Planning and Environmental Consultants

Biodiversity Management and Enhancement Plan

Seskin Renewables Wind Farm

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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

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1. INTRODUCTION

1.1 Background

This Biodiversity Management and Enhancement Plan (BMEP) has been prepared in support of the Environmental Impact Assessment Report (EIAR) produced for the proposed Seskin Renewables Wind Farm.

This BMEP has been prepared to outline the proposed biodiversity enhancement measures associated with the Proposed Development. This BMEP also outlines how the Proposed Development has been designed to offset any loss of habitat or loss of faunal supporting habitat.

Biodiversity enhancement measures outlined in this BMEP include the following:

- Increase the ecological condition of 2,375m of existing hedgerow. Hedgerows will be managed to increase their biodiversity value and enhanced through additional planting of native species where existing hedgerows are gappy or in poor condition.
- Approximately 2,097m of additional hedgerow will be established within the Proposed Development site, this will be achieved through new hedgerow planting and translocation of existing hedgerows within the site.
- Installation of bat boxes within the Proposed Development Site.
- Creation of ashy mining bee habitat within the Proposed Development Site.

1.2 Statement of Authority

This report has been prepared by Ciara Hackett (B.Sc. Zoology) and reviewed by Corey Cannon (B.Sc, M.Sc., CEcol MCIEEM). Ciara is an Ecologist with MKO, while Corey is a Project Director (Ecology) at MKO, she is also a Chartered Ecologist and Full Member of CIEEM. Corey has over ten years' consultancy experience.

1.3 Reference Documents

The following documents were reviewed and informed the information presented in this BEMP:

- Guidance Note: Hedgerow Translocation. Hedgerows Ireland.
- Documenting the successful translocation of a mature hedgerow. Heritage Office, Roscommon Co. Council. Foulkes. N, 2007.
- Devon hedges and Development 1: Moving Hedges (2015).
- How to guide: Hedgerows for pollinators. National Biodiversity Data Centre Ireland, 2018.
- Hedgerow Establishment and restoration. Department of Agriculture, Environment and Rural Affairs, 2022.
- The Vincent Wildlife Trust Irish Bat Box Scheme, 2015.
- How to create solitary bee nest sites on your farm, National Biodiversity Data Centre.

2. LINEAR HABITAT LOSS

The vast majority of field boundaries within the Proposed Wind Farm site are delineated by mature (managed and unmanaged) hedgerows and treelines. It is anticipated that approximately 1,794m of linear habitat, including hedgerow and treelines will be removed to accommodate the Proposed Development, including turbines and associated bat buffers, wind farm roads and other key infrastructure.

Detailed hedgerow appraisals is included in Appendix in 6-1. The majority of the hedgerows within the site were intact, and many were associated with dry ditches or earthbanks. A large number of hedgerows within the site were found to be species rich. These hedgerows tended to be outgrown and less managed, having higher biodiversity value. Some hedgerows across the Proposed Development site demarcated townland boundaries, and were therefore, of historical significance. These hedgerows tend to have a richer and more diverse floristic composition than other hedgerows across the site. A small number of hedgerows within the site were heavily managed, while other hedgerows were gappy in places. The hedgerows within the Proposed Development boundary provided commuting and foraging corridors for local wildlife. Hedgerows to be lost to the Proposed Development are shown in Figure 2-1 and Figure 2-2.

A number of measures are proposed to off-set the hedgerow loss associated with the Proposed Development including enhancement of existing hedgerows and establishment of new hedgerows through new hedgerow planting and translocation of existing hedgerows on the site. Enhancement measures are recommended to be carried out on heavily-managed, species poor hedgerows and on gappy hedgerows, while translocation is recommended to be carried out on hedgerows of high biodiversity value which will be lost to the footprint of the Proposed Development. Hedgerow planting will be carried out in areas already agreed with landowners (See Figure 2-3 and Figure 2-4).

