

Response to Request for Further Information

Ballivor Wind Farm (ABP
Ref. 316212)





DOCUMENT DETAILS

Client: **Bord Na Móna Powergen Ltd.**

Project Title: **Ballivor Wind Farm (ABP Ref. 316212)**

Project Number: **191137-r**

Document Title: **Response to Request for Further Information**

Document File Name: **191137-r - Submissions Response – D2**

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



Rev	Status	Date	Author(s)	Approved By
01	Draft	26/06/2024	TH	JW
02	Final	05/07/2024	TH	JW,SC



Contents

- 1. INTRODUCTION 2
 - 1.1 Background to the Proposed Development 2
- 2. REQUEST FOR FURTHER INFORMATION 4
 - 2.1 Collision Risk 4
 - 2.2 Response 4
 - 2.2.1 Collision Risk for migrating Greenland white-fronted geese 4
 - 2.2.2 Conclusion 8
 - 2.3 Marsh Fritillary 9
 - 2.4 Response 9
 - 2.4.1 Survey timing 9
 - 2.4.2 Assessment of suitable habitat 10
 - 2.4.3 Loss of habitat 10
 - 2.4.4 Drying out of habitat 10
 - 2.4.5 Conclusion 11
 - 2.5 ZTV Mapping 12
 - 2.6 Response 12
- 3. CONCLUSION 13

Table of Figures

- Figure 1. Flight Paths Taken by tagged Geese Schindler AR et al., (2024). 8

List of Appendices

- Appendix 1: Marsh Fritillary Report
- Appendix 2: HES Note

1.

INTRODUCTION

MKO have been instructed by the Applicant, Bord Na Móna Powergen Ltd., to prepare a response to the Request for Further Information (RFI) issued by An Bord Pleanála (the Board) on the 14th of May 2024. The request was made in relation to the live Strategic Infrastructure Development (SID) planning application before them for consideration (ref: ABP-316212) for a proposed wind farm development located at Ballivor Bog Group in Counties Meath and Westmeath.

The letter stated that the deadline for submitting a response to the request for further information was the 5th of June 2024. On 27th May, 2024, MKO, representing the Applicant submitted a formal request to the Board for an extension to this deadline. The purpose of the request was to seek an extension until **12th of July 2024** allowing sufficient time for a thorough response to be prepared. This extension request was accepted by the Board by email dated 27th July 2024.

This report sets out the Applicant's response to each of the three requests by the Board as set out in the letter dated 14th May 2024.

It is noted that the planning application lodged included a robust Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS) and a suite of drawings in support of the Proposed Development.

1.1

Background to the Proposed Development

The Applicant sought planning permission from the Board in April 2023 for the following Proposed Development, which remains that as set out in the public notices as follows:

The Proposed Development will constitute of the following:

- i. The construction of 26 No. wind turbines and all associated hard-standing areas with the following parameters:
 - a. A total blade tip height of 200m,
 - b. Hub height of 115m, and
 - c. Rotor diameter of 170m.*
- ii. 2 No. permanent Meteorological Anemometry Masts with a height of 115 metres and associated hardstanding area and removal of existing meteorological mast.*
- iii. 4 No. temporary construction compounds with temporary site offices and staff facilities, in the townlands of Bracklin and Grange More.*
- iv. 5 No. temporary security cabins at the main construction site entrances and access points around the site, in the townland of Killagh, Grange More and Coolronan.*
- v. 2 No. borrow pits located in the townlands of Grange More and Craddanstown and all works associated with the opening, gravel and spoil extraction, and decommissioning of the borrow pits.*
- vi. 1 No. permanent 110 kV electrical substation, which will be constructed in the townland of Grange More. The electrical substation will have 2 No. single storey control buildings, a 36-metre-high telecom tower, associated electrical plant and equipment, a groundwater well and a wastewater holding tank.*
- vii. All associated underground electrical and communications cabling connecting the turbines and masts to the proposed electrical substation, including road crossings at R156 and a local road between Lisclogher and Bracklin Bogs, and all works associated with the connection of the proposed wind farm to the national electricity grid, which will comprise connecting into the existing Mullingar – Corduff 110 kV overhead line that traverses the site.*

- viii. *Provision of new internal site access tracks with passing bays measuring a total length of c. 28km and provision/upgrade of existing/new pathways for amenity uses measuring a total length of c. 3.3km and associated drainage.*
- ix. *Temporary accommodating works to existing public road infrastructure to facilitate delivery of abnormal loads at locations on the R156 and R161 in the townlands of Doolystown and Moyfeagher.*
- x. *Accommodating works to widen existing site entrances off the R156 into Ballivor and Carranstown Bogs and reopen entrances at Lisclogher and Bracklin Bogs for use as construction site entrances and to facilitate delivery and movement of turbine components and construction materials; Entrances will be used for maintenance and amenity access during the operational period.*
- xi. *Permanent vertical realignment of the R156 in the vicinity of the site entrance to achieve required sight lines.*
- xii. *Construction of permanent site entrances off a local road into Lisclogher and Bracklin Bogs to facilitate a crossing point for turbine components, construction materials and operation/amenity access.*
- xiii. *Provision of amenity access and amenity pathways using existing entrances off the R156 and local roads in the townlands of Bracklin, Coolronan, Clondalee More and Craddanstown.*
- xiv. *3 No. permanent amenity carparks in Ballivor Bog (50 no. car parking spaces), Carranstown (15 no. car parking spaces) and Bracklin Bog (15 no. car parking spaces) and the provision of bicycle rack facilities at each location.*
- xv. *All associated site works and ancillary development including access roads, drainage and signage.*
- xvi. *A 10-year planning permission and 30-year operational life of the wind farm from the date of commissioning of the entire wind farm.*

2.

REQUEST FOR FURTHER INFORMATION

The following sections outline the requests by the Board for which Further Information is sought.

2.1

Collision Risk

The first item of the Board's RFI relates to collision risk and is outlined below:

“Collision Risk - Having regard to the submitted EIAR and supporting information with regard to Ornithology and noting submissions received from the Department of Housing Local Government and Heritage, (NPWS), in relation to information received by the NPWS of records of electronically tagged Greenland White Fronted Geese passing near the proposed wind farm site during migrations from their most important wintering sites in Ireland on the Wexford slob and their summering areas in Greenland, the Board notes the request of the Department for a more thorough analysis, based on additional survey using radar or other techniques of the potential for night migrants especially Greenland white fronted geese colliding with wind farm turbines and details of mitigation to ensure that the possibility of such collisions might be reduced. You are invited to respond to this submission.”

2.2

Response

This section of the response to the request for further information relates solely to ornithology and herein sets out the response to the matters raised. As there is considerable overlap between An Bord Pleanála's request for further information and the substance of the submission made by the Development Application Unit (dated 19th of February 2024) their concerns are addressed by topic below. The response to these issues has been prepared by the MKO Ornithology team who undertook the bird surveys and wrote the Ornithology Sections of the EIAR. This response has been prepared by Principal Ornithologist, Pádraig Cregg (BSc., MSc.) of MKO. He is a suitably qualified, competent, professional ornithologist with extensive experience in completing avifaunal assessments and is a competent expert for the purposes of the preparation of this EIAR and this response.

For ease of reference, the relevant section of the DAU submission relating to Greenland white-fronted goose migratory activity is provided here:

“Research undertaken by the University of Saskatoon involving tracking individual Greenland white-fronted geese from their winter feeding grounds in Wexford. Those undertaking the research indicated to NPWS staff that some of the tagged birds came within 8km of the proposed development site near Ballivor with a smaller number flying within a 6km buffer zone around the development, possibly flying through the development footprint.”

2.2.1

Collision Risk for migrating Greenland white-fronted geese

To provide the requested more thorough analysis of collision risk, further information on the flight activity of the satellite-tagged Greenland white-fronted geese was requested from NPWS. On the 20th of May 2024, it was queried whether or not the geese were flying at night and at what altitude they were flying. A response was received on the 30th of May 2024. The information that was received from NPWS as previously outlined was provided by the University of Saskatoon and is associated with a 2024 paper¹:

¹ Schindler AR, Fox AD, Wikle CK, Ballard BM, Walsh AJ, Kelly SBA, Cao L, Griffin LR, Weegman MD. 2024 Energetic trade-offs in migration decision-making, reproductive effort and subsequent parental care in a long-distance migratory bird. *Proc. R. Soc. B* 291: 20232016. <https://doi.org/10.1098/rspb.2023.2016>

Energetic trade-offs in migration decision-making, reproductive effort and subsequent parental care in a long-distance migratory bird. The correspondence from NPWS included the following information:

"I am attaching documents and maps in relation to the requested Greenland white-fronted goose telemetry data.

The three maps show a circle of 6km around a site centroid with WGS84 coordinates 53.55618818401887, -7.038666641656937.

The researcher provided us with the following information:

There were two cases where tagged birds came within 6 km of the indicated point. Both were Wexford birds flying during spring migration. There are a few others that came close (in all, 8 instances where a bird's GPS points were within 20 km of the point, this included Wexford birds flying during migration and one Lough Iron bird during winter). Some of these may have flown through the 6 km buffer as well.

As far as flight heights, the 18 GPS points within 20 km were at altitudes between 216 – 2235 m (with reference to sea level) and the 2 GPS points within 6 km were at altitudes between 1606 – 2210 m. However, it is recommended to apply caution when using these numbers, as the altimeters on the devices used were not specifically calibrated before use. As a result, there is no real indication of how accurate they are.

Of the 20 total GPS points from spring/fall migration occurring within 20 km of the centroid, 8 were night-time flights (here defined as occurring between sunset and sunrise).

Please note that the GPS data behind the attached maps has not been submitted to NPWS."

In summary, the following are considered the key pieces of information:

- In all eight geese flew within 20km of the proposed development, these included migratory birds and one wintering bird.
- It was confirmed that there are two instances where geese flew within 6km of the proposed development, these birds may have crossed the site.
- All twenty of the GPS points from satellite-tagged geese were recorded to be flying at altitudes between 216m and 2,235m above sea level. The accompanying flight lines of the tagged geese were also provided by Schindler AR et al., (2024), please see Figure 1 for location details of the flight paths taken.
- The two geese that flew within 6km of the proposed development were flying at altitudes between 1,606m and 2,210m above sea level.
- Caution should be applied when considering altitude data.
- When within 20km of the proposed development, eight of the twenty GPS points from satellite-tagged geese were recorded to be flying between sunset and sunrise, i.e. 40% of flights were at night.

Following a review of the DAU submission (informed by research undertaken by the University of Saskatoon) and the additional information received from NPWS on the 30th of May 2024, it is submitted that the balance of evidence strongly suggests that migratory Greenland white-fronted geese flying between the Wexford Slobs and Iceland are not at significant collision risk from the proposed development. The rationale for this statement is as follows:

- Advancements in animal tracking technology have made it possible to record the movements of migratory birds, like the Greenland white-fronted geese in Ireland. In this specific case, the information provided by the NPWS allows for *"a more thorough analysis, based if possible on*

additional surveys using radar or other techniques.” In this instance, the ‘other technique’ is GPS data from satellite-tagged geese.

- Based on the information provided from a recently published peer-reviewed paper by the University of Saskatoon, no significant collision risk is likely given the altitude the geese were flying. In every instance where information on migratory geese was provided (by NPWS) the geese were flying nearly ten times the height of the proposed turbines (i.e. 1,606m, 2,210m or 2,235m). The flight height information was only provided in a range for six of the eight geese that flew within 20km of the proposed development. The flight height for the other two migratory geese was provided (1,606m and 2,210m respectively), it seems likely the lower end of the range was the Lough Iron bird undertaking the short distance flight (rationale provided in next bullet point) and the higher end of the range must relate to another individual as it is a higher value than the geese that flew within 6km of the proposed development. It is, therefore, reasonable to conclude that Greenland white-fronted geese migrating between the Wexford Slobs and south-west Iceland are not at significant collision risk as the geese were flying nearly ten times the height of the proposed turbines (i.e. 1,606m, 2,210m or 2,235m). Furthermore, the only geese that were confirmed to have flown within 6km of the proposed development were flying at altitudes between 1,606m and 2,210m above sea level. These geese flew the closest to the development and were at no risk of collision with a turbine based on their flight height (>1,606m).
- In all only one of the eight geese that flew within 20km of the proposed development was a wintering bird (i.e. not migrating). As outlined by NPWS, this was the goose from Lough Iron. Although “*the GPS data behind the...maps*” was not available from NPWS, it is likely the flight at 216m was this Lough Iron flight, as birds on wintering grounds, undertaking shorter foraging flights, typically fly at much lower elevations than migrating birds. From an energetics perspective, climbing to high altitudes for short flights is disadvantageous.
- Another key consideration is the evidence of surveys. No Greenland white-fronted geese were recorded during the comprehensive suite of surveys undertaken at the Wind Farm Site between April 2020 and March 2023. This included ornithological surveys on or near the site c.25 days a month during the migratory season (the core migratory months are late September/October and late March/April). A reasonable explanation for how geese could have flown above the proposed development but were not seen would be if they were migrating at high altitudes, as indicated by the data provided by NPWS. As previously stated, this height is approximately ten times the proposed turbines’ height. For reference, the key focus of flight activity surveys (vantage point surveys) is to record flight activity at the height where a collision is possible. That is the airspace occupied by the rotating turbine blades. In this instance that was between 30-200m. If the birds were flying at lower elevations they would have been observed, particularly as, as outlined in the NPWS data a majority of the migrating geese were flying during the day (60%).
- A review of the literature shows that many species of birds including water birds like swans and geese fly at high altitudes when migrating. When on migration Greenland white-fronted geese have previously been recorded to fly at altitudes of >2,500m when crossing the 2,500m high Greenland Ice Cap (Fox *et al.*, (2003))². Other related species also fly at high elevations when migrating: Pacific greater white-fronted goose, tundra white-fronted goose, lesser snow goose migrate at flight altitudes of between 2,500m and 3,500m³.
- While caution was recommended when interpreting the altitude data as provided by NPWS, it is reasonable to assume that even following this application of caution the geese are still not at risk of a collision (i.e. given the high altitude of flights and the related considerable margin for error). And particularly so as the evidence of surveys and a literature review corroborate the outputs of the altimeters.

