

RECEIVED: 22/09/2023

**Biodiversity Management
and Enhancement Plan
(BMEP)**

Carrig Renewables Wind
Farm

Tipperary Planning Authority - Information Purposes Only!



RECEIVED: 22/09/2023



DOCUMENT DETAILS

Client: **Carrig Renewable Energy Ltd**

Project Title: **Carrig Renewables Wind Farm**

Project Number: **211016**

Document Title: **Biodiversity Management and Enhancement Plan (BMEP)**

Document File Name: **BMEP F - 2023.09.21 - 211016**

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



Planning and
Environmental
Consultants

Rev	Status	Date	Author(s)	Approved By
02	Final	21/09/2023	RW	JH

Tipperary Planning Authority Inspection Purposes Only!

Contents

1. INTRODUCTION	2
1.1 Background	2
1.1.1 Cutover bog (PB4) loss	2
1.1.2 Bog woodland (WN7) and Broadleaved woodland (WD1) loss	2
1.1.3 Hedgerow and Treeline loss	2
1.1.4 Works in proximity of Badger Sett.....	3
2. BIODIVERSITY MEASURES	5
2.1 Proposed Replanting Areas	5
2.1.1 Hedgerows	5
2.1.2 Woodland.....	5
2.1.3 Maintenance of Newly Planted Hedgerow and Tree Planting.....	5
2.2 Proposed Reseeding Areas	6
2.3 Artificial Sett.....	7
3. MONITORING.....	9
3.1 Reporting	9
4. CONCLUSIONS	10
5. BIBLIOGRAPHY	11

RECEIVED: 22/09/2023

Tipperary Planning Authority - Inspection Purposes Only!

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 Carrig Renewables Wind Farm Development.

The BMEP has been prepared as part of the Proposed Development to offset the potential loss of approximately 9.9ha of cutover raised bog (PB4), 5.8ha of bog woodland (WN7), 1.9ha of broadleaved woodland (WD1), 1ha of bog woodland/scrub mosaic, 267m of linear hedgerow and 116m of treeline habitat within the Site. Linear feature losses associated with access roads and turbine bat buffers (as per NatureScot guidelines) are shown on Figure 1-1. The below sections describe the measures which will be implemented to contribute to offsetting these losses.

1.1.1 Cutover bog (PB4) loss

Turbines 1, 3 and 5 are located on actively cut and drained cutover raised bog (PB4), as well as spoil and peat repository areas and internal access roads. There will be approx. 9.9ha loss of cutover bog habitat of Local Importance (higher value) associated with this. In order to contribute towards the offset of this loss, the following commitments will be made as part of the proposed development:

- Commitment to providing a portion of the community benefit fund to biodiversity enhancement/nature positive projects within 10km of the proposed development.
- Commitment to offering compensation to turbarry rights holders who cease peat extraction on their plots. This initiative aims to prevent further degradation of the peatland habitat within the site and to promote the natural regeneration of peatland areas.

From areas of cutover bog which will require excavation, sods and turves of the surface vegetation will be retained and will be emplaced on top of the peat repository areas in order to retain and translocate existing cutover community habitats. Reseeding of spoil repository areas will also be carried out as described in Section 2.2.

1.1.2 Bog woodland (WN7) and Broadleaved woodland (WD1) loss

Bog woodland within the site is on dry cutover bog and as such does not correspond to the Annex I habitat. Approximately 5.8ha of bog woodland and 1ha of bog woodland/scrub mosaic will be lost to accommodate Turbines 2 and 3 and associated access roads and bat buffers. Approximately 1.9ha of broadleaved woodland (WD1) will be lost to accommodate the footprint of the proposed substation and a spoil repository area close to Turbine 7. The proposed substation is located within an Ash (*Fraxinus excelsior*) plantation. It is proposed to replace ash trees within the plantation which are currently in poor condition with healthy native trees of various ages in order to enhance the age structure and longevity of this woodland.

1.1.3 Hedgerow and Treeline loss

The majority of the proposed loss of hedgerow/tree habitat is associated with habitat buffering measures required to avoid impact on bats as per NatureScot recommendations. The proposed vegetation removal to prevent impacts on bats is summarised in the table below. The necessary losses are shown in Figure 1-1.

