

# **Tullaghoge Fort Access and Interpretation Study**

October 2023

Prepared by

Outdoor Recreation NI and Tandem Design

*on behalf of Mid Ulster District Council*



Tandem™



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## 1 Introduction

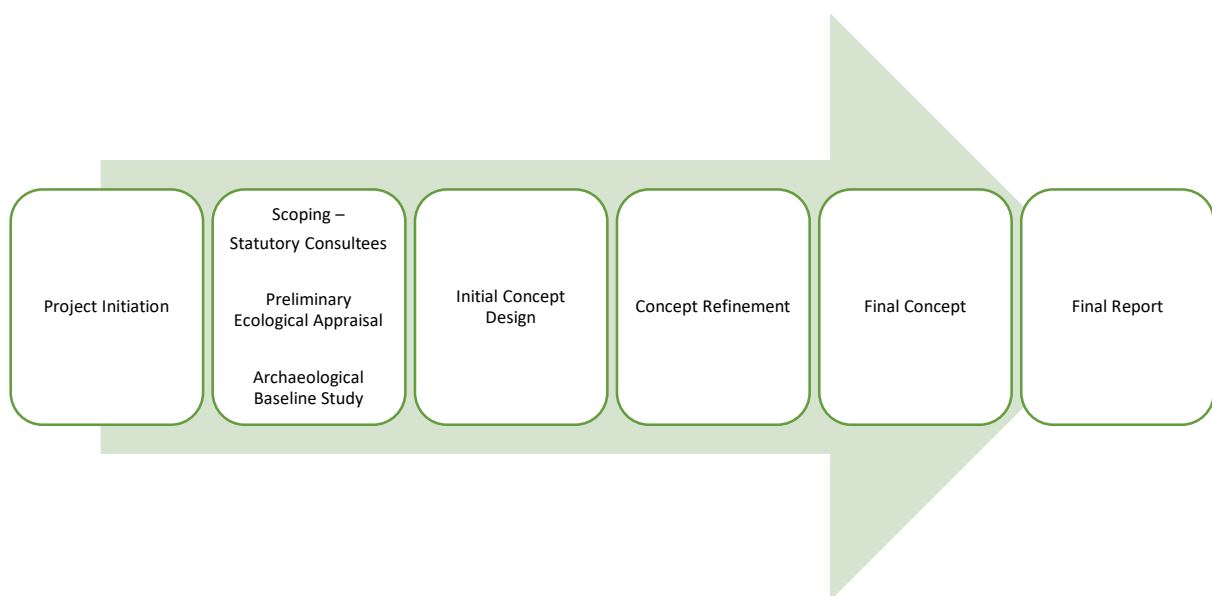
Outdoor Recreation NI (ORNI) have been appointed by Mid Ulster District Council (MUDC) to undertake a feasibility study to investigate expansion of access at Tullaghoge Fort through the development of new pathways and to explore the development of new and innovative interpretation opportunities within the site.

This study -

- Examines the viability of introducing new pathways within the publicly owned land at Tullaghoge Fort, identifying potential trail developments and associated infrastructure etc.
- Assesses the interpretation options for the new pathway and investigates new innovative approaches to the interpretation of a recently discovered historic settlement at Tullaghoge.
- Required consultation with relevant stakeholders to ensure that development of visitor infrastructure and interpretation met both local needs and statutory requirements.
- Provides recommendations and indicative costs for pathway options, interpretation options with rationale and supportive mapping.
- Provides project detail to RIBA stage 2 (concept design stage) and includes relevant investigative studies (Preliminary Ecological Appraisal and Archaeological Baseline Survey).

## 2 Methodology

The methodology below was followed with regards the access elements of the project. Tandem Design completed the interpretation elements of the project, please see Section 5 for further detail.



## 2.1 Scoping

There are several opportunities and constraints which could impact the design – these are as identified below:

### *Statutory Consultees*

The key statutory consultee is the Department of Communities Historic Environment Division (DoC HED - owners of Tullaghoge Fort and surrounds). Representatives from HED State Care and Planning Development Teams were engaged with throughout the scoping and design process.

### *Preliminary Ecological Appraisal Report (PEAR)*

ORNI engaged the service of David Smith (CIEEM Accredited Ecologist, Ulster Wildlife Trust) to undertake a Preliminary Ecological Appraisal. This included an assessment of the ecological features present, within the site and its surrounding area (the zone(s)) of influence in relation to the proposed trail. An overview of findings can be found in Section 3.3 and the full PEAR viewed in Appendix 1.

