided with discernible boundaries on aerial imagery available at the time of survey, accuracy is as determined by the accuracy and clarity of the aerial imagery. Otherwise, habitat boundaries are as estimated in the field. Note also that habitats often grade into each other without a sharp boundary, and in these cases best placement of the boundary has been estimated. For these reasons, baseline habitat areas/lengths are approximations only;
- there was no access to the existing substation platform during the field survey due to health and safety concerns. However, the area is almost entirely artificial surfaces and buildings of little to no biodiversity value. Where semi-natural habitats were present within the existing substation platform, these were surveyed and mapped from the boundary of the existing substation platform;
- the extent of post-development habitats has been derived from the baseline habitats (which were subject to the limitation above) and the Proposed Development extents;
- calculations involving habitat areas/lengths are rounded to two decimal places in the SSEN Transmission Toolkit, therefore the calculations are to that level of accuracy; and
- baseline habitats and conditions may change with further elapsed time since the field surveys informing this BNG assessment were completed. However, it is unlikely given the current land ownership of the Site and the nature of habitats that there would be any other significant changes relevant to BNG for several years.

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3 Results

3.1 Biodiversity Baseline

3.1.1 The baseline habitats impacted by development are shown in the baseline habitat plan (see Annex B) detailed in the project Biodiversity toolkit (see Annex C and Annex G) and are summarised here:

- Footprint of Proposed Development (excluding temporary compound / laydown area, wayleave felling area and SuDS pond to be removed – these are grouped separately below):
  - blanket bog (modified – poor condition) 0.30 ha
  - upland acid grassland 1.56 ha
  - other neutral grassland (with tall ruderals) 0.01 ha
  - other neutral grassland 0.13 ha
  - other neutral grassland 0.06 ha
  - upland heathland (dry) 0.08 ha
  - upland heathland (wet) 0.44 ha
  - gorse scrub 0.02 ha
  - mixed scrub 0.95 ha
  - artificial unvegetated, unsealed surface 1.81 ha
  - suburban/mosaic of developed/natural surface 0.01 ha
  - other Scots pine woodland 0.01 ha
  - other coniferous woodland 0.05 ha
- temporary compound / laydown area:
  - upland Heathland (Wet) 0.77 ha
- zones for habitat measures:
  - upland Acid Grassland 0.55 ha
  - upland Acid Grassland 1.39 ha
  - other Neutral Grassland 0.22 ha
  - other Neutral Grassland 1.35 ha
  - other Neutral Grassland 0.40 ha
  - other Conifer Plantation 0.33 ha
  - other Conifer Plantation 0.04 ha
  - sparsely Vegetated Land - Ephemeral 0.72 ha

3.1.2 The baseline area biodiversity units (for the combined footprint of the Proposed Development plus areas around it for proposed habitat measures) are 53.22.

3.1.3 There are no hedgerows within the Scheme Area, and there is assumed to be no net effect on the Allt na Fearna as discussed above, therefore linear habitats are not considered further in this assessment.

3.1.4 There are no irreplaceable area-based habitats within the footprint of the Proposed Development.

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3.2 Temporary Impacts

3.2.1 Impacts to habitats which are reversible and can return to same extent and ecological condition within two years, can be considered temporary. Temporary impacts have not been included in the toolkit calculations as there are no permanent adverse impacts. The following temporary impacts relating to the Proposed Development have been identified: the majority of species-poor habitats in Poor condition within the Temporary Compound / Laydown Areas (with the exception of wet heath in the Upland Heathland patch in this part of the Site, which is nevertheless still in Poor condition).

3.3 Post-development Biodiversity Units

3.3.1 The post-development units have been calculated using the difference between the baseline and the impact on the habitat. The post-development habitats are shown on the post-development habitat plan in Annex D.

3.3.2 The post-development units for (area) are 60.83.

3.4 There are no linear habitat proposals. Although tree planting could be undertaken within the 10 m buffer of the Allt na Fearna, remedial tree planting is already proposed in this area under a woodland management plan that will be implemented regardless of the Proposed Development.

3.5 Habitat Creation (Within the Development Boundary)

3.5.1 Opportunities for habitat creation and enhancement on site have been identified (see Landscape and Habitat Management Plan – Appendix F of accompanying EA). Five habitat types have been selected for habitat creation/enhancement in suitable areas adjacent to the Proposed Development within the wider Site:

- enhancement of Upland Acid Grassland of Fairly Poor condition in the OHL wayleave within the Site to the south;
- creation of Other Neutral Grassland on existing poor quality, non-notable grassland and ephemeral vegetation where soil removed from the construction area is expected to be spread and resown;
- creation of Mixed Scrub on a very small SuDS pond that will be filled in; and,
- creation of Upland Acid Grassland where wet heath lost to the temporary compound area and resown during reinstatement. Note – creation of replacement wet heath has not been proposed because SSE advise that the area could possibly be used for future temporary compounds or grid connections and it has therefore been assumed that sown wet heath is unlikely to properly establish.

