

Project related

Broad Habitat	UK Habitat Classification	Habitat Area (ha)	Distinctiveness	Condition	Strategic Significance	Required Action	Biodiversity Units
Grassland	Modified grassland	15.047	Low (2)	Poor (1)	Low Strategic Significance (1)	Same distinctiveness or better habitat required \geq	30.09
Woodland and forest	Other woodland; broadleaved	0.375	Medium (4)	Poor (1)	Low Strategic Significance (1)	Same broad habitat or a higher distinctiveness habitat required (\geq)	1.65
Woodland and forest	Other woodland; broadleaved	0.187	Medium (4)	Poor (1)	Low Strategic Significance (1)	Same broad habitat or a higher distinctiveness habitat required (\geq)	0.82
Heathland and shrub	Gorse scrub	0.298	Medium (4)	Poor (1)	Low Strategic Significance (1)	Same broad habitat or a higher distinctiveness habitat required (\geq)	1.19
Urban	Developed land; sealed surface	0.184	Very Low (0)	N–A - Other	Low Strategic Significance (1)	Compensation Not Required	0.00
Woodland and forest	Other coniferous woodland	1.355	Low (2)	Poor (1)	Low Strategic Significance (1)	Same distinctiveness or better habitat required \geq	2.71
Woodland and forest	Other coniferous woodland	0.318	Low (2)	Poor (1)	Low Strategic Significance (1)	Same distinctiveness or better habitat required \geq	0.64

4.4.1 Calculation of Biodiversity Unit Losses

The Proposed Development will, by its construction, result in a permanent loss of habitat on-site. The habitat types, respective areas and their associated biodiversity unit value lost are presented below in **Table 4.4**.

Table 4.4 Area habitat losses as result of the Proposed Development

UK Habitat Classification	Area retained (ha)	Baseline units retained	Area of habitat lost (ha)	Units lost
Modified grassland	2.463	9.85	0.00	0.02
Other neutral grassland	0.845	6.76	0.12	0.99
Ponds (non-priority habitat)	0.002	0.02	0.00	0.00
Vacant or derelict land	0.21	0.42	0.01	0.02
Developed land; sealed surface	0.243	0.00	0.00	0.00
Modified grassland	0.133	0.27	0.00	0.00
Mixed scrub	0.072	0.58	0.09	0.69
Other neutral grassland	0.251	2.01	0.17	1.38
Gorse scrub	0.115	0.92	0.15	1.17
Gorse scrub	0.062	0.50	0.00	0.02
Blanket bog	0.168	Irreplaceable habitat - no units generated Δ^2	0.00	Irreplaceable habitat - no units generated Δ
Modified grassland	0.00	0.00	15.09	30.18
Other woodland; broadleaved	0.373	1.64	0.00	0.02
Other woodland; broadleaved	0.188	0.83	0.00	0.00
Gorse scrub	0.186	0.74	0.11	0.45
Developed land; sealed surface	0.179	0.00	0.01	0.00
Other coniferous woodland	1.324	2.65	0.03	0.07
Other coniferous woodland	0.266	0.53	0.05	0.11
Total	7.08	27.71	15.85	35.11

² Blanket bog is classed as an irreplaceable habitat in the Statutory Biodiversity Metric as it is technically very difficult to recreate once destroyed. As such, the BNG requirement is disappplied for these habitats. Any losses or deterioration impacts to irreplaceable habitats cannot be calculated by the biodiversity metric. All irreplaceable habitats must be recorded and bespoke compensation agreed upon for any losses.

4.4.2 Post-Development Habitat Creation

The Proposed Development includes post-development habitat creation on-site, as shown in **Figure 4.15**. The proposed habitats, areas and biodiversity units are summarised in **Table 4.5**.