² Fox A. D., Glatthard C. M. and Walsh, A. J. 2003. Spring migration routes and timing of Greenland white-fronted geese – results from satellite telemetry. – *Oikos* 103: 415–425.

³ Weiser, E. L., Overton, C. T., Douglas, D. C., Casazza, M. L., & Flint, P. L. (2024). Geese migrating over the Pacific Ocean select altitudes coinciding with offshore wind turbine blades. *Journal of Applied Ecology*, 61, 951–962. <https://doi.org/10.1111/1365-2664.14612>

- While the altitude of flight is the key factor limiting the potential for impacts, a further consideration is the number of migratory geese that are likely to migrate above the proposed development. As provided in the NPWS response, only a small proportion of the satellite-tagged geese have flight paths that cross the proposed development. For this to be meaningful information, this data would need to be representative of the wider Wexford Slob population. The University of Saskatoon study aimed to tag a representative sample of the Wexford Slob population as this would facilitate the more meaningful study of the migratory routes taken by the population rather than just the individuals involved. As outlined in the aforementioned 2024 paper by Schindler AR et al., “to maximize independence in our data, we attempted to fit devices to only one individual of a family group as families migrate together.” In the late 90s, a similar satellite tracking study tagged geese from the Wexford Slob Ireland and showed that a majority of tracked Greenland white-fronted geese flew directly to staging areas in Iceland (Fox *et al.*, 2003⁴) with again only a small proportion of the tagged geese coming close to the proposed development area. On departing the Wexford Slob a majority of the geese flew directly to Iceland, while others staged (stopping briefly) in Lough Foyle Northern Ireland. Please see Figure 4 of Fox *et al.*, (2003) for further details.
- This is not surprising as there is no particular landscape feature on or near the site likely to attract the geese to the proposed development area and the relative width of the turbine envelope limits the potential for migratory geese to collide with a turbine. The width of the proposed turbine envelope (outermost blade tip to outermost blade tip) is small (c. 5km) relative to the total width of the migration corridor taken by the Greenland white-fronted geese migrating between the Wexford Slob and south-west Iceland at the latitude of the proposed development, as outlined in Figure 1 below (as provided by Schindler AR et al., (2024)).
- Concerning radar: it is not possible to provide radar data of relevance within the timeframe allowed for the response to the request for further information (i.e. by the 12th of July 2024) given the ecology of Greenland white-fronted geese. As noted in the request for further information this species winters in Ireland and summers in Greenland, at the time of writing this response there are no Greenland white-fronted geese in Ireland or Britain and they will not be expected back to Ireland until October 2024. Notwithstanding this, as outlined in the additional information submitted to the Board in August 2023 entitled ‘Response to Observations Received’, the use of automated sensing techniques such as radar is not well suited to surveying migratory Greenland white-fronted geese. For further information on that topic please reference Section 2.1.4 of the response document.

⁴ Fox A. D., Glahder C. M. and Walsh, A. J. 2003. Spring migration routes and timing of Greenland white-fronted geese – results from satellite telemetry. – *Oikos* 103: 415–425.

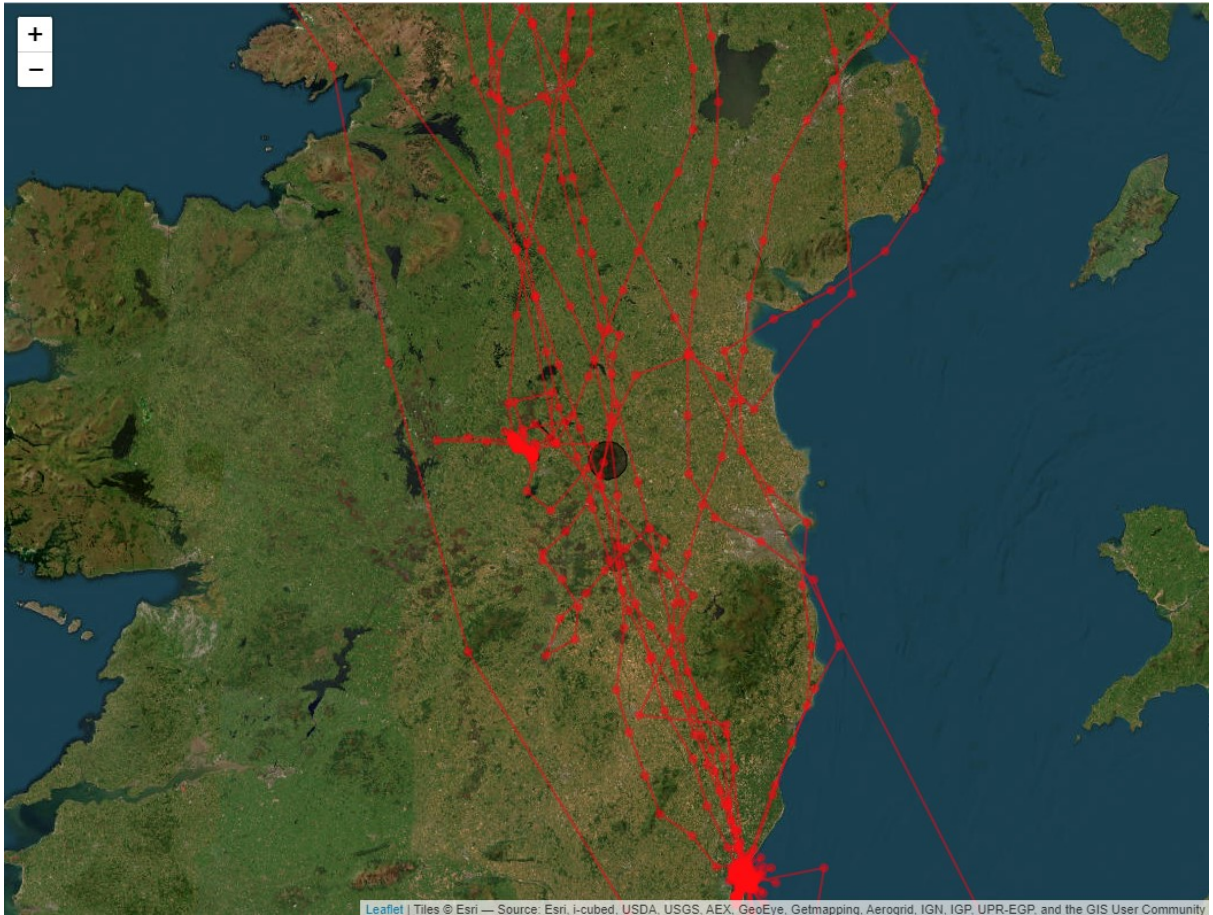


Figure 1. Flight Paths Taken by tagged Geese Schindler AR et al., (2024).

In summary, it is submitted that the balance of evidence leaves little doubt that migratory Greenland white-fronted geese flying between the Wexford Slob and Iceland are not at significant collision risk from the proposed development. Notwithstanding this, a comprehensive suite of commencement/pre-construction and operational phase monitoring is proposed in Appendix 7-7 of the EIAR. The proposed monitoring programme was not proposed in response to any identified significant effect but rather as a best practice measure (SNH, 2009). The monitoring is comprehensive and considered entirely adequate in this regard. The monitoring results will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required.

Adaptive management is an iterative process whereby the results of previous monitoring are analysed to inform future monitoring or mitigation as relevant. As the Bird Monitoring Programme is considered entirely adequate as currently submitted, no change will be proposed unless there is a significant change in the use of the site by the local avian community. Similarly, no requirement for additional mitigation is anticipated. However, if following monitoring, bird usage on the site changes and the potential for negative effects is identified, adaptive mitigation will be employed to avoid any potential for significant effects on avian receptors.

2.2.2 Conclusion

Following the clarification and explanation provided above, it is clearly demonstrated that the issues raised have been comprehensively addressed and that the information before the ABP is adequate and that no deficiencies in information remain. Furthermore, it has been demonstrated that the proposed development site will not significantly impact migratory Greenland white-fronted geese flying between the Wexford Slob and Iceland.

2.3 Marsh Fritillary

The second item of the Board's RFI relates to the potential impact on Marsh Fritillary and is outlined below:

"Marsh Fritillary Butterfly Annex II Species - Key Ecological Receptor - Regarding Marsh Fritillary Butterfly, Annex II listed species, (Categorised as inadequate status in Department of Culture Heritage and Gaeltacht. The Status of EU Protected Habitats and Species in Ireland, 2019) and noting the submissions to the Board of Mr Jesmond Harding, Butterfly Expert, on behalf of DRB Community Company Limited and the subsequent inclusion of the Marsh Fritillary as a Key Ecological Receptor, the Board notes concerns raised with regard to the 490sq.m categorised by you as "potential habitat" located within the proposed development footprint (T13 -T14) and the issues raised with regard to the timing and time constrained nature of the survey and potential for wider spatial distribution and quantity of the species. The classification of this area as "potential breeding habitat" rather than "likely breeding habitat" and the characterisation of its loss as "slight in nature" has been disputed and concerns raised that removal of part of this habitat might remove the population. It is further submitted that no evidence is provided that 'suitable habitat is abundant in the wider landscape' and the issue of sequencing is also raised. It has been suggested that the design should be applied to avoid any loss of Marsh Fritillary habitat and mitigate potential for drying out of habitat. You are invited to respond to this submission."

2.4 Response

The points below address each of the concerns highlighted within the RFI received from ABP on the 14th of May 2024, and are supplemented by additional information in the Appendices of this RFI response.

2.4.1 Survey timing

Submissions were received highlighting concerns relating to the extent and timing of the targeted marsh fritillary surveys undertaken for the Proposed Development planning application. Whilst the surveys undertaken followed the best practice guidance document entitled *Guidelines for Assessment of Ecological Impacts of National Roads Schemes (NRA, 2009)*, in light of this, the opportunity to undertake additional surveys throughout the life cycle of marsh fritillary was undertaken, in order to obtain additional data on the presence and use of the Proposed Development site by marsh fritillary. These surveys, which were additional to those undertaken in September 2020, 2021, and 2022 to inform the EIAR which accompanied the planning application for the Proposed Development, were carried out on the following dates:

- 22nd of August 2023
- 24th of April 2024
- 6th of June 2024

The surveys focused on suitable marsh fritillary habitat within the proposed Ballivor Wind Farm development footprint and coincided with the i) the autumn larval web stage, ii) late instar larval stage (spring) and iii) the adult flight/egg laying season (summer) for marsh fritillary, respectively.

Full details of these additional surveys, including their results, are detailed in the Marsh Fritillary Report which is included in Appendix 1 of this response to the RFI. The report also details the efforts and findings of the 2020, 2021, and 2022 surveys.

2.4.2 Assessment of suitable habitat

Submissions received in respect of the planning application for the Proposed Development also queried the categorisation of the habitat in the submitted Biodiversity Chapter and previous Marsh Fritillary Report as “potential supporting habitat”. In light of the findings of additional surveys carried out, as mentioned above and detailed in Section 3 of the updated Marsh Fritillary Report in Appendix 1, it can be confirmed that the areas of semi-natural grassland which delineate railway infrastructure between Turbine 13 and Turbine 14 provide supporting habitat for this species. The surveys confirmed the presence of marsh fritillary at all stage of its life cycle to be using small sections of these grasslands.

2.4.3 Loss of habitat

As discussed in the submitted Biodiversity Chapter and previous Marsh Fritillary Report, there will be a requirement for the loss of approximately 490 m² of semi-natural grassland to facilitate Turbine 14 of the Proposed Development (See Figure 3-1 of the updated Marsh Fritillary Report). Whilst it was previously assessed that this loss would constitute a slight permanent loss of “potential” supporting habitat for marsh fritillary, at a Local and County scale, submissions received have disputed this assessment.