2.1 Hedgerow Enhancement and Management

Approximately 2,375m of heavily managed hedgerow will be enhanced through best practice management measures (discussed further below) and additional planting with native hedgerow species. It is proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value of linear features within the Proposed Development site (See Plate 2-1 for example of gappy hedgerow to be enhanced). The following species should be planted:

- Hawthorn (*Crataegus monogyna*)
  - Proportion of hedgerow mix: 75%
  - Age class to be planted: combination of whips and advanced nursery stock (10cm – 12 cm girth trees) to increase structure diversity.
- Hazel (*Corylus avellana*)
- Blackthorn (*Prunus spinosa*)
- Guelder rose (*Viburnum opulus*)
- Holly (*Ilex aquifolium*)
- Elder (*Sambucus nigra*)
- Spindle (*Euonymus europaeus*)
- Wild cherry (*Prunus avium*)
- Downey birch (*Betula pubescens*)
- Oak (*Quercus robur*)
- Goat Willow (*Salix caprea*)
  - Proportion of hedgerow mix: 25%
  - Age class to be planted: Whips predominantly

Hedgerows should be managed as follows (DAERA, 2022):

- Hedgerows should not be cut every year, as flower buds often form on second-year growth. Hedges should be trimmed on a two- three-year rotation, targeting different sections each year, which will make sure there are always flowers for pollinators in spring and berries for birds in autumn.
- Hedgerows should be trimmed to an 'A' Shape, which is thicker at the base and gets narrower at the top
- A two-meter buffer should be provided next to the hedgerow.
- Where possible, allow trees to develop at roughly 20 metre intervals.

The enhancement of existing hedgerows, translocation of existing (species rich) hedgerow and hedgerow creation will off-set the loss of hedgerows within the Proposed Development site and in the long term will provide a net gain in linear features across the Proposed Development site, increasing the ecological value of the site for local biodiversity. Existing hedgerows identified for enhancement are shown in yellow on Figure 2-3 and Figure 2-4 while areas identified as suitable for new hedgerow planting and/or translocation are shown in blue on Figure 2-3 and Figure 2-4. To note the location of hedgerow planting and enhancement was identified to ensure connectivity with the wider landscape in particular for commuting bats.

Plate 2-1: Example of gappy and heavily-managed hedgerow to be enhanced.

2.2 Hedgerow Creation

Species selected will be indigenous to the local area and will maximise flowering times throughout the year as well as berry availability later in the year as detailed in Table 2-1. For example, species such as guelder rose would be beneficial as this species flowers later in summer. The ideal native hedge is made up of approx. 75% hawthorn and 25% of at least four other species[1]. Four other species will be included from the species list provided in Table 2.1 below.

A combination of whips and advanced nursery stock (10cm – 12 cm girth trees) will be used for both tree and hedgerow planting across the Proposed Wind Farm site to increase structure diversity and to ensure connectivity gains are immediate.

New hedgerows should be planted between November – March when the woody hedge plants are dormant. When planting new hedgerow, plants will be closely spaced (a maximum of 50cm apart) and planted in a staggered row. The new hedgerow will need to be protected from poaching by livestock, through the erection of new stockproof fencing where required, which will be at least 1m away from the hedge, and installed on each side if required.

See Plate 2-2 below for example of area to be planted with a new hedgerow.

Table 2-1: Hedgerow Species and Flowering Periods[1]

Species	Flowering Period
Willow	March - April
Blackthorn	March - April
Whitethorn/Hawthorn	May - June
Spindle	May-June
Elder	June
Guelder Rose	May - July

[1] *Hedgerow establishment and restoration. (2022). Available at: https://www.cafre.ac.uk/wp-content/uploads/2022/11/Hedgerow-establishment-and-restoration.pdf*

Plate 2-2: Example of area to be planted with new hedgerow near Turbine 8.

2.2.1 Maintenance of Newly Planted Hedgerow

In order to facilitate the successful establishment of the new hedgerow to be planted within the Proposed Wind Farm site, and to promote biodiversity value of these the following measures are proposed (DAERA, 2022):

- New hedgerow shrub planting will be kept weed and litter free until the new plants are established, particularly from ruderal weeds. Healthy growth will be maintained by allowing the plant to occupy as much of the planting areas as possible to allow them to achieve as close their natural form as possible.
- During spring and autumn maintenance periods all trees and plants will be checked and adjusted/replaced as required, soil firmed, and any dead wood present removed back to healthy tissue and mulch added if required. Where tree guards are no longer required these will be removed to avoid damage to the tree.
- During the first growing season, all standard trees/ semi-mature trees will be watered regularly during any prolonged dry periods during the growing season (i.e. in April, May, June, July and August). During the second growing season the trees will be kept well-watered as often as required, particularly during June, July and August.
- Hedgerows should be trimmed every two – three years, with the cutting height raised 10-15cm each year, with trimming taking place in late winter (January / February), thus allowing flowers and fruit to develop.
- Hedgerows can be trimmed to produce an 'A' Shaped hedgerow which allows more light into the base.
- Any tree, hedge or shrub that is removed, uprooted, destroyed or that becomes seriously damaged, defective diseased or dead shall be replaced in the same location with another plant of the same species and size as that originally planted. All such replacements shall be carried out within the first planting season following the loss.