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3.5.2 Specific habitat creation requirements including suitable species and additional criteria that will allow the created habitats to meet target condition are detailed in Annex H.

3.5.3 The biodiversity units through on-site habitat measures result in 14% gain, and no off-site measures are therefore necessary.

3.5.4 The Proposed Development will result in a minor loss of the Wetland broad habitat type, caused by loss of a patch of Degraded Blanket Bog which is small (0.3 ha), in Poor condition (dry and disturbed, with vegetation resembling Wet Heath), isolated, and of little ecological value. There are no viable opportunities to create or enhance other habitats constituting the Wetland broad habitat type within the Site. Where other wetlands are present (e.g. other Degraded Blanket Bog in the east of the Site), the circumstances (including hydrological conditions and presence of established Scots pine woodland that would require removal to significantly improve condition of the bog, which is itself not desirable) rule out an intervention of this kind. Also considered was the creation of a new wetland adjacent to the Allt na Feàrna. However, this would also be prone to significant difficulties, owing to local topography and a need to divert flow from the watercourse, which is relatively natural and has its own biodiversity value that could be impacted (such as impacts on local fish population). Therefore, an intervention of this kind is also not considered viable. There are no other realistic options for wetland habitat creation within the Site.

3.6 Habitat Creation (Off-site)

3.6.1 Off-site habitat creation is only required when all options for on-site biodiversity enhancement provision has been explored. Since the BNG target can be met through habitat creation/enhancement on-site, no off-site habitat creation is necessary.

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4 Summary

4.1 The post-development Biodiversity Area Units are 60.83, meaning that the project will achieve 14% net gain.

4.1.1 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 and professional judgement as appropriate. We believe these measures are appropriate to the nature and scale of development. These enhancements have considered surrounding habitats and strengthening nature-networks, such as improving the biodiversity value of open space habitats adjacent to woodland around the Proposed Development.

4.2 This means the project will achieve positive effects for biodiversity, leaving the natural environment in a demonstrably better state than before development work began.

4.3 Summary of Results

Table 1. Summary of biodiversity units

Habitat Type	Base Line Biodiversity Units	Post-Development Biodiversity Units	Difference in Biodiversity Units	Difference in Biodiversity Units (%)	Biodiversity Units Required Off-site
- Area	53.22	60.83	+7.65	+14%	0
Linear (Hedgerows)	0	0	0	0	0
Linear (Watercourses)	0	0	0	0	0

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4.4 Biodiversity Outcomes

4.4.1 The outcome of the proposed habitat works and further biodiversity enhancement measures will be primarily to create more species-rich acid and neutral grassland (and more locally to enhance baseline acid grassland and plant mixed scrub) with higher biodiversity value than existing habitats, and providing further benefits beyond the floristic (such as for invertebrates, including pollinators) for the local environment.

4.5 Implementing and Monitoring

4.5.1 Biodiversity enhancements will be achieved within the following timeframe. All habitat creation measures will be initiated during construction of the Proposed Development, or at most within one year of its completion, with the exception of creation of acid grassland at the temporary compound which will be commenced upon removal of the temporary compound (again, expected to be initiated within one year of completion of the Proposed Development).

4.5.2 To ensure positive enhancements are achieved long term, monitoring and maintenance procedures will be implemented by the SSEN operations team. These are detailed in the Landscape and Habitat Management Plan (Appendix F of accompanying EA) but generally:

- All planting required for habitat creation will be carried out according to appropriate standards, including following the instructions provided by the seed supplier;
- Created (and enhanced) habitats will be monitored to ensure correct establishment, and remedial action taken if growth fails.

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Annex 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). Application of these principles is described in Table 1.

Table 1. Summary of project actions taken to apply good practice principes for BNG.

Principle	Summary of project actions
Apply the mitigation hierarchy	The mitigation hierarchy has been applied during this assessment by engaging with the applicant team and finding the best ecological solutions for the Project Site. However, it has been determined through field surveyor and desk study that a) habitats within the Project Site are neither irreplaceable nor otherwise notable, as a result of their low quality and/or ubiquity. Tree loss is as minimal as possible.
Avoid losing biodiversity that cannot be offset elsewhere	There are no irreplaceable habitats within the footprint of the Proposed Development. Whilst a small patch of blanket bog is present and will be lost, it is very small, very isolated and highly degraded (such that the vegetation on the remaining peat lacks typical bog indicators such as sphagnum and hare's-tail cottongrass *Eriophorum vaginatum*). Multiple wetland creation options within the Project Site were considered to compensate for this minor loss to the Wetland broad habitat type (into which degraded blanket bog falls); however, none were deemed viable owing to impracticality or an undesirable negative effect on the Allt na Fearna.
Be inclusive and equitable	Wider stakeholder engagement was not necessary for this project; however, the SSEN operations team have been consulted throughout the assessment and multiple meetings have taken place to determine best approach to BNG at this Project Site, and to avoid conflicts with other land use management plans (including a woodland management plan for the Project Site, which would be implemented regardless of the Proposed Development).
Address risk	Risk in achieving net gain has been mitigated by selecting created/enhanced habitats and target conditions that are reasonable to attain in the light of guidance and professional judgement, and give sufficient provision of compensatory habitats to achieve net gain.
Make a measurable net gain contribution	Measurable net gain has been achieved for the Proposed Development as documented in this Report and the associated SSEN Biodiversity Toolkit, in this case through on-site biodiversity unit provision using created/enhanced habitats that are reasonable to attain given the nature and location of the Project Site.
Achieve the best outcomes for biodiversity	The project enhances habitats of current low ecological value, that are often disturbed and of poor quality. The provision of higher quality grasslands will provide multiple benefits both floristically and by benefitting other taxa such as invertebrates (including pollinators).