Following on from the additional surveys, whilst no indication of marsh fritillary was recorded in this 490 m² area of semi-natural grassland to be lost during any survey effort, the assessment of this area as “Potential” supporting habitat has been re-evaluated as “likely” supporting habitat due to its proximity to confirmed breeding sites for marsh fritillary.

In light of this reassessment of suitable habitat for marsh fritillary an updated impact assessment has been provided in the Marsh Fritillary Report which is included as Appendix 1 of this of this RFI response. The report also provides mitigation measures to ensure that there is no loss of likely supporting habitat for marsh fritillary at a Local or County Scale, as a result of the Proposed Development. These measures include the following:

- Prior to the commencement of construction works, an updated survey will be undertaken to determine if there have been any changes to the extent of identified suitable marsh fritillary habitat within the construction footprint.
- Areas of suitable habitat within and adjacent to the construction footprint will be fenced off under the supervision of a qualified ecologist using heras fencing, to ensure no inadvertent removal or damage of habitat. A modified construction methodology will be adopted at this location to ensure that there will be no loss to this small section of habitat (refer to Table 4-1 of the updated Marsh Fritillary Report for further information).

2.4.4 Drying out of habitat

The submission with respect to loss of Marsh Fritillary Habitat also raised concerns in relation to drying out of suitable habitat within the Proposed Development site resulting from the construction works. A technical letter addressing this concern has been provided by Michael Gill from Hydro Environmental Services (HES) and is included as Appendix 2 of this RFI response.

Hydro Environmental Services (HES) are a specialist geological, hydrological, hydrogeological, and environmental practice that delivers a range of water and environmental management consultancy services to the private and public sectors across Ireland and Northern Ireland. Michael Gill is a suitably qualified, competent, professional hydrologist with HES and has extensive experience in completing hydrological and hydrogeological assessments. Michael was co-author of the EIAR Hydrology and Hydrogeology chapter and the lead author of this response.

The technical letter provided by HES includes cross sections of the areas identified as providing suitable habitat for marsh fritillary, which clearly show that these areas are on raised embankments and are already drained. This technical letter concludes with the following:

“In summary, as a result of the geometry and existing drainage conditions of the rail bed, it has little or no potential for further drying out arising from the wind farm development. In the operational phase (subject to consent and construction) the area of the wind farm footprint (at T13 and T14) will be locally drained, and the vast areas of the surrounding cutover bog will be rewetted to optimise climate and habitat enhancement benefits. Therefore, the wider potential effects of “drying out” on the wider cutover bog will not occur.”

2.4.5

Conclusion

Following on from submissions received regards the Proposed Development, additional surveys were undertaken within the Ballivor Bog Group to help provide a stronger baseline understanding of marsh fritillary within the site. These surveys have confirmed that the areas previously identified as potential suitable habitat are breeding sites for this species and therefore have been reassessed as likely breeding habitat, important in a Local and County context. As a result, an updated impact assessment has been provided in the Marsh Fritillary Report and includes mitigations to ensure that there will be no loss of any supporting habitat for this species. Furthermore, as per the technical letter from HES, there is no potential for the Proposed Development to result in any further drying of areas identified as supporting habitat for marsh fritillary and therefore, there is no potential for degradation of these habitats in this regard.

2.5

ZTV Mapping

The third item of the Board's RFI relates to the ZTV mapping and is outlined below:

“ZTV Mapping - The applicant is advised to note that the ZTV mapping colour banding error evident on the initial half blade ZTV map Fig 13-1 (digital and hard copy), a digital malfunction as referenced by you in the response to the observations, is also evident within the digital copy of further information on the standalone website - Response to Observations Received (ballivorwindfarmplanning.ie) at Fig 5 and Fig 13.1, though the colour banding is present on the hard copy documents submitted to the Board. It is acknowledged that the colour banding is evident (digital and hard copy) on several of the other mapping figures included within the ELAR including the LVIA baseline map Fig 13-5, and landscape character areas Fig 13-11.”

2.6

Response

The Applicant acknowledges this banding error in the Figures mentioned above, which occurred when the files were compressed for upload to the SID website. The Response to Submissions document has been split into 4 no. parts and uploaded to the SID website to allow for the document to be uploaded in full resolution.

3.

CONCLUSION

This document has been prepared to respond to the Request for Further Information received by the Board by letter dated 14th May 2024. This document has provided responses to the 3 no. RFI items set out in the request. We trust that this information is sufficient for the Board to continue their assessment of the planning application. Should any further information be required, we would be happy to provide it.



APPENDIX 1

MARSH FRITILLARY REPORT

Marsh Fritillary Survey

Proposed Ballivor Wind
Farm





DOCUMENT DETAILS

Client: **Bord na Mona**

Project Title: **Proposed Ballivor Wind Farm**

Project Number: **191137-o**

Document Title: **Marsh Fritillary Survey Report**

Document File Name: **Ballivor MFR – F – 2024.07.11 – 191137-r**

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



Rev	Status	Date	Author(s)	Approved By
01	Draft	29/08/2023	PD	PR
02	Draft 2	30/08/2023	PD	PR
03	Final	11/07/2024	PD	SM/PR

Contents

1. INTRODUCTION	3
1.1 General Introduction.....	3
1.2 Marsh Fritillary (<i>Euphydryas aurinia</i>).....	3
1.3 Site Location	4
1.4 Statement of Authority	4
2. SURVEY METHODOLOGY	5
2.1 Desk Study	5
2.2 Field Survey Methodology	5
2.2.1 Surveys undertaken in 2020, 2021, and 2022.....	5
2.2.2 Surveys undertaken in 2023	6
2.2.3 Surveys undertaken in 2024	6
3. SURVEY RESULTS	9
3.1 Surveys undertaken in 2020, 2021, and 2022.....	9
3.2 Results of the DRB Community CLG Lepidoptera Report.....	9
3.3 Surveys undertaken in 2023	9
3.3.1 Potential suitable marsh fritillary habitat	9
3.3.2 Survey results	11
3.4 Surveys undertaken in 2024	15
3.4.1 Potential suitable marsh fritillary habitat	15
3.4.2 Survey results	15
3.5 Summary of Results.....	21
4. MARSH FRITILLARY IMPACT ASSESSMENT	22
4.1 Assessment of the Potential Impacts on marsh fritillary during construction.....	22
4.2 Assessment of the Potential Impacts on marsh fritillary during operation	24
4.3 Assessment of the Potential Impacts on marsh fritillary during decommissioning	24
5. MARSH FRITILLARY MANAGEMENT PLAN.....	25
5.1 Management measures	25
5.2 Post-Construction Management.....	26
5.2.1 Peatland Stabilisation and Pollinator Enhancement Measures	26
5.2.2 Habitat enhancement monitoring programme.....	26
5.2.3 Woodland establishment.....	27
BIBLIOGRAPHY	28

TABLE OF FIGURES

Figure 2-1 Survey efforts undertaken in 2020, 2021, and 2022.....	7
Figure 2-2 Survey effort undertaken in 2023 and 2024 and areas surveyed for the DRB Community CLG Lepidoptera report.	8
Figure 3-1 Results from 2023 survey efforts.....	14
Figure 3-2 Results from 2024 survey efforts.	16

TABLE OF TABLES

<i>Table 4-1 Potential impacts on marsh fritillary.....</i>	<i>22</i>
---	-----------

TABLE OF PLATES

<i>Plate 3-1 Suitable marsh fritillary habitat identified adjacent to existing railway infrastructure between proposed Turbines 13 & 14. This is in the vicinity of Site 1 of the DRB Community CLG Lepidoptera report.</i>	<i>10</i>
<i>Plate 3-2 Suitable marsh fritillary habitat identified in a semi-natural grassland habitat adjacent to existing railway, approximately 200m south of Plate 3-1.....</i>	<i>10</i>
<i>Plate 3-3 Suitable marsh fritillary habitat identified adjacent to existing railway infrastructure southwest of Turbine 14, in the vicinity of Site 2 of the DRB Community CLG Lepidoptera report.....</i>	<i>11</i>
<i>Plate 3-4 Marsh fritillary larval web recorded at IG N63629 57298, approximately 30m west of proposed road infrastructure and adjacent to Site 1 of the DRB Community CLG Lepidoptera report.</i>	<i>12</i>
<i>Plate 3-5 Marsh fritillary larval web recorded at IG N63621 57275, recorded approximately 5m south of the web depicted in Plate 3-4.....</i>	<i>12</i>
<i>Plate 3-6 Marsh fritillary larval web recorded at IG N63619 57279, approximately 10m west of proposed road infrastructure and 15m north of Site 1 of the DRB Community CLG Lepidoptera report.</i>	<i>13</i>
<i>Plate 3-7 Loose cluster of marsh fritillary caterpillar on Devils bit scabious.....</i>	<i>17</i>
<i>Plate 3-8 Loose cluster of marsh fritillary caterpillar on purple moor grass.....</i>	<i>18</i>
<i>Plate 3-9 Loose cluster of marsh fritillary caterpillar on purple moor grass.....</i>	<i>18</i>
<i>Plate 3-10 Adult marsh fritillary on Devils bit scabious.....</i>	<i>19</i>
<i>Plate 3-11 Adult marsh fritillary foraging on hawksbit.....</i>	<i>19</i>
<i>Plate 3-12 Marsh fritillary eggs recorded on the underside of a basal Devils bits scabious leaf.....</i>	<i>20</i>

1. Introduction

1.1 General Introduction

Following a Request for Further Information (RFI) from an Bord Pleanála (ABP) received on the 14th of May 2024 in relation to the Proposed Ballivor Wind Farm (Bord Pleanála Case reference: PA25M.316212), which invited the client to further address the concerns highlighted in the submission from DRB Community CLG, MKO have been commissioned to prepare a Marsh Fritillary report to accompany the response to the RFI.

Item 2 of the RFI received on the 14th of May 2024 states:

‘Marsh Fritillary Butterfly Annex II Species – Key Ecological Receptor – Regarding Marsh Fritillary Butterfly, Annex II listed species, (Categorised as inadequate status in Department of Culture Heritage and Gaeltacht. The Status of EU Protected Habitats and Species in Ireland, 2019) and noting the submissions to the Borad of Mr. Jesmond Harding, Butterfly Expert, on behalf of DRB Community Company Limited and the subsequent inclusion of the Marsh Fritillary as a Key Ecological Receptor, the Board notes concerns raised with regard to the 490sq.m categorised by you as “potential habitat” located within the proposed development footprint (T13 – T14) and the issues raised with regard to the timing and time constrained nature of the survey and potential for wider spatial distribution and quantity of the species. The classification of this area as “potential breeding habitat” rather than “likely breeding habitat” and the characterisation of its loss as “slight in nature” has been disputed and concerns raised that removal of part of this habitat might remove the population. It is further submitted that no evidence is provided that ‘suitable habitat is abundant in the wider landscape’ and the issue of sequencing is also raised. It has been suggested that the design should be applied to avoid any loss of Marsh Fritillary habitat and mitigate potential for drying out of habitat. You are invited to respond to this submission’.

A marsh fritillary survey report was initially prepared in August 2023 in response to submissions received pertaining to the Proposed Development and marsh fritillary. The report has been updated here to respond to the above mentioned RFI and to further address concerns raised in a submission from DRB Community CLG.

1.2 Marsh Fritillary (*Euphydryas aurinia*)

Marsh fritillary is a native colonial butterfly to Ireland and is the country's only insect listed under Annex II of the EU Habitats Directive. Marsh fritillaries are widespread throughout the country and are easiest identified between early May and early July during the adults flight period. The size of marsh fritillary populations varies greatly from year to year, mainly due to climatic factors and to cycles of attack from parasitic wasps. Adults of the species are generally sedentary, remaining in a series of linked meta-populations, forming numerous temporary sub-populations which can often die out but subsequently become recolonized from adjacent sites.

In late June females lay eggs on the underside of the leaves of Devil's bit scabious (*Succisa pratensis*), which is also the food plant of its larval stage. Populations of marsh fritillary are restricted to a particular ecological niche defined by the abundance of Devil's bit scabious and certain microhabitat conditions such as vegetation structure, aspect, sun exposure and grazing.

1.3

Site Location

The Proposed Development site lies approximately 3.5 kilometres west of Ballivor town, Co. Meath, and 23 kilometres east of Mullingar, Co. Westmeath. The IG Reference for the approximate centre of the Proposed Development is N 64676 54490.

1.4

Statement of Authority

Baseline ecological surveys were undertaken at the Proposed Development site between April 2020 and February 2023 by MKO ecologists. Those involved are listed in Section 6.3.1 of Chapter 12, Biodiversity of the submitted EIAR. A wide variety of surveys required for ecological assessment were carried out during this time period including a number of species-specific surveys such as Marsh Fritillary surveys. Further information on the Marsh Fritillary surveys and their findings was included in Chapter 6 of the EIAR and is included in Section 2 and 3 of this report, respectively.