### *Archaeological Baseline Study*

ORNI engaged the services of ‘Northern Archaeological Consultancy’ to undertake an Archaeological Baseline Survey with a focus on the proposed development site to highlight the specific archaeological potential of the route, potential physical impacts of proposed developments both in terms of access and interpretation interventions, any potential design constraints, and likely mitigation. An overview of findings can be found in Section 0 and the full report viewed in Appendix 2.

## 2.2 Initial Concept Design

Informed by previous knowledge of the site and additional fieldwork, ORNI used GIS mapping to develop the concept trail design. The concept trail design was supported by initial interpretation options as prepared by Tandem Design. These outputs were presented to MUDC and approval was received before proceeding to concept refinement.

## 2.3 Concept Refinement

Following feedback from the concept design and further consultation with HED regarding on-site opportunities, the concept design was refined to prepare high-level concept trail design. Please see Section 4 for design detail.



### 3 Site Description

#### 3.1 Land Ownership and Management

Tullaghoge Fort itself is a scheduled monument within State Care, meaning it is owned and managed by DoC HED. The surrounding field parcels are also under the ownership of HED. A parcel of land that is located at the entrance to the car park from the Tullywiggan Road, is owned by MUDC. See Figure 1, Figure 2 and Table 1 for an overview of land ownership and management details at Tullaghoge Fort.



Figure 1 Land ownership at Tullaghoge Fort

Land Parcel	Owned by	Managed by	Additional information
17	HED	MUDC	MUDC have a maintenance agreement with HED for the management of trails and related infrastructure within this land parcel. Grass mowing, hedge trimming and bin emptying are maintenance activities that MUDC undertake.
18B	HED	HED	Leased to local farmer on a 3-year grazing cycle. Current lease due to end March 2024.

<b>19A</b>	HED	HED	Leased to local farmer on a 3-year grazing cycle. Current lease due to end March 2024.
<b>19B</b>	HED	HED	Leased to local farmer on a 3-year grazing cycle. Current lease due to end March 2024.
<b>19C</b>	HED	MUDC	MUDC have a maintenance agreement with HED for the management of trails and related infrastructure within this land parcel.
<b>19D</b>	HED	HED	HED access lane to the fort.
<b>20</b>	HED	HED	Leased to local farmer on a 3-year grazing cycle. Current lease due to end March 2024.
Car park	HED/ MUDC	MUDC	Originally all owned by HED - MUDC bought additional lands for realignment of entrance to the site when previous works happened on site.

Table 1 Overview of land ownership and management at Tullaghoge Fort



Figure 2 Areas managed by MUDC through grass mowing

### 3.2 Current Use

The existing trail network can be seen in Figure 5. It consists of a meandering path leading gently uphill towards the fort itself. This path is 2m wide and consists of a fully bound surface that is suitable

for users of all abilities. Upon reaching the fort, the fully bound surface ends, and mown grass paths provide access to and around the fort (Figure 3). Two circular hedgerows are located on the outskirts of the fort. Open access on mown grass is available within the center of the fort, and a 2 m wide mown grass trail is provided between the two hedgerows. A mown grass surface is not classified as being suitable for users with limited mobility.

Public access to the rest of the site is not currently permitted or provided for. As discussed above, the remainder of the site is used for sheep grazing (Figure 4).

Trail and interpretive infrastructure on site includes a series of interpretation panels, sculptures, bins x2, seating and picnic areas plus basic waymarking. Field gates are also present throughout the site to provide access for maintenance vehicles as well as for agricultural access.

Within the car park there are 17 car parking spaces, two dedicated accessible parking spaces, plus a layby for use by groups or during organised events. Events have previously occurred on site that help interpret the history of the site, through storytelling and celebration.



Figure 3 Existing built trails on site and mown grass trails within the fort



Figure 4 Current land use within the site to the north, examples of current infrastructure





Figure 5 Existing Site Overview

### 3.3 Natural Heritage

Please see attached document 'Preliminary Ecological Appraisal Report'.

### 3.4 Built Heritage

Please see attached document 'Archaeological Baseline Survey'.

## 4 Concept Trail Design

### 4.1 Rationale

The concept trail design was shaped by the ground conditions, topography, vegetation cover, points of interest and extent of land available for public access. Building on this, the detailed recommendations were heavily influenced by the existing and future management and maintenance requirements of the site, based on the needs of both key stakeholders, HED and MUDC. A summary of consultation with HED and their requirements for the site are as follows:

- HED are broadly supportive of plans for additional access and interpretation at Tullaghoge (within the confines of suitable development at a State Care and Scheduled Monument).
- They are enthused by the potential of animating the Great Hall, plus further exploration and interpretation regarding the 'seat'.
- HED confirmed that trimming the hedges in the immediate vicinity of the fort, fell under their remit.
- Figure 2 shows the land parcels owned by HED at Tullaghoge. Parcels 18, 19 and 20 are currently leased in a 3-year grazing cycle, due to end in March 2024.
- The lease would either be renewed (or not), in its entirety i.e. one parcel would not be excluded from a future grazing lease.
- If the lease were not to be renewed for grazing, it could potentially be leased for cropping. This would be a hay crop taken twice per year – the land has been grazed for many years resulting in a nutrient poor soil – good for grassland meadow establishment.
- The farmer who currently leases the land for grazing, has previously stated he would also lease it for cropping. If this farmer did not want to lease it for cropping, HED are unsure if there would be demand to lease the site for this purpose and may look to MUDC to help with harvesting the crop or finding a tenant. Further detail to be explored.
- HED are willing to enter into a maintenance agreement with MUDC to open up land parcels 18, 19 and 20, for a series of mown grass paths and associated interpretation infrastructure to increase public access around the site and to features of built heritage interest.
- Potential new grass paths within the site total 1601m, plus the existing path network (1898m bound surface to the fort and grass paths within the fort), which equals a total potential network of 3499m.