Table 4.5 Post-development habitat creation

Proposed habitat	Area (ha)	Distinctiveness	Condition	Final time to target condition (years)	Habitat units delivered
Other woodland; broadleaved	0.090	Medium	Moderate	15	0.47
Other woodland; coniferous	0.025	Low	Moderate	30	0.02
Developed land; sealed surface	0.494	Very Low	N/A - Other	0	0.00
Sustainable drainage system	0.128	Low	Moderate	3	0.34
Mixed scrub	1.507	Medium	Poor	1	5.23
Gorse scrub	0.546	Medium	Poor	1	2.11
Developed land; sealed surface	2.944	Very Low	N/A - Other	0	0.00
Sustainable drainage system	0.16	Low	Moderate	3	0.42
Modified grassland	0.025	Low	Moderate	4	0.09
Other woodland; broadleaved	0.130	Medium	Moderate	15	0.328
Developed land; sealed surface	0.015	Very Low	N/A - Other	0	0.00
Modified grassland	0.035	Low	Moderate	4	0.07
Developed land; sealed surface	0.125	Very Low	N/A - Other	0	0.00
Other woodland; broadleaved	0.727	Medium	Moderate	15	3.76
Other neutral grassland ³	9.399	Medium	Poor	2	35.01
Total	16.19	-	-	-	48.18

³ The other neutral grassland included in Table 4.5 is derived from previously modified grassland pasture which will be impacted for more than two years, and therefore within the metric has been classified as a permanent habitat loss followed by habitat creation to account for its reinstatement post-development.



- Legend**
- Planning Boundary
 - Existing Features**
 - Coniferous woodland
 - Broadleaf woodland and scrub
 - Pasture farmland retained
 - Trees and other vegetation to be removed
 - Proposed Landscape Features***
 - Attenuation basin
 - Proposed contours (1m interval)
 - Individual tree planting
 - Tree & shrub planting
 - Heather / juniper scrub with birch trees
 - Area restored to pasture
 - Species rich neutral grassland
 - Existing wetland area retained and enhanced
 - Hedgerow with trees
 - Acoustic barrier: 4m high
 - Acoustic barrier: 3m high
 - Palisade security fence: 2.4m high with 600mm electric topper
 - Post & wire mesh stock proof fence

*All planting native species

Client
Field Energy

Project
Knocknagael Battery Storage System

Drawing Title
Proposed Landscape Restoration

Created by JE	Reviewed by MCE	Sheet Size A1	Scale 1:1250	Date Created 21.06.24
Drawing No. Drawing R01				Revision 04

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Figure 4.15 Post-development habitat creation on-site

4.4.3 Biodiversity Enhancement

The Proposed Development is predicted to result in a loss of **35.11** biodiversity units from the baseline conditions set out in **Table 4.3**. The proposed habitat creation on-site results in a net unit increase of **13.07** biodiversity units, which is a net change of **20.8%**, and therefore it can be concluded that biodiversity net gain is achieved.

The baseline biodiversity units calculated do not include the blanket bog, as the Statutory Biodiversity Metric classes this habitat as irreplaceable and any losses require bespoke compensation. However, the blanket bog sits within a construction exclusion zone for the Proposed Development; all of the blanket bog habitat will therefore be retained and will therefore not impact the outcome of the biodiversity enhancement assessment.

The post-development habitat layout around the Knocknagael Substation and the BESS Site will improve the overall biodiversity within the site and enhance connectivity to the wider landscape. Habitats of higher ecological value better will be connected and enhanced through the proposed planting of various native tree and shrub species suitable for the region as well as heather and juniper scrub planting. Additionally, the tree, shrub and scrub planting will provide enhanced foraging and nesting opportunities for birds, improve habitat conditions for reptiles, amphibians, and mammals as well as foraging and commuting bats and ground nesting birds.

Individual tree planting in hedgerows will improve the ecological function of these linear features, providing enhanced routes for commuting bats and improve and connect foraging habitat. The addition of bat boxes, bird boxes and an owl box will further encourage nature networks and connections across the site.

The proposed grassland enhancement will turn pasture into species rich swards which will boost species diversity within this habitat type, resulting in improved conditions for pollinators and other terrestrial invertebrates.

Future management of the habitats post-development is recommended in the form of a Biodiversity Enhancement Management Plan (BEMP) as described in **Section 5.2.4**. Monitoring and management will be developed post-consent, which will consider the final time to target condition included in **Table 4.5**.

5 Discussion and Recommendations

5.1 Biodiversity Enhancement Management Plan

A BEMP will be delivered post consent will be informed by the findings of the PEAR and detail the management of biodiversity including habitats during the construction, operation and decommissioning periods.

