



Cush Wind Farm
Phase II

Environmental Impact Assessment Report

Annex 5.7: Habitat & Species Management Plan

Cush Wind Limited



Habitat and Species Management Plan

Cush Wind Farm Phase II

Cush Wind Limited

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1.0 Introduction

1.1 Background

This report has been prepared by SLR Environmental Consulting (Ireland) Limited (SLR) on behalf of Cush Wind Limited (the 'Applicant'). It presents a Habitat and Species Management Plan (HSMP) for Cush Wind Farm Phase II (the 'Project') for an initial 35-year period. The HSMP forms part of the Applicant's commitments for the Project and should be read in conjunction with EIAR Chapter 5 (Biodiversity) and the Natura Impact Statement (NIS).

The 'Project' refers collectively to the proposed wind farm, the c.5 km underground electricity line (UGL) connecting the wind farm switch room to the proposed Mullanafawnia 110 kV substation, and the turbine haul route (THR) accommodation works. The UGL is assessed as part of the wider Project in the EIAR/NIS but does not form part of the development seeking permission under this application. References to the 'Project site' mean the lands within the planning application boundary.

Habitat loss quantities are based on the intersection of the surveyed habitats with the permanent and temporary works footprints associated with the wind farm, UGL and THR accommodation works. Temporarily disturbed habitats will be reinstated following construction, with replacement planting undertaken as specified in this HSMP. Additional off-setting and enhancement planting will be provided at the locations identified in the accompanying figures, on lands within the Applicant's control, to ensure delivery and ongoing management of these measures.

All measures set out in this HSMP will be implemented in full. Any proposed changes will be agreed in writing with the planning authority, in consultation with the National Parks and Wildlife Service (NPWS), where relevant.

1.2 Scope

This HSMP sets out the key objectives and methods by which parts of the proposed project lands (the 'Site') will be managed to the benefit of biodiversity. The HSMP is intended to cover the establishment and management of habitats and species required to compensate for impacts identified within the EIAR. Enhancement measures such as the provision of additional nesting habitat for birds and hibernacula for amphibians and reptiles are included. Most of the information about mitigation measures to be employed during the construction period is included in the Construction Environmental Management Plan (CEMP).

2.0 Hedgerow

The following sections sets out a summary of the baseline conditions for hedgerows including a description and evaluation, along with any ecological trends and constraints that could influence management.

Next listed are the objectives with details of actions that will be implemented in full.

2.1 Summary of Baseline

There are currently 0.07ha and 341.55m of hedgerows at the Project (comprising 0.07ha and 61.49m WL1 Hedgerow, and 280.06m of hedgerows x treeline mosaic) and of these, 61.49m are predicted to be lost (all temporary loss).

Hedgerows were evaluated as being important at the local scale due to providing foraging, resting and breeding habitat for a variety of animal species. They also act as ecological



corridors, connecting fragmented populations of plants and animals within the landscape. Hedgerows can also protect water quality.

Most hedgerows are managed at the Project via regular trimming, although some have been left to 'escape' (i.e. they have started turning into treelines). Some hedgerows are 'gappy'.

Any hedgerow management proposed as part of this HSMP could be constrained by existing agricultural practices at the Project e.g. livestock could damage any newly established hedgerows, hedges could also be over- or under-trimmed, close ploughing could damage roots and spray drift from herbicides/insecticides could affect plants/animals within the hedge.

2.2 Objectives

Offaly County Development Plan 2021-2027 has policy objectives that relate to the preservation and enhancement of existing hedgerows, along with replacement of any hedgerows that are removed with native species indigenous to the area.

- **BLO-16** Encourage woodland and tree enhancement.
- **BLO-17** Manage landscape features important for ecological connectivity.
- **BLO-18** Retain hedgerows and characteristic boundaries

Objectives and criteria for success have been developed in accordance with the ACRES specifications (DAFM, 2022; 2023) and the Hedgerow Appraisal System (Foulkes et al., 2013).

The objectives relating to hedgerow compensation and enhancement are set out below along with associated measures to successfully establish and manage these habitats for each objective.

Figure 1 in Appendix A shows the locations for proposed hedgerow creation, which are all within the red-line boundary or optioned lands.

2.2.1 Objective 1: Mitigate for the loss of hedgerows

Listed below include targets to define success for objective Objective 1, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

2.2.1.1 Targets

Minimum thresholds for success include:

- To compensate for loss of existing hedgerows by planting 61.49m of replacement hedgerow;
- By year 5 after planting, new hedgerows should meet the criteria for 'Favourable' under the Hedgerow Appraisal System; and
- In addition to the condition assessment, the diversity of the tree / shrub / climber component (otherwise described in the Hedgerow Appraisal System as 'canopy' forming species) should be the same, or greater than, that at planting (≥ 3 native 'hedgerow' species per 30 m hedgerow strip).