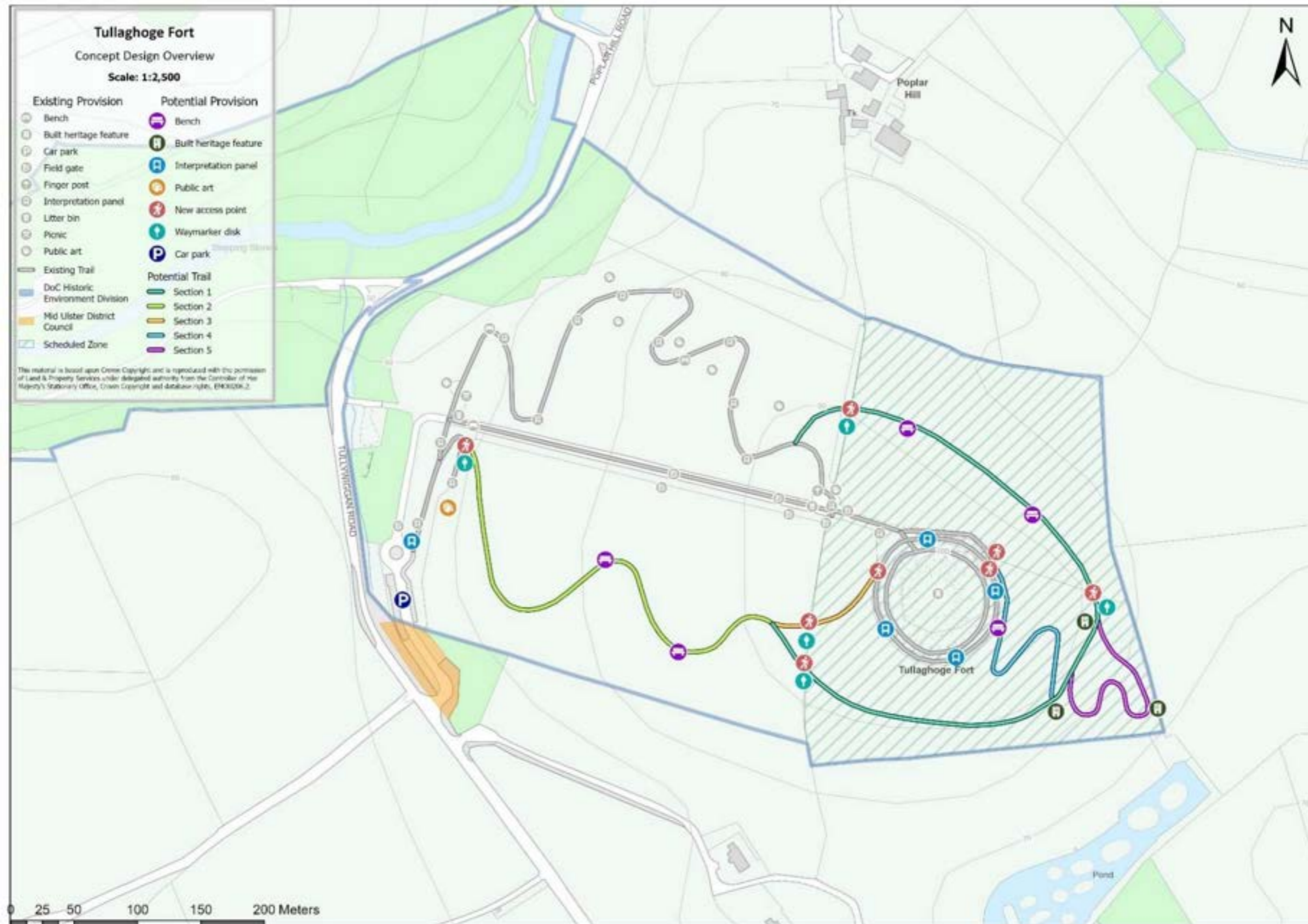



Figure 6 Map showing concept trail design detail

Section	Length (m)	Trail grade*	Trail type	Trail corridor description	Rationale	Works required	Infrastructure required
1	656	Category 4	1.5m wide mown grass path	Trail following the 90m contour around the fort from the north to the west via the eastern side of the hill. Minimal gradients. No drainage issues.	To provide access to previously inaccessible areas on site, feature of built heritage interest and to provide unobstructed 360° views of the surrounding countryside.	Make 2x 2m wide opening in existing fencing and species poor defunct hedge running 1) north and 2) south from turning circle. Make 2m wide opening in fence line running east on eastern side of fort. Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. Bench x2 to be placed on top of ground (no in ground works). No gates required. No drainage requirements.
2	209	Category 4	1.5m wide mown grass path	Trail travelling east from the fort to the site of the Great Hall and exit to the car park. It travels from the 90m contour to the 70m contour, resulting in a 23m drop in elevation over 200m. No drainage issues.	To provide access to the site of the 'Great Hall' directly from the fort, to provide the last trail section to achieve a looped walk and to provide access to previously inaccessible areas on site.	Make a 2m wide opening in fence line separating access trail to Great Hall to field parcel 19B. Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence post at opening. Bench x2 to be placed on top of ground (no in ground works). No gates required. No drainage requirements.
3	408	Category 4	1.5m wide mown grass path	Trail linking fort to return leg of trail. Minimal gradients. No drainage issues.	To provide a linkage for those who wish to complete a circular loop on site, by travelling to the fort and back again, i.e those who do not wish to travel down or across the slope the east of the fort.	Make 2x 2m wide opening in fence line separating field parcels 19B and 20, and field parcel 20 and the fort itself. Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. No gates required. No drainage requirements.
4	105	Category 4	1.5m wide mown grass path	Trail linking fort to Section 1 and on to Section 5. Steep gradients requiring several switch backs.	To provide access to previously inaccessible areas on site and for those who wish to visit the fort and then on to the three built heritage features on the eastern slope of the fort.	Make 2x 2m wide opening in fence line separating field parcels 19D and 20, and field parcel 20 and the fort itself (both on northeastern side of fort). Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. Bench x1 to be placed on top of ground (no in ground works). No gates required. No drainage requirements.



5	223	Category 4	1.5m wide mown grass path	Trail providing access from Section 1 to Section 5. Steep gradients requiring several switch backs.	To provide access to previously inaccessible areas on site and for those who wish to visit the third built heritage feature on the eastern slope of the fort.	Annual maintenance programme for grass mowing required.	None
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Table 2 Concept trail design overview

Section	Images
1	

2



3



4





5



Table 3 Images relating to concept design trail sections

## 5 Interpretation Options

Please see attached document 'Tullaghoge Fort - Interpretation experience extension'.

## 6 Estimated Costs

No.	Item	Description	Quantity	Rate	Cost	Incl. 10% contingency	Incl. 8.6% Inflation to 2024
<b>Pre-construction</b>							
1	Ecological works	See professional fees	1	0	£0	£0	£0
2	Archaeological works	See professional fees	1	0	£0	£0	£0
3	Interpretive Consultation and Design	Detailed consultation and design of all interpretive elements of project	1	25000	£25,000	£27,500	£29,865
<b>Pre-Planning Sub-Total</b>					<b>£25,000</b>	<b>£27,500</b>	<b>£29,865</b>
<b>Capital Costs</b>							
5	Access	New access points - contractor to make 6x 2m wide openings in existing fencelines, leave ground flat and reseeded if required.	1	1200	£1,200	£1,320	£1,434
6		Waymarker disks - design, production and supply	10	8	£80	£88	£96
7		Trailhead Panel - design, production and supply	1	1500	£1,500	£1,650	£1,792
8	Intepretation development **	Additional lecturns	2	3000	£6,000	£6,600	£7,168
9		Stone seats	2	10000	£20,000	£22,000	£23,892
10		Timber log seats	4	1000	£4,000	£4,400	£4,778
11		Wooden sculptures	5	1500	7500	8250	8959.5
12		Viewfinder/ Interpretation point	8	2000	16000	17600	19113.6
13		Great Hall - landscaping	1	15000	15000	16500	17919
14		AR Content Development	1	45000	45000	49500	53757
<b>Capital Sub-Total</b>					<b>£116,280</b>	<b>£127,908</b>	<b>£138,908</b>
<b>Professional Fees</b>							
	CPM Fee (9% of capital)			9% of capital	£10,465	£11,512	£12,762
	Ecological Clerk of Works	PEA completed at feasibility stage (1 year lifespan), work corridors to be surveyed at least one week prior to works starting, ECoW to review contractors method statement		N/A	£2,000	£2,200	£2,439
	Archaeological Clerk of Works	Archaeological Baseline Survey completed at feasibility stage,		N/A	£2,000	£2,200	£2,439
	Trail Design	RIBA Stage 3 design and detailed costings		5% of capital	£5,814	£6,395	£7,090
<b>Professional Fees Sub-Total</b>					<b>£20,279</b>	<b>£22,307</b>	<b>£24,730</b>
<b>TOTAL*</b>					<b>£161,559</b>	<b>£177,715</b>	<b>£197,015</b>
*costs provided are at a high level, are accurate at time of writing and do not allow for unpredictability in variations from time of report to undertaking capital works							
** Excludes hard landscaping, contractor prelims, groundworks							