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Be additional	The creation and enhancement of habitats on site are set to achieve a +12% net gain, surpassing the target of 10%.
Create a net gain legacy	The proposed created/enhanced habitats can be expected to persist in the long-term and thus represent a net gain legacy.
Optimise sustainability	The habitat proposals include on-site re-use, where it is available, of surplus excavated material during construction. Such re-use minimises the need for off-site disposal and associated carbon costs.
Be transparent	Through regular meetings and liaison with the AECOM project team and applicant team, the habitat proposals have been clearly presented and altered or removed as necessary. This has included the (correct) removal of all net gain through ecological enhancement of woodland, because such enhancements are due to be delivered regardless of whether the Proposed Development proceeds, via a woodland management plan for the wider Project Site, thus there would be no additionality for BNG purposes.

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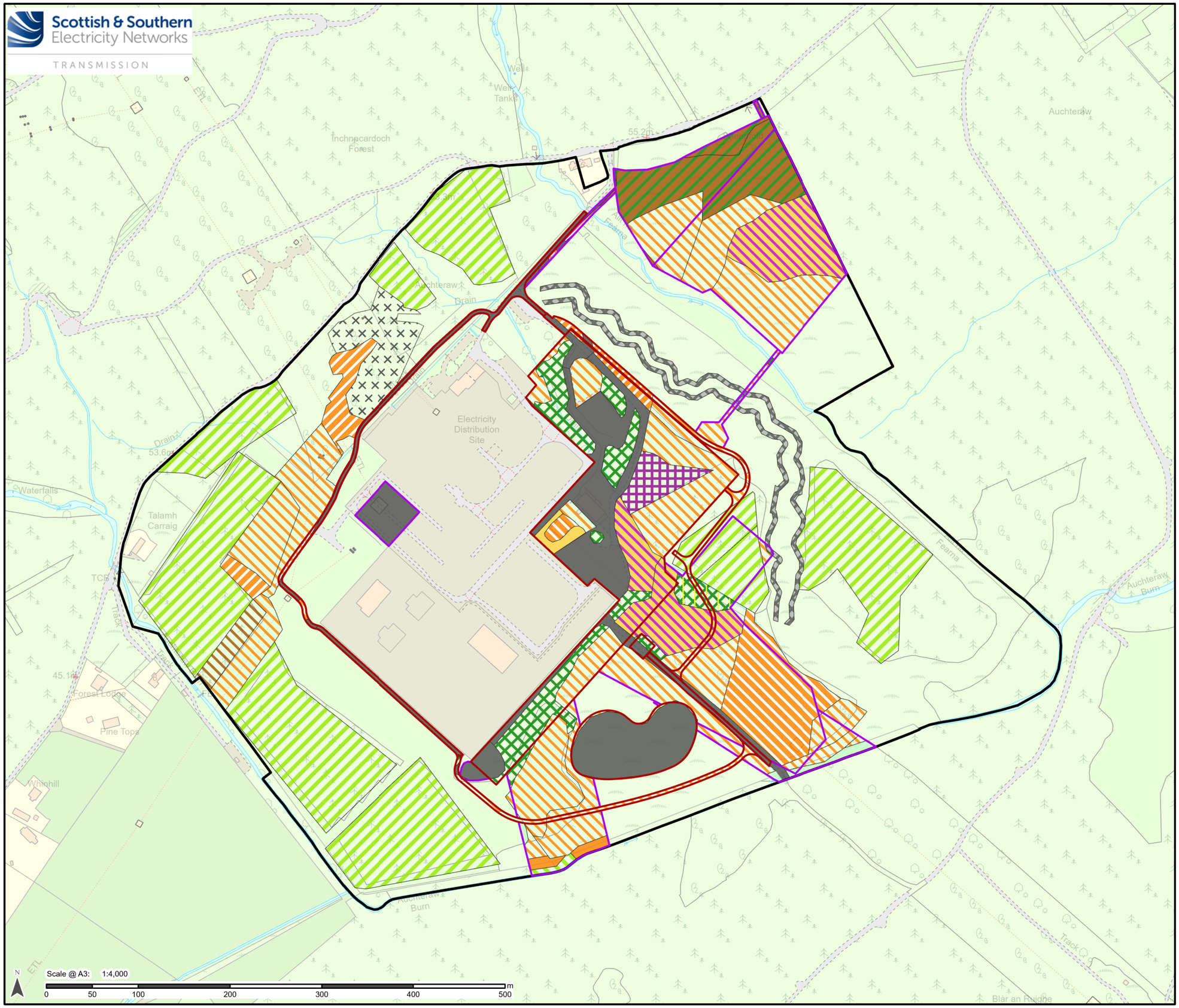
Annex B Baseline Habitat Plan

