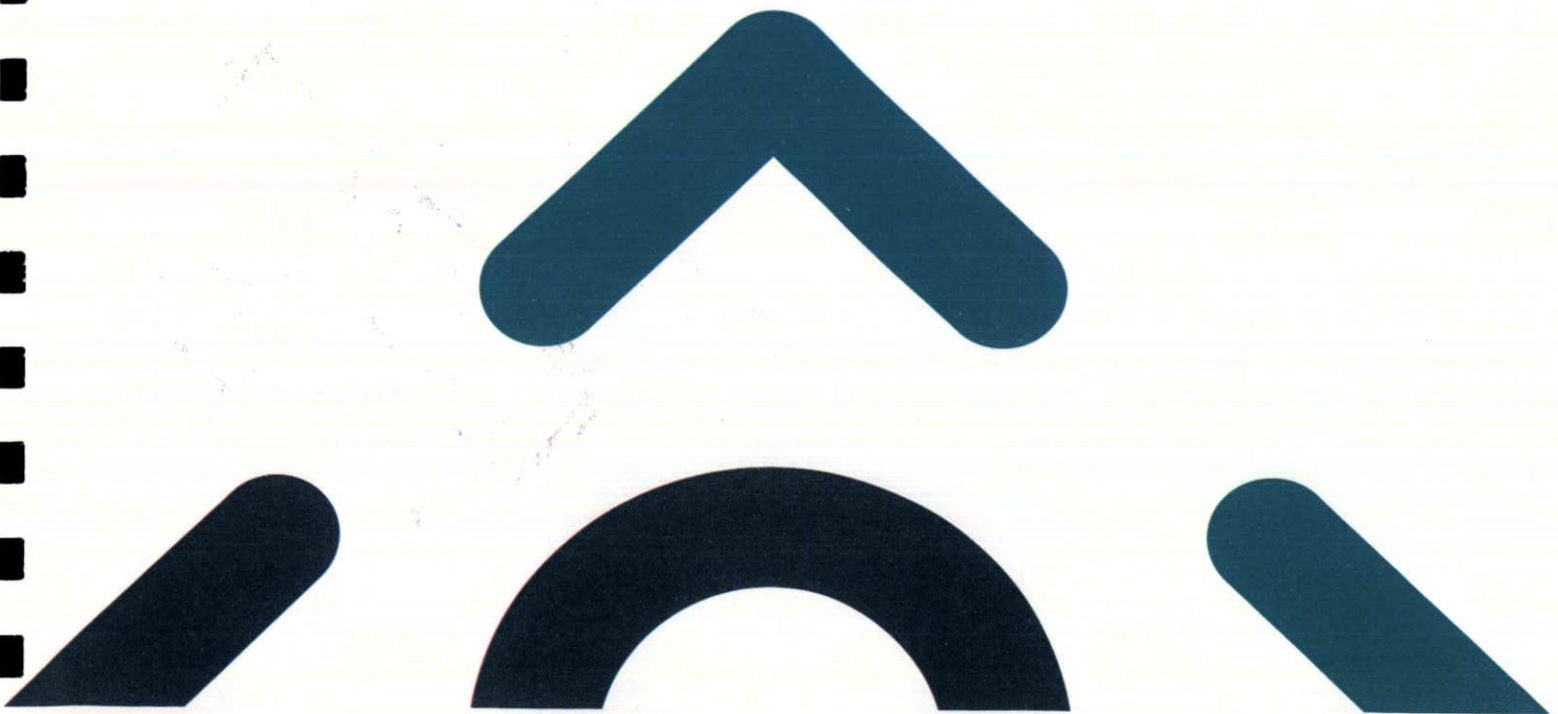


## Mammal Survey Report

Proposed Derryclare Wild  
Western Peatlands Project  
- Response to Further  
Information Request





Received  
18 JAN 2024  
Planning & Development Section  
Galway County Council



DOCUMENT DETAILS

Client: Coillte Nature

Project Title: Proposed Derryclare Wild Western Peatlands Project - Response to Further Information Request

Project Number: 210603-a

Document Title: Mammal Survey Report

Document File Name: MSR D1 - 2023.09.20 – 210603-a

Prepared By: MKO  
Tuam Road  
Galway  
Ireland  
H91 VW84



Rev	Status	Date	Author(s)	Approved By
01	Draft	15/09/2023	StC	PD
02	Final	14/12/2023	StC	PD



# Contents

<b>1. INTRODUCTION .....</b>	<b>3</b>
1.1 General Introduction.....	3
1.2 Site Location.....	3
1.3 Statement of Authority .....	3
1.4 Legislative Context and Standard Practice .....	4
1.4.1 Badgers ( <i>Meles meles</i> ) .....	4
1.4.2 Red Squirrel ( <i>Sciurus vulgaris</i> ).....	5
1.4.3 Pine Marten ( <i>Martes martes</i> ).....	6
1.4.4 Deer .....	6
1.4.5 Otter ( <i>Lutra lutra</i> ) .....	7
<b>2. SURVEY METHODOLOGY .....</b>	<b>9</b>
2.1 Desk Study.....	9
2.2 Field Survey Methodology .....	9
2.2.1 Badger Surveys.....	9
2.2.2 Otter Surveys .....	10
2.2.3 Red Squirrel Surveys.....	10
2.2.4 Pine Marten Surveys.....	10
2.2.5 Deer Surveys .....	11
2.3 Trail Camera Deployment Surveys .....	11
<b>3. SURVEY RESULTS .....</b>	<b>14</b>
3.1 Results of desk study.....	14
3.1.1 National Biodiversity Data Centre (NBDC) Records.....	14
3.1.2 NPWS.....	14
3.2 Results of field surveys .....	15
3.3 Results of trail camera survey.....	16
<b>4. IMPACT ASSESSMENT ON MAMMALS .....</b>	<b>17</b>
4.1 Effects on Mammals During Construction .....	17
4.1.1 Assessment of Potential Effects on Otter.....	17
4.1.2 Assessment of Potential Effects on Red Squirrel.....	19
4.1.3 Assessment of Potential Effects on Badger and Pine Marten.....	21
4.2 Effects on Mammals During Operation .....	22
<b>5. CONCLUSIONS .....</b>	<b>23</b>
<b>BIBLIOGRAPHY .....</b>	<b>24</b>

## TABLE OF FIGURES

Figure 1-1 Site Location.....	8
Figure 2-1 Mammal walkover surveys.....	12
Figure 2-2 Trail camera locations.....	13

## TABLE OF TABLES

Table 2-1 Classification of Badger Setts (Definition as per SNH 2003).....	10
Table 2-2 Trail camera locations and habitats.....	11

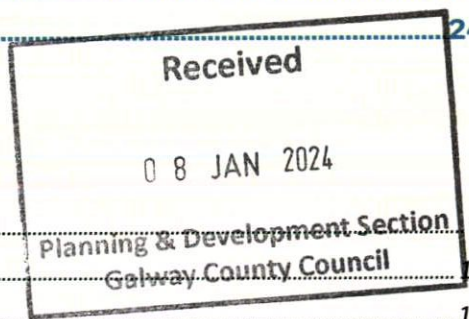


Table 3-1 NBDC records for mammal species recorded in hectads L85 and L84.....	14
Table 3-2 NPWS records for rare and protected mammal species.....	14
Table 4-1 Assessment of Potential Impacts on Otter.....	17
Table 4-2 Assessment of Potential Impacts on Red Squirrel.....	19
Table 4-3 Assessment of Potential Impacts on badger and pine marten.....	21