Additional marsh fritillary surveys (details of which are included in Section 2 below) were undertaken on the 22nd of August 2023 by Stephanie Corkery (B.Sc., M.Sc.), Neill Campbell (B.Sc., M.Sc.), Rudraksh Gupta (B.Sc., M.Sc.), Tom Peters (B.Sc.), Mairead Kavanagh (B.Sc.), and Pádraig Desmond (B.Sc.), on the 24th of April 2024 by Cora Twomey (B.Sc.) and Ciara Hackett (B.Sc.) and on the 6th of June 2024 by Pádraig Desmond and Deepali Mooloo (B.Sc., M.Sc.) of MKO. All surveyors have the relevant skills and experience to undertake the required surveys.

This Marsh Fritillary Report has been prepared by Pádraig Desmond and reviewed by Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc., MCIEEM).

Pat Roberts is Principal Ecologist at MKO with over 16 years' experience. He currently manages the ecological team within MKO. Pat holds B.Sc. (Hons) in Environmental Science. He has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage.

Sarah holds a B.Sc. (Hons) in Botany, an M.Sc. in Biodiversity and Conservation and a Ph.D. in Botany. Sarah has over 6 years' experience working in ecological consultancy and has extensive experience in undertaking habitat and species surveys and working on Ecological Impact Assessment and Appropriate Assessment.

Pádraig is a Project Ecologist within MKO and holds a B.Sc. (Hons) in Ecology and Environmental Biology. He has four years of ecology survey experience and has worked in consultancy for over three years, working on Ecological Impact Assessment and Appropriate Assessment for a wide range of projects.

2.

SURVEY METHODOLOGY

2.1

Desk Study

In preparation of the Biodiversity chapter for the EIAR which accompanied the planning application, a desk study was undertaken and included a thorough review of available ecological data including the following:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS)
- Review of the publicly available National Biodiversity Data Centre (NBDC) webmapper
- *Specially requested records from the NPWS Rare and Protected Species Database for the hectads in which the Proposed Development is located.*

In the preparation of this document, the above desk study was revisited, and the Lepidoptera report written by Jesmond Harding and submitted as part of the DRB Community CLG Submission to ABP was reviewed. The Lepidoptera Report was also considered in the 2023/2024 survey effort.

2.2

Field Survey Methodology

Previous surveys for marsh fritillary were carried out by MKO in September 2020, 2021, and 2022. Following a review of the aforementioned Lepidoptera report prepared by Jesmond Harding, additional surveys were undertaken on the following dates to update and ground truth previous survey efforts and to assist in responding to the issues raised.

- 22nd of August 2023
- 24th of April 2024
- 6th of June 2024

The survey focused on the lands within and adjacent to the proposed Ballivor Wind Farm development footprint situated in counties Meath and Westmeath and aimed to ground truth the findings of the Lepidoptera report prepared by Jesmond Harding.

2.2.1

Surveys undertaken in 2020, 2021, and 2022

Taking account of the findings of the initial desk study and following the identification of suitable habitat for marsh fritillary within the Proposed Development Site during baseline ecological walkover surveys undertaken in 2020, targeted larval web surveys for the species were undertaken on the 3rd September 2020, 27th September 2021 and 26th September 2022. The surveys were undertaken within the optimal period for undertaking marsh fritillary larval web surveys, i.e. August – September, on dry days, with no rain and no to little wind.

The survey methodology followed that described in the best practice guidance document entitled *Guidelines for Assessment of Ecological Impacts of National Roads Schemes (NRA, 2009)*. This involved walked surveys to identify suitable areas of marsh fritillary habitat within or adjacent to the development footprint as the Proposed Development had the potential to impact on this species in areas where the development footprint overlaps with or is adjacent to suitable habitat for the species. Walked transects were also undertaken of potentially suitable habitat within and adjacent to the Proposed Development footprint to search for larval webs. Areas of suitable habitat were also mapped as part of the survey effort and informed the footprint of the Proposed Development. The extent of the survey effort is shown in Figure 2-1.

2.2.2

Surveys undertaken in 2023

Following review of the aforementioned Lepidoptera Report, the opportunity was taken to carry out additional marsh fritillary surveys. These surveys focused on the Proposed Development footprint and adjacent habitats, in particular the following:

- Areas identified as suitable habitat in previous surveys;
- Areas outlined in the submitted DRB Community CLG Lepidoptera Report; and
- Areas where the Proposed Development footprint overlaps with or is adjacent to suitable habitat.

These surveys, like previous years, followed the methodology described in the NRA (2009) best practice guidance document. Additionally, the NBDC methodology entitled *Habitat Condition Assessment For Marsh Fritillary* was also followed. The extent of the 2023 survey effort is shown in Figure 2-2.

2.2.3

Surveys undertaken in 2024

In light of the RFI received from ABP and additional submissions received from the DRB Community Group, the opportunity to undertake further marsh fritillary surveys was taken in 2024. These surveys were undertaken on the following dates:

- 24th of April 2024
- 6th of June 2024





The April survey coincided with the latter instar larval stages of marsh fritillary during which caterpillars emerge in early spring and bask communally on the basal leaves of Devil's bit scabious, either in loose clusters or solitary individuals.

The June surveys coincided with the adult flight/egg laying season, where adults can be recorded foraging or clumps of eggs can be found on the underside of a leaf of the caterpillar's food plant, the Devil's-bit Scabious.

All surveys were undertaken on sunny warm days.



Map Legend

-  WF Site Boundary
-  Survey Effort 2020
-  Survey Effort 2022
-  Footprint of Proposed Development



Microsoft product screen shots reprinted with permission from Microsoft Corporation
Ordnance Survey Ireland Licence No. AR 0021821© Ordnance Survey Ireland/Government of Ireland

Drawing Title
Previous Marsh Fritillary survey effort

Project Title
Ballivor WF - Response to RFI

Drawn By PD	Checked By PR
Project No. 191137-r	Drawing No. Figure 2-1
Scale 1:30,000	Date 08/07/2024



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



Map Legend

- WF Site Boundary
- 2023 Survey Effort
- Footprint of Proposed Development
- CLG Lepidoptera Report survey sites



Drawing Title
**Marsh Fritillary 2023
Survey Effort**

Project Title
Ballivor WF - Response to RFI

Drawn By	PD	Checked By	PR
Project No.	191137-r	Drawing No.	Figure 2-2
Scale	1:47,000	Date	08/07/2024

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

Microsoft product screen shots reprinted with permission from Microsoft Corporation
Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government of Ireland

3.

SURVEY RESULTS

3.1

Surveys undertaken in 2020, 2021, and 2022

The initial desk study undertaken in 2020 identified records for marsh fritillary from the Proposed Development Site and a buffer was established around them in the design of the Proposed Development. Adult marsh fritillary were identified during the multi-disciplinary walkover survey of the Proposed Development Site in May 2020.

While small areas of suitable habitat were identified within the Proposed Development Site boundary, these areas were located along existing railway tracks and were avoided in the design of the Proposed Development. No marsh fritillary larval webs were recorded within these areas during dedicated larval web surveys undertaken in September 2020, 2021, and 2022.

3.2

Results of the DRB Community CLG Lepidoptera Report

The lepidoptera report undertaken by Jesmond Harding, and submitted to ABP by DRB Community CLG, surveyed four sites, as shown in Figure 3-1, within the Proposed Development site boundary. Surveys were undertaken in May 2023 during the Marsh fritillary flight period and in warm sunny conditions. None of the four sites surveyed are located within the Proposed Development footprint, but Site 1 and Site 4 are located 20m and 5m from the proposed road infrastructure, respectively. The findings of the report are summarised as follows:

Site 1

The report identified this site as a confirmed breeding site for marsh fritillary. Eighteen adult marsh fritillary were recorded during the survey effort, as well as eggs and a single pupa. This site had a varied sward height and devil's bit scabious (*Succisa pratensis*) was prevalent throughout.

Site 2

The report identified this site as suitable for marsh fritillary based on the plant composition (including devil's bit scabious) and its exposure to sunlight. One adult marsh fritillary was identified at this site.

Site 3

The report identified this site as mosaic of scrub, grassland, and bog. Two adult marsh fritillary were identified at this site.

Site 4

The report identified this site as mosaic of scrub, grassland, cutover bog, and raised bog and provides potential suitable habitat for marsh fritillary. One adult marsh fritillary were identified at this site.

Each of these sites were either on or directly adjacent to the transects undertaken during previous surveys in 2020, 2021, and 2022.

3.3

Surveys undertaken in 2023

3.3.1

Potential suitable marsh fritillary habitat

Areas identified as providing potential suitable habitat for marsh fritillary during previous survey efforts and in the DRB Community CLG Lepidoptera report were surveyed, as well as any other areas identified during the survey. On a precautionary basis, areas previously identified as providing potential suitable marsh fritillary habitat have been extended and now small sections of potential habitat, totalling 0.049 ha,

are within the Proposed Development footprint. Areas identified as potential suitable habitat are indicated in in Figure 3-1. These are areas that are exposed to high levels of sunlight and with an abundance of devil's bit scabious. Sward height in these areas was varied and no evidence of grazing was present. Plates 3-1, 3-2, and 3-3 show typical areas identified as providing potential suitable habitat for marsh fritillary.



Plate 3-1 Suitable marsh fritillary habitat identified adjacent to existing railway infrastructure between proposed Turbines 13 & 14. This is in the vicinity of Site 1 of the DRB Community CLG Lepidoptera report.



Plate 3-2 Suitable marsh fritillary habitat identified in a semi-natural grassland habitat adjacent to existing railway, approximately 200m south of Plate 3-1



Plate 3-3 Suitable marsh fritillary habitat identified adjacent to existing railway infrastructure southwest of Turbine 14, in the vicinity of Site 2 of the DRB Community CLG Lepidoptera report.

3.3.2 Survey results

Three marsh fritillary larval webs were recorded within an area identified as providing suitable habitat during the 2023 survey effort and are shown in Plates 3-4 to 3-6. This area is located between proposed Turbines 13 and 14 in the vicinity of Site 1 of the DRB Community CLG Lepidoptera report. The locations of the larval webs are shown in Figure 3-1. All larval webs recorded were outside the footprint of the Proposed Development.

During this survey, small sections of potential suitable habitat for marsh fritillary were identified within the Proposed Development footprint. Within this overlap, which amounted to 0.049 ha (approximately 1.23% of the identified marsh fritillary habitat) within the Proposed Development site, potential suitable habitats presented different sward composition and structure to the to that outside the construction footprint. No evidence of marsh fritillary was recorded within the Proposed Development footprint.



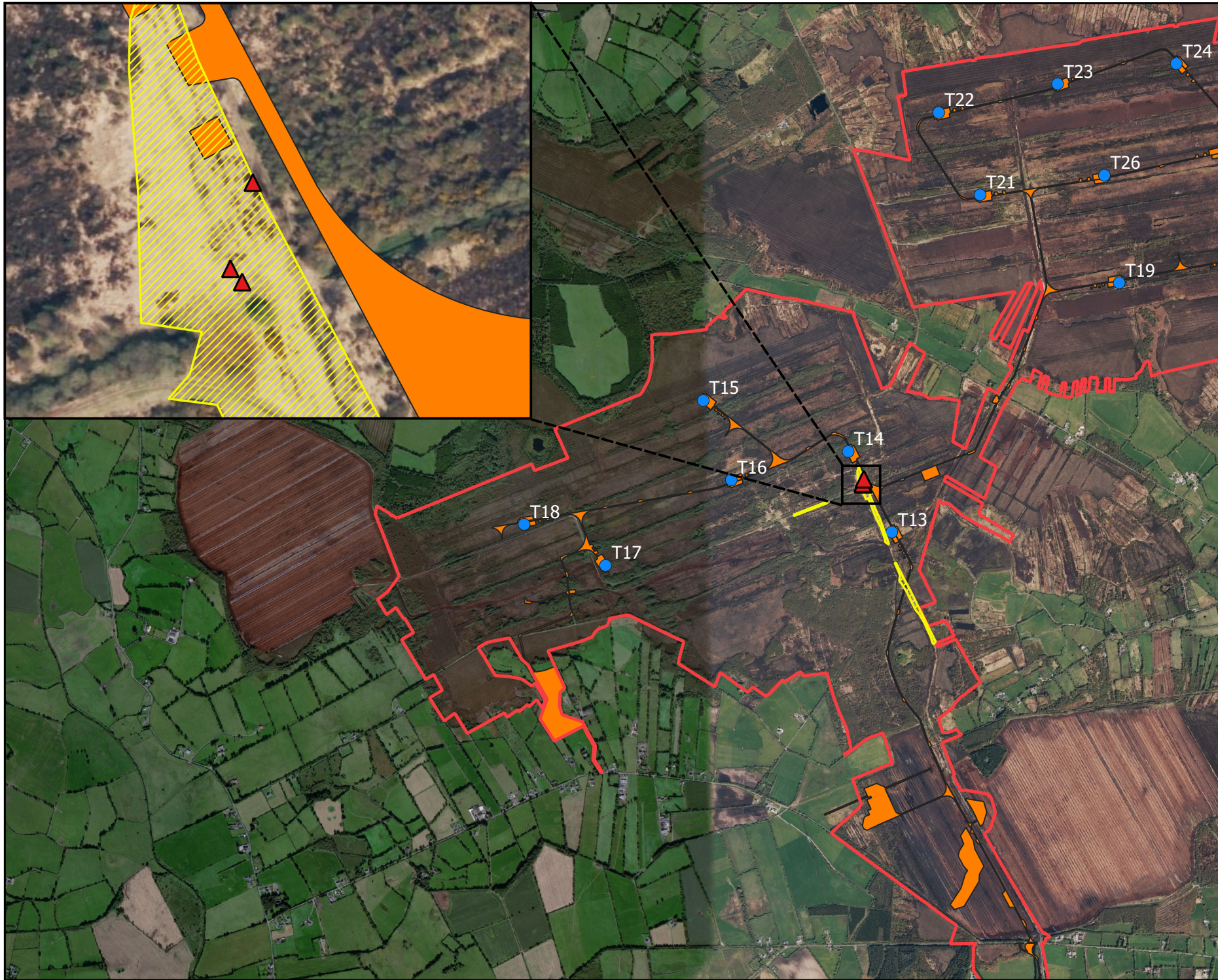
Plate 3-4 Marsh fritillary larval web recorded at IG N63629 57298, approximately 30m west of proposed road infrastructure and adjacent to Site 1 of the DRB Community CLG Lepidoptera report.