Table 1-1 Assessment of Linear Habitat Features within Turbine Buffers

Turbine No.	Linear habitats within the buffer	Length of Proposed Removal
Turbine 1	None	None
Turbine 2	None	None
Turbine 3	None	None
Turbine 4	Two hedgerows forming agricultural field boundaries are within the buffer	243m WL1 55m WL2
Turbine 5	None	None
Turbine 6	None	None
Turbine 7	None	None

The remainder (24m) of linear hedgerow and (61m) treeline habitat for removal is to facilitate road widening, new access roads and construction works associated with the Proposed Development.

It is proposed to offset the proposed loss of hedgerow and trees through the creation of new hedgerows and treelines along proposed new internal access roads. A total of 674m of linear hedgerow and treeline habitat is proposed; this extra habitat creation is proposed given that it would not be a like for like replacement, and would take time to establish, and as enhancement. Overall, the proposed replanting will result in a net gain of approximately 291m in the linear landscape features within the Wind Farm Site. Planting will be of semi-mature specimens to ensure connectivity gains are immediate, and will be indigenous to the local area.

1.1.4

Works in proximity to Badger Setts

In order to accommodate road upgrade works on the approach to Turbines 6 and 7, it has been assessed that there is potential for impacts to an existing badger sett located in proximity to the route. Therefore, an artificial badger sett is proposed which will be constructed in similar habitat in proximity to the existing sett and an appropriate distance away from any proposed construction works. The artificial badger sett will be constructed and monitored for 6 months as per NatureScot¹ guidance in advance of exclusion of the existing sett. Monitoring will be carried out periodically through surveys and use of camera footage, with baiting techniques to be used to encourage use of the sett by badgers.

¹ <https://www.nature.scot/sites/default/files/2018-04/Guidance-Badgers-artificial-sett-construction.pdf>



Map Legend

-  EIAR Site Boundary
-  Crane Platform Hardstand
-  Bat buffer
-  linear habitat to be lost
-  Existing Roads to be Upgraded
-  Proposed New Roads

RECEIVED: 22/09/2023



Microsoft product screen shots reprinted with permission from Microsoft Corporation
 Ordnance Survey, Ireland Licence No. AR 0021820© Ordnance Survey Ireland/ Government of Ireland

Drawing Title	
Linear Habitat Loss	
Project Title	
Carrig Renewables Wind Farm	
Drawn By	Checked By
RW	JH
Project No.	Drawing No.
211016	Figure 1-1
Scale	Date
1:11,000	20.09.2023



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

2. Biodiversity Measures

2.1 Proposed Replanting Areas

2.1.1 Hedgerows

The locations in which the proposed replanting of hedgerow and treeline will take place will be subject to final landowner agreement. The management measures identified in this BMEP are therefore indicative of what can be undertaken within the EIAR Site Boundary. The identified areas for hedgerow planting are illustrated in Figure 2-1. There is an extensive network of existing linear landscape features in the wider area that will be retained and the proposed replanting will enhance connectivity across the site and wider landscape. Planting will be of semi-mature specimens to ensure connectivity gains are immediate, and will be indigenous to the local area. Such species include hawthorn (*Crataegus monogyna*) which should make up approx. 75% of the hedgerow mix. The ideal native hedge is made up of 75% Whitethorn and 25% of at least 4 other species². Other species present within the EIAR site boundary which will be included:

- Spindle (*Euonymus europaeus*)
- Dog rose (*Rosa canina*)
- Hazel (*Corylus avellana*)
- Elder (*Sambucus nigra*)
- Blackthorn (*Prunus spinosa*)

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 browsing by livestock, through the erection of new stockproof fencing where required, which should be at least 1m away from the hedge, and on each side if required.

2.1.2 Woodland

An Arboricultural Assessment of the woodland adjacent to the proposed substation footprint will be undertaken (this area is shown in Figure 2-1). Any ash trees or other species identified as being in poor condition will be replaced with healthy specimens (excluding ash) in order to enhance the age structure, diversity and longevity of this woodland area. The species to be used for the replanting will comprise native species locally sourced and species that are already represented within the site as follows: hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*), Hazel (*Corylus avellana*), elder (*Sambucus nigra*), goat willow (*Salix caprea*), spindle (*Euonymus europaeus*), dog rose (*Rosa canina*) with standard trees planted at intervals.