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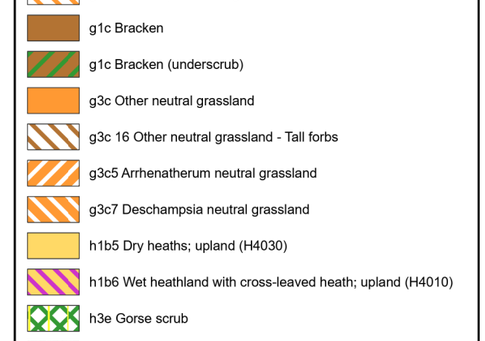
- Operational Site Boundary

Proposed Layout

- Permanent
- Temporary

Habitat Classification

- f1a6 Degraded blanket bog (H7130)
- g1b6 Other upland acid grassland
- g1c Bracken
- g1c Bracken (underscrub)
- g3c Other neutral grassland
- g3c 16 Other neutral grassland - Tall forbs
- g3c5 Arrhenatherum neutral grassland
- g3c7 Deschampsia neutral grassland
- h1b5 Dry heaths; upland (H4030)
- h1b6 Wet heathland with cross-leaved heath; upland (H4010)
- h3e Gorse scrub
- h3h Mixed scrub
- u1 Built-up areas and gardens (artificial flood control channel)
- u1c Artificial unvegetated, unsealed surface
- u1f Sparsely vegetated urban land
- w1f 30 Lowland mixed deciduous woodland - Semi-natural
- w1g 29 Other broadleaved woodland - Plantation
- w2a 30 Native pinewoods - Semi-natural
- w2b 29 Other Scots Pine woodland - Plantation
- w2c 29 Other coniferous woodland - Plantation



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Project No: LT000519

Project: Fort Augustus Substation 400kV Upgrade

Title:
Post-intervention Habitat Plan

Drawn by: JBARR Date: 05/07/2024

Drawing: Annex B

Annex C Baseline Habitats Data

Table 2. Details of baseline habitats for Proposed Development including habitat creation/enhancement areas. (Note: areas shown as 0.00 are too small to register at this level of accuracy.)

Habitat	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic significance	Habitat units
PROPOSED DEVELOPMENT FOOTPRINT (excluding Temporary Compound / Laydown Area, Wayleave Felling Area and SuDS Pond To Be Removed – these are grouped Table 3 below)						
Blanket Bog (Modified – Poor Condition)	0.30	High	Poor	Moderate	Medium	2.18
Upland Acid Grassland	1.56	High	Poor	Moderate	Low	10.30
Bracken	0.00	Medium	Poor	Low	Low	0.00
Other Neutral Grassland	0.01	High	Poor	Low	Low	0.06
Other Neutral Grassland	0.00	High	Poor	Moderate	Low	0.00
Other Neutral Grassland	0.13	High	Poor	Moderate	Low	0.86
Other Neutral Grassland	0.06	High	Poor	Moderate	Low	0.40
Upland Heathland (Dry)	0.08	High	Poor	Moderate	Medium	0.58
Upland Heathland (Wet)	0.44	High	Poor	Moderate	Medium	3.19
Gorse Scrub	0.02	Low	Poor	Low	Low	0.04
Mixed Scrub	0.95	Low	Poor	Low	Low	1.90
Artificial Unvegetated, Unsealed Surface	1.81	Very Low	N/A - No biodiversity value	Low	Low	0.00
Suburban/mosaic of developed/natural surface	0.01	Very Low	N/A - No biodiversity value	Low	Low	0.00
Other woodland; broadleaved	0.00	Medium	Poor	Low	Low	0.00
Other Scots Pine woodland	0.01	Medium	Moderate	Low	Low	0.04
Other coniferous woodland	0.05	Low	Poor	Low	Low	0.10
TEMPORARY COMPOUND / LAYDOWN AREA						
Upland Heathland (Wet)	0.77	High	Poor	Moderate	Medium	5.59
BASELINE HABITATS ELSEWHERE FOR SUBSEQUENT CREATION/ENHANCEMENT						