Plate 3-5 Marsh fritillary larval web recorded at IG N63621 57275, recorded approximately 5m south of the web depicted in Plate 3-4.



Plate 3-6 Marsh fritillary larval web recorded at IG N63619 57279, approximately 10m west of proposed road infrastructure and 15m north of Site 1 of the DRB Community CLG Lepidoptera report.



Map Legend

- WF Site Boundary
- Recorded Larval webs
- Identified Suitable Habitat
- Footprint of Proposed Development
- Turbine locations



Drawing Title
**2023 Marsh Fritillary
Survey Results**

Project Title
Ballivor WF - response to RFI

Drawn By	PD	Checked By	PR
Project No.	191137-r	Drawing No.	Figure 3-1
Scale	1:30,000	Date	08/07/2024



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

Microsoft product screen shots reprinted with permission from Microsoft Corporation
Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government
of Ireland

3.4 Surveys undertaken in 2024

3.4.1 Potential suitable marsh fritillary habitat

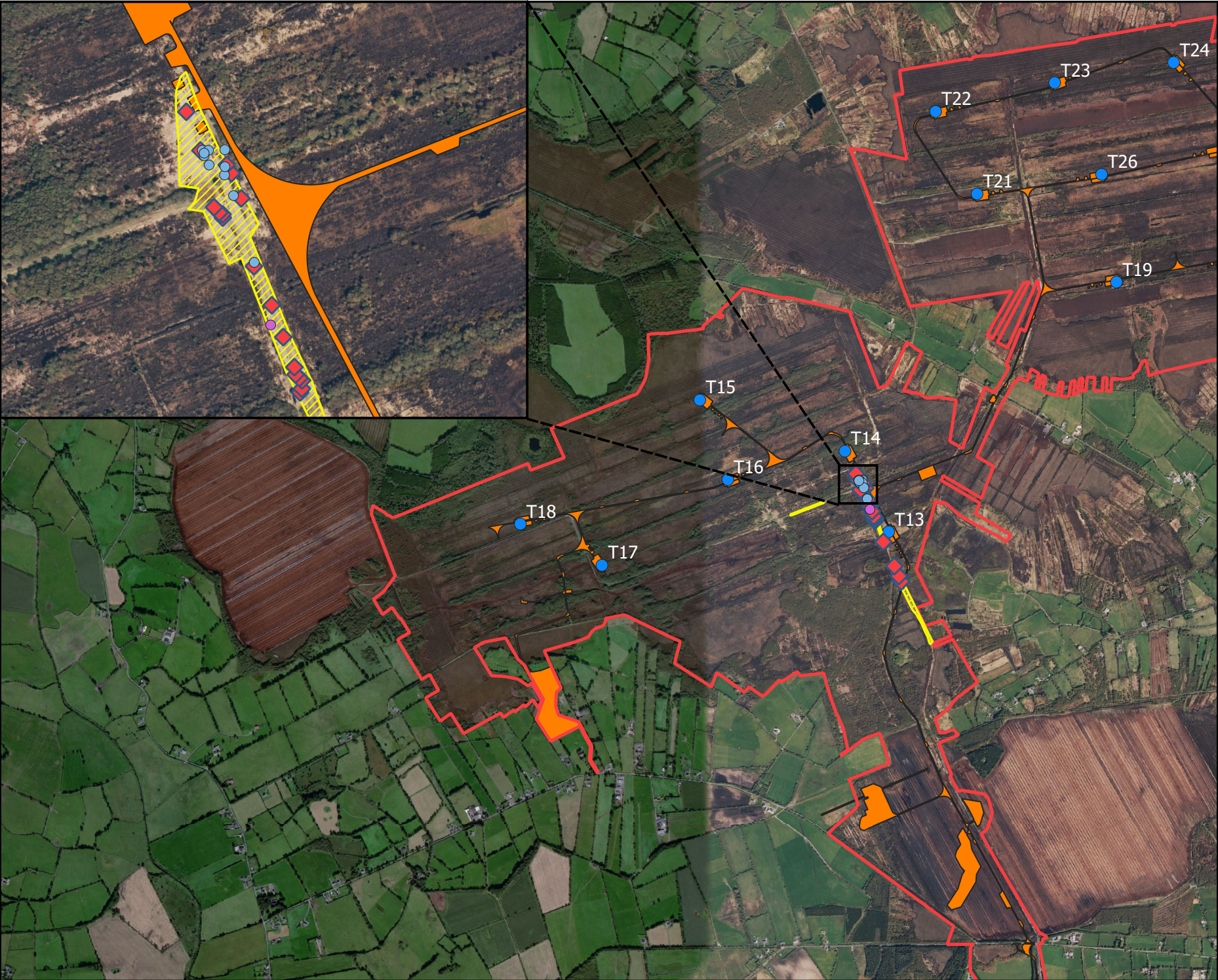
As in the 2023 surveys, areas identified as providing suitable habitat for marsh fritillary during previous survey efforts and in the DRB Community CLG Lepidoptera report were surveyed during the 2024 surveys. Particular effort was focused on grassland habitats adjacent to existing railway infrastructure between Turbines 13 and 14, as shown in Figure 3-1 and Figure 3-2, especially where the Proposed Development footprint overlaps with areas identified as potential suitable habitat. These areas are depicted in Figure 3-1 above.

3.4.2 Survey results

April 2024

Surveys undertaken in April 2024 coincide with the fifth instar stage of the marsh fritillary life cycle, where individuals present as caterpillars in loose clusters or alone on basal leaves of Devils bit scabious. During the survey effort, a total of 63 marsh fritillary caterpillars were recorded in 19 small clusters in areas identified as potential suitable habitat. See Plate 3-7, Plate 3-8, and Plate 3-9. The locations of each cluster is provided on Figure 3-2.

No caterpillars were recorded within the Proposed Development construction or operational footprint.



Map Legend

- WF Site Boundary
- Identified Suitable Habitat
- Footprint of Proposed Development
- Turbine locations
- Adult Marsh Fritillary
- Marsh Fritillary Caterpillar cluster
- Marsh Fritillary Eggs

Microsoft product screen shots reprinted with permission from Microsoft Corporation
Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey
Ireland/Government of Ireland

Drawing Title
2024 Marsh Fritillary Survey Results
Project Title
Ballivor WF - response to RFI

Drawn By PD	Checked By PR
Project No. 191137-r	Drawing No. Figure 3-2
Scale 1:30,000	Date 08/07/2024

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

June 2024

Surveys undertaken in June 2024 coincide with adult flight stage of marsh fritillary, as well as the egg laying stage. During the survey effort a total of 12 adult marsh fritillary were recorded, either on Devils bit scabious or hawksbit (*Leontodon* sp.), as shown in Plate 3-10 and Plate 3-11. Additionally, one record of early-stage marsh fritillary eggs (less than 12 days old) was recorded on the underside of a basal Devils bit scabious leaf. The locations of adult butterflies and eggs recorded are provided in Figure 3-2.

No adult marsh fritillary or eggs were recorded within the Proposed Development construction or operational footprint.



Plate 3-7 Loose cluster of marsh fritillary caterpillar on Devils bit scabious.



Plate 3-8 Loose cluster of marsh fritillary caterpillar on purple moor grass.



Plate 3-9 Loose cluster of marsh fritillary caterpillar on purple moor grass.



Plate 3-10 Adult marsh fritillary on Devils bit scabious.



Plate 3-11 Adult marsh fritillary foraging on hawkbit



Plate 3-12 Marsh fritillary eggs recorded on the underside of a basal Devils bits scabious leaf.

3.5

Summary of Results

Table 3-1 below provides a concise summary of the surveys undertaken within the Proposed Development site and their findings, in relation to marsh fritillary.

Date	Survey	Survey target area	Marsh fritillary life cycle stage	Results
26/05/2020 04/06/2020 16/06/2020 20/07/2020 03/09/2020 26/05/2021 27/05/2021 08/07/2021 15/07/2021 26/04/2022 16/02/2021	Multidisciplinary walkover surveys	Proposed Development site		Potential supporting habitat for marsh fritillary, as shown in Figure 2-1
3 rd September 2020	Target larval web surveys	Areas identified as potential supporting habitat during walkover surveys	Larval web	No marsh fritillary recorded
27 th September 2021	Target larval web surveys	Areas identified as potential supporting habitat during walkover surveys	Larval web	No marsh fritillary recorded
26 th September 2022	Target larval web surveys	Areas identified as potential supporting habitat during walkover surveys	Larval web	No marsh fritillary recorded
22 nd of August 2023	Target larval web surveys	Areas identified as potential supporting habitat during walkover surveys, areas surveyed by Jesmond Harding	Larval web	Three larval webs recorded, none within construction footprint
24 th of April 2024	Target caterpillar surveys	Identified supporting marsh fritillary habitat between turbines 13 and 14	Late instar stage before pupae	63 marsh fritillary caterpillars recorded, none within construction footprint
6 th of June 2024	Target adult/egg surveys	Identified supporting marsh fritillary habitat between turbines 13 and 14	Adult flight and egg laying stage	12 adult marsh fritillary recorded, one cluster of eggs, none within construction footprint

4.

MARSH FRITILLARY IMPACT ASSESSMENT

Following the recommendation from the submitted Lepidoptera report, and taking a precautionary approach, marsh fritillary have been included as a Key Ecological Receptor (KER) in this assessment. Following the formatting of Section 6.7 of the Biodiversity Chapter of the submitted EIAR, Table 4-1 below assesses the potential for significant impacts on marsh fritillary from the construction, operational, and decommissioning phases of the Proposed Development. Where potential impacts have been identified, mitigation has been provided.

4.1

Assessment of the Potential Impacts on marsh fritillary during construction

Table 4-1 Potential impacts on marsh fritillary.

Description of Effect	Habitat Loss/Degradation <p>The Proposed Development footprint has been specifically designed to avoid areas identified as providing suitable habitat for marsh fritillary where possible. However, following on from the 2023 survey effort, a precautionary approach was taken, and small sections of likely breeding marsh fritillary habitat were identified within the Proposed Development footprint (Figure 3-1), amounting to 0.049 ha. Therefore, there will be a direct loss of some small areas of supporting habitat, totalling approximately 0.049 ha. Whilst this area to be lost is assessed as likely breeding habitat, marsh fritillary was not recorded within this overlap during any of the targeted surveys.</p> <p>The potential for drying out of supporting habitat for marsh fritillary is also considered here. All suitable habitat for marsh fritillary was recorded on raised supporting embankments for the existing railway infrastructure, and therefore, is already highly drained. Additionally, the areas within which suitable habitat was recorded, have already been significantly drained for peat extraction. Therefore, there is no potential for the construction of the Proposed Development to result in the further drying out of any supporting marsh fritillary habitat.</p>
	Disturbance/Direct Mortality <p>Whilst marsh fritillary was recorded in close proximity to the footprint of the Proposed Development, within grasslands delineating railway infrastructure between Turbines 13 and 14, in the form of larval webs, caterpillars (5th instar larvae), eggs and adults, no adults or breeding sites for marsh fritillary were identified within the footprint of the Proposed Development. However, there is potential for the inadvertent disturbance/direct mortality to this species arising from the construction phase of the Proposed Development via encroachment of machinery into identified breeding sites.</p>
Assessment of Significance prior to mitigation	Habitat Loss/Degradation <p>In the absence of mitigation, the loss of approximately 0.049 ha (1.23%) of identified likely breeding marsh fritillary habitat constitutes a permanent slight negative impact at the Local and County scale. This would not be reversible as it is within the construction footprint. No significant loss of marsh fritillary habitat is anticipated at any geographic scale.</p>
	Disturbance/Direct Mortality <p>In the absence of mitigation, there is potential for significant negative impacts on populations of marsh fritillary of Local and County Importance via direct mortality arising from the encroachment of machinery into identified breeding sites in close proximity to the</p>