2.2.1.2 Establishment Actions

Establishment actions that will be implemented include:



- Plant 61.49m of hedgerows using native fruit and seed-bearing 'hedgerow' species (e.g. hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, dog rose *Rosa canina*, guelder rose *Viburnum opulus*, hazel *Corylus avellana*, holly *Ilex aquifolium*, spindle *Euonymus europaeus* and alder buckthorn *Frangula alnus*) using a 'like-for-like' approach to replace lost hedgerows;
- Plants must be of Irish Origin or Irish Provenance and purchased from Department of Agriculture, Forestry and the Marine (DAFM) registered professional operators¹;
- New planting will be undertaken in the appropriate season, with bareroot stock planted October to December (avoiding periods when the ground is waterlogged or frozen) unless on clay (which underlies some peat soils at the Project), when planting should be delayed until March due to risk of frost heave during heavy frost;
- Planting will not be undertaken until the first appropriate season post-construction to avoid damage to whips;
- To ensure new hedgerows are beneficial for biodiversity, there must be five plants per metre in a double-staggered row with ≥ 3 species listed above. It will incorporate as many 'hedgerow species' listed above into the new hedgerow as possible;
- One tree (see section 3.2.1.2 below for list of native tree species) should be planted every 50 m to ensure there are some hedgerow trees present, which will provide additional value for invertebrates, birds and bats;
- Water during the first year to assist with establishment. Frequency of watering to adapt to weather conditions i.e. a new bareroot hedge will need at least 5-10 L of water per every metre of hedgerow delivered once weekly under normal summer conditions and twice weekly during hot weather conditions (i.e. five consecutive days with maximum temperatures of $>25^{\circ}\text{C}$). If weeds are controlled before and after planting (e.g. via use of mulch, which will help the soil retain moisture), then watering is unlikely to be required under normal weather conditions outside of summer. Watering via a leaky hose for 2-4 hours is recommended;
- New hedgerows must be protected from livestock with an appropriate permanent fence located at least 1.5 m from the edge of the new hedgerow, which will allow the to hedgerow mature and expand; and
- Whips intended to mature into hedgerow trees will be left to mature without cutting and protected with a tree guard/shelter and fenced off from livestock if present.

2.2.1.3 Management Actions

Management actions that will be implemented include:

- Ploughing and application of fertilisers and herbicides must not be undertaken within at least 2 m of the hedgerow edge to avoid damage to root systems and the hedge itself; ideally, tussocky grass will be allowed to develop at the base of the hedgerows;
- Hedgerows will be cut annually via top trimming during establishment phase (the first five years) to encourage sideways growth and canopy closure;
- Whips intended to grow into hedgerow trees will not be cut / trimmed and will be allowed to grow into mature trees;

¹ The GLAS specification (DAFM, 2020) provides the mailbox plantandpests@agriculture.gov.ie as the place to request this info from.



- Hedgerows must not be cut below 1.8 m in height (either during establishment or post-establishment);
- Post-establishment, not all hedgerows should be cut in the same calendar year (a 3–5-year rotation is recommended, raising cutting heights each time for post-construction years 5-35) and should be cut in an 'A' shape to encourage a dense shrub layer and diverse range of hedgerow heights;
- Any hedgerows that have been allowed to 'escape' (develop into treelines) should be cut from the side only;
- Hedgerow cutting must be undertaken outside the breeding bird season i.e. March to August inclusive and should ideally be undertaken in late winter (January to February) to provide food for birds;
- Outgrowths of rose and bramble (i.e. hedgerows with wavy edges), and patches of suckering blackthorn should be retained where possible to provide nesting and foraging opportunities for birds;
- Branches from any hedgerows overhanging ditches should be cut back once every 5 years to help maximise usage of ditches for wildlife; and
- Competing vegetation will be controlled, preferably via mulching with organic matter such as wood chippings, straw and composted bark, which will be applied immediately after planting.

2.2.1.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented include:

- Newly created or enhanced hedgerows will be subject to condition assessment following the Hedgerow Appraisal System each year after planting for the first 5 years (the establishment phase), and then every 5 years until (and including) year 35 (the maintenance phase);
- The results of the condition assessment will help identify ongoing management actions, such as weed control, gapping up and where fence maintenance is required;
- If mulching does not control competing vegetation during establishment, compostable film or plastic should be used in preference of chemical herbicides and cutting back competitive species with a hand-held hook can also be used;
- Failed or dead plants (identified during condition assessments) will be replaced the following planting season;
- If hare or rabbits start to damage the newly planted hedgerow, then netting will be implemented along with the stock-proof fencing; the bottom 25 cm of netting must be laid out in the direction attack and securely pegged into the ground;
- Should any newly planted hedgerows require temporary removal to allow for maintenance works to the wind farm, they will be reinstated following the criteria mentioned above in section 2.2.1.2; and
- It is anticipated that the cycle of management described in section 2.2.1.3 will allow the newly planted hedgerows to develop to maturity over 20 to 35 years from planting, after which they may start to become open at the base. If any hedges become open at the base, then then trimming will cease, allowing the hedge to grow upwards. If the hedge consists of largely dead plants, then new planting (see section 2.2.1.2) will be implemented.



2.2.1.5 Programme

The programme to achieve Objective 1 is given in Table 2-1.