The BEMP will:

- Provide detail on the locations and techniques for creation and restoration of habitats;
- Describe the management objectives for each habitat type that will be created, enhanced, or restored in order to establish success criteria for the different habitat types affected; and
- Be agreed in advance of construction with the Highland Council.

The monitoring against the agreed management objectives will be an essential part of the BEMP and will be used for evaluating effective habitat creation and restoration interventions; as well as identifying the need to finetune management. On this basis, it is expected that the BEMP will function as a live document where success, criteria and management prescriptions may be subject to revision subject to relevant agreements based on monitoring findings.

5.2 Mitigation Recommendations

Species and habitat specific mitigation measures will be implemented to avoid potential impacts on ecological receptors from the Proposed Development.

All works should follow the mitigation hierarchy set out by the Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) in their Guidelines for Ecological Impact Assessment In the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Following the mitigation hierarchy ensures potential impacts on ecological receptors are recognised early in development and can be addressed appropriately and proportionally. The hierarchy is as follows, starting with avoidance and as a last option the use of enhancement as mitigation:

- **Avoidance:** Seek options that avoid harm to ecological features;
- **Mitigation:** Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation;
- **Compensation:** Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures; and
- **Enhancement:** Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

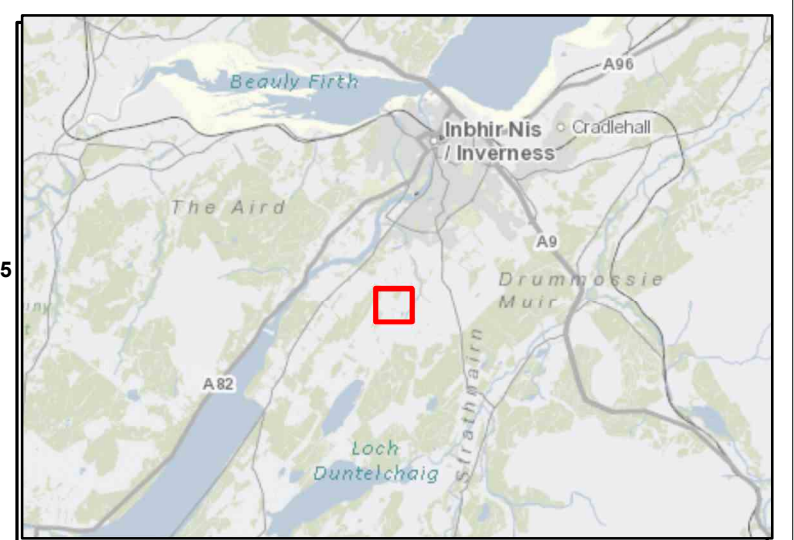
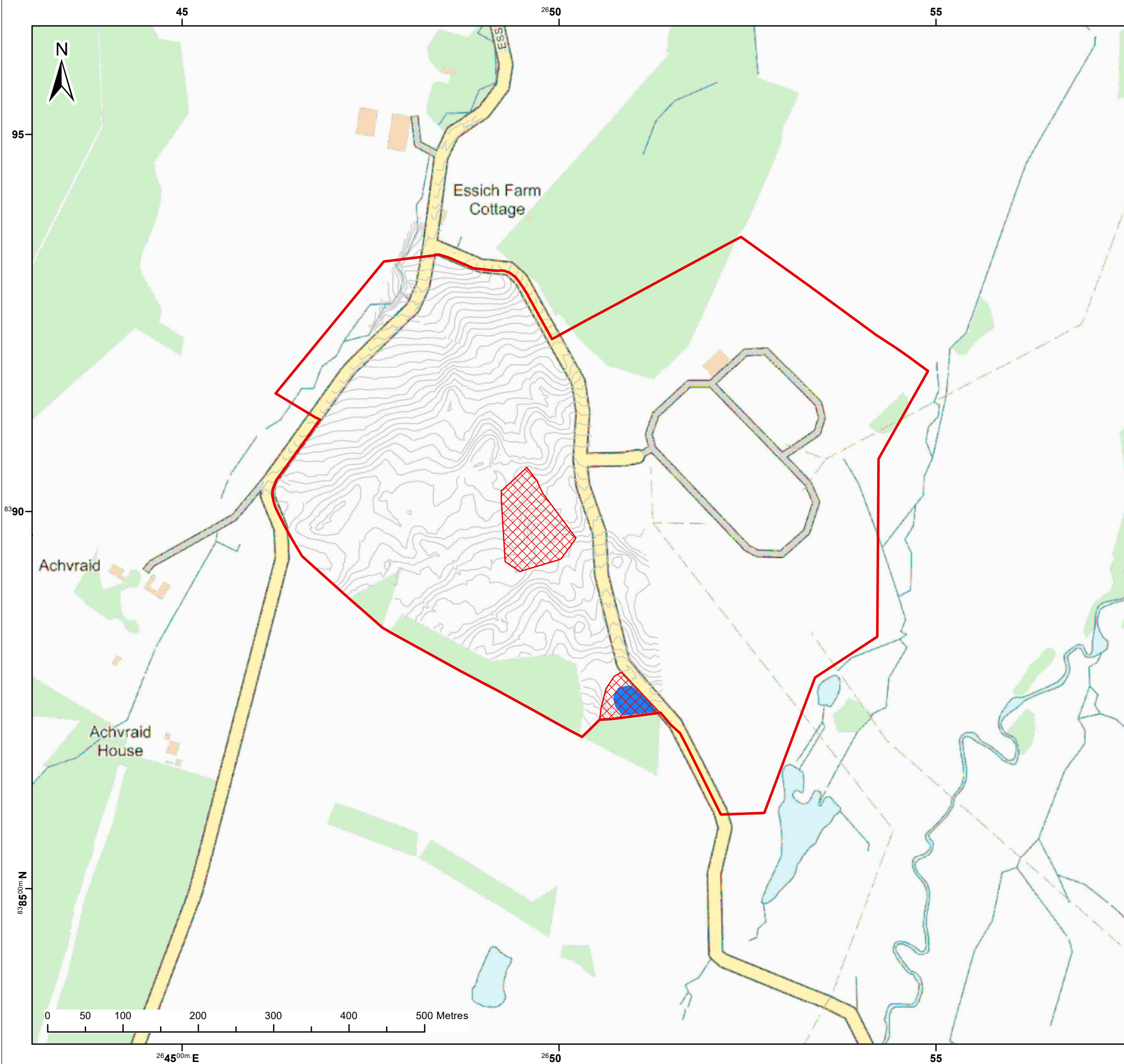
It is anticipated that all infrastructure associated with the Proposed Development will be within the Ecology Study Area. In the event development outside of the Ecology Study Area is required, update assessments will be carried out.