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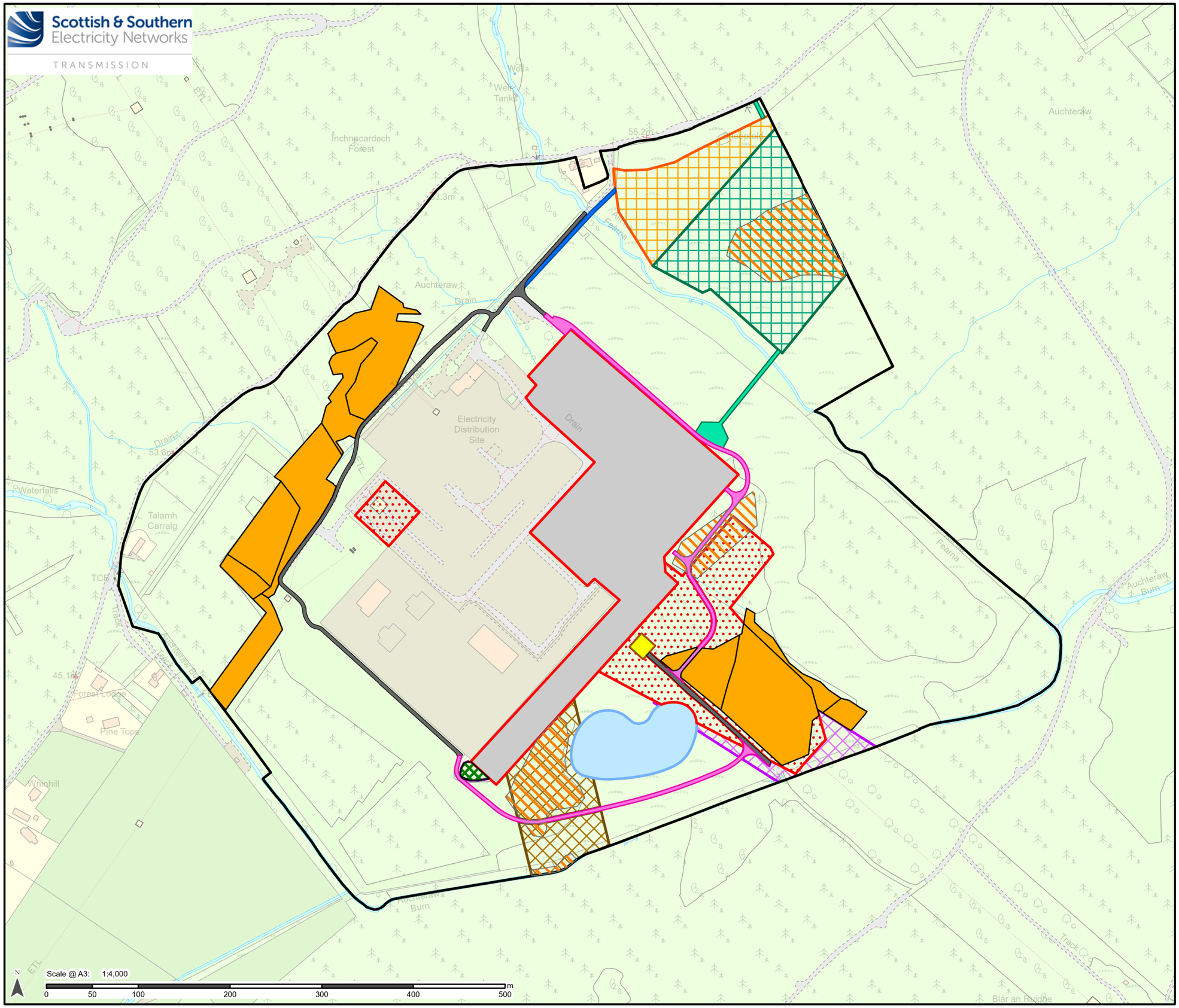
Grassland - Upland acid grassland	0.55	High	Poor	Moderate	Low	3.63
Grassland - Upland acid grassland	1.39	High	Poor	Moderate	Low	9.17
Grassland - Other neutral grassland	0.22	High	Poor	Moderate	Low	1.45
Grassland - Other neutral grassland	1.35	High	Poor	Moderate	Low	8.91
Grassland - Other neutral grassland	0.40	High	Poor	Moderate	Low	2.64
Sparsely vegetated land - Ephemeral	0.72	Low	Poor	Low	Low	1.44
Woodland and forest - Other coniferous woodland	0.04	Low	Poor	Low	Low	0.08
Woodland and forest - Other coniferous woodland	0.33	Low	Poor	Low	Low	0.66
Urban - Artificial unvegetated, unsealed surface	0.04	Very Low	N/A - No biodiversity value	Low	Low	0.00
						53.22

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Annex D Post-development Habitat Plan

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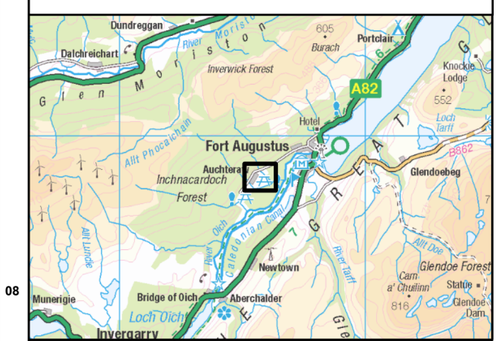
- Operational Site Boundary

Scheme Layout

- Substation Platform Extension Area
- Existing Road to be Upgraded
- Proposed Access Road
- Extent of Working Area
- Tower Base
- SuDS Pond
- SUDs Pond to be Removed
- KE CDM Heavy Vehicle
- KE CDM Pedestrian Access
- KE CDM Laydown Area
- KE CDM Site Compound
- S37 Exemption - Wayleave
- Coire Glas - Wayleave