	construction footprint. No significant impacts are anticipated at any greater geographical scales.
Mitigation	<p>Habitat Loss/Degradation</p> <p>In the absence of mitigation, the loss of approximately 0.049 ha of suitable marsh fritillary habitat will be slight negative in nature and no significant impacts are anticipated.</p> <p>However, to ensure that there is no loss of suitable marsh fritillary habitat whatsoever, the following mitigation measures will be implemented.</p> <ul style="list-style-type: none"> ➤ Prior to the commencement of construction works, an updated survey will be undertaken to determine if there have been any changes to the extent of identified suitable marsh fritillary habitat within the construction footprint as shown in Figure 3-1 of this report. ➤ Areas of suitable habitat within and adjacent to the construction footprint will be fenced off under the supervision of a qualified ecologist using heras fencing, to ensure no inadvertent removal or damage of habitat. ➤ A modified construction methodology will be adopted, removing the necessity of losing this small section of habitat. <ul style="list-style-type: none"> ➤ The pad for the crane boom, which forms the overlap with supporting habitat for marsh fritillary, will be removed and the crane boom will be laid on the road, on other remaining hard standing, or temporary bog mats if necessary. ➤ The assist crane pad will be reduced in size to ensure they do not encroach on this area of habitat ➤ A suitable buffer zone between the works area and marsh fritillary habitat will be established, under the supervision of a qualified ecologist. <p>In addition, a Marsh Fritillary Management Plan has been prepared to enhance and promote further areas of suitable habitat within the development site and is provided in Section 5 of this report.</p> <p>Disturbance/Direct Mortality</p> <p>The following mitigation measures will be implemented to ensure that no marsh fritillary or identified breeding sites are impacted during the construction of the proposed development:</p> <ul style="list-style-type: none"> ➤ Prior to the commencement of construction works, an updated survey will be undertaken to determine if there have been any changes to the extent of identified suitable marsh fritillary habitat within the construction footprint as shown in Figure 3-1 of this report. ➤ Areas of suitable habitat within and adjacent to the construction footprint will be fenced off under the supervision of an ecologist using heras fencing, to ensure no inadvertent removal or damage of habitat. ➤ A modified construction methodology will be adopted, removing the necessity of working within or adjacent to identified supporting habitat. <ul style="list-style-type: none"> ➤ The pad for the crane boom, which forms the overlap with supporting habitat for marsh fritillary, will be removed and the crane boom will be laid on the road, on other remaining hard standing, or temporary bog mats if necessary. ➤ The assist crane pad will be reduced in size to ensure they do not encroach on this area of habitat ➤ A suitable buffer zone between the works area and marsh fritillary habitat will be established, under the supervision of a qualified ecologist.
Residual impact following Mitigation	<p>Habitat Loss/Degradation</p> <p>No loss of marsh fritillary habitat is anticipated as a result of the Proposed Development. Given the provision of the marsh fritillary management plan provided in Section 5 below,</p>

	the Proposed Development has potential to have an overall positive impact on suitable habitat for this species.
	<p>Disturbance/Direct Mortality</p> <p>Following the incorporation of the mitigation measures described above, no significant negative impacts on marsh fritillary are anticipated at any geographic scale.</p>

4.2

Assessment of the Potential Impacts on marsh fritillary during operation

The operation of the Proposed Development will not result in any additional habitat loss or deterioration for faunal species and will not result in an overall increase in anthropogenic activity when compared to the past peat production usage of the site. No operational phase impacts on marsh fritillary or supporting habitat for this species are anticipated as a result of the Proposed Development.

4.3

Assessment of the Potential Impacts on marsh fritillary during decommissioning

It is anticipated that there will be no additional habitat loss associated with the decommissioning of the Proposed Development and therefore there will be no significant impacts in this regard. In addition, the removal of the infrastructure will involve similar operations to those involved in construction but without the large-scale earth moving or excavations as the turbine bases and roads etc. will be left in place. These works would therefore be of a smaller scale but would have potential for similar impacts on ecology to those experienced during construction. There would be no additional or ancillary impacts associated with the decommissioning phase.

Mitigations provided in Table 4-1 above for the construction phase of the Proposed Development will be implemented during decommissioning, ensuring that no marsh fritillary breeding sites are damaged/destroyed during any works.

5. MARSH FRITILLARY MANAGEMENT PLAN

5.1 Management measures

As described in Section 3.2 and Section 3.3, marsh fritillary has been confirmed breeding within the Proposed Development site, but not within the infrastructure footprint during dedicated surveys undertaken in May and August 2023. As outlined in Table 4.1 a Marsh Fritillary Management Plan will be implemented for proposed development. Measures implemented to date and those to be adopted through the various phases of development are outlined in the following sections.

Avoidance Measures

- Areas identified as having potential suitable marsh fritillary habitat were identified in the initial site walkovers in 2020 and were constrained out of the design process. As part of the iterative design process for the project, updates on results from all ongoing baseline surveys, including the subsequent Marsh Fritillary surveys in September 2020, 2021, and 2022, were also forwarded to the project design team for consideration in the design. As such, the proposed development has been designed to avoid these areas. In addition, all other elements of the proposed project will also avoid any areas of suitable marsh fritillary habitat.

Pre-construction Measures

- Prior to the commencement of site works, areas of suitable marsh fritillary habitat identified within the study area will be clearly marked out by a suitably qualified ecologist and fenced off for the duration of construction. This will avoid damage, loss or disturbance from construction machinery or the storage of materials/machinery.
- Other areas of potentially suitable habitat in close proximity to the development footprint will be surveyed for Marsh fritillary prior to the commencement of site works in order to identify any additional areas to those already mapped in Figure 3-1. This will further advise on the extent of areas that may require fencing off.
- Vegetation structure and suitability will be monitored following the National Biodiversity Data Centre (NBDC) Habitat Condition Assessment methodology. This will be used to compare baseline surveys of the vegetation with future survey findings and thus assist in informing the management measures described below.

Construction Phase Measures

- In addition to the measures detailed in Table 4-1 above, which ensure there will be no loss or deterioration of marsh fritillary habitat, the following measures will also be followed during construction.
- Where suitable marsh fritillary habitat occurs in close proximity to the proposed infrastructure, side casting of material will be to the opposite side of the proposed infrastructure to where the suitable habitat occurs. This will ensure that there is no potential for direct or indirect impacts on marsh fritillary habitat. This measure will also protect existing suitable habitat for other Lepidoptera/pollinator species of local importance.
- Where shallow peat occurs along the infrastructure footprint and sub peat material comprises calcareous substrate, such substrate will be used during the site reinstatement, along the infrastructure corridor. Such material will facilitate the establishment of calcareous plant species that have been recorded on spoil heaps and sub peat material within the study area. The establishment of such vegetation will benefit pollinator species generally as well as providing a food source for adult marsh fritillary. In addition, such material, in combination with the

surrounding peat substrate will also create a suitable substrate for the natural colonisation of devils-bit scabious and thus marsh fritillary breeding habitat.

Tree-planting will avoid areas of suitable marsh fritillary habitat

- The proposed tree planting areas within the study area have been located away from areas of suitable marsh fritillary habitat, see the Habitat Management and Enhancement Plan in Appendix 6-5 of the submitted EIAR. This will ensure that there is no loss of potentially suitable habitat for the species.

Post-construction Monitoring and Habitat Management

- Marsh fritillary and its habitat will continue to be monitored post construction. Some minor management or scrub clearance may be required if it encroaches/establishes along the infrastructure corridor. All future habitat management measures will be supervised by a suitably qualified ecologist.
- Bord na Móna will work with and support local stakeholders to enhance the education and amenity potential of the site by erecting signage to increase awareness of local biodiversity, and in relation to supporting the monitoring of biodiversity on site.

5.2 Post-Construction Management

5.2.1 Peatland Stabilisation and Pollinator Enhancement Measures

The construction phase of the proposed project will lead to the creation of bare peat areas and verges that will require re-vegetation. This will also ensure peat stabilisation and thus surface water protection. Natural colonisation is the best method in terms of stabilising bare peat surfaces, as species colonise they are adapted to the specific environmental conditions.

However, there will be opportunities to enhance these areas for pollinating insects as part of the facilitated bare peat revegetation. Re-vegetation will be facilitated through the establishment of semi-natural grassland along the infrastructure corridor using a wildflower pollinator-friendly seed mix and/or by using ‘Green Hay’ in combination with fertiliser and/or lime and a nursery crop. The species mix will comprise of a variety of plant species that will grow on peatland habitats found in the Ballivor Bog Group and contribute to an enhancement in biodiversity. It is proposed to use a seed mix comprising of red fescue (*Festuca rubra*) and creeping bent, (*Agrostis stolonifera*) that will allow for a rapid revegetation, while not resulting in a cores/dense sward preventing other wildflower species from establishing. The use of wildflower/native species that are also locally common will be incorporated into the seed mixes. The management of the habitat in this way will be beneficial for other wildlife, particularly pollinators (bees, butterflies and other invertebrates) by providing more wildflowers, food and space.

Any management approach needs to be flexible and be tailored to the specific on-site environment where there will be a variety of peat depths, hydrological conditions and nutrient status. Management (e.g. mowing) should not be uniform. Different actions in different places should enhance the natural diversity of habitats already developing on site.

5.2.2 Habitat enhancement monitoring programme

A habitat and biodiversity monitoring programme will be put into place during both the construction and operational phase of the proposed project. Both the construction and post construction habitat management measures and monitoring will be overseen by a suitably qualified ecologist to ensure the

protection of the species. A Ballivor Wind Farm habitat and biodiversity monitoring report will then be submitted by Bord na Móna to Meath and Westmeath County Councils in years 1, 3 & 5 and every five years thereafter for the lifetime of the proposed project. This report will initially document the establishment of vegetation along the site access tracks and the distribution of the species at the site. Following this, the report will allow remedial action to be taken if specific issues develop in the future i.e. scrub encroachment or the establishment of noxious weeds. Any additional management measures will also be undertaken in consultation with a suitably qualified ecologist.

The Ballivor Wind Farm habitat and biodiversity monitoring programme will specifically monitor:

- Marsh fritillary butterfly (presence and distribution) using NBDC guidelines.
- Marsh fritillary butterfly habitat condition using NBDC guidelines.
- Record any other subsequent rare or threatened species to establish a detailed understanding of the additional biodiversity benefits of the management measures.

5.2.3 **Woodland establishment**

As part of the Proposed Development, it is proposed to fell and remove a small section of oak-ash-hazel woodland within the development footprint. It is proposed to plant new woodland habitat on suitable cutaway bog outside the infrastructure footprint but inside the development site boundary in order to replace that lost to the infrastructure footprint. Areas suitable for planting native trees are likely to include areas with shallow remnant peat, steeper slopes and indicators of future dry habitat development. The replanting lands were identified and assessed in Chapter 6, Biodiversity of the proposed EIAR and have been surveyed for marsh fritillary. No suitable habitat for the species was identified within the replanting lands.

BIBLIOGRAPHY

CIEEM (2016) Institute of Ecology and Environmental Management Draft Guidelines for Ecological Impact Assessment: Terrestrial, Freshwater and Coastal

CIEEM (2018) Chartered Institute of Ecology and Environmental Management. Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine. September 2018 Version 1.1- updated September 2021.

EPA 2022, Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports, Online, Available at: <https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf>.

Habitats Directive (92/43/EEC).