5.2.1 Protected Sites





There are no statutory or non-statutory designated sites within or adjacent to the Site. Given the scale of Proposed Development, impacts beyond the site boundary are considered unlikely and therefore no impacts to designated sites are anticipated.

Several SBL habitats are present within the site boundary. These comprise two areas of riparian woodland, and an area of blanket bog. The following mitigation measures are recommended:

- SBL habitats should be retained alongside any development;
- Any construction related activities, including storage of materials and earthworks should be kept at least 15 m from the edges of these habitats (construction exclusion zones are shown in **Figure 5.1**); and
- Appropriate pollution prevention measures must be implemented to ensure no polluted surface water or construction materials enter surface water which may drain into these habitats.



Legend:

-  Construction Exclusion Zone selection
-  Planning Boundary
-  Bog
-  Existing Site Topography

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Client:	Project:
Field Knocknagael Ltd	Knocknagael Battery Energy Storage System

Title: Construction Exclusion Zones

Figure: 6.1	Drawing No: PC3506-RHD-03-ZZ-DG-Z-0001				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	26/06/2024	MW	EW	A3	1:5,000

Co-ordinate system: British National Grid



5.2.2 Habitats

The following mitigation measures are recommended:

- The layout of the Proposed Development must avoid loss or degradation of the blanket bog habitat and implement a construction exclusion zone of 15 m from the boundary of this habitat (construction exclusion zones are shown in **Figure 5.1**). Silt fencing and best available pollution prevention techniques are required to avoid pollution of the bog during the construction phase;
- The areas of 'other woodland; broadleaved' should be retained and protected throughout the construction and operational phases of the Proposed Development. Root protection zones must be observed around this habitat to avoid killing and damage to the mature and veteran trees present;
- Impacts to the area of *Holcus-Juncus* neutral grassland and other neutral grassland mosaic habitat north-west of the substation should be avoided during construction, this includes any storage of materials/machinery within these habitats; and
- Any impacts to habitats of high or medium distinctiveness must be compensated for on a 'like for better' basis.