Table 2-1: Management and Monitoring Programme for Objective 1

Summary Action	Timescale Relative to End of Construction
Plant new hedgerow	Year 1 in the first appropriate season (October – December, or March where soils have more clay)
Watering	Year 1 in summer (if whips are mulched) depending on weather conditions (once/week in normal conditions or twice/week in hot weather conditions)
Trimming (establishment)	Annual top-trimming cutting during Jan-Feb in years 1 to 5 except for hedgerow trees, which will be left uncut
Trimming (post-establishment)	Trimming on a 3 to 5-year rotation during Jan-Feb between years 5-35, except for hedgerow trees, which will be left uncut
Monitoring (condition assessment) / Reporting	Years 1 to 5, and every 5 years thereafter until and including year 35
Remedial actions (replacement of dead/failed plants, weed control, hare/rabbit netting, restoration of 'gappy' hedges)	As for monitoring but when required only

2.2.1.6 Reporting

Monitoring results will be reported on an annual basis (during years in which monitoring takes place) and if necessary (e.g. if stated targets were not being met), recommendations made for reasonable changes to management prescriptions, as appropriate. Monitoring reports will be submitted to the Planning Authority and any changes proposed to management prescriptions would be discussed with them in the first instance and agreed in writing.

2.2.1.7 Responsibilities

All management tasks carried out under the HSMP will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf.

All ecological monitoring and reporting will be undertaken by suitably qualified and experienced ecologists.



2.2.2 Objective 2: To increase the length of hedgerows

Listed below include targets to define success for Objective 2, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

2.2.2.1 Targets

Minimum thresholds for success include:

- To increase the amount of hedgerow by 0.03ha and 138.37m so the total length at the Project is 0.10ha and 199.86m of WL1 hedgerows (i.e. a net gain of 0.03ha, and 138.37m), and 501.44m of WL1 x WL2 hedgerows x treeline mosaic (net gain of 221.38m);
- Other targets are the same as for Objective 1 described in section 2.2.1.1.

2.2.2.2 Establishment Actions

Establishment actions that will be implemented are the same as for Objective 1 and as described in section 2.2.1.2 but include:

- Planting of 0.03ha and 138.37m of additional new WL1 hedgerow and 221.38m of WL1 hedgerow x WL2 treeline matrix)

2.2.2.3 Management Actions

Management actions that will be implemented are the same as for Objective 1 and as described in section 2.2.1.3.

2.2.2.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented are the same as for Objective 1 and as described in section 2.2.1.4.

2.2.2.5 Programme

The programme to achieve Objective 2 is the same as for Objective 1 and is given in Table 2-1.

2.2.2.6 Reporting

The reporting required for Objective 2 is the same as for Objective 1 and is given in section 2.2.1.6.

2.2.2.7 Responsibilities

The responsibilities for Objective 2 are the same as for Objective 1 and are given in section 2.2.1.7.



3.0 Treeline

The following sections sets out a summary of the baseline conditions for treelines including a description and evaluation, along with any ecological trends and constraints that could influence management.

Next listed are the objectives with details of actions that will be implemented in full.

3.1 Summary of Baseline

There are currently 5.41m and 0.05ha of treelines at the Project and of these, 0.02ha and 5.41m are predicted to be temporarily lost, all as part of the UGL installation.

Treelines can be important at the local scale due to providing foraging, resting and breeding habitat for a variety of animal species. They also act as ecological corridors, connecting fragmented populations of plants and animals within the landscape.

Most treelines are immature, with more mature treelines not managed at the Project apart from the occasional trimming of overhanging branches.

Any treeline management proposed as part of this HSMP could be constrained by existing agricultural practices at the Project e.g. livestock could damage any newly established treelines, treelines could also be over-trimmed, close ploughing could damage roots and spray drift from herbicides/insecticides could affect plants/animals within the treelines.

3.2 Objectives

Objectives and criteria for success have been developed in accordance with British Standard 5837: 'Trees in relation to design, demolition and construction – Recommendations' (2012).

The objectives relating to treeline compensation are set out below along with associated measures to successfully establish and manage these habitats for each objective.

Figure 1 Appendix A shows the locations for proposed treeline creation, which are all within the red-line boundary or optioned lands.

3.2.1 Objective 3: To mitigate for the loss of treelines

Listed below include targets to define success for Objective 3, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

3.2.1.1 Targets

Minimum targets for success include:

- To compensate for loss of existing treelines by planting 0.02ha and 5.41m of replacement treeline in their original location along the UGL; and
- Success will be defined as >95% of trees established at year 5, with at least 90% at Year 20 meeting the British Standard 5837: 'Trees in relation to design, demolition and construction – Recommendations' (2012) criteria for Category A – Tree of High Quality'.

3.2.1.2 Establishment Actions

Establishment actions that will be implemented include:



- Plant 0.02ha and 5.41m of new treelines using native fruit and seed-bearing species (e.g. bird cherry *Prunus padus*, crab apple *Malus sylvestris*, goat willow *Salix caprea*, grey willow *Salix cinerea*, rowan *Sorbus aucuparia*, wild cherry *Prunus avium*, hawthorn, Irish whitebeam *Sorbus hibernica*, sessile oak *Quercus petraea* and pedunculate oak *Quercus robur* for treelines) using a 'like-for-like' approach to replace lost hedgerows/treelines where possible; and
- All other establishment actions will follow those for objective 1 outlined in section 2.2.1.2.

3.2.1.3 Management Actions

Management actions that will be implemented include:

- All relevant management actions set out for objective 1 outlined in section 2.2.1.3; and
- No top trimming will be undertaken (although new trees can be pruned from the side if required).