2.3 Translocation

2.3.1 Benefits of Translocating Hedgerows

A number of hedgerows within the site had a rich and diverse floristic composition. They consisted of a high number of woody species including hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), elder (*Sambuccus nigra*) hazel (*Corylus avellana*), holly (*Hedera helix*), and spindle (*Euonymus europaeus*). Mature and semi-mature trees, such as beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*), pedunculate oak (*Quercus robur*), goat willow (*Salix caprea*), alder (*Alnus glutinosa*), and aspen (*Populus* tremuloides) were growing as individual trees within these hedgerows. Some of these hedgerows had well developed understories and a diverse ground flora associated with them with species such as lords and ladies (*Arum maculatum*), cow parsley (*Anthriscus sylvestris),* bluebells (*Hyacinthoides non-scripta*), greater stitchwort (*Stellaria holostea*), primrose (*Primula vulgaris*), golden saxifrage (*Chrysosplenium oppositifolium*), common dog violet (*Viola riviniana*), wood avens (*Geum urbanum*), and lesser celandine (*Ficaria verna*) recorded (See Plate 2-3 and 2-4 for examples of hedgerows with high biodiversity value that will be lost to the footprint of the Proposed Development).

The identification of hedgerows suitable for translocation should be agreed with an Ecologist. Those species rich hedgerows and those that follow old townland boundaries (see data on specific hedgerows in Appendix 6-1) should be prioritised for translocation including those with a range of ground flora. Hedgerow translocation is practiced widely in the UK (Rooney and Hill 2004, cited in Foulkes, N. 2007) and has been attempted in Ireland on multiple occasions (Foulkes, N. 2007). The benefits of translocation include the following (Devon Hedges Group, 2015):

- Where works are carried out well, the integrity and visual character of the original hedge can be maintained, together with much of its cultural, environmental and landscape value.
- A translocated hedge will establish and grow in its new position more quickly than a new hedge.
- Translocation retains the genetic stock and seed bank of the original woody and herbaceous plants.
- The retention of the original and nutrient poor soils can help to reduce weed infestation problems.
- It can be cheaper than establishing a new hedge.
- The hedge is likely to be more in keeping with the surrounding landscape than a new boundary feature such as a fence or unbanked hedge.

Plate 2-3: Example of hedgerow with high biodiversity value adjacent to Turbine 6.

Plate 2-4: Example of hedgerow with high biodiversity value near Turbine 2.

2.3.2 Methodology

Detailed methodology can be found in the. Foulkes. N, 2007 document on the successful translocation of a mature hedgerow and in Devon hedges and Development 1: Moving Hedges (2015). Below is a brief outline of the methodology used to carry out hedgerow translocation.

2.3.2.1 Timing

Undertake during the period November to March when hedge growth is dormant and the ground is sufficiently moist. However, do not undertake when the ground is frozen or waterlogged (Foulkes, N. 2007, Devon Hedges Group, 2015).

2.3.2.2 Site Preparation

Identify and label individual plants to be moved. Take photos of each hedgerow section to be moved. Draw up a written work schedule to ensure clear communication between contractors, site manager, and operatives (Foulkes, N. 2007).

2.3.2.3 Prepare Receptor Site

The exact location of the receptor trench and adjacent fencing should be agreed and marked out in advance and the trench should be dug 1m deep and 1.5m wide with shallow tapered sides. The soil in the bottom of the trench should be loosed and mixed with some top soil (Foulkes, N. 2007).

2.3.2.4 Machinery

A four-wheel drive mechanical excavator with front four-in-one loading bucket and 180° backhoe with a selection of bucket is recommended for translocating hedgerows (Devon hedge Group, 2015).