## TABLE OF PLATES

Plate 3-1 Example of a mammal trail found on site.....	15
Plate 3-2 Badger ( <i>Meles meles</i> ) recorded on trail camera 1397.....	16
Plate 3-3 Fox ( <i>Vulpes vulpes</i> ) recorded on trail camera 1397.....	16
Plate 3-4 Red squirrel ( <i>Sciurus vulgaris</i> ) recorded on trail camera 1300.....	16
Plate 3-5 Red deer ( <i>Cervus elaphus</i> ) recorded on trail camera 1397.....	16
Plate 3-6 Pine marten ( <i>Martes martes</i> ) recorded on trail camera 1304.....	16



## 1. INTRODUCTION

### 1.1 General Introduction

MKO have been commissioned to undertake mammal surveys in response to the Requests for Further Information (RFI) received from Galway County Council on the 19<sup>th</sup> of April 2023. The Proposed Project will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and fencing.

The aim of these surveys was to determine if mammals, including badger, otter and red squirrel, are present within or adjacent to the footprint of the Proposed Project, and to determine whether there is potential for significant impacts on mammal species as a result of the Proposed Project. The survey study area included the Proposed Project footprint within the EIAR Study Area, which were dominated by Conifer plantation (WD4), Low-lying blanket bog (PB3), and Recently felled woodland (WS5), with smaller sections of Wet heath (HH3), Exposed siliceous rock (ER1), Other habitats within the EIAR Study Area included artificial lakes and ponds (FL8), Non-calcareous spring (FP2), and Eroding upland river (FW1).

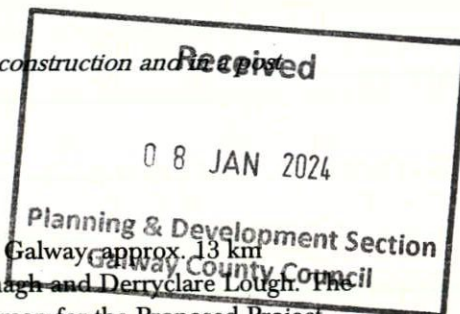
The RFI from Galway County Council (Planning ref: 23/60) stated, in relation to mammals:

*The Planning Authority requires the applicant to provide and update the submitted NIS accordingly including the following required information:*

*d. Mammal surveys (including any required mitigation during construction and development scenario), including the use of trail cameras.*

### 1.2 Site Location

The Proposed Project site is located within Coillte lands in west County Galway approx. 13 km southeast of Letterfrack (IG: L 83927 50924) and is adjacent to Lough Inagh and Derryclare Lough. The site is accessed via a forestry road turning west off the R344. A location map for the Proposed Project site is given in Figure 1-1.



### 1.3 Statement of Authority

Ecological surveys and habitat mapping of the Proposed Project site were previously carried out by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) to assess the feasibility of the habitat restoration project (ANIR Ecology, 2021). Additional ground truthing surveys were carried out by MKO ecologists Sarah Mullen (B.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc. Env.) on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021. The site was visited again by Laoise Chambers (B.Sc.) and Patrick O' Boyle (B.Sc., M.Sc.) on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. These additional surveys also provided additional information on the ecology of the site and surrounding area. All staff have relevant academic qualifications and are competent experts in undertaking multidisciplinary ecological surveys to this level.

As part of the multidisciplinary survey, searches for indications of badger, otter, and red squirrel were carried out. This search was conducted in order to determine the presence or absence of these species within Proposed Project site.

In response to the RFI, targeted mammal surveys were carried out by Stephanie Corkery (BSc., MSc.) and Jennifer Snook (BSc.) on the 20<sup>th</sup> and 21<sup>st</sup> of July 2023. Additionally, trail cameras were deployed

for a total of 14 days throughout the site. All staff have relevant academic qualifications to undertake these surveys. This report was written by Stephanie Corkery and was reviewed by Pádraig Desmond (BSc.). Pádraig has over 2.5 years' professional experience in ecological consultancy.

In addition to the above, incidental records of mammal signs were considered during the targeted bird and bat surveys, which were undertaken in response to the RFI. Multiple bird surveys were undertaken in May and July 2023 by Susan Doyle (PhD), Louis de Vries (MSc), and Marcus Hogan (BSc) of MKO. Bat surveys were undertaken on the 25<sup>th</sup> of May, 4<sup>th</sup> of July, 14<sup>th</sup> of August 2023 by Kate Greaney (BSc., MSc.) and David Culleton (BSc., MSc.) of MKO.

## 1.4

## Legislative Context and Standard Practice

Mammal species are protected in Ireland under the Wildlife Act 1976 (as amended). The Wildlife Act is Ireland's primary national legislation for the protection of wildlife. It covers a broad range of issues, from the designation of nature reserves, the protection of species, regulation of hunting and controls in wildlife trading.

The management of mammals where they are identified within the footprint of any proposed development, should be carried in line with NRA (2009) Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes and NRA (2006): Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes.

The sections below outline the habitat preferences, survey techniques, and licensing requirements for species of mammals expected to be present on site of the Proposed Project due to their known geographic range.

## 1.4.1

### Badgers (*Meles meles*)

The below paragraphs describe the ecology of badger in Ireland and is taken from the NRA (2006) Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes:

*The Badger is one of the larger wild mammals in Ireland and is relatively common and widespread throughout most of the country. Badgers are omnivorous, feeding on insects, small mammals, grains and wild fruits - but the main component of their diet is earthworms. Consequently, their density is often higher in landscapes of agricultural pastures and lower in areas where habitats provide poorer food supply, such as bogs, moors and upland areas. Badgers live in social groups, usually comprised of between two and six adults and their young. Each group defends territory, which varies in size between 25 and 200ha (with mean territory size of c.80ha). The average density of Badgers in the country is one social group per 2km but in many lowland areas is often as much as one or more social groups per square kilometer.*

*Badgers create burrows (known as setts); larger setts may possess very extensive tunnel systems with many entrances and underground chambers. There may be a number of setts within a group's territory, varying in size, complexity and use. Usually, there is just one principal sett (the 'main' sett), which is generally used for breeding and is inhabited by Badgers throughout the year. It is usually located centrally within the Badger group territory. Setts closer to the boundary of a territory are usually referred to as 'outlier' setts. Other types of sett include annex, subsidiary and minor setts, depending on their use and importance to the Badger group. Setts vary in size from those with one entrance to complexes stretching over 100m and with 40 or more entrances.*

*The most frequent location of Badger setts in the Irish countryside is within or close to hedgerows and treelines, as these provide cover and safety from disturbance from agricultural and other activities. Setts are also frequently located in deciduous woodlands and areas of scrub, and they do occur in urban areas as well as in the open countryside.*

*Setts are used by generations of Badgers and some setts may be of considerable antiquity. Cubs are born (litters consist of two to four cubs) towards the end of January and through February, emerging above ground in April or May.*

Badger territorial activity is high from mid-January to March, and surveys during this time are suitable for identifying latrines, feeding signs and tracks. Additionally, vegetation cover is relatively low during this period.