Post Intervention Habitat Plan

- g1b6 - Other upland acid grassland
- g3c - Other neutral grassland
- h3h Mixed scrub



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Project No: LT000519

Project: Fort Augustus Substation 400kV Upgrade

Title:
Post-development Habitat Plan

Drawn by: JBARR Date: 05/07/2024

Drawing: Annex D

Annex E Post-development Habitat Data

Table 3. Summary of post-development habitats

Habitat	Area (ha)	Distinctiveness	Condition	Connectivity	Strategic significance	Habitat units
TEMPORARY COMPOUND / LAYDOWN AREA						
Upland Acid Grassland	0.77	High	Fairly Poor	Moderate	Low	6.38
HABITAT ENHANCEMENT ELSEWHERE ON-SITE						
Upland Acid Grassland	0.55	High	Fairly Poor	Moderate	Low	5.15
HABITAT CREATION ELSEWHERE ON-SITE						
Other Neutral Grassland	1.39	High	Fairly Poor	Moderate	Low	15.36
Other Neutral Grassland	0.22	High	Moderate	Moderate	Low	2.43
Other Neutral Grassland	1.35	High	Moderate	Moderate	Low	14.92
Other Neutral Grassland	0.40	High	Moderate	Moderate	Low	4.42
Other Neutral Grassland	0.72	High	Moderate	Moderate	Low	7.95
Other Neutral Grassland	0.04	High	Moderate	Moderate	Low	0.44
Other Neutral Grassland	0.33	High	Moderate	Moderate	Low	3.65
Mixed Scrub	0.04	Low	Moderate	Low	Low	0.13
						60.83

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Annex F Rationale for Parameter Assignment

Table 4 below sets out the rationale for condition of each area-based habitat within the Scheme Area and Habitat Compensation Area. All polygons for each UKHab type were of the same condition at the baseline and so are listed below under a single heading for each habitat.

Table 4. Condition rationale for baseline area-based habitats

UKHab type	Condition	Rationale/description
Degraded Bog	Poor	On deep peat but habitat resembles a wet heath community, occurs within an area of former commercial forestry plantation (now felled) to the east of the existing substation platform. The habitat is dominated by a mix of heather *Calluna vulgaris*, deer grass *Trichophorum cespitosum*, purple moor-grass *Molinia caerulea*, with a little *Sphagnum capillifolium* and cross-leaved heath *Erica tetralix*. Heavily impacted by artificial drainage (e.g. adjacent to former commercial plantation forestry and electricity infrastructure with associated drainage channels). Low sphagnum and no cottongrass *Eriophorum angustifolium* cover. Not a recognisable bog vegetation community.
Upland Heathland	Poor	Wet heath is present to the south-east of the existing substation platform. Habitat is dominated by heather with purple moor-grass, tormentil *Potentilla erecta*, cross-leaved heath, *P. schreberi*, *H. splendens*, *S. capillifolium* and green-ribbed sedge *Carex binervis*. Many areas have been impacted by former coniferous plantation forestry and has been invaded by scrub (e.g. gorse *Ulex europaeus* / broom *Cytisus scoparius*) and tree saplings (e.g. Scots pine). The dwarf shrub heath has a poor diversity of age classes. Dry heath occurs in a small, localised patch within an area of previously disturbed ground surrounded by hardstanding, immediately adjacent to the existing substation. The community is dominated by heather with little else, except for a very low cover of other species including purple moor-grass, *Pleurozium. schreberi*, the moss *Rhytidiadelphus squarrosus*, tormentil and soft rush *Juncus effusus*. The heath has a poor diversity of age classes and only one species of dwarf shrub.
Other Scots Pine Woodland	Moderate	Pine woodland bordering the Auchteraw Burn. The woodland is dominated by Scots pine. The semi-natural ground flora is typical with abundant dwarf shrubs (heather and / or bilberry *Vaccinium myrtillus*), wavy hair-grass *Avenella flexuosa* and a thick carpet of mosses including *Hylocomium splendens* and *Plagiothecium undulatum*. Even-aged trees, but with good natural regeneration of trees and moderate vertical structure, moderate dead wood.
Other Scots Pine Woodland	Poor	Pine woodland on previously disturbed land on an artificial bank of the Auchteraw Burn. Dominated by Scots pine, with a poor mossy ground flora with little to no other vegetation.
Other Neutral Grassland	Poor	*Arrhenatherum* neutral grassland is present on previously disturbed land to the north of the existing substation platform. The sward is dominated by Yorkshire fog *Holcus lanatus* and false oatgrass *Arrhenatherum elatius* with ribwort plantain *Plantago lanceolata*, white clover *Trifolium repens*, germander speedwell *Veronica chamaedrys*, creeping buttercup *Ranunculus repens* and greater bird's-foot trefoil *Lotus pedunculatus*. *Deschampsia* neutral grassland occurs in the south-east of the Site, with tall tussocks, on flat and low-lying ground under an existing overhead electricity power line. In addition, there is a small, localised patch within an area of previously disturbed ground that is surrounded by hardstanding, immediately adjacent to the substation. The grassland is dominated by tufted hair grass *Deschampsia cespitosa*, with the moss *Rhytidiadelphus squarrosus*, marsh violet *Viola palustris* and locally frequent Yorkshire fog and soft rush. Tall herb habitats are included in this broad habitat type and are dominated by rosebay willowherb *Chamaenerion angustifolium*, with bramble *Rubus fruticosus* agg., raspberry *Rubus idaeus*, cleavers *Galium aparine*, and tufted hairgrass. The grasslands above are all species poor and possess less than 9 species per sq m.
Other Upland Acid Grassland	Poor	Other upland acid grassland is present across the Scheme Area and Habitat Compensation Area in areas of damp, previously disturbed ground. The community often has abundant to dominant soft rush, with frequent neutral grasses such as Yorkshire fog and tufted hairgrass, with heath bedstraw *Galium saxatile* and tormentil.