5.2.3 Species

5.2.3.1 Birds

Several notable bird species were observed during the field surveys (**Section 4.2.2.1**). Loch Ashie SPA is within the 3 km of the Ecology Study Area however Slavonian grebe are restricted to marine and freshwater habitats and are unlikely to be present on the Ecology Study Area, and no specific mitigation is required for this species.

The following mitigation measures are recommended:

- The removal of suitable nesting bird habitat, such as scrub, trees, long vegetation and grassland (as shown within **Figure 4.2**) should be undertaken outside of the of the bird nesting season to avoid disturbance of legally protected nesting birds. The nesting bird season is taken to run from March to the end of August.
- If works to remove suitable nesting bird habitat are required within the nesting bird season, then a Suitably Qualified Ecologist must check the area for nesting birds a maximum of 48 hours prior to the commencement of works. Active nests and their associated vegetation must remain until young birds have left the nest.
- To avoid potential adverse effects to nesting birds and to secure biodiversity enhancements, provision of an appropriately worded Species and Biodiversity Protection Plan is recommended. This will accord with NPF4 and will be subject to approval prior to the commencement of works.

5.2.3.2 Bats

The desk study returned no records of bats or their roosts from within or adjacent to the Ecology Study Area. However, the habitats within the Ecology Study Area provide a range of foraging, navigational and potential roosting opportunities.

These opportunities are mostly limited to the areas of habitat which fall outside of the Ecology Study Area or are being retained alongside development.

However, any substantial removal of these habitats or removal of trees from within the 'other woodland; broadleaved' may trigger the requirement of additional bat survey work and mitigation measures to prevent offences under the protective legislation afforded to bat species.

Under the current proposals (4.2.2.2), safeguards are considered to be proportionate to avoid any potential effects upon bats. Safeguards which will require implementation should be secured through an appropriately worded planning condition which requires a Species Protection Plan which is approved by the Highland Council prior to commencement of any enabling or construction related works.

Safeguards may include but are not limited to:

- Retention and protection of 'other woodland; broadleaved' and other individual broadleaved trees within the site boundary;
- No trees within the site boundary shall be removed without prior approval from a suitably qualified ecologist, this may include detailed bat surveys in the event the trees are suspected of providing potential bat roost features;
- Avoiding night-time working to avoid potential disturbance to bat species; and
- Where nighttime working cannot be avoided or any lighting is required, a sensitive lighting scheme should be implemented for construction (in the event security lighting is required) and for the operational phase.

5.2.3.3 Otters and Water Voles

Part of the Essich Burn passes through the site boundary. The source of Essich Burn is located approximately 1.2 km upstream of the site boundary. The lower reaches of the burn do not appear to be connected to any larger watercourses or waterbodies. Given the proximity to the burn's source, the section which passes through the Site is in the upper most reaches of this watercourse where the habitats are likely to provide poor foraging opportunities for otter and water vole. Moreover, the poor connectivity of the burn with other watercourses and waterbodies provides limited opportunities for either species to colonise the section of burn which passes through the Site, or any length of the burn within 250 m of the site boundary. In light of this, resident populations of otter or water vole are likely absent from the section of Essich Burn which passes through the Site, in addition to the lengths 250 m up and downstream of the Site.

However, transient individuals of both species may occasionally make use of the burn and therefore safeguards will be required in relation to any construction related activities within 30m of the burn.

Safeguards must be detailed within an appropriately worded Species Protection Plan. These may include but are not limited to:

- A pre-commencement check of the habitats should be carried out in the event of any construction related activities proposed within 30 m of the watercourse. This includes but is not limited to the drainage connection proposed on the eastern side of Essich Road, approximately 28m from Essich Burn.

5.2.3.4 Amphibians

GCN are considered to be likely absent from the Ecology Study Area. However, common toad, a SBL Species of Principal Importance could be present.