Table 4 Estimated costs for access and interpretation proposals

Item	Detail	Existing (per annum)	Potential (per annum)
Grass cutting	1049m x 2m wide corridor = 2098m <sup>2</sup> x 10p x 18 cuts per year	£3,776.40	
	1601m x 1.5m wide corridor = 2401.5m <sup>2</sup> x 10p x 18 cuts per year		£4,322.70
Hedge cutting <sup>1</sup>	4no. operatives including equipment for to trim hedge x2 per year around the fort 16 hrs per year x £124.78 per hr	£1,996.48	
Bin emptying	£10 per hr x 0.5 x52wks	£260.00	
	<b>Subtotal</b>	<b>£6,032.88</b>	<b>£4,322.70</b>
	<b>Total</b>	<b>£10,355.58</b>	

Table 5 Maintenance costs for total trail network

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<sup>1</sup> Note that HED confirmed that cutting hedges around the fort itself, fell under their remit

## 7 Next Steps

To take all recommendations forward, a suitably qualified consultant(s) should be appointed to oversee a three-stage process to deliver the recommendations on the ground.

### Stage 1

- Obtain relevant landowner permissions, lease and maintenance agreements.
- Update ecological study if more than one year since it was completed.
- Appoint licensed Archeologist to:
  - Apply to HED for an 'Archaeological Excavation License'.
  - Apply to HED for 'Scheduled Monument Consent'.
  - Completion of a 'programme of works', submit to HED for assessment and approval.
- Commission and complete Interpretation Plan
- Detailed interpretation design
- If necessary, apply for funding.

### Stage 2 - CPM (1)<sup>2</sup>

- Complete RIBA Stage 3 design and detailed costings.
- Complete technical design for Interpretation elements.
- Prepare tender documentation and oversee procurement (to include Archaeological Clerk of Works (ACoW)).

### Stage 3 - CPM (2)<sup>3</sup>

- Administer the contract.
- Full project management of delivery on the ground.

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<sup>2</sup> CPM – Consultant Project Manager Role, undertake the role of Principal Designer in accordance with the CDM NI 2016 Regulations.

<sup>3</sup> CPM – Consultant Project Manager Role, undertake the role of Principal Designer in accordance with the CDM NI 2016 Regulations, including provision of a Health and Safety File on completion of works.



## Appendix 1 – Trail Category Descriptions

Key trail attributes	Category 4 Walking Trail
Description	<p>Category Four Walking Trails have variable gradients and surfaces and may be found in a very wide variety of environments including more remote upland sites.</p> <p>These are trails where access is more restricted by issues such as gradients, trail surfaces and the nature and size of trail features. This means these trails may not be suitable for use by all user groups at the same time. Category Four Walking Trails are suitable for the following users only:</p> <ul style="list-style-type: none"> <li>• Pedestrians – mixed ability walkers and runners</li> </ul> <p>Category Four Multi Use Trails are not suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Off-road cyclists</li> <li>• Equestrians – leisure and endurance riders</li> <li>• Those with limited mobility or impaired vision</li> <li>• Off road cyclists using bikes other than mountain bikes - not tag-alongs, trailers, child seats and stabilizers</li> <li>• Those with baby buggies</li> <li>• Novice equestrians</li> </ul>
Width	Refer to Section information.
Surface	Very variable and uneven including loose material, rocks, mud, gravel, soil, roots, grass, and other vegetation. Surfaces may change suddenly and vary over short distances.
Gradients	Average gradients of 10%, maximum gradients should not exceed 20% for not more than 50m.
Lines of Sight	Minimum 15m
Trail Features	<p>These trails can feature unexpected and sudden level changes caused by steps, roots, rocks, ditches, drains and water bars of not more than 300mm in relation to pedestrian only trails.</p> <p>Trails should include obstructions to prevent use by other trail users as shown in photographs below.</p> <p>Turns of up to 180 degrees.</p> <p>Grade reversals of not less than 2.5m length and not more than 1.5m depth.</p> <p>Boardwalks not less than 600mm wide and not more than 1500mm high above ground level.</p> <p>Bridges should be not less than 1m wide and should have handrails throughout if more than 1500mm high above ground level.</p> <p>May feature encroaching vegetation and have limited clearance in relation to trees etc.</p>
Suitable for	Walkers only