2.1.3 Maintenance of Newly Planted Hedgerow and Tree Planting

In order to facilitate the successful establishment of the new hedgerow and trees to be planted within the site, and to promote biodiversity value of the new hedgerow the following measures are proposed:

- > 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;

² NBDC – Pollinator-friendly Management of Wind Farms – National Biodiversity Data Series No. 25

- > 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 stakes and ties 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.
- > New hedgerows should be cut annually, with the cutting height raised by 10-15cm each year. This will allow the plants to flower and produce berries whilst preventing the height of the hedgerow from increasing too rapidly.
- > 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.

2.2

Proposed Reseeding Areas

As mentioned in Section 1.1.1, excavated surface turves of cutover bog habitat from the construction works will be retained and the surface vegetation will be kept intact and replaced over the top of peat repository areas, in order to retain existing vegetation and reduce run-off potential from these areas. In addition, the spoil repository areas (as shown on Figure 2-1) will be reseeded with native wildflower meadow mix (from wildflowers.ie) the mix will be agreed with the Project Ecologist and will be a suitable mix according to the substrate within the repository area.

Artificial Setts

In order to offset potential loss of the badger sett as described previously, an artificial sett will be constructed 6 months in advance of road upgrade works in this area. The location of the artificial sett is shown in the Confidential Figure 6-8 to Chapter 6 of the EIAR. The sett should be constructed in line with *Guidance for the Creation of Artificial Setts* (NatureScot³). Accordingly, the sett location has been selected due to its proximity to the existing sett/social group's territory, and the space available at the site. An area measuring 10m x 10m should accommodate a small sett comprising two entrances and two chambers. However, additional chambers and entrances should be constructed to increase potential for success. As per the guidance, construction of the sett must be carried out at least 6 months in advance of exclusion of the existing sett. Below are design parameters according to NatureScot guidance:

Chamber design

The chambers should always be constructed at the end of branches off the main pipe run as badgers like the security of a defensible 'end' situation. Chambers are constructed using concrete slabs with either concrete or breeze blocks or alternatively wood and plastic. The basic design of the chamber reflects the shape and size of the materials used for construction. Thus, 3' x 2' concrete paving slabs can be used in association with 6" bed concrete. Alternatively, wood chambers typically measure 450mm to 750mm square. Completed chambers should always be filled generously with dry hay or straw.