Disturbance and removal of scrub, other neutral grassland, *Holcus-Juncus* neutral grassland and the north-eastern area of modified grassland (located adjacent to the substation) within the Ecology Study Area should be avoided where possible (see Figure 4.2 Habitat mapping from PEA survey for habitat type locations). Where removal is required to facilitate development, safeguards will be required to avoid and reduce the risk of killing and injury of this species.

Safeguards must be detailed within an appropriately worded Species Protection Plan. These may include but are not limited to:

- Implementing a sensitive phased clearance method of suitable habitat;
- timing clearance works to coincide with the amphibian active season (March to September)
- presence of an Ecological Clerk of Works to supervise sensitive activities such as, but not limited to, habitat clearance.

5.2.3.5 Reptiles

Scrub, other neutral grassland, *Holcus-Juncus* neutral grassland and the northeastern area of modified grassland located within the Ecology Study Area provide opportunities for reptile species to be present. The extent of impacts to these habitats are unknown as the final cable route to the Knocknagael substation is subject to agreement with SSEN.

However, in the event any removal or disturbance is required in order to facilitate the Proposed Development, the same safeguards which have been set out for amphibians are applicable and must be implemented to avoid killing and injury.

5.2.3.6 Other Mitigation

The following further mitigation measures are recommended:

- In the event any animals are encountered during the construction phase a suitably qualified Ecologist should be contacted to provide appropriate advice; and
- Any excavations created should have a ramp installed at the end of each workday to provide any mammals which may fall in a means of escape. A suitable ramp would have adequate grip, be at least 30 cm wide and set at an angle of no greater than 45° (e.g., a scaffold board).

5.2.4 Biodiversity Enhancement

Calculations of biodiversity units impacted by the Proposed Development are provided in **Section 4.4**, and significant biodiversity enhancement is predicted to be achieved. In addition to the habitat creation incorporated into the post-developmental design, the Proposed Development should also consider:

- That the habitat creation of mixed scrub should be composed of heather and juniper, ensuring both male and female juniper are planted to allow for self-seeding;
- Grassland areas in the site should be planted with a suitable species rich seed mix; and
- The length of the habitat monitoring and maintenance period will be agreed with the LPA and NatureScot to ensure that proposed biodiversity enhancement is secured. Monitoring and

management measures would be discussed with regulators and agreed post consent in the form of a BEMP, as discussed in Section 5.1.

5.3 Ecological Opportunities

To maximise opportunities for biodiversity alongside the Proposed Development, the following options for ecological enhancement could be implemented:

- Enhancements of modified grassland habitats by resowing with wildflower species;
- Planting of native species rich hedgerows;
- Creating biodiverse water attenuation features;
- Provision of bird boxes, an owl box and bat boxes.

6 Summary and Conclusions

This PEAR has been informed by a desk study review of species and habitat data and a PEA field survey of the Ecology study Area in March 2024.

The Ecology Study Area is dominated by habitats of low ecological interest with negligible potential to support protected or notable species. However, some interest has been recorded within several small areas of habitat, including an area of blanket bog, a SBL Priority Habitat, on the southern boundary (**Figure 4.3**).

Though the area of blanket bog is active, due to the presence of sphagnum moss, the bog is surface water fed and therefore, not considered a GWDTE. Furthermore, the Proposed Development will have no impact on any surface water flowing into the blanket bog area because of the impeding topography and distance to proposed works. No other potential GWDTE are present within the Ecology Study Area.

The value of habitats present and those proposed within the Ecology Study Area have been quantified using the Defra Statutory Biodiversity Metric (Defra, 2023). The Proposed Development will result in a biodiversity net gain of 20.8%.

Habitats of greatest interest within the Ecology Study Area are to be protected and retained alongside the Proposed Development. In addition, areas of new habitat creation are proposed which are anticipated to result in long-term positive effect for biodiversity.

The baseline opportunities for protected and notable species within the Ecology Study Area, and wider site boundary, are considered to be low or negligible. Subject to safeguards outlined herein, no adverse effects are anticipated.

In the event works associated with the Proposed Development are required outside of the Ecology Study Area, additional survey work may be required to ensure appropriate safeguards are implemented where required.

Implementation of mitigation measures recommended herein will prevent significant impacts upon the habitats and species present. These could be secured and detailed within an appropriately worded Species Protection Plan.

7 References

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