## Appendix 2 - Preliminary Ecological Appraisal Report

Please see attached document 'Tullaghoge Fort - Preliminary Ecological Appraisal Report'.

## Appendix 2 – Archaeological Baseline Study

Please see attached document 'Tullaghoge Fort - Archaeological Baseline Study'.

# Ulster Wildlife



<b>Report Title</b>	Updated Preliminary Ecological Appraisal Report	
<b>Site</b>	Tullaghoge Fort	
<b>Client</b>	Outdoor Recreation Northern Ireland (ORNI)	
<b>Date:</b>	October 2023	
<b>Report Reference:</b>	<b>UWT-RT-2023-25-02</b>	Ulster Wildlife Trust McClelland House 10 Heron Rd Belfast Northern Ireland BT3 9LE Tel: 028 9045 4094  E-mail: <a href="mailto:david.smith@ulsterwildlife.org">david.smith@ulsterwildlife.org</a>
<b>Date Submitted:</b>	<b>October 2023</b>	
<b>Principal Contact:</b>	<b>David Smith</b>	

## REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	26/10/2023	David Smith BSc Ecology, MCIEEM	Dr Peter McEvoy MCIEEM Director of Land Use UWT	Jennifer Fulton Chief Executive UWT

The information which we have prepared is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

## DISCLAIMER

The contents of this report are the responsibility of Ulster Wildlife Trust. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Ulster Wildlife Trust accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

## VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, it may be necessary to undertake an updated survey to allow any changes in the status of bats on site to be assessed, and to inform a review of the conclusions and recommendations made.

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## 1. INTRODUCTION

### 1.1 PROJECT BACKGROUND

Tullaghoge Fort is a large mound on the outskirts of Tullyhogue village near Cookstown, County Tyrone, Northern Ireland. which is an ancient ceremonial site where the Chiefs of the Clan O'Neill of Tyrone were inaugurated.

### 1.2 SCOPE OF THIS REPORT

This PEAR:

- Provides baseline information on current habitats and ecological features;
- Identifies the presence or potential presence of any protected species or habitats and provides an appraisal of any potential effects the development may have on these;
- Identifies the proximity of any sites designated as being of nature conservation interest and provides an appraisal of any potential effects the development may have on these;
- Provide recommendations for habitat enhancement and species features; and,
- Consideration of options for net environmental gain / compensation.

In October 2023 the client (Outdoor Recreation NI) provided an amended proposed trail drawing (See Drawing: Tullaghoge Revised Existing and Potential Trails V2) and this updated report takes these additional access routes into consideration. The amended proposal reflected opportunities and recommendations received from Historic Environment Division (HED).

### 1.3 SITE DESCRIPTION AND CONTEXT

The site is located off the Sessiagh Rd to the north of Tullyhogue, County Tyrone (National Grid Reference: NV95101 34151).

The fort lies on top of a hill and is dominated by mature broadleaved trees with amenity grass and surrounded by two concentric rings of hedgerows. The landscape surrounding the fort is sheep grazed grassland with fences and hedgerows.

### 1.4 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by ORNI regarding the scope of the project. Documentation made available by ORNI is listed in Table 1.1.

Document Name / Drawing Number	Author
Request for Quotation – PEAR	ORNI (2023)

Table 1.1: Documentation Provided by Client

## 2. METHODOLOGY

### 2.1 DESK STUDY

A desk study search was undertaken by David Smith in August 2023 to collect ecological data with respect to the site and a surrounding buffer zone of 2 km.

A list of sources is given in Table 2.1 below.