Tunnels

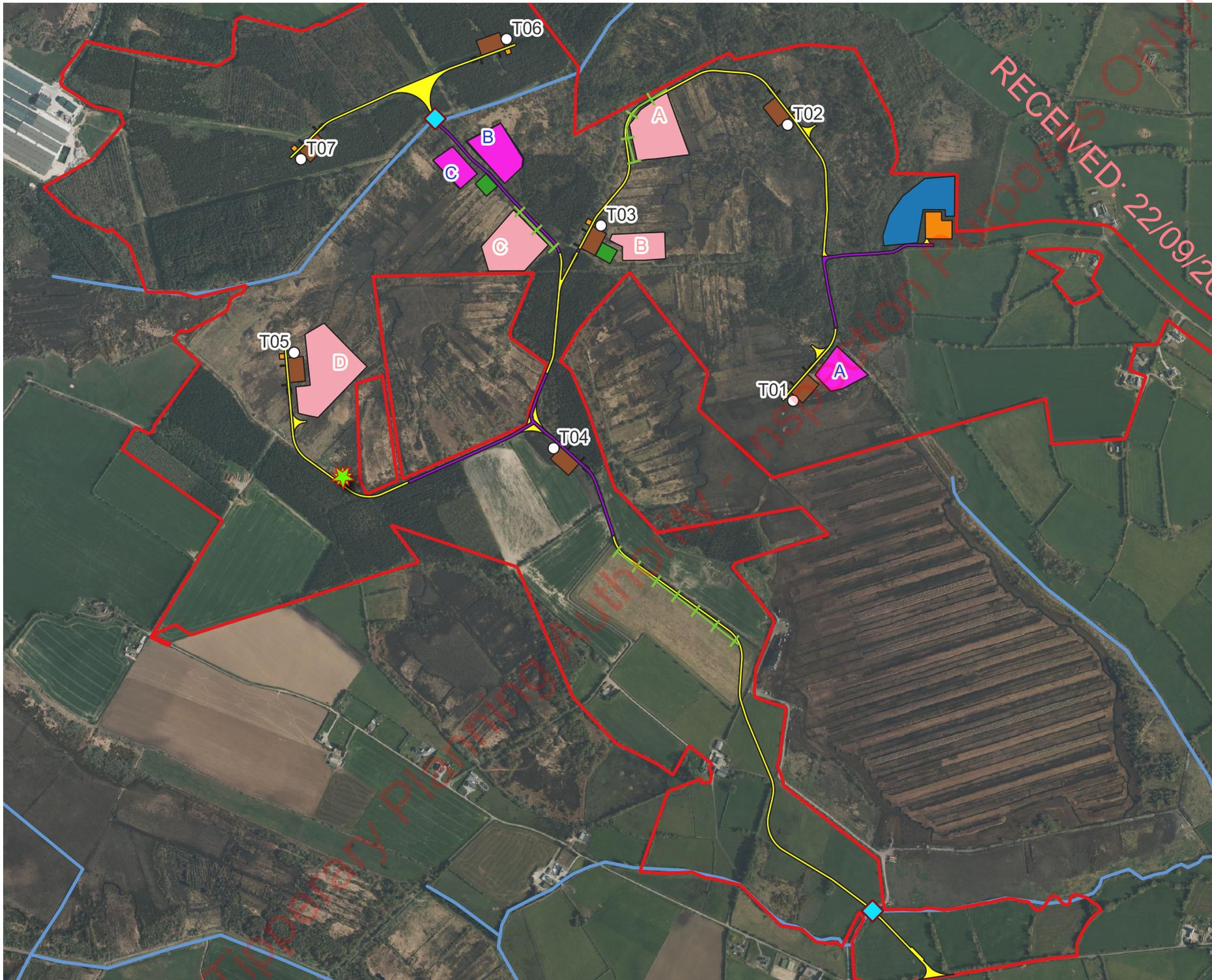
The tunnels are constructed from 12" (300mm) diameter pipes throughout - reduced at entrances to 9" (225mm) pipes. The 9" pipes at the entrances restrict the size of any dog that could enter into the sett, but allow badgers easy access. Pipes can be of clay or concrete, collared or not, and of any length that can be obtained. However it should be remembered that long pipes are difficult to handle and make curves more difficult to construct. Preferred pipes are clay at 1500mm long with collars. These are the lightest and easiest to handle, fit together well and make the straightness of the trenches less critical. One, or possibly two, pipe branches with one branch left open to the surrounding soil allows the badgers to excavate and expand the sett if they wish. Plastic piping, 250mm – 300mm in diameter, can also be used and is easy to handle. If preferred, a mixture of all material types could be used.

Construction

A mechanical digger is usually used to excavate the sett. Chambers and pipe runs should be buried at a depth of at least 1250mm. Pipe trenches should be excavated using a 600mm wide digger bucket. Normal Health and Safety guidelines apply, particularly with respect to working in trenches. Therefore, trench sides should be sloped back or stepped to comply with guidelines.

The time taken to construct an artificial sett is determined by how well the construction has been organised. Assuming that all materials and labour are readily available (including an excavator driver), the sett can be constructed, backfilled and landscaped within two to four days.