Should active Badger setts be identified within the footprint of any Proposed Project, the badgers may need to be evacuated prior to the commencement of works. It is normal practice to impose seasonal constraints e.g. that breeding setts are not interfered with or disturbed during the Badger breeding season (December to June inclusive) (NRA, 2006). No active sett should be interfered with or disturbed during the breeding season as any sett category may contain cubs. Closure of setts during the breeding season would require monitoring to demonstrate no sett activity.

Presently, the National Parks and Wildlife Service do not issue disturbance licenses for Badger, as the legal process is under review. It is understood, however, that the Department wishes to be consulted with regards to construction works in the vicinity of Badger setts in order to advise and provide recommendations on avoidance of disturbance of setts, or mitigations for same.

1.4.2

## Red Squirrel (*Sciurus vulgaris*)

The below paragraphs describe the ecology of red squirrel in Ireland and is taken from the NRA (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes:

*The red squirrel is considered native to Ireland, although it has colonised the island several times since the last ice age.*

*Red squirrels are most commonly found in large blocks of coniferous woodland, although they may also be found in broadleaved/mixed woodland and scrub habitats where grey squirrels are absent. Woodland/scrub present in close proximity to road verges may be used by red squirrels where suitable habitat adjoins it, and these may act as habitat links to adjacent, otherwise isolated, blocks of woodland. In broadleaved habitats, red squirrels are usually displaced within 15 years of the arrival of greys, appearing to suffer competitive exclusion by a species better adapted to conditions in fragmented woodlands where acorns are often the principal food, or by contracting squirrelpox virus, which tends to be spread by grey squirrels. Even small numbers of broadleaved trees present within or adjacent to coniferous woodland can nevertheless provide grey squirrels with 'access corridors' and sufficient resources to become established and subsequently displace the resident red squirrel.*

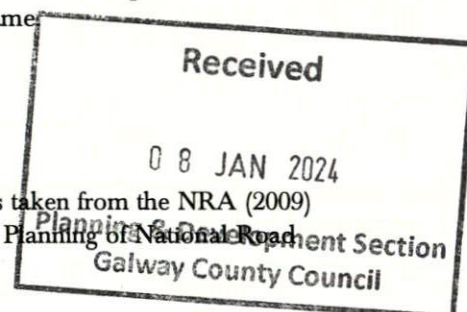
Three survey techniques should be used to determine whether red squirrel is present or not on the site. These include direct observation surveys, drey counts, and searching for feeding remains.

A survey licence is required from the National Parks and Wildlife Service for any survey work that would directly interfere with the animals or their dreys. In this instance a survey licence was not required as such surveys were visual.

1.4.2.1

### Red Squirrel in Derryclare

In 2005, 19 red squirrels were translocated into Derryclare Nature Reserve, which is directly adjacent to the southern boundary of the Proposed Project site. The population at Derryclare has continued to increase and has expanded into much of the Proposed Project site, but numbers are concentrated around Derryclare Nature reserve and adjacent conifer plantations (Waters & Lawton, 2011). There are



currently an estimated 20 red squirrel in Derryclare woods. Based on ongoing monitoring studies from NUIG, the nature reserve and surrounding conifer plantations are considered the most important areas for this species in the area. Red squirrel are strongly associated with conifer plantation habitat, but their preferred habitat is mixed broadleaved woodland (FRSF, 2023).

1.4.3

### Pine Marten (*Martes martes*)

The below paragraphs describe the ecology of pine marten in Ireland and is taken from the NRA (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes:

*Pine martens are almost exclusively nocturnal during winter. They are commonly active during the day as well as during the night in summer.*

*Pine martens have historically been associated with woodland areas, and in Europe they are most frequently found in coniferous and broadleaved woodland and scrub. In Ireland deforestation has meant that a wider variety of habitats are used by pine martens. They have adapted to pasture, moors and coastal areas, surviving in hazel scrub and limestone pavement habitat in the Burren in County Clare, and sea cliffs in the north of Ireland. They are most likely to be found in more enclosed, heavily-wooded areas than predominantly open habitats. However, habitats with abundant den sites, secure from predators, and plentiful foraging resources items are as important as vegetation cover.*

Direct observations of pine marten are rare and the reliable identification of scats (droppings) can be difficult. In most cases, where the Proposed Project occurs within or close to their known geographic range and habitat is considered suitable, the presence of pine martens can be assumed, on a precautionary basis, without the need for targeted surveys. Where a specific survey is considered necessary, surveys should involve walking transects and searching for characteristic scats, supplemented by direct observations wherever possible.

A survey licence is required from the National Parks and Wildlife Service for any survey work that would directly interfere with the animals or their resting places such as den sites. In this instance a survey licence was not required as such surveys were visual. If a pine marten is encountered, an unlicensed surveyor must cease survey work, unless they are in the presence of a surveyor with an appropriate licence.

1.4.4

### Deer

The below paragraphs describe the ecology of deer in Ireland and is taken from the NRA (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes:

*There are three species of deer occurring as well-established populations in Ireland: fallow deer (*Dama dama*), red deer (*Cervus elaphus*) and sika deer (*Cervus nippon*), with some more recent Records of Reeves' muntjac (*Muntiacus reevesi*).*

*The red deer is Ireland's only native species of deer and is also the largest, with stags measuring up to 135cm at shoulder height. In summer, the red deer is red-brown in colour with a grey underside, whilst during the winter, the coat is grey-brown in colour. It has a short tail and pale rump.*

*Fallow deer are smaller than red deer with bucks measuring approximately 90cm at shoulder height. Coat colour varies considerably from black, white or brown to yellow-brown. The most common colour is chestnut-brown with white spots on the back and flanks, and a black line along the middle of the back. The rump is white and is surrounded with a black border. The tail is white with a black stripe down the middle.*

*Sika deer is the smallest deer species found in Ireland; stags measure up to 80cm at shoulder height. They are superficially similar in appearance to red deer, although smaller. They are brown in colour (turning grey-brown to black in winter), gradually becoming lighter from the back to the underside, with pale spots on the flanks. The rump is white and heart-shaped and is exposed when alarmed. Red deer have limited distribution and are found in woodland habitat as well as upland moorland and mountainous areas. Fallow deer are widespread and are found in all woodland habitats, both upland and lowland. Sika deer colonise all types of woodland, but are often found in woodlands on acid soils and within pine plantations.*

The presence of deer is often determined by a desk study. Field signs of deer presence include pellets, slots (footprints) and sightings. In many cases, targeted surveys are unlikely to be required for deer.