Data Source	Information
NIEA Natural Environment Map Viewer (Online GIS tool)	Statutory designated site locations and citations
NI Planning Websites (Council Development Plans)	Non-statutory designated site locations and citations
NBN Atlas website <a href="https://nbnatlas.org/">https://nbnatlas.org/</a>	Distribution of noteworthy species
Local Biodiversity Action Plans	Details of species and habitats listed on the LBAP

**Table 2.1: Summary of Data Sources**

The above information was reviewed by David Smith in March 2023 by reference to the:

- CEDaR at National Museums Northern Ireland (NMNI)
- NBN Atlas

A search was made for information on statutory designated sites and non-statutory designated sites within 2km of the site boundary. A search was also made for records of noteworthy species within the same 2km area. Species included in the search parameters are:

- European Protected Species (listed on Schedules 2 and 4 of The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995;
- Nationally protected species under Schedules 5 and 8 of The Wildlife (Northern Ireland) Order 1985 and the Wildlife & Natural Environment (WANE) Act 2011;
- Species listed as critically endangered, endangered or vulnerable based on the IUCN Red List Categories and Criteria 2001;
- Irish Red Data Book (RDB) species classed as critically endangered (CR), Endangered (EN) or Vulnerable (VU);
- Red-listed species in either Birds of Conservation Concern in Ireland (BOCCI) or the UK Birds of Conservation Concern (UK BOCC) lists;
- Nationally rare or nationally scarce species;
- Invasive species listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 and the Wildlife & Natural Environment (WANE) Act 2011. It is an offence under Article 15 to plant or otherwise cause to grow in the wild any species of plant and animal listed on Schedule 9 Part I and Part II of the Wildlife (Northern Ireland) Order 1985 (as amended).
- Notable invertebrates; and
- Priority species under the local biodiversity action plan.

The data collected from the consultees is provided in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data is not provided within this report.



## **2.2 PHASE 1 HABITAT SURVEY**

The walkover survey was conducted following the Phase 1 Habitat Survey methodology of the Joint Nature Conservation Committee (JNCC, 2010) and the Institute of Environmental Assessment (IEA, 1995). Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are present on site. During the survey, the presence, or potential presence, of protected species was noted.

Whilst every effort is made to notify the client of any plant species listed on Schedule 9 of the Wildlife (NI) Order 1985 present on site, it should be noted that this is not a specific survey for these species.

Data recorded during the field survey are discussed in Chapter 4.

### 3. DESK STUDY

The results from the desk study are provided in Sections 3.1 to 3.4.

#### 3.1 DESIGNATED NATURE CONSERVATION SITES

##### 3.1.1 Internationally Important Sites

There are no internationally designated sites within 2 km of the fort.

##### 3.1.2 Nationally Designated Sites

The Nationally designated sites are summarised in Table 3.1 below.

Site	Grid Reference and distance from Site	Notes
Ballysudden ASSI	NV93230 34520 1.8 km to the west	The Carboniferous outcrop at Ballysudden exposes over 100m of strata in a continuous section. It is the best section of the late Visean rocks of the Armagh Group in Northern Ireland.

**Table 3.1: Summary of Nationally Designated Sites**

##### 3.1.3 Non-Statutory Designated Sites

There are no non-statutory designated sites within 2 km of the site boundary.

#### 3.2 NORTHERN IRELAND PRIORITY HABITATS

**Peatland Habitat:** 1.6 km to the northeast of the fort.

**Woodland Habitat:** 360 m to the west of the fort.  
360 m to the northwest of the fort.

#### 3.3 EUROPEAN AND NATIONALLY PROTECTED SPECIES AND NORTHERN IRELAND PRIORITY SPECIES

##### 3.3.1 Mammals

A summary of the Northern Ireland Priority Species (mammals), European Protected Species and Invasive Non-Native Species recorded on the NBN Atlas is to be found in Table 3.2.

Common name	Scientific name	Distance from site	Designations
<b>Hedgehog</b>	<i>Erinaceus europaeus</i>	200 m to the east	Bern Convention Appendix 3, GB Red List (VU), Wildlife (NI) Order Schedule 6 and 7
<b>Otter</b>	<i>Lutra lutra</i>	450 m to the west	Europe Red List (NT), Global (NT), Habitats Directive Annex 2 and 4, Wildlife (NI) Order Part 1 Schedule 6 and 6A
<b>Pine marten</b>	<i>Martes martes</i>	550 m north of the site	Habitats Directive Annex 5, Wildlife (NI) Order Schedule 5, 6, 6A and 7
Grey squirrel*	<i>Sciurus</i>	800 m north of the site	
<b>Northern Ireland Priority Species are in bold</b>			
*Invasive non-native species			

**Table 3.2: Summary of mammal records within 2 km of the site**

### Badgers

There are two badger *Meles meles* records, one 890 m north and one 975 m west returned from CEDaR.

### 3.3.2 Birds

The relevant Northern Ireland Priority Species recorded within 2 km of the site are summarised in Table 3.3 below. All bird records associated with aquatic habitats have been omitted.

This included species protected under the Wildlife (NI) Order 1985, UK Biodiversity Action Plan, the Convention on Migratory Species, Red data categories, the Bern Convention and the Birds Directive.