3.2.1.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented include:

- Newly planted trees forming treelines will be inspected each year after planting for the first 5 years, and then every 5 years until year 35; and
- These inspections will inform the need or otherwise for weed control, replacement of failed trees, removal of tree guards (usually around years 3-5) and pruning;
- Failed or dead plants (identified during condition assessments) will be replaced the following planting season;
- If deer, hare or rabbits start to damage the newly planted treeline, then tree guards may be fitted; and
- Should any newly planted treelines require temporary removal to allow for maintenance works to the wind farm, they will be reinstated following the criteria mentioned above in section 2.2.1.2.

3.2.1.5 Programme

The programme to achieve Objective 3 is the same as for objective 1 and is given in Table 2-1.

3.2.1.6 Reporting

Monitoring results will be reported on an annual basis (during years in which monitoring takes place) and if necessary (e.g. if stated targets were not being met), recommendations made for reasonable changes to management prescriptions, as appropriate. Monitoring reports will be submitted to Planning Authority and any changes proposed to management prescriptions would be discussed with them in the first instance.

3.2.1.7 Responsibilities

All management tasks carried out under the HSMP will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf.

All ecological monitoring and reporting will be undertaken by suitably qualified and experienced ecologists.



3.2.2 Objective 4: To increase the length of treelines

Listed below include targets to define success for Objective 4, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

3.2.2.1 Targets

Minimum thresholds for success include:

- To increase the amount of treeline so the total length at the Project is 0.08ha and 215.33m (i.e. net gain of 0.03ha, and 209.92m);
- Other targets are the same as for Objective 3 described in section 3.2.1.1.

3.2.2.2 Establishment Actions

Establishment actions that will be implemented are the same as for Objective 3 and as described in section 3.2.1.2 but include:

- Planting of 209.9m and 0.03 ha of new treeline.

3.2.2.3 Management Actions

Management actions that will be implemented are the same as for Objective 3 and as described in section 3.2.1.3.

3.2.2.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented are the same as for Objective 3 and as described in section 3.2.1.4.

3.2.2.5 Programme

The programme to achieve Objective 4 are the same as for Objective 3 and is given in Table 2-1.

3.2.2.6 Reporting

The reporting required for objective 4 are the same as for 3 and is given in section 3.2.1.6.

3.2.2.7 Responsibilities

The responsibilities for objective 4 are the same as for Objective 3 and are given in section 3.2.1.7.



4.0 Birds

The following sections sets out a summary of the baseline conditions for birds including a description and evaluation, along with any ecological trends and constraints that could influence management.

Next listed are the objectives with details of actions that will be implemented in full.

4.1 Summary of Baseline

No significant effects are predicted for avian species as a result of the Project. However, due to the poor nature of habitats at the site there is an opportunity to improve habitats for passerine species.

Any management for birds proposed as part of this HSMP could be constrained by existing agricultural and agroforestry practices at the Project, as well as the BNM Draft Galros Bog Rehabilitation Plan, including damage to habitats for nesting.

4.2 Objectives

The retention, reinstatement and enhancement of hedgerows, treelines and other natural features will provide biodiversity benefits while also contributing to landscape character, visual integration and ecological connectivity. These measures support the complementary landscape and biodiversity objectives of the Offaly County Development Plan 2021–2027, including the following policies:

- BLO-26 Protect key scenic views, prospects and amenity routes.
- BLO-27 Ensure developments minimise visual impacts.
- BLO-28 Explore creation of wilderness corridors across rehabilitated peatlands

Enhancement measures further include provision of nesting/breeding habitat as set out below, and objectives 1-4 (relating to creation and appropriate management of hedgerows and treelines) will also be of benefit to the local bird populations.

Figure 1 in Appendix A shows the indicative locations for proposed bird management measures.

4.2.1 Objective 5: Provision of additional bird nesting and/or foraging habitat

Listed below include targets to define success for Objective 5, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

4.2.1.1 Targets

Minimum targets for success include:

- Creation of habitats for passerines including 1m wide margins of GS2 dry meadows and grassy verges alongside access tracks and the switchroom (i.e. additional 0.34ha).

4.2.1.2 Establishment Actions

Establishment actions that will be implemented include:



- Establishment actions for creation of habitats for passerines will follow those of objectives 1-4 for linear habitats;
- Grassy margins will be established by preparing 1m buffers either side of access tracks within the Project by stripping nutrient-rich topsoil or lightly scarifying the location;
- Aggressively competitive or non-native species (e.g. docks, thistles) will be controlled prior to sowing;
- Native, low-fertility grassland mixes will be sown in early autumn or spring;
- This additional habitat and existing scrub that is not conflicting with proposed infrastructure or bat mitigation buffers will be retained by establishing no-works buffers around the scrub during construction; and
- Retained scrub will be supplemented with infill planting where appropriate using species outlined in Objective 1.

4.2.1.3 Management Actions

Management actions that will be implemented include:

- Management actions for creation of habitats for passerines will follow those of objectives 1-4 for linear habitats;
- Establishment and retention of grassy margins and existing scrub;
- Margins will be cut 1-2 times per year to control rank growth outside of the breeding bird nesting season;
- Cuttings will be removed to avoid nutrient build-up;
- Some patches will remain uncut over winter to retain seed availability; and
- Infill planting for scrub patches will be allowed to establish with minimal intervention, but excessive browsing will be controlled using fencing if needed.