1.4.5

## **Otter (*Lutra lutra*)**

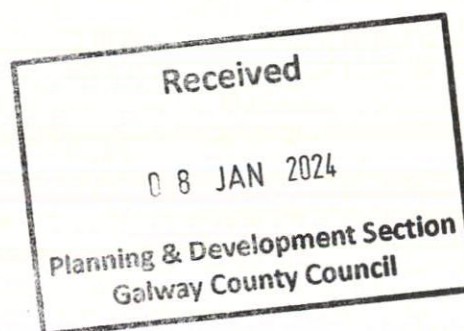
The below paragraphs describe the ecology of otter in Ireland and is taken from the NRA (n.d) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes:

*Otters are found in both fresh- and salt-water. They are commonly found along rivers and around lakes. In the west they can be found along undisturbed rocky shores and inshore islands. Otters are also found away from watercourses, and will use drains and ditches, as well as other (nonaquatic) linear features to move between catchments.*

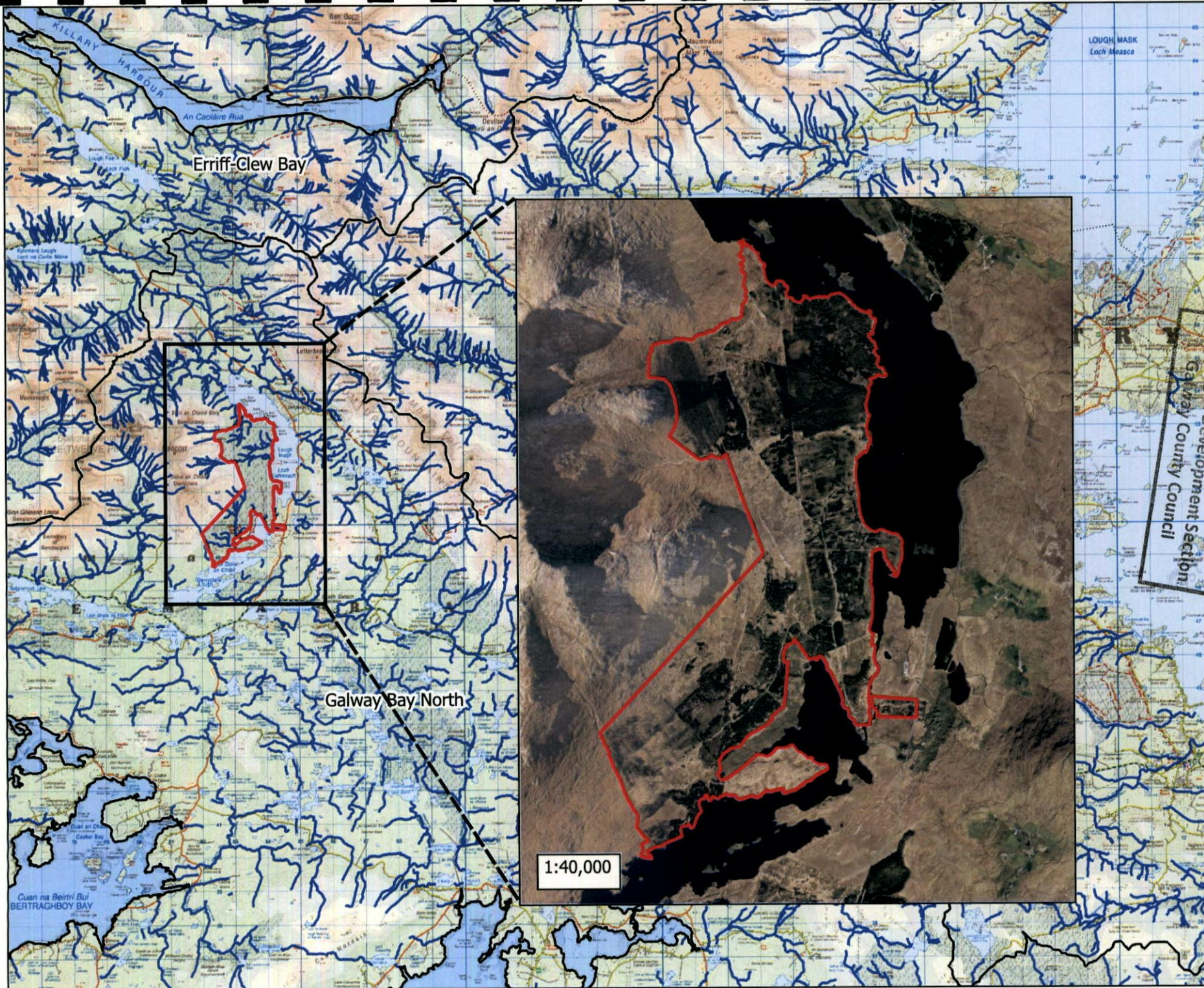
*The otter is primarily nocturnal. In freshwater habitats, otters feed on fish, amphibians (mainly frogs) and sometimes crayfish.*

It may be necessary to conduct a detailed otter survey if the site contains any watercourses or wetland features. Field signs of otter include spraints (otter droppings), footprints or slides. Wherever possible, the presence of otters should be confirmed as part of the multi-disciplinary walkover survey.

A survey licence is required from the National Parks and Wildlife Service for any survey that involves invasive techniques such as endoscopes. In this instance a survey licence was not required as such surveys were visual to determine the presence/ absence of otter. For example, the usage of camera traps (i.e. not at resting sites), a licence is not required.







**Map Legend**

- Site Boundary
- WFD Catchments
- WFD River Waterbodies

Received  
08 JAN 2024  
Planning & Development Section  
Galway County Council



**Site Location**

Project Title  
Proposed Derryclare Wild Western Peatlands Project - F1

Drawn By SC	Checked By PD
Project No. 210603-a	Drawing No. 1-1
Scale 1:150,000	Date 13.09.2023

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



100-100

100-100

2.

## SURVEY METHODOLOGY

2.1

### Desk Study

The desk study undertaken for this assessment 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 Project is located.
- Waters, C. and Lawton, C. (2011) Red Squirrel Translocation in Ireland. Irish Wildlife Manuals, No. 51. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Planning application for the Proposed Project.

Received

08 JAN 2024

Planning & Development Section  
Galway County Council

2.2

### Field Survey Methodology

In addition to the multidisciplinary walkover surveys undertaken in 2021 and 2022, targeted mammal surveys were carried out on the 20<sup>th</sup> and 21<sup>st</sup> of July 2023 by Stephanie Corkery (BSc., MSc.) and Jennifer Snook (B.Sc.), both of MKO. The surveys covered the footprint of the Proposed Project and adjacent lands within the EIAR Study Area. The surveys were carried out in accordance with NRA Guidelines (NRA, 2009). A map containing areas covered during the mammal walkover surveys is provided in Figure 2-1.

2.2.1

#### Badger Surveys

The badger surveys were conducted in order to determine the presence or absence of badger signs within and adjacent to the Proposed Project footprint. The Badger survey involved a search for all potential badger signs as per NRA (2006) (latrines, badger paths and setts) and SNH (2003):

- Faeces: Badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries.
- Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- Paths between setts or leading to feeding areas.
- Scratching posts at the base of tree trunks.
- Snuffle holes (small scrapes where Badgers have searched for insects, earthworms, and plant tubers).
- Day nests (bundles of grass and other vegetation where Badgers may sleep above ground).
- Hair traces.
- Prints.