NIEA, Natural Environment Division (2021). Guidance on Bat Surveys, Assessment & Mitigation for Onshore Wind Turbine Developments.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

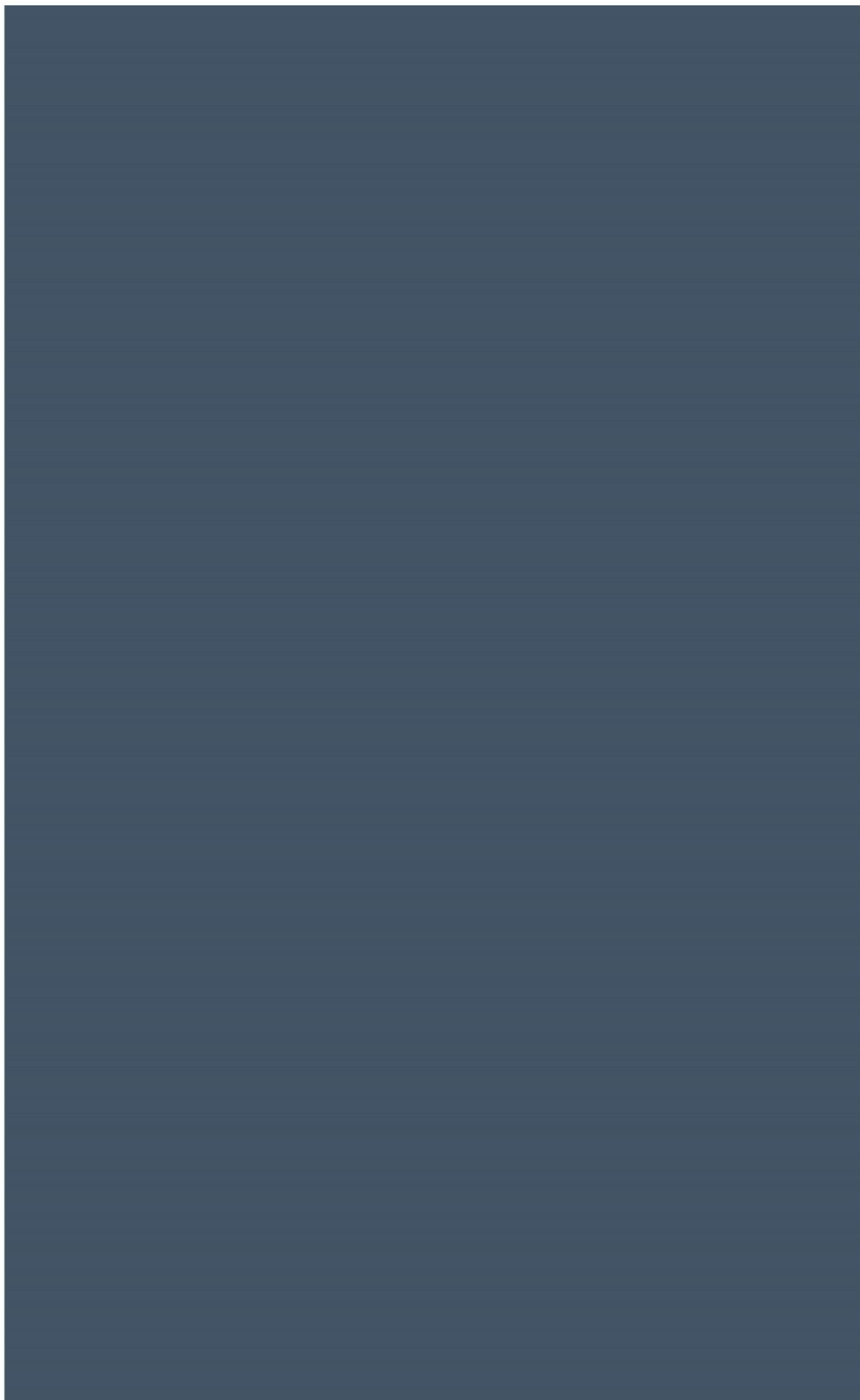
NPWS Natural Heritage Areas (NHA), Online, Available at: <https://www.npws.ie/protected-sites/nha>

NRA (2009) *Ecological Surveying Techniques for Protection Flora and Fauna during the Planning of National Road Schemes*. National Roads Authority, Dublin, Ireland.

NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Roads Schemes*. National Roads Authority, Dublin, Ireland.

Wildlife Act (1976) Wildlife Act, Ireland, 22 December 1976, No. 39 of 1976.

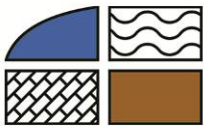
Wildlife Amendment Act (2000) Wildlife Amendment Act, Ireland, 18 December 2000, No. 38 of 2000.





APPENDIX 2

HES NOTE



Date: 09th July 2024
Our Ref: P1510-3/0020

**An Bord Pleanála
64 Marlborough Street
Dublin 1
D01 V902**

Dear An Bord Pleanála,

Re: Hydrological & Hydrogeological Response to Further Information Request from ABP in respect of the proposed Ballivor Wind Farm, Co. Meath/Co. Westmeath
Ref: ABP-316212-23

Hydro-Environmental Services (HES) were requested by MKO to respond to hydrological and hydrogeological matters raised in the further information request letter issued by ABP on 14th May 2024.

Our response relates to the hydrological aspects of Item 2 (of the ABP letter) and relates to the potential for drainage and drying out of peatland habitats (associated with the Marsh Fritillary Butterfly Annex II Species).

1. HYDROLOGICAL RESPONSE TO ITEM 2

HES has plotted the area of "supporting marsh fritillary habitat" on our mapping for the site, and we note that area corresponds with an old rail bed which is raised above the surrounding cutover bog. We have illustrated this point using a number of cross-section drawings which we have attached for the attention of the Board in **Appendix I**. The cross-section drawings clearly illustrate how the "supporting marsh fritillary habitat" area is along an old rail bed and is raised above the surrounding cutover peatland.

From a hydrological perspective the potential for drying out of the rail bed will not occur for the following reasons:

- The rail beds have been in this position for >50 years;
- Therefore, the local hydrology and drainage regime at and around the rail bed is well established;
- All BnM rail beds have longitudinal toe-drains on both sides of the raised embankment. These were required to maintain drainage and stability of the rail beds during the extraction of peat from the bog (e.g. the rail beds allowed the transport of heavy loads of dried peat off the bogs during the previous peat extraction works);
- The rail beds themselves would therefore be reasonably dry areas, as those conditions were required to ensure stability;
- The surrounding peat fields are also drained by frequent field drains to allow previous peat extraction (i.e. field drains were installed at ~15m centers); and,
- While the drainage of the surrounding cutover bog has been diminished slightly over recent time, by reduced/infrequent drainage maintenance and vegetation encroachment, those drains still exist, and they still drain the cutover bog.

With regards to the potential for drying out of the wider cutover bog, this issue was addressed in the EIAR in Section 9.5.75. In the interest of clarity, we include the following:

- The footprint area of the proposed wind farm is <2% of the total area of the Ballivor Group of bogs;
- Therefore, 98% of the Ballivor Group of bogs is subject to the Decommissioning and Rehabilitation Plans. These plans were attached to the EIAR in Appendix 6-6. The Decommissioning and Rehabilitation Plans will also be subject to consultation as well as input from the EPA prior to their implementation;
- Key objectives of the Decommissioning and Rehabilitation Plans are rewetting and revegetation, occurring between and surrounding the Proposed Development wind farm infrastructure. This includes the cutover peatland areas around T13 and T14; and,
- In addition, PCAS (Peatlands Climate Action Scheme) will be implemented in certain areas of the Ballivor Bog Group (Carranstown East and Bracklin West) and this will also optimise climate and habitat enhancement benefits.

In summary, as a result of the geometry and existing drainage conditions of the rail bed, it has little or no potential for further drying out arising from the wind farm development. In the operational phase (subject to consent and construction) the area of the wind farm footprint (at T13 and T14) will be locally drained, and the vast areas of the surrounding cutover bog will be rewetted to optimise climate and habitat enhancement benefits. Therefore, the potential effects of "drying out" on the wider cutover bog will not occur.

2. CLOSURE

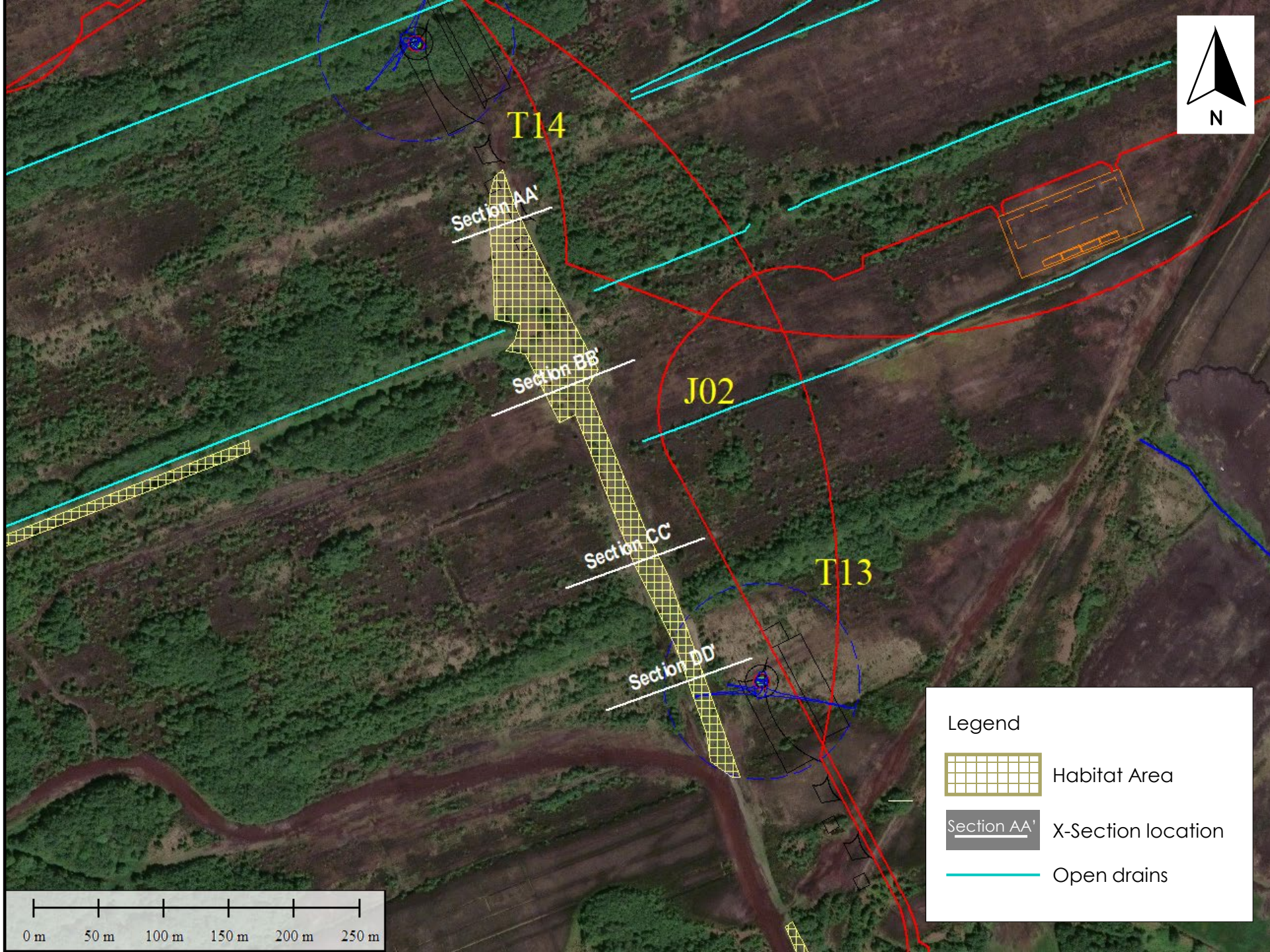
We trust the above response meets your requirements. Please contact the undersigned if you have any questions regarding the above.

Yours sincerely,

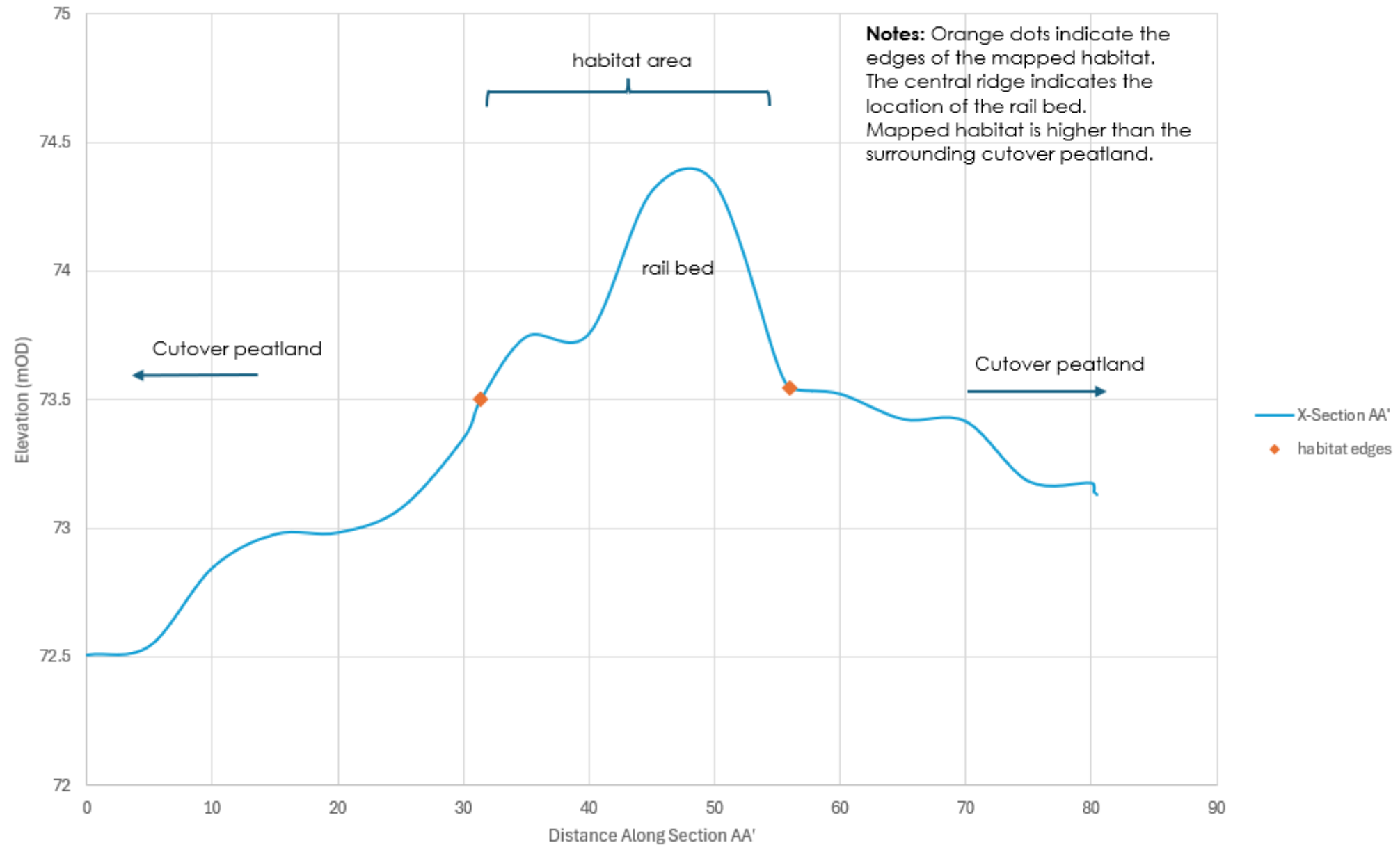


Michael Gill PGeo
Civil/Environmental Engineer and Hydrogeologist
B.A., B.A.I., M.Sc., Dip Geol, MIEI, MCIWEM