³ <https://www.nature.scot/sites/default/files/2018-04/Guidance-Badgers-artificial-sett-construction.pdf>



Map Legend

- EIAR Site Boundary
- Existing Roads to be Upgraded
- Proposed New Roads
- Construction Compound
- Peat Repository Areas
- Substation
- Crane Platform Hardstand
- Enhance woodland
- Wildflower areas (spoil storage area)
- New Linear Habitat



Microsoft product screen shots reprinted with permission from
 Microsoft Corporation
 Ordnance Survey Ireland Licence No. AR 00218200 © Ordnance
 Survey Ireland/Government of Ireland

Drawing Title	
Biodiversity Measures	
<small>Project Title</small>	
Carrig Renewables Wind Farm	
<small>Drawn By</small>	<small>Checked By</small>
RW	JH
<small>Project No.</small>	<small>Drawing No.</small>
211016	Figure 2-1
<small>Scale</small>	<small>Date</small>
1:11,000	21.09.2023
 MKO Planning and Environmental Consultants <small>Tuam Road, Galway Ireland, H91 VW84 +353 (0) 91 735611 email: info@mkofireland.ie Webste: www.mkofireland.ie</small>	

3. MONITORING

Monitoring of the artificial badger sett by a qualified ecologist will be undertaken during the 6 months in advance of upgrade works to the road in the vicinity of the existing sett. The monitoring will be carried out to ensure that the local badger population have become acquainted with the new sett. Monitoring will be carried out periodically (for example, once per month), to monitor badger activity in the vicinity of the new sett. Baiting techniques can also be used to encourage use of the sett.

To confirm that habitat creation and enhancement has been successful, all areas of replanting as shown in Figure 2-1 will be monitored post-restoration. These areas will be inspected following the main growing season (i.e. in September) for the first five years of growth. This will be undertaken in partnership between the developer, the Project Ecologist and the Landowner. The proposed management actions will be conveyed to the developer and each of the landowners, and management alterations implemented as required to achieve the targets of the management plan.

Hedgerows and replanted trees will be inspected following the main growing season (i.e. in September) for the first five 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 Annual Environmental Report.

In summary, monitoring and baiting for the artificial badger sett will be carried out approx. once per month for 6 months in advance of construction of the road upgrade works close to turbines 6 and 7. Post construction of the wind farm development and implementation of replanting measures, inspections of the replanted hedgerows and trees will be carried out once per year around September in years 1,2,3,4 and 5.

3.1 Reporting

Monitoring results will be reported within an Annual Environmental Report with any criteria failures identified and corrective actions implemented. Monitoring results will be reported by a suitably experienced ecologist within an Annual Environmental Report each year for the first 5 years post construction, with any criteria failures identified and corrective actions implemented as part of the Construction Environmental Management Plan (CEMP). 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 in years 1,2, 3, 4 and 5 following commencement of the plan's implementation.

4. Conclusions

The measures described in this BMEP will serve to offset the loss of cutover bog, hedgerow and woodland habitat, and badger sett associated with the Proposed Development. A total of 674m of linear hedgerow and treeline habitat is proposed which will result in a net gain of approximately 291m in the linear landscape features within the Wind Farm Site. The installation of an artificial badger sett will ensure there is no net loss of badger resting or breeding habitat as a result of the proposed development.

The success of these measures will be evaluated through a detailed monitoring and reporting programme.

RECEIVED: 20/09/2023
Tipperary Planning Authority - Inspection Purposes Only!

5. BIBLIOGRAPHY

Adams, N. The Hedgerow Management Cycle. Hedgelink UK.

Heritage Council. Conserving Hedgerows. Online, Available at:
https://www.heritagecouncil.ie/content/files/conserving_hedgerows_2mb.pdf

National Rural Network. GLAS Hedgerows: A Case Study.

National Roads Authority, (2006). A Guide to Landscape Treatments for National Road Schemes in Ireland. Dublin: National Roads Authority

NatureScot – *Guidance for the Creation of Artificial Setts* – accessed at
<https://www.nature.scot/sites/default/files/2018-04/Guidance-Badgers-artificial-sett-construction.pdf>

NBDC – *Pollinator-friendly Management of Wind Farms* – National Biodiversity Data Series No. 25

Trout and Brunt, (2014). Best Practice Guidance Note for Land Regeneration No. 12: Protection of trees from Mammal Damage, Online, Available at: https://cdn.forestresearch.gov.uk/2022/02/ru_bpg12.pdf, Accessed: 18.01.2023.

RECEIVED: 22/09/2023
Tipperary Planning Authority - Inspection Purposes Only!

RECEIVED: 22/09/2023

Tipperary Planning Authority - Inspection Purposes Only!