4.2.1.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented include:

- Monitoring and remedial actions for creation of habitats for passerines will follow those of objectives 1-4 for linear habitats;
- Remedial actions for grassland margins will be the same as the management actions for objectives 1-4 ; and
- Remedial actions for infilling scrub patches will involve fencing to control excessive browsing if required.

4.2.1.5 Programme

The programme to achieve Objective 5 is given in Table 4-1.

Table 4-1: Management and Monitoring Programme for Objective 5.

Summary Action	Timescale Relative to End of Project Construction
Establishment of grassy margins along access tracks and infilling of scrub	Year 1



Summary Action	Timescale Relative to End of Project Construction
Cutting of grassy margins	Annually years 2-35 (this will be undertaken annually outside the breeding bird season March-August inclusive).
Monitoring / Reporting	Annually from years 1-5 and every five years thereafter until year 35.

4.2.1.6 Reporting

Monitoring results will be reported on an annual basis (during years in which monitoring takes place) and if necessary (e.g. if stated targets were not being met), recommendations made for reasonable changes to management prescriptions, as appropriate. Monitoring reports will be submitted to Planning Authority and any changes proposed to management prescriptions would be discussed with them in the first instance.

4.2.1.7 Responsibilities

All management tasks carried out under the HSMP will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf.

All ecological monitoring and reporting will be undertaken by suitably qualified and experienced ecologists.



5.0 Bats

The following sections sets out a summary of the baseline conditions for bats including a description and evaluation, along with any ecological trends and constraints that could influence management. These measures are independent of any compensation measures which may be required by wildlife licences potentially needed to allow construction work to progress. Any works that could result in the disturbance, damage or removal of bat roosts identified during pre-construction checks of trees or bridges would only be undertaken under and in accordance with a derogation licence issued by the National Parks and Wildlife Service (NPWS), and subject to all associated licence conditions.

Next listed are the objectives with details of actions that will be implemented in full.

5.1 Summary of Baseline

Surveys showed that there were eight species of bats recorded at the Project site, namely:

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Nathusius' pipistrelle (*Pipistrellus nathusii*)
- Leisler's bat (*Nyctalus leisleri*)
- Brown long-eared bat (*Plecotus auritus*)
- Daubenton's bat (*Myotis daubentonii*)
- Whiskered bat (*Myotis mystacinus*)
- Natterer's bat (*Myotis nattereri*)

There were no structures or trees at the Project site with potential roost features. No confirmed roosts were recorded. There was one tree with PRF-I potential recorded ca. 50m from the UGL but there will be no impact on this tree.

All bat species were evaluated as being important at the county / regional or local scale (see section 5.4.8 of the EIAR).

Any management for bats proposed as part of this HSMP could be constrained by existing agricultural and agroforestry practices at the Project, including the use of pesticides, which could reduce prey availability, along with accidental destruction of bat roosts within trees due to felling of woodland and hedgerow/treeline management.

5.2 Objectives

All hedgerows and treelines that will be lost due to construction will be replaced (as per objectives 1-4) which will ensure there is no net loss of commuting routes for bats, and the creation of new hedgerows (Objective 2) and treeline (Objective 4) will provide foraging resources to bats in the medium and long-term.

The objective to reduce bat collision risk was developed in accordance with NatureScot (2021) guidance.

Figure 1 in Appendix A shows the indicative locations for proposed bat management measures.



5.2.1 Objective 6: To mitigate for loss of linear bat foraging and commuting habitat

Listed below include targets to define success for Objective 6, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting.

5.2.1.1 Targets

Minimum targets for success include in situ replacement of all hedgerow or treeline projected to be lost due to the Project.

5.2.1.2 Establishment Actions

Replacement hedgerows will be established in accordance with Objective 1, Section 2.2.1.2. Replacement treelines will be established in accordance with Objective 3, Section 3.2.1.2.

5.2.1.3 Management Actions

Management Replacement hedgerows will be managed in accordance with Objective 1, Section 2.2.1.3. Replacement treelines will be managed in accordance with Objective 3, Section 3.2.1.3.

5.2.1.4 Monitoring and Remedial Actions

Monitoring and remedial actions for replacement hedgerows will follow Objective 1, Section 2.2.1.4. Monitoring and remedial actions for replacement treelines will follow Objective 3, Section 3.2.1.4.

5.2.1.5 Programme

The programme for achieving Objective 6 will follow the programmes for Objectives 1 and 3, as set out in Sections 2.2.1.5 and 3.2.1.5 and Table 2-1.

5.2.1.6 Reporting

Reporting for replacement hedgerows and treelines will follow the requirements of Objectives 1 and 3, as set out in Sections 2.2.1.6 and 3.2.1.6, respectively.

5.2.1.7 Responsibilities

All management tasks carried out under the HSMP will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf.

All ecological monitoring and reporting will be undertaken by suitably qualified and experienced ecologists.

5.2.2 Objective 7: To implement bat mitigation felling buffers to reduce collision risk

Listed below include targets to define success for Objective 7, details of measures (establishment and management) that will be implemented to achieve success, details of monitoring measures and possible remedial actions, the programme, details of reporting requirements and who will be responsible for implementing the measures, monitoring and reporting. While the buffers currently comprise no vegetation, it is imperative this clearance is maintained over the lifetime of the Project.