The surveys adhered to the guidance as set out in *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Roads Schemes* (NRA 2009) and *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes* (NRA 2006). If/where encountered, setts are classified using the conventions set out in NRA (2006). Classification of setts as per the *Best Practice Badger Survey Guidance Note* provided by SNH (2003) is provided in Table 2-1 below.

Table 2-1 Classification of Badger Setts (Definition as per SNH 2003)

Sett Type	Description
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 50m from main sett with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May be used by Foxes and rabbits.

Main setts normally have a large number of entrances (both used and disused), with obvious heaps of spoil. These setts look well used, with obvious tracks between entrances. Annexe setts lie close to the main sett, between 50 and 150m away, and are connected by tracks. They usually have several holes but may not be in use all the time. Subsidiary setts are not connected to another sett by obvious paths and are not continuously active. Outlier setts have usually just one or two holes, without obvious spoil heaps or paths. They are used by badgers sporadically and are often taken over by foxes and rabbits (Smal, 1995).

## 2.2.2 Otter Surveys

The otter surveys were conducted in order to determine the presence or absence of otter signs within and adjacent to the Proposed Project footprint. The otter survey involved a search for all potential otter signs as per NRA (2009) outlined below:

- Searches for spraints (otter droppings).
- Searches for footprints.
- Searches for slides.
- Where otters are present, determine whether or not any resting sites (such as holts or couches) are present, and their level of importance.

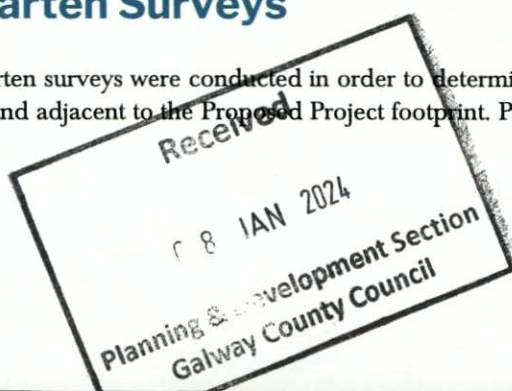
The surveys adhered to the guidance as set out in *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Roads Schemes* (NRA 2009).

## 2.2.3 Red Squirrel Surveys

The red squirrel surveys were conducted in order to determine the presence or absence of red squirrel signs within and adjacent to the Proposed Project footprint. The red squirrel survey largely involved a search for potential signs of feeding remains as per NRA (2009) guidance and a visual search for dreys in the areas adjacent to where feeding remains were recorded.

## 2.2.4 Pine Marten Surveys

The pine marten surveys were conducted in order to determine the presence or absence of pine marten signs within and adjacent to the Proposed Project footprint. Pine marten surveys involved a search for



potential signs as outlined in the NRA (2009) guidance and included walked transects throughout the site.

## 2.2.5 Deer Surveys

According to NRA (2009) guidance, the presence of deer is confirmed by desk study records, or where the multi-disciplinary walkover survey has identified field signs (including pellets, slots (footprints) and sightings). Mitigation measures regarding deer are often straightforward and often does not require targeted surveys.

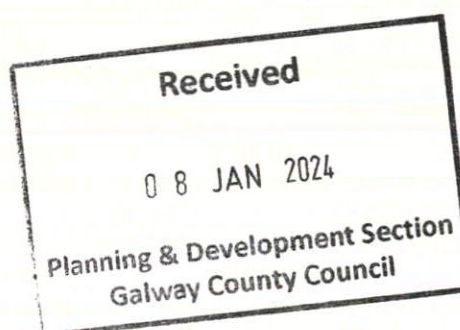
## 2.3 Trail Camera Deployment Surveys

A total of seven trail cameras were deployed throughout the site for 14 days to determine which mammal species are using the site. A total of four trail cameras were deployed in the northern portion of the site and three were deployed in the southern portion. Trail cameras were deployed during the multispecies mammal walkover surveys on the 20<sup>th</sup> and 21<sup>st</sup> of July in locations where evidence of mammal activity was noted by the surveyors, in addition to any suitable habitat identified. Indicators of mammal activity included scats, mammal trails, and foraging remains. These locations represented a variety of habitats within the site boundary.

A map containing the camera trap locations is given in Figure 2-2.

Table 2-2 Trail camera locations and habitats



Trail Camera ID	Grid Reference ITM	Habitat	North/ South Portion of Site
01304	X 483002 Y 752825	Mixed broadleaved woodland (WD1)	North
01300	X 483162 Y 752223	Conifer Plantation (WD2)	North
01302	X 483974 Y 751712	Mixed broadleaved woodland (WD1)	North
01309	X 484073 Y 751471	Conifer Plantation (WD2)	North
01397	X 483436 Y 750357	Conifer Plantation (WD2) at roadside	South
01301	X 483357 Y 750039	Conifer Plantation (WD2) at roadside	South
01310	X 482998 Y 749260	Acid Oligotrophic Lakes (FL2)	South







## Map Legend

-  Site Boundary
-  Mammal Survey Transect

Received

08 JAN 2024

Planning & Development Section  
Galway County Council



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	
Mammal Walkover Survey Transect	
Project Title	
Proposed Derryclare Wild Western Peatlands Project - FI	
Drawn By	Checked By
SC	PD
Project No.	Drawing No.
210603-a	2-1
Scale	Date
1:20,000	19.09.2023



**MKO**  
Planning and  
Environmental  
Consultants  
Tuam Road, Galway  
Ireland, H91 VV84  
+353 (0) 91 735611  
email: info@mkofireland.ie  
Website: www.mkofireland.ie

2

# Map Legend

-  Site Boundary
-  Trail camera locations

Received

8 JAN 2024

Development Section  
Way County Council

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

Trail Camera Locations

Project Title

Proposed Derryclare Wild Western  
Peatlands Project - FI

Drawn By

Checked By

SC

PD

Project No.

Drawing No.

210603-a

2-2

Scale

Date

1:20,000

19.09.2023



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



### 3. SURVEY RESULTS

#### 3.1 Results of desk study

##### 3.1.1 National Biodiversity Data Centre (NBDC) Records

A search of the National Biodiversity Data Centre (NBDC) website was conducted on the 18/07/2023 and 20/09/2023. This helped to inform survey effort and provide a baseline of likely species composition in the area. Records of protected mammals recorded from hectads L85 and L84 are provided in Table 3-1.