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UKHab type	Condition	Rationale/description
		Some stands have locally abundant tall herbs such as rosebay willowherb and foxglove *Digitalis purpurea*. The above grasslands are slightly acidic / circum-neutral on thin soils. On previously felled coniferous plantation on peaty soils, the habitat is dominated by wavy hairgrass with heath bedstraw, *H. splendens* and tormentil. These grasslands are acidic and on peaty soils. The grasslands above generally do not have a recognisable semi-natural vegetation community and have fewer than 9 species per sq m.
Sparsely Vegetated Land	Poor	Open habitat of mostly bare ground is present in the north-west of the Site on previously disturbed ground. These habitats do not have a recognisable semi-natural vegetation community and have less than 9 species per sq m.
Gorse Scrub	Poor	Dense scrub dominated by gorse is present in localised areas to the south-east of the existing substation platform. Species-poor, non-woodland habitat, poor structure.
Mixed Scrub	Poor	Dense scrub dominated by broom is present on embankments adjacent to the existing substation platform. Other species include gorse, bramble, raspberry, and foxglove. Species-poor, non-woodland habitat, poor structure.
Bracken	Poor	Dense bracken *Pteridium aquilinum* with little or no other species. Dense bracken (under-scrub) with other species including bramble, cleavers, Yorkshire fog, common sorrel *Rumex acetosa*, broad-leaved dock *Rumex obtusifolius* and bluebells *Hyacinthoides non-scripta*. Species-poor (less than 9 species per sq m).
Other Coniferous Woodland	Poor	Mature Sitka spruce-dominated plantation with little or no ground flora. Typically with poor age classes of trees, no native trees, no natural regeneration, no recognisable semi-natural vegetation community, no veteran trees or deadwood, much damage and evidence of enrichment.
Artificial Surface, Unsealed	n/a	n/a

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Table 5 sets out the rationale for condition of each additional post-development area-based habitat that will be created.

Table 5. Condition rationale for area-based habitats (Post-development).

UKHab type	Phase 1 type	Target condition	Rationale/description
Acid grassland (creation of)	Unimproved acid grassland	Fairly Poor	Will likely fail on sward height variability and minimum 1% bare ground (although the latter criterion is arguably inappropriate for most grasslands, at least in Scotland), and given likely minimum management a target condition between Poor and Moderate is considered appropriate.
Acid grassland (enhancement of)	Unimproved acid grassland	Fairly Poor	Will likely fail on sward height variability and minimum 1% bare ground (although the latter criterion is arguably inappropriate for most grasslands, at least in Scotland), and given likely minimum management a target condition between Poor and Moderate is considered appropriate.
Other Neutral Grassland (creation of)	Semi-improved neutral grassland	Moderate	Grassland comprising a mix of native species (e.g. Lowland meadow seed mix). No management is intended, thus 'other neutral grassland' is anticipated and only Moderate condition – some species would not persist therefore Lowland Meadow would not persist, but some species would including black knapweed *Centaurea nigra* and the sward would be more diverse than the current very poor and often disturbed grassland, in places with little soil. Likely to fail on bare ground/undesirable species criteria (although as mentioned above 1% minimum bare ground is arguably not appropriate), but still expected to achieve Moderate condition through species richness greater than 9 spp per square metre.
Mixed Scrub (creation of)	Dense scrub	Moderate	Scrub with a mix of suitable species for the local area. No management is intended. Very small area adjacent to development so would fail on scrub height/age variability.

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Table 6 sets out the rationale in determining strategic significance of baseline and post-development habitats.