5.2.2.1 Targets

Minimum targets for success include:

- Maintenance of a 50 m separation distance from the blade tips of the turbine to the nearest bat commuting / foraging habitat feature for every turbine.

5.2.2.2 Establishment Actions

- Details for the clearance buffer dimensions are provided in Table 5-1;
- The buffers will be kept clear over the lifetime of the Project and will be made as unfavourable to bats as possible;
- The clearance should be carried out routinely while still at ground-level. As such, no tree/scrub should develop and, thus, no felling will be required;
- Immediately prior to the clearance of any vegetation, surveys will be carried out within the felling area to identify whether there are any mammal dwellings or breeding amphibians within the felling areas.
 - If any new mammal dwellings are identified, then appropriate exclusion zone(s) will be implemented and construction activities timed to avoid sensitive periods, such as the breeding season or hibernation, as relevant.
 - If spawning frogs are present in any felling area, adults and spawn will be translocated under NPWS licence² to suitable alternative locations. Pitfall traps and drift fences will be used to capture adult frogs.

Table 5-1: Details of Bat Mitigation Buffers Required for Each Turbines

Turbine Number	Habitat Feature	Buffer (m)		Area (ha) or length (m) to be removed
		Minimum	Maximum	
T9	Cutover bog	45	80.32	0
T10	Cutover bog	45	80.32	0
T11	Cutover bog	45	80.32	0

5.2.2.3 Management Actions

Management actions that will be implemented include maintenance of shrub or tree-free buffers via infrequent (once a year) mowing or trimming of vegetation, which will be undertaken outside the breeding bird season (March to August inclusive) for years 2-35. This includes trimming of any overhanging branches from woodland, treelines or hedgerows adjacent to the buffer edges.

5.2.2.4 Monitoring and Remedial Actions

Monitoring and remedial actions that will be implemented include:

- Bat mitigation buffers will be monitored annually during years 1-3 to ensure vegetation clearance and management measures have resulted in the desired habitat conditions i.e. maintained free of shrubs and trees that could attract foraging or commuting bats;

² [https://www.npws.ie/sites/default/files/files/DOE%20Frogspawn%20Licence%202026%20\(DOE\).pdf](https://www.npws.ie/sites/default/files/files/DOE%20Frogspawn%20Licence%202026%20(DOE).pdf)



- A post-construction monitoring programme for bats will be implemented, which will check whether bat activity levels have been reduced around turbines with bat mitigation buffers relative to the pre-construction period. This will consist of:
 - static detector surveys: these surveys will allow for a valid comparison of bat activity and Project usage with pre-construction levels. Following NatureScot (2021) guidance, the surveys are to be conducted during years 1, 2 and 3 post construction to allow for annual variation and cumulative effects. Surveys will follow baseline survey methods, as outlined in NatureScot (2021) guidance. After three years of post-construction surveys, the monitoring programme may be extended or halted based on the results and following agreement with the planning authority and NPWS.
 - fatality monitoring: if this is determined to be required following the year of pre-construction monitoring (i.e. due to high levels of bat activity), this will initially be conducted during years 1, 2 and 3 post construction to allow for annual variation and cumulative effects. After three years of post-construction surveys, the monitoring programme may be extended or halted following agreement with the planning authority and NPWS.
- The results of the post-construction monitoring surveys will be used to determine whether further mitigation measures are required. If no significant effects are shown (this would be demonstrated via an assessment of recorded mortality in the light of changes in current conservation status at the time of the monitoring survey, indicating that the Project is not contributing to the decline or hindering restoration efforts for the relevant species), the monitoring should no longer be required, subject to agreement with the competent authority and NPWS. If monitoring indicates potentially significant levels of collision mortality for bat species, mitigation measures will be implemented (including turbine curtailment), and further monitoring will also be implemented in all additional years post construction, to ensure there are no significant collision effects on any bat species.

5.2.2.5 Programme

The programme to achieve Objective 7 is given in Table 5-2.

Table 5-2: Management and Monitoring Programme for Objective 7

Summary Action	Timescale Relative to End of Project Construction
Pre-felling survey for non-bat mammals, bats and amphibians	Year 1 (immediately prior to felling)
Maintenance of buffers via mowing or trimming of vegetation, by monitoring for growth	Years 1-35
Monitoring (checking felling has been implemented; static detector and fatality monitoring surveys) / Reporting	Years 1 to 3 (checking vegetation clearance being implemented correctly; static detector and fatality monitoring surveys; reporting) Years 4-35 (additional static detector and fatality monitoring; reporting but only if required by NPWS and Planning Authority)
Remedial actions (additional trimming/mowing; additional mitigation measures, such as curtailment)	If and when required only; curtailment is only to be implemented if required by NPWS and Planning Authority



5.2.2.6 Reporting

Monitoring results will be reported on an annual basis (during years in which monitoring takes place) and if necessary (e.g. if stated targets were not being met), recommendations made for reasonable changes to management prescriptions, as appropriate. Monitoring reports will be submitted to Planning Authority and any changes proposed to management prescriptions would be discussed with them in the first instance.

5.2.2.7 Responsibilities

All management tasks carried out under the HSMP will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf.