Table 3-1 NBDC records for mammal species recorded in hectads L85 and L84

Common Name	Scientific Name	Designation	Hectad
Daubenton's Bat	<i>Myotis daubentonii</i>	HD Annex IV, WA	L84, L85
Eurasian Badger	<i>Meles meles</i>	WA	L84, L85
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	WA	L84, L85
European Otter	<i>Lutra lutra</i>	HD Annex II, IV, WA	L84, L85
Fallow Deer	<i>Dama dama</i>	WA	L84
Irish Hare	<i>Lepus timidus</i> subsp. <i>hibernicus</i>	WA	L84, L85
Lesser Noctule	<i>Nyctalus leisleri</i>	HD Annex IV, WA	L84, L85
Pine Marten	<i>Martes martes</i>	WA	L84, L85
Red Deer	<i>Cervus elaphus</i>	WA	L84, L85
Red Fox	<i>Vulpes vulpes</i>	WA	L84, L85
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	HD Annex IV, WA	L84, L85
Irish Stoat	<i>Mustela erminea</i> subsp. <i>hibernica</i>	WA	L85
Wood Mouse	<i>Apodemus sylvaticus</i>	WA	L84
American Mink	<i>Mustela vison</i>	Regulation S.I. 477 (Ireland)	L84, L85

HD = EU Habitats Directive; WA = Wildlife Acts (Ireland).

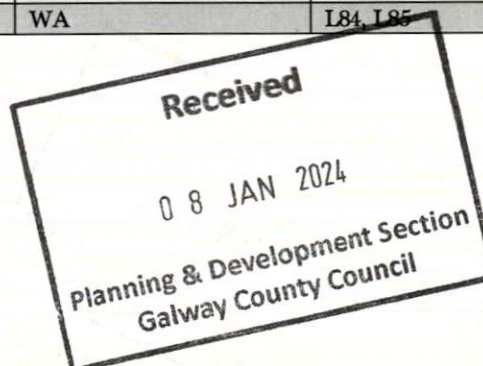
##### 3.1.2 NPWS

National Parks and Wildlife Service (NPWS) online records were searched to see if any rare or protected species of flora or fauna have been recorded from hectads L85 and L84. An information request was also sent to the NPWS scientific data unit to inform the Biodiversity chapter of the submitted EIAR, requesting records from the Rare and Protected Species Database on the 24th of October 2022. A response was received on the 28th of October 2022. Table 3-2 lists rare and protected terrestrial mammal records obtained from NPWS.

Table 3-2 NPWS records for rare and protected mammal species

Common Name	Scientific Name	Designation	Hectad
Irish Hare	<i>Lepus timidus</i> subsp. <i>hibernicus</i>	WA	L84, L85
Eurasian Badger	<i>Meles meles</i>	WA	L84, L85
European Otter	<i>Lutra lutra</i>	HD Annex II, IV, WA	L84, L85
Pine Marten	<i>Martes martes</i>	WA	L84, L85
Red Deer	<i>Cervus elaphus</i>	WA	L84, L85

HD = EU Habitats Directive; WA = Wildlife Acts (Ireland).



## Results of field surveys

The suitability of the Proposed Project site was assessed to potentially support multiple species of mammal.

No evidence of badger, otter or red squirrel was identified during the surveys carried out in 2021 and 2022. However, it was determined that these species are likely to occur within the EIAR Study Area, at least on occasion, as the site provides suitable habitat for all three. Lough Inagh and Derryclare Lough, adjacent to the Proposed Project site, provide suitable breeding, resting, foraging, and commuting habitat for otter. However, no evidence of otter was recorded. Red squirrel was translocated into the Derryclare Nature Reserve in 2005, which is directly adjacent to the Proposed Project site.

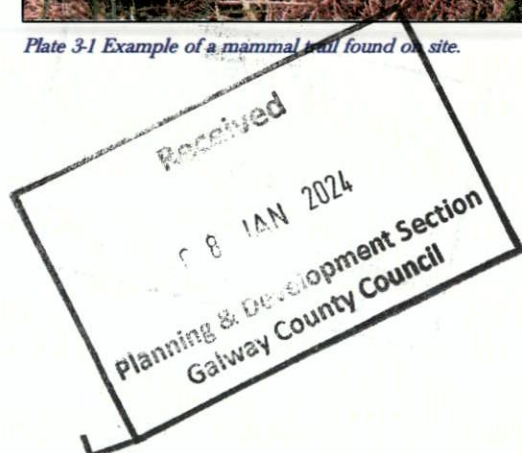
No significant mammal activity was recorded within the site boundary during the targeted mammal surveys undertaken in July 2023. While some indications of mammals using the site were recorded (tracks, trails, scats, feeding remains), the presence of badger (*Meles meles*), fox (*Vulpes vulpes*), red deer (*Cervus elaphus*), red squirrel (*Sciurus vulgaris*), and pine marten (*Martes martes*) was confirmed via trail cameras.

No mammal breeding sites were recorded during any surveys carried out in 2021, 2022, and 2023, including setts, dreys, or holts.

Multiple mammal trails were recorded within both mixed broadleaved woodland and conifer plantation habitat within the site boundary. Plate 3-1 shows an example of a distinct mammal trail located within an area of mixed woodland.



Plate 3-1 Example of a mammal trail found on site.



### 3.3

## Results of trail camera survey

A total of five mammal species were recorded on the seven trail cameras distributed within the site boundary over 14 days. These species include badger (*Meles meles*), fox (*Vulpes vulpes*), red deer (*Cervus elaphus*), red squirrel (*Sciurus vulgaris*), and pine marten (*Martes martes*).

Images of the mammal species recorded on the trail cameras are available in Plates 3-2 to 3-6 below.



Plate 3-2 Badger (*Meles meles*) recorded on trail camera 1397.



Plate 3-3 Fox (*Vulpes vulpes*) recorded on trail camera 1397.



Plate 3-4 Red squirrel (*Sciurus vulgaris*) recorded on trail camera 1300.



Plate 3-5 Red deer (*Cervus elaphus*) recorded on trail camera 1397.



Plate 3-6 Pine marten (*Martes martes*) recorded on trail camera 1304.

Received

08 JAN 2024

Planning & Development Section  
Galway County Council

4.

## IMPACT ASSESSMENT ON MAMMALS

Otter and red squirrel were included as Key Ecological Receptors (KERs) in the Biodiversity chapter of the submitted EIAR and thus, were included in the impact assessment. Impacts assessments for these species were undertaken in the Biodiversity chapter of the submitted EIAR. In light of this RFI, these have been amended and have been included in this report. In addition, taking a precautionary approach and in light of the results of the targeted mammals surveys undertaken in response to the RFI, both badger and pine marten have been included in the assessment and are detailed in this section.

While the targeted surveys confirmed the presence of deer within the EIAR Study Area, these species are highly mobile and suitable habitat is widespread in the wider environment and therefore, have not been identified as KERs.

4.1

### Effects on Mammals During Construction

The Proposed Project aims to restore approximately 281 ha of peatland habitat and plant 62.26 ha of native woodland within the site boundary. This represents a positive impact on these habitats within the site, and in turn, will result in enhanced habitat for mammals with the provision of favoured native woodland. In order to facilitate the proposed restoration project, the Proposed Project will involve the felling/loss of approximately 343 ha of conifer plantation/recently felled conifer woodland habitats. The construction phase of the Proposed Project has the potential to result in habitat loss/degradation and disturbance impacts on faunal species that were recorded on the site. These potential impacts are assessed in the following tables.