2.3.2.5 Hedge Cutting

Plants should be either trimmed or coppiced back to a height of 30 – 60 cm before moving. Side growths should be cut back completely. Cutting should be undertaken with chainsaws, taking care to leave clean sloping cuts across stems of not less than 30 degrees.

2.3.2.6 Lifting

Use the four-in-one bucket to scoop the plant while maintaining as much of the root ball as possible. The root ball should then be placed in the transport box of a tractor and taken to the receptor site. On placement, maintain the correct height and line of each plant (Foulkes, N. 2007). The trench should then be back-filled with top soil from the original site position (contains original seed bank) to stabilise the plants.

2.3.2.7 Monitoring, aftercare and maintenance

Once translocated, the hedgerow should be well watered to ensure topsoil is washed in to fill any voids. Leave a 1-2m wide margin on each side of the hedge for biodiversity. Double fencing at 1-2m on either side of the hedge to protect against livestock. Control competing vegetation, such as grasses and ruderal vegetation (DAERA, 2022). The hedgerow should be inspected in the growing season following translocation to assess the percentage take of the plants (following heavy pruning and translocation, some plants can be very late producing leaves). Any dead plants should be replaced. The translocated hedgerow will require trimming back after the first season's growth to encourage bushy growth, followed by bi-annual cutting (Devon Hedge Group, 2015).

2.4 Monitoring and Reporting

Hedgerows and replanted trees will be inspected following the main growing season (i.e. in September) for the first three years of growth, where the requirement for replacement planting will be assessed. If any shrubs are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within an Environmental and Ecological Report and corrective actions implemented. Monitoring results will be reported after each monitoring year as noted above. Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan.

2.5 Discussion

The proposed enhancement of 2,375m of exiting hedgerow habitat, and the translocation and planting of 2,097m of hedgerow habitat will improve the ecological value and provide benefits for local biodiversity. Improving hedgerow availability will increase the commuting and foraging habitat available for bats and other mammals within the Project Development. Linear features allow bats to navigate across a landscape while providing protection from predators like owls and hawks. Predators rely on hunting bats where gaps or open space exist. Bolstering hedgerow and treelines reduce and remove gaps to provide more consistently safe commuting routes for bats. Bats have been shown to avoid crossing a linear feature gap with a distance of 3m. Improving the diversity of the hedgerow and treelines will allow a more diverse and abundant habitat for insect species. Insect species that breed and exist within the tree habitat are an important food source for bats and birds.

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Hedgerow loss
- Construction Compounds
- Indicative Borrow Pit Location
- Met Mast Location
- Potential 38kV Substation
- Potential Grid Route
- Proposed Hardstands
- Proposed New Roads
- Proposed Road Amendments Existing Roads
- Infrastructure / bat buffers

Drawing Title: Hedgerow Loss (North)

Project Title: Seskin Renewables Wind Farm

Drawn By	Checked By
CH	CC
Project No.	Drawing No.
231103	Figure 2-1
Scale	Date
1:9,585.31	26.05.2025

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Drawing Title
Hedgerow Loss (south)

Project Title
Seskin Renewables Wind Farm

Drawn By	Checked By
CH	CC
Project No.	Drawing No.
231103	Figure 2-2
Scale	Date
1:7,307.11	26.05.2025

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Drawing Title
Hedgerow Enhancement and Creation (north)

Project Title
Seskin Renewables Wind Farm

Drawn By	Checked By
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Project No.	Drawing No.
231103	Figure 2-3
Scale	Date
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MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Hedgerow Enhancement
- Hedgerow Replanting/ Translocation
- Construction Compounds
- Indicative Borrow Pit Location
- Met Mast Location
- Potential 38kV Substation
- Potential Grid Route
- Proposed Hardstands
- Proposed New Roads
- Proposed Road Amendments Existing Roads
- Infrastructure / bat buffers

Drawing Title: Hedgerow Enhancement and Creation (south)

Project Title: Seskin Renewables Wind Farm

Drawn By	Checked By
CH	CC
Project No.	**Drawing No.**
231103	Figure 2-4
Scale	**Date**
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MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