All ecological monitoring and reporting will be undertaken by suitably qualified and experienced ecologists.



6.0 Hedgehogs

6.1 Summary of Baseline

While they were not recorded by field surveys, it is likely that hedgehog are present based on desktop data and the availability of suitable foraging/breeding habitats. As such, the following enhancement measures are proposed.

6.2 Objectives

6.2.1 Objective 8: Provision of hibernacula for hedgehogs

- Four no. hibernacula will be constructed for hedgehogs from logs arising from felled trees;
- The hibernacula will be constructed in areas that are south facing, well-drained, undisturbed by humans/vehicles (e.g. paths and roads) adjacent to broad-leaved trees (to provide leaves for nest construction) and act as transitions between habitats (e.g. between scrub and woodland etc);
- The logs will be laid in a hole 0.5 m deep, and at least 2 m wide and 4 m long, with turves of vegetation from the area excavated kept aside to be placed on top of the hibernacula. The hole will be filled to just below ground level with gravel or sand to facilitate drainage, with logs piled on top in a configuration that creates voids within the heap, with access gaps into these voids. Logs will be piled to a height of at least 1m. Soil arising from the hole and the salvaged turves of vegetation will be laid on top of the logs with the aim of establishing a cover of vegetation to provide insulation.
- The locations of the hibernacula will be agreed in conjunction with landowners and the Planning Authority prior to the operation of the Project.

6.2.2 Measures of success

- Annual checks in Years 1-5 indicate hibernacula are in suitable condition for use by hedgehogs;
- Evidence of use (droppings, nests) recorded within at least two hibernacula in the first 5 years after construction; and
- All hedgehog records to be submitted to the Irish Hedgehog Survey online at Record sightings | Hedgehog Survey (www.irishhedgehogsurvey.com).



7.0 Reptiles and amphibians

7.1 Summary of Baseline

While no common lizard or common frog were recorded during surveys, it is likely there are suitable habitats present.

7.2 Objectives

7.2.1 Objective 9: Provision of amphibian hibernacula

- Four no. hibernacula will be constructed for amphibians from logs formed from felled trees;
- The hibernacula will be the same as those for hedgehogs;
- The hibernacula will be located in a sunny position, orientated such that a long side faces south and near to watercourses / drainage ditches, within rough grassland or scrub and avoiding areas of intensively managed / grazed land; and
- The locations of the hibernacula will be agreed in conjunction with landowners and the Planning Authority prior to the operation of the Project.

7.2.2 Measures of success

- Reptile and amphibian species richness and abundance will be measured via physical checks to ensure hibernacula are still present and functional in years 1-5 post-construction.

8.0 Invertebrates

8.1 Summary of Baseline

No protected invertebrate species were recorded during the surveys. The following enhancement measures are proposed.

8.2 Objectives

8.2.1 Objective 10: Provision of invertebrate foraging habitat and hibernacula

- As for Objective 5, maintain 1m rough grassland buffer along access tracks, hedgerows, and treelines to provide habitat for pollinators;
- Erect insect hotels in the first year of operation. Insect hotels or bee boxes can be created by drilling holes into fence posts or pieces of wood and positioning appropriately. These sites can be created along dry hedgerows, access tracks and other field boundaries;
- Ensure insect hotels are maintained or replaced over the lifespan of the Project as required; and
- Locate both insect hotels and bee hotels in sunny, sheltered areas, ideally no more than 300m from areas of food plants.
- The locations of the insect hotels will be agreed in conjunction with landowners and the Planning Authority prior to the operation of the Project.



Measures of success

- At least three insect hotels per 35 ha;
- Maintenance checks to ensure grassland buffer habitats, and insect hotels still present and functional, to be carried out annually in Years 1-5 post-construction.

9.0 Implementation

9.1 Roles and Responsibilities

The implementation of enhancement measures will be overseen by an ecologist with the required experience and expertise, appointed by the Project. All management tasks will either be undertaken by the developer, operator or by suitably experienced contractors acting on their behalf, and all ecological monitoring will be undertaken by suitably qualified and experienced ecologists.

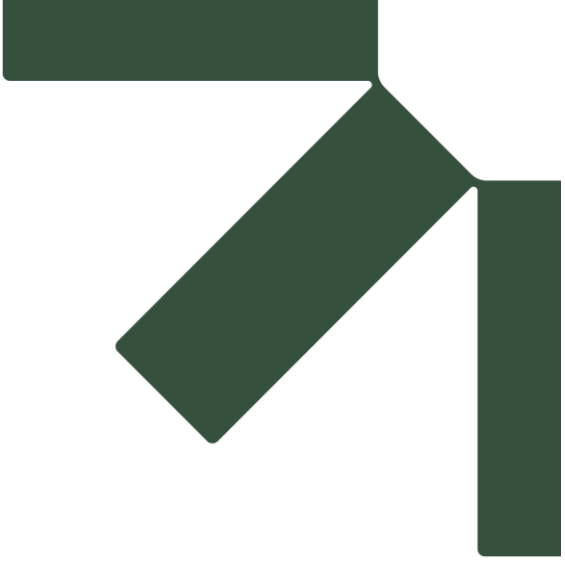
9.2 Reporting and Reviewing

These enhancement measures have been developed using NatureScot (formerly SNH) guidance (SNH, 2016) and following the recommendations of this guidance monitoring is proposed to measure success of the management measures and to identify whether remedial measures are required if objectives are not being met.