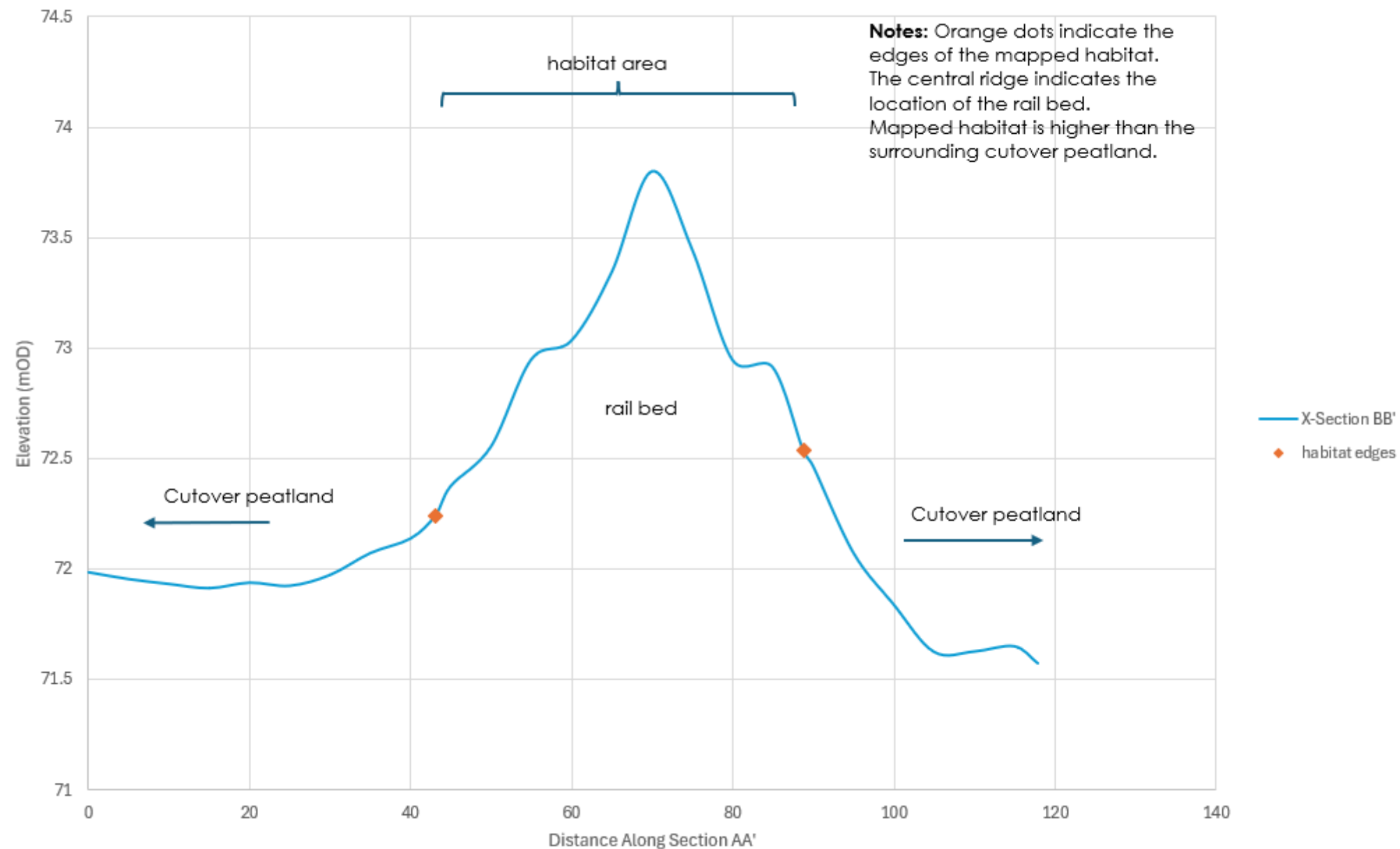
Appendix I: Cross-Section Drawings



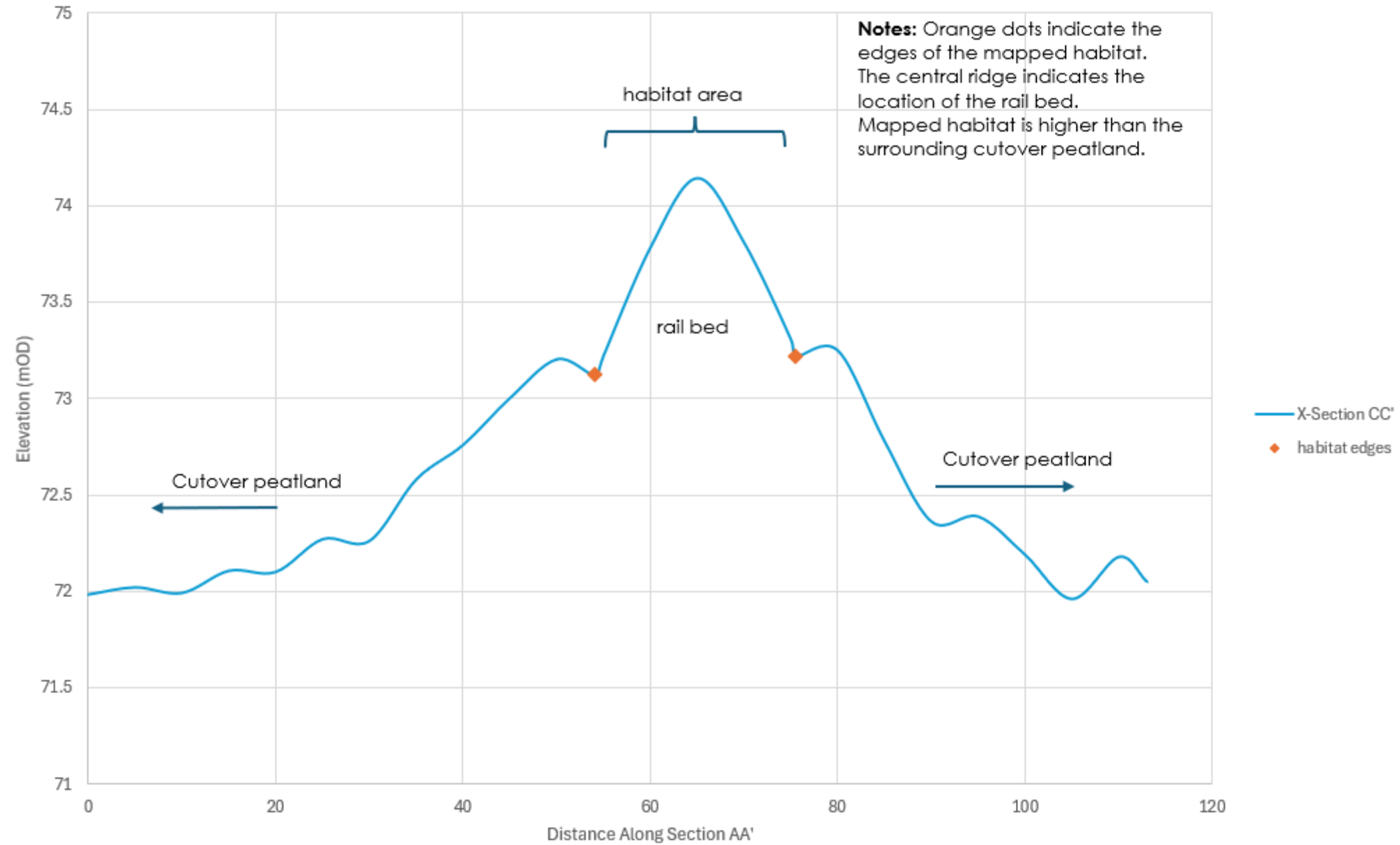
Cross-Section AA'



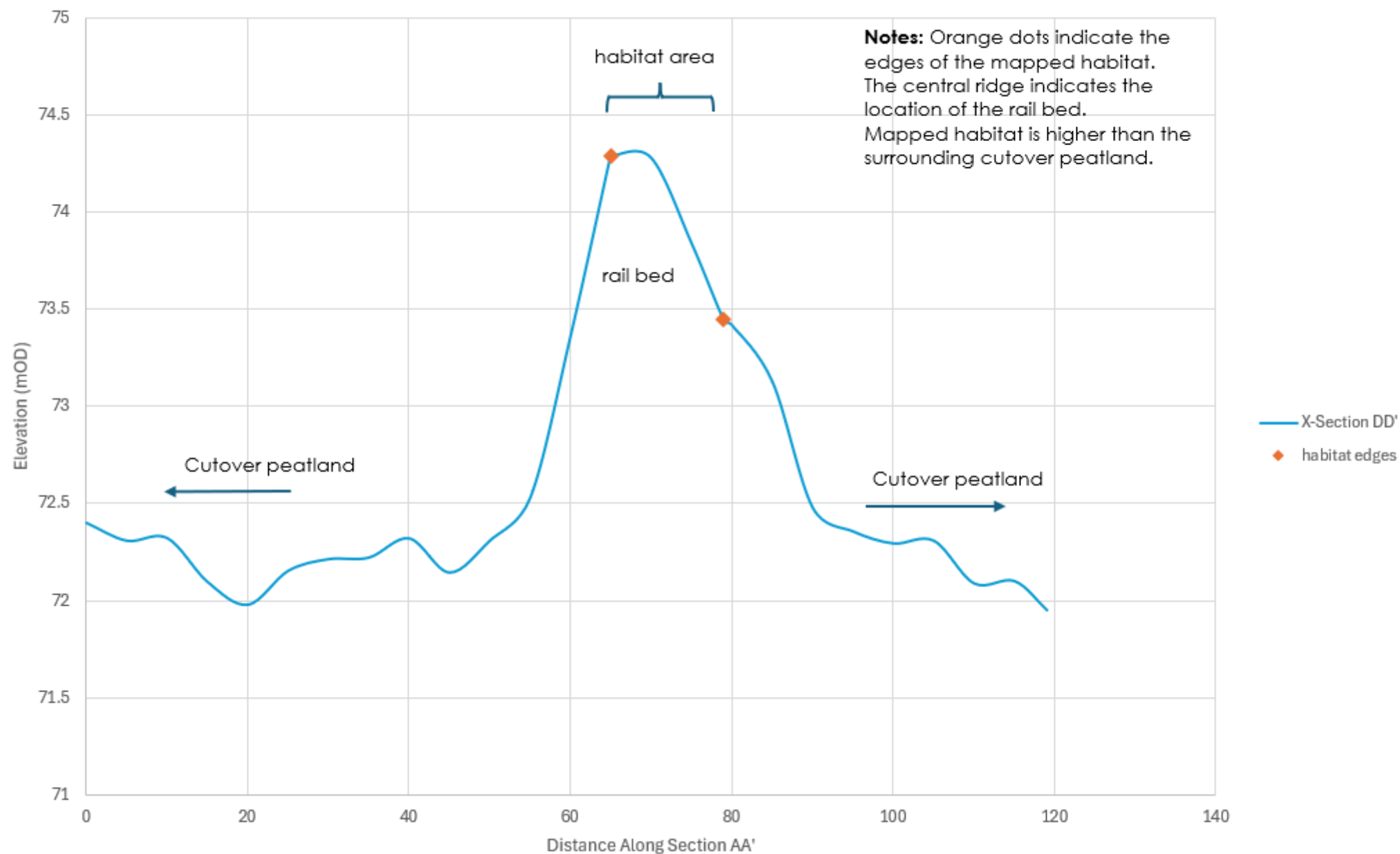
Cross-Section BB'



Cross-Section CC'



Cross-Section DD'



© **HYDRO-ENVIRONMENTAL SERVICES**

22 Lower Main Street, Dungarvan, Co. Waterford, X35 HK11
T: +353-(0)58-441 22 F: +353-(0)58-442 44 E: info@hydroenvironmental.ie

www.hydroenvironmental.ie