4.1.1

### Assessment of Potential Effects on Otter

Table 4-1 Assessment of Potential Impacts on Otter

Description of Effect	<b>Habitat Loss/ Degradation</b>  The felling and construction activities associated with the Proposed Project have the potential to result in deterioration of water quality within and downstream of the Proposed Project site. Deterioration of water quality, which could result in degradation of otter foraging habitat, is considered in 6.7.2.3.2 of the Biodiversity of the submitted EIAR and is not repeated in this section. No otter resting or breeding sites were identified within the site and there will be no loss of otter breeding habitat. There are no instream works proposed as part of the Proposed Project.
	<b>Disturbance</b>  Although no signs of breeding otter, including holts, slides, and couches, were recorded within the Proposed Project site, Lough Inagh and Derryclare Lough, which are adjacent to the Proposed Project site, provide potential suitable breeding, resting, and foraging habitat for otter.  Taking the precautionary approach, the construction phase of the Proposed Project has the potential for some localised disturbance to otter resulting from noise and increased anthropogenic activities.
Characterisation of unmitigated effect	<b>Habitat Loss/ Degradation</b>  The potential for degradation of otter habitat due to deterioration of water quality is assessed in the response document to Item 2c of the RFI, where potential for impacts on water quality is reconsidered.
	<b>Disturbance</b>

Received  
08 JAN 2024  
Planning & Development Section  
Galway County Council

	In the absence of mitigation and best practice measures, and taking the precautionary approach, there is potential for the construction phase of the Proposed Project to result in short-term slight impacts on otter.
Assessment of Significance prior to mitigation	<b>Habitat Loss/Degradation</b>  The potential for degradation of otter habitat due to deterioration of water quality is assessed in the response document to Item 2c of the RFI, where potential for impacts on water quality is reconsidered.
	<b>Disturbance</b>  There is no potential for significant effects on otter species as a result of disturbance.
Mitigation	<b>Habitat Loss/Degradation</b>  Whilst Sections 5.1.1.3.1 and 6.7.2.2.1 of the submitted NIS and the Biodiversity Chapter of the EIAR, respectively, have provided mitigations against potential pathways for impacts on water quality, a draft Best practice Operational Guidelines for Blanket Bog Restoration in Ireland has been prepared by Coillte in response to the RFI from GCC and will be applied to each individual felling block associated with the Proposed Project. This document provides for specific measures to be implemented during felling operations based on peat and soil depths and stabilities, felling block gradients, and distances from watercourses whilst implementing the precautionary principle.
	<b>Disturbance</b>  Otter is predominantly crepuscular in nature and are unlikely to be adversely impacted by the proposed works. Construction activity will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The NPWS Threat Response Plan for Otter acknowledges that "Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure." It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.  Channin P (2003) <sup>1</sup> provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993). (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.  Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "the lowest percentage occurrence was found at the sites with the lowest recorded disturbance!" Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006).  Based on the above review of scientific literature and on the best practice disturbance limitation measures included below the potential for adverse impact on the integrity of the Otter population associated with the Twelve Bens/Garraun Complex SAC [002031] as a result of the construction and operational phases of the Proposed Project can be excluded.

Received

08 JAN 2024

Planning & Development Section  
Galway County Council

	<p>No disturbance related impacts on otter will therefore occur.</p> <p><b>Best practice disturbance limitation measures.</b></p> <ul style="list-style-type: none"> <li>• All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments.</li> <li>• Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use.</li> <li>• Operating machinery will be restricted to the Proposed Project site boundary.</li> <li>• It is expected that works will occur during normal working hours which will be agreed with the local authority in consultation with the appointed contractor prior to works commencing.</li> <li>• Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the Proposed Project, and consequently on fauna of conservation value including otter.</li> </ul>
<p><b>Residual Effect following Mitigation</b></p>	<p>Following the implementation of the mitigation measures as described above, there will be no significant residual effect on otter.</p>

Received  
08 JAN 2024

Planning & Development Section  
Galway City Council

## Assessment of Potential Effects on Red Squirrel

Table 4-2 Assessment of Potential Impacts on Red Squirrel

<p><b>Description of Effect</b></p>	<p><b>Habitat Loss/ Degradation</b></p> <p>Red squirrel is known to occur within the Proposed Project site and the site provides suitable habitat for red squirrel. The felling activities associated with the Proposed Project have the potential to result in the loss/degradation of suitable habitat for red squirrel within the proposed restoration site.</p> <p><b>Disturbance</b></p> <p>Activities associated with the Proposed Project include the felling of conifer plantations, habitat restoration and enhancement, upgrading of existing road and construction of new access roads, temporary water crossings, the resurfacing of an existing carpark and fencing. These activities all require the use of heavy machinery and increased anthropogenic activity. There is, therefore, potential for the Proposed Project to result in disturbance to red squirrel, potentially resulting in mortality to juveniles.</p>
<p><b>Characterisation of unmitigated effect</b></p>	<p><b>Habitat Loss/ Degradation</b></p> <p>Given the abundance of suitable habitat in the wider area, the retention of large sections of 2<sup>nd</sup> rotation forestry, the sequential approach to the felling activities (20 felling blocks over 5 years), the development of mixed conifer/native woodland via natural regeneration, and the proposed planting of 62.26 ha of permanent native woodland within the site, the Proposed Project has potential to result in a permanent slight negative effect on red squirrel.</p> <p><b>Disturbance</b></p> <p>Taking a precautionary approach, the potential for disturbance of red squirrel as a result of felling and construction activities is assessed as a slight short-term negative effect and the effect is reversible given the temporary nature of the works. The</p>

	<p>magnitude of this impact has the potential to be moderate if the works result in mortality of juveniles.</p>
Assessment of Significance prior to mitigation	<p><b>Habitat Loss/ Degradation</b></p> <p>There is no potential for significant effects on red squirrel as a result of habitat loss.</p> <p><b>Disturbance</b></p> <p>There is potential for significant effects on red squirrel as a result of disturbance from the construction phase of the Proposed Project.</p>
Mitigation	<p><b>Habitat Loss/ Degradation</b></p> <p>Following a precautionary approach, a pre-commencement red squirrel survey for each felling block will be carried in advance of felling, to identify whether any breeding red squirrel or dreys are located within that felling block. Surveys will be carried out as per NRA guidance (NRA, 2009, Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority).</p> <p>Should active dreys be identified within the felling block to be felled, the following mitigations and best practice procedures will be followed to ensure that no breeding red squirrel sites are impacted:</p> <ul style="list-style-type: none"> <li>• Buffer zones of 50 meters will be established around the breeding sites during the breeding seasons (February to September inclusive).</li> </ul> <p>Additionally, the following measures will be followed on a precautionary basis:</p> <ul style="list-style-type: none"> <li>• As the proposed felling will result in a temporary reduction of food resources, supplementary feeding of red squirrel will be carried out.</li> </ul> <p>The proposed restoration project will include the replanting of 62.26 ha of native scrub woodland, which will potentially result in a permanent significant positive effect on red squirrel as it will provide suitable habitat for this species.</p> <p><b>Disturbance</b></p> <p>Disturbance limitation measures will be adhered to, which include the following:</p> <ul style="list-style-type: none"> <li>• All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments.</li> <li>• Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use.</li> <li>• Operating machinery will be restricted to the Proposed Project site boundary.</li> <li>• It is expected that works will occur during normal working hours which will be agreed with the local authority in consultation with the appointed contractor prior to works commencing.</li> <li>• Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the Proposed Project, and consequently on fauna of conservation value.</li> </ul>
Residual Effect following Mitigation	<p>Following the implementation of the mitigation measures as described above, there will be no significant residual effect on red squirrel. The Proposed Project will not result in significant habitat loss for this species and provided disturbance limitation measures are followed, there will be no significant impacts via disturbance.</p>

08 JAN 2024  
Planning & Development Section  
Galway County Council

Received

08 JAN 2024

Planning & Development Section  
Galway County Council

4.1.3

## Assessment of Potential Effects on Badger and Pine Marten

Table 4-3 Assessment of Potential Impacts on badger and pine marten.