Monitoring results will be reported on an annual basis (during years in which monitoring takes place) and if necessary (e.g. if stated objectives were not being met), recommendations made for reasonable changes to management prescriptions, as appropriate. Monitoring reports will be submitted to Planning Authority and any changes proposed to management prescriptions would be discussed with them in the first instance.

The developer will undertake a review of the HSMP every 5 years if monitoring indicates the objectives are not being met. If any changes to the HSMP are required these will be submitted to the NPWS and/or the Planning Authority for review, if required.





Appendix A Figures

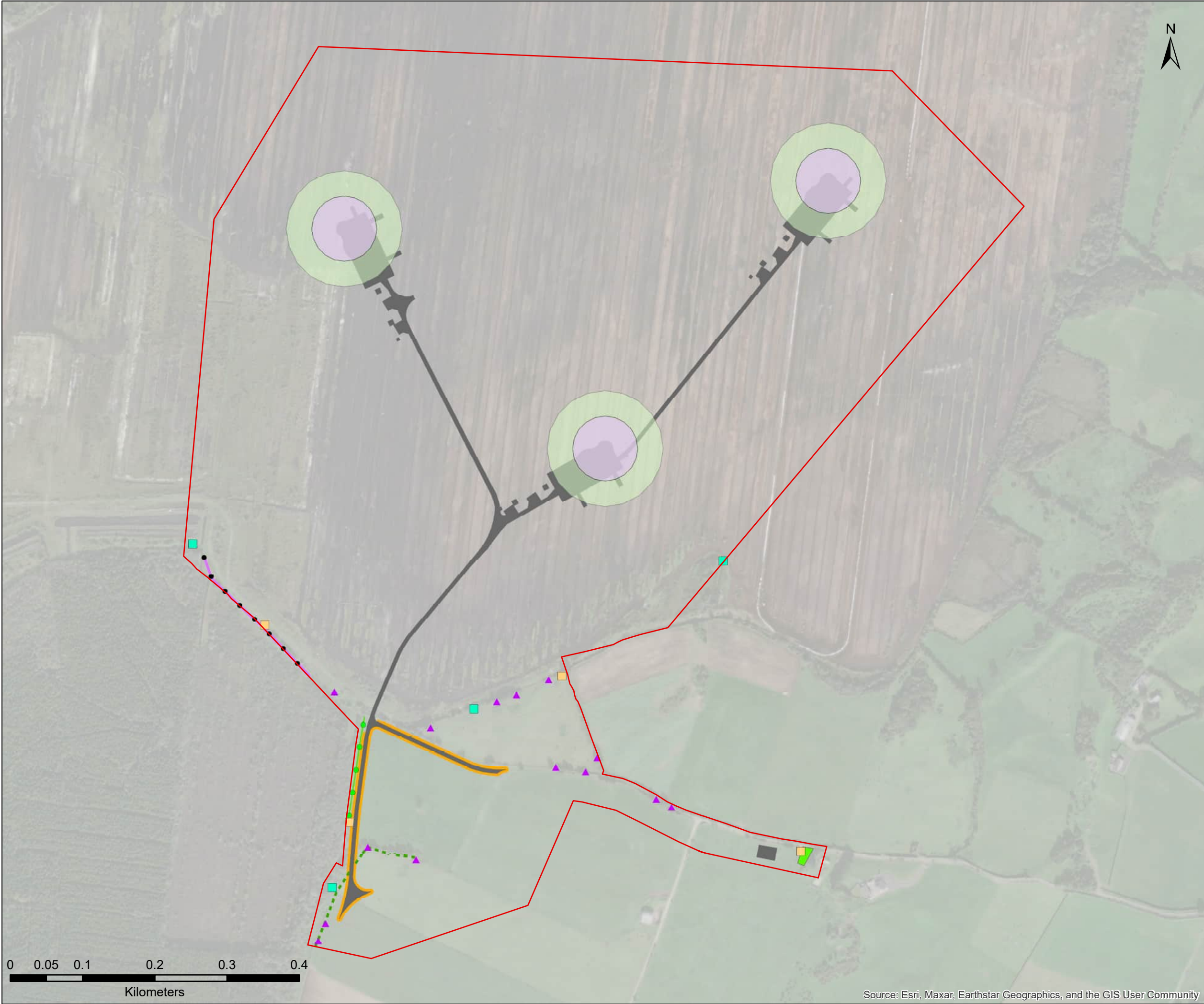
Habitat and Species Management Plan

Cush Wind Farm Phase II

Cush Wind Limited

SLR Project No.: 501.065723.00001

21 October 2026



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Site Boundary
- Permanent infrastructure
- Bat felling buffer - min
- Bat felling buffer - max

Enhancement Planting

- WL1
- GS2
- WL1
- WL1 x WL2
- WL2

Insect Hotel

-

Hibernacula

- Amphibians
- Hedgehog

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CUSH WIND FARM PHASE II
HABITAT AND SPECIES MANAGEMENT PLAN

**HABITAT AND SPECIES MANAGEMENT
PLAN MEASURES**

FIGURE 1

Scale
1:5,007 @ A3

Date
OCTOBER 2026



Making Sustainability Happen