Table 6. Strategic significance rationale

Source	Relevant habitats	Applicable policy or guidance	Application to assessment
Highland-wide LDP[16]Error! Bookmark not defined.	Forestry, woodland and trees. Designated sites. Habitats important for Green Networks, including: • rivers and burns; • loch and ponds; • wetlands; and, • areas of woodland. Features of the landscape of major importance because of their linear and continuous structure or combination as habitat "stepping stones" for the movement of wild fauna and flora, including: • Annex I habitats of the EC Habitats Directive; • habitats of priority and protected bird species; • local priority habitats listed; and, • Scottish Biodiversity List priority habitats.	Policies 51, 52, 57, 60, 74	The LDP does not specifically designate the location of the Site for biodiversity actions. Some habitats within the Site could be considered parts of Green Networks, but arguably none are important parts of Green Networks because they are very small in the wider landscape context or they are species-poor habitats of little note. The Site is not within a designated site. No forestry/woodland will be lost within the Proposed Development footprint and there will be no overall loss of woodland. Given the above, policies within the Highland LDP are not considered relevant to strategic significance for this assessment.
Highland Council LBAPError! Bookmark not defined.	• Upland and moorland; • Peatland and wetland; • Woodland and forest; • Freshwater: rivers, burns and lochs; and, • Agricultural land.	Section 2: Action for Habitats	Habitats within the Site that are LBAP priorities are: • Degraded blanket bog; • Upland wet heathland; • Upland dry heathland; • Other priority habitat rivers; and, • Other rivers and streams. Habitats that are not priorities comprise Other Woodland – Broadleaved, Other Scots Pine Woodland, Other Coniferous Woodland, Mixed Scrub, Gorse Scrub, Other Upland Acid Grassland (all are species-poor and highly disturbed examples), Other Neutral Grassland, Bracken and Artificial Surfaces.

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[16] Highland-wide Local Development Plan.

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Annex G SSEN Transmission Toolkit Baseline Calculation

Shown below for the Site is the final output of the SSEN Transmission Toolkit. This output accounts for the proposed habitat measures set out in this Report. Note that the % change in linear units (hedgerows and watercourses) are not shown below because there are no hedgerows in the Site and there is not considered to be any net effect on watercourses (see Section 2.6).

Biodiversity Project Toolkit

Scottish & Southern Electricity Networks

Summary outputs

Review the automatically updated biodiversity unit and linear habitat (hedgerow (H) and water courses (W)) results graphs to help the optioneering process and site selection.



% Change	
Biodiversity (Area)	14%
Linear Units (H)	-
Linear Units (W)	-

Before Works	Units
Biodiversity (Area)	53.22
Linear Units (H)	0.00
Linear Units (W)	0.00

Post Development	Units
Biodiversity (Area)	60.83
Linear Units (H)	0.00
Linear Units (W)	0.00

Net Change	Units
Biodiversity (Area)	7.61
Linear Units (H)	0.00
Linear Units (W)	0.00

wsp

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Annex H Habitat Creation and Enhancement Requirements

The following describes how criteria necessary for the proposed created and enhanced habitat target condition can be achieved, and recommends measures, including which species are preferred for planting to maximise biodiversity benefits, based on professional judgement.

All planting required for habitat creation should be carried out according to appropriate standards, including following the instructions provided by the seed or plant supplier. Created habitat should be monitored to ensure correct establishment, and remedial action taken if growth fails.

Acid grassland

An upland acid grassland seed mix containing species native to the locality should be used to create slightly better quality acid grassland than exists or enhance existing. It is assumed that soil from the Development footprint would be spread in the creation areas on existing very poor grassland (often poorly vegetated and in places with little soil), and sown with acid grassland seed mix. Where enhancement is proposed, ground should be scarified if necessary and more diverse acid grassland seed mix sown amongst existing vegetation. Where creation is proposed on soil from the Development footprint, soil should be spread at 2 to 15 cm depth before seeding. No management is assumed therefore Fairly Poor is the target condition.

Other Neutral Grassland

A lowland meadow seed mix containing species native to the locality should be used to create a moderately species-rich neutral grassland. It is expected, given an assumption of no management other than possible occasional mowing, that several lowland meadow species would not persist. It has been assumed that created grassland would be managed with minimal effort, hence Other Neutral Grassland has been proposed rather than a better-quality grassland that requires more management, such as Lowland Meadow. On-going management would ideally include a yearly cut with the arisings removed (to be composted locally) – any cutting must have the arisings removed otherwise the arisings left in situ will ultimately rot and fertilise the grassland and result in reduced species diversity. However, without management, and although some species would not then persist, there would likely still be at least nine species per square metre (including e.g. black knapweed) and therefore Moderate condition is considered achievable (Good condition is not achievable, since at least varied sward height and 1% minimum bare ground requirement are likely to fail).

Other Neutral Grassland creation (on areas of poor quality baseline Upland Acid Grassland, Other Neutral Grassland and Sparsely Vegetated Land) should be preceded by spreading soil from the Development footprint (or elsewhere where not from enriched agricultural soil) at 2 to 15 cm depth. Where neutral grassland creation is proposed, the substrate is slightly acidic to circum-neutral.

Mixed Scrub

Scrub to be planted at a suitable density, using plants of local provenance. Suitable growing conditions must be prepared (placing soil to create a suitable growing medium). No ongoing management is intended. Provided that the scrub establishes, it will easily meet Moderate condition (Good is not achievable because scrub height/age variability will fail).

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