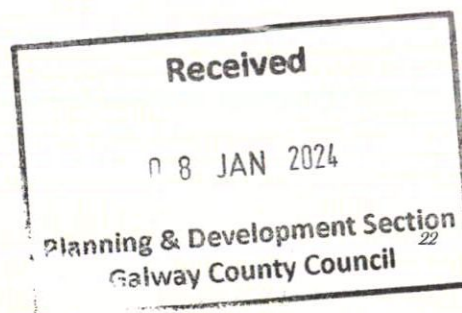
Description of Effect	<p><b>Habitat Loss/ Degradation</b></p> <p>Both badger and pine marten are known to occur within the Proposed Project site and the site provides suitable habitat for both species. The felling activities associated with the Proposed Project have the potential to result in the loss/degradation of suitable habitat for these species within the proposed restoration site. <b>No badger or pine marten breeding sites were identified within the site.</b></p> <p><b>Disturbance</b></p> <p>Activities associated with the Proposed Project include the felling of conifer plantations, habitat restoration and enhancement, upgrading of existing road and construction of new access roads, temporary water crossings, the resurfacing of an existing carpark and fencing. These activities all require the use of heavy machinery and increased anthropogenic activity. There is, therefore, potential for the Proposed Project to result in disturbance to badger and pine marten, potentially resulting in mortality to juveniles.</p>
Characterisation of unmitigated effect	<p><b>Habitat Loss/ Degradation</b></p> <p>Given the abundance of suitable habitat in the wider area, the retention of large sections of 2<sup>nd</sup> rotation forestry, the sequential approach to the felling activities (20 felling blocks over 5 years), the development of mixed conifer/native woodland via natural regeneration, and the proposed planting of 62.26 ha of permanent native woodland within the site, the Proposed Project has potential to result in a permanent slight negative effect on badger and pine marten.</p> <p><b>Disturbance</b></p> <p>Taking a precautionary approach, the potential for disturbance of badger and pine marten as a result of felling and construction activities is assessed as a slight short-term negative effect and the effect is reversible given the temporary nature of the works. The magnitude of this impact has the potential to be moderate if the works result in mortality of juveniles.</p>
Assessment of Significance prior to mitigation	<p><b>Habitat Loss/ Degradation</b></p> <p>There is no potential for significant effects on badger and pine marten as a result of habitat loss.</p> <p><b>Disturbance</b></p> <p>There is potential for significant effects on badger and pine marten as a result of disturbance from the construction phase of the Proposed Project.</p>
Mitigation	<p><b>Habitat Loss/ Degradation</b></p> <p>Following a precautionary approach, a pre-commencement badger and pine marten survey for each felling block will be carried in advance of felling, to identify whether any breeding badger and pine marten, and their associated habitats are located within that felling block. Surveys will be carried out as per NRA guidance (NRA, 2009, Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of</p>

	<p>National Road Schemes. Dublin: National Roads Authority, and NRA, 2006, <i>Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes</i>. National Roads Authority).</p> <p>Should active breeding sites for either species be identified within the felling block to be felled, the following mitigations and best practice procedures will be followed to ensure that no breeding badger or pine marten sites are impacted:</p> <ul style="list-style-type: none"> <li>• Buffer zones of 50 meters will be established around the breeding sites during the breeding seasons.</li> <li>• These exclusion zones will remain unfelled or will be managed as per guidance set out in the Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (NRA 2006).</li> </ul> <p>The proposed restoration project will include the replanting of 62.26 ha of native scrub woodland, which will potentially result in a permanent significant positive effect on badger and pine marten as it will provide suitable habitat for this species.</p> <p><b>Disturbance</b></p> <p>Disturbance limitation measures will be adhered to, which include the following:</p> <ul style="list-style-type: none"> <li>• All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments.</li> <li>• Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use.</li> <li>• Operating machinery will be restricted to the Proposed Project site boundary.</li> <li>• It is expected that works will occur during normal working hours which will be agreed with the local authority in consultation with the appointed contractor prior to works commencing.</li> <li>• Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the Proposed Project, and consequently on fauna of conservation value.</li> </ul>
<p><b>Residual Effect following Mitigation</b></p>	<p>Following the implementation of the mitigation measures as described above, there will be no significant residual effect on badger and pine marten. The Proposed Project will not result in significant habitat loss for this species and provided disturbance limitation measures are followed, there will be no significant impacts via disturbance.</p>

4.2

## Effects on Mammals During Operation

The operation of the Proposed Project will not result in any additional habitat loss or deterioration for faunal species, nor will it result in an increase in anthropogenic activity. There is no potential for significant negative effects on mammals during the operational phase of the project. The increase in native broadleaved woodland habitat area has potential to have a positive impact on mammal species by providing additional areas of suitable habitat.



5.

## CONCLUSIONS

No significant mammal activity was recorded within the footprint of the Proposed Project during the multispecies mammal walkover surveys undertaken. However, recordings from the trail cameras deployed throughout the site confirmed that the site is used by a range of mammal species including badger (*Meles meles*), otter (*Lutra lutra*), red squirrel (*Sciurus vulgaris*), fox (*Vulpes vulpes*), pine marten (*Martes martes*), and red deer (*Cervus Elaphus*). Although no breeding sites for any species was recorded, taking a precautionary approach, mitigations have been provided, both in this mammal report and in the Biodiversity chapter of the submitted EIAR, to block any potential pathways for effect on these species. Following the implementation of these mitigations, there is no potential for significant residual impact on any mammal species, as a result of the Proposed Project.



## BIBLIOGRAPHY

Bang, P and Dahlstrom, P. (2004). *Animal tracks and signs*. Oxford University press.

FRSF, 2023. The Fermanagh Red Squirrel Group (FRSG) [Accessed 28/09/2023 Online:  
<https://www.fermanaghredsquirrelgroup.com/squirrelfacts/ecology#:~:text=Habitat,and%20where%20food%20is%20plentiful>

Harris, S., Cresswell, P, & Jefferies, D. (1989) Surveying Badgers, The Mammal Society, London.

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.

NRA (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin, Ireland.

Smal, C., 1995. *The Badger and habitat survey of Ireland*. Dublin: The Stationery Office.

SNH (2003) Best Practice Badger Survey Guidance Note.

Waters, C. & Lawton, C. (2011) Red Squirrel Translocation in Ireland. Irish Wildlife Manuals, No. 51. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, 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.