3. BAT BOXES

To provide additional roosting habitat for local bat species, it is proposed to install five bat boxes within the Proposed Wind farm site. Schwegler 1FF and one 2FN woodcrete bat boxes are recommended. 2FN bat boxes are equipped with a floor and can be used for the relocation of bats by a licenced ecologist if any are found during the demolition and felling processes. Bat boxes will have a southerly orientation and be positioned at least 2m from the ground, away from artificial lighting. Bat boxes should be installed in dark areas within the Proposed Development site along a suitable linear feature. A licenced ecologist will confirm a suitable location for the bat boxes. Bat boxes will be placed adjacent to vegetation features such as treelines and hedgerows to ensure they are close to existing flight paths and can avoid wide open spaces (Collins, 2023). Existing buildings, trees and walls to be retained within the Proposed Development site and can be used for the installation of bat boxes. Monitoring and maintenance of the Bat boxes will take place yearly for the first three years of the operational Wind Farm. The results of the first three years of monitoring will inform the need for and frequency of further monitoring and maintenance of the Bat Boxes, to be reviewed by the Project Ecologist and agreed with the wind farm operator.

3.1 Maintenance of Proposed Bat Boxes

2FN bat boxes contain a base, as a result, the box may need to be checked outside the Maternity Season to remove excess bat droppings and remove bird nests outside the bird nesting season.

3.2 Monitoring

A licenced ecologist will carry out a yearly bat box Monitoring protocol for the first three years of the operational life of the Proposed Wind Farm. The ecologist will confirm and flag bat boxes in use by bats, evidence of bats, droppings, urine splashing, bat fur oil stains and/or dead bats. Monitoring will be carried out a suitable time of year to ensure no disturbance to any roosting bats, particularly in the case of a maternity roost. The best time of year for a bat box monitoring protocol to be carried out is September/ October.

Evidence or presence of nesting birds will be flagged and removed outside the bird nesting season. 2FN bat boxes must be checked to remove excess bat droppings and flag any bird nests being constructed within a bat box. If a bird nest is found, a secondary bat roosting source must be erected to replace the bat roosting source lost.

The results of the first three years of monitoring will inform the need for and frequency of further monitoring and maintenance of the bat boxes, to be reviewed by the Project Ecologist and agreed with the wind farm operator.

3.3 Reporting

Monitoring results will be reported within an Environmental and Ecological Report with any criteria failures identified and corrective actions implemented Monitoring results will be reported after each monitoring instance. Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared.

4. ASHY MINING BEE

Over 80% of Ireland's bee species, including the ashy mining bee (*Andrena cineraria*) are ground nesting bees. Ashy mining bee were recorded nesting within a hedgerow bank north of Turbine 6. The bank was a well-drained sunny south facing bank consisting of bare earth clay. It is proposed to create additional nesting habitat for this species of bee and other ground nesting solitary bees.

Plate 4-1: Ashy mining bee nesting within hedgerow bank north of Turbine 6. 0

4.1 Habitat Creation and Enhancement

There is potential to create additional habitat for this species within the Proposed Wind Farm site, providing an opportunity to bolster the population on site. These sites can be created along hedgerows and other field boundaries. Sites should be south or west facing and should be dry banks. In order to create habitat for ground nesting bees, the following methodology has been set out by the National Biodiversity Data Centre:

- Identify suitable locations, ideally a well-drained sunny south or west facing bank (or an aspect in between) with suitable food source (wildflowers or fruit trees) nearby.
- Using a spade, clear the vegetation on your bank with a spade (areas ranging from 1.5m^2 to 12m$^{2)}$. Vegetation will need to be kept clear, and the site may need to be cleared more than once a year.
- Avoid clearing back the vegetation if an active nest is present.
- Never spray with site with pesticides or allow drift to access the site.

Areas for creating suitable bee nesting habitat should be identified in conjunction with an ecologist. This could be combined with hedgerow planting and translocating works.

Plate 4-2: Bank with Ashy mining bee present.

5. CONCLUSION

This BMEP sets out the measures to be implemented to ensure that the Proposed Development will result in the enhancement and improvement of ecological connectivity within the Proposed Wind farm site. The enhancement of 2,375m of existing hedgerows, and translocation and creation of 2,097m of new native hedgerow will be of benefit to a number of species including bats, mammals and pollinator species. This plan has set out measures to be implemented during establishment and management phases to ensure that the measures are successful, as well as regularly monitoring by an ecologist to ensure the success of the measures outlined in the BMEP.

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