Common name	Scientific name	Designation
<b>Lesser redpoll</b>	<i>Acanthis cabaret</i>	BoCC5 Red
<b>Meadow pipit</b>	<i>Anthus pratensis</i>	IUCN (VU), Birds Directive Annex 2.1 and 3
<b>Swift</b>	<i>Apus apus</i>	IUCN (EN), BoCC5 Red
<b>Corncrake</b>	<i>Crex crex</i>	BoCC5 Red, Birds Directive Annex 1, Bern Convention Appendix 2, Wildlife (NI) Order Schedule 1 Part 1
<b>Linnet</b>	<i>Linaria cannabina</i>	BoCC5 Red, Bern Convention Appendix 2
<b>Spotted flycatcher</b>	<i>Musciicapia striata</i>	ECCITES-A, IUCN (NT), BoCC5 Red, Bern Convention Appendix 2, Wildlife (NI) Order Schedule 1 Part 1
<b>House sparrow</b>	<i>Passer domesticus</i>	BoCC5 Red
<b>Tree Sparrow</b>	<i>P. montanus</i>	IUCN (VU), BoCC5 Red, Wildlife (NI) Order Schedule 1 Part 1
<b>Starling</b>	<i>Sturnus vulgaris</i>	IUCN (VU), BoCC5 Red, Birds Directive Annex 2.2
<b>Redwing</b>	<i>Turdus iliacus</i>	Bird-Red, BirdsDir-A2.2, NIPS, Scottish Biodiversity List, WACA-Sch1_part1
<b>Mistle thrush</b>	<i>T. philomelos</i>	IUCN (NT), BoCC5 Red, Birds Directive Annex 2.2
<b>Fieldfare</b>	<i>T. pilaris</i>	IUCN (CR), BoCC5 Red, Birds Directive Annex 2.2
<b>Song thrush</b>	<i>T. viscivorus</i>	IUCN (LC), BoCC5 Amber, Birds Directive 2.2
<b>Barn owl</b>	<i>Tyto alba</i>	IUCN (LC), BoCC5 Green, Bern Convention Appendix 2, Wildlife (NI) Order Schedule A1, Schedule 1 Part 1
<b>Northern Ireland Priority Species are in bold</b>		

Table 3.3: Northern Ireland Priority Bird Species within 2km of the application site

### 3.3.3 Amphibians and Reptiles

There are no amphibia nor reptile records close to the site.

### 3.3.4 Invertebrates

The following invertebrates in Table 3.4 have been recorded within 2 km of the fort.

Common name	Scientific name	Designation	Distance from site
<b>Marsh Pug</b>	<i>Eupithecia pygmaeta</i>	Irish Red List (VU)	825 m NE from site
<b>Bordered Pug</b>	<i>E. succenturiata</i>	Irish Red List (VU)	825 m NE from site

Table 3.4: Northern Ireland Priority Bird Species within 2km of the application site

### 3.4 INVASIVE NON-NATIVE SPECIES

A list of the invasive non-native plants recorded within 500 m of the site is provided in Table 3.5 below.

Invasive species listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 and the Wildlife & Natural Environment (WANE) Act 2011 are highlighted in bold.

<b>Common name</b>	<b>Scientific name</b>	<b>Distance from site</b>
Japanese knotweed	<i>Fallopia japonica</i>	425 m west of the site
Rhododendron	<i>Rhododendron ponticum</i>	500 m north of the site

**Table 3.5: Invasive Non-native Species**

## 4. FIELD SURVEY RESULTS

### 4.1 INTRODUCTION

The results of the Phase 1 Habitat Survey are presented in the following sections. An annotated Phase 1 Habitat Survey Drawing (Drawing UWT-2023-25-01) is provided in Section 8. This drawing illustrates the location and extent of all habitat types recorded on site. Any notable features or features too small to map are detailed using target notes. Photographs taken during the field survey are provided.

The Extended Phase 1 Habitat Survey was conducted on Wednesday 2<sup>nd</sup> August 2023 by David Smith (Ulster Wildlife Trust).

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Conditions
Temperature (°C)	17
Cloud Cover (%)	100
Precipitation	Nil/Scattered showers
Wind Speed (Beaufort)	F2

**Table 4.1: Weather Conditions During the Field Survey**

### 4.2 CONSTRAINTS

There were no constraints to undertaking the survey of Tullaghoge Fort.

### 4.3 ECOLOGICAL WALKOVER SURVEY

During the ecological site survey the following habitats were found.

The main habitats present are:

Amenity grass (J1.2)	Scattered trees (A3.1)
Improved grass (B4)	Intact native species-poor hedge (J2.1.2)
Unimproved grassland (B2.1)	Intact native species-rich hedge with trees (J2.3.1)

#### **Amenity grass**

The route of the proposed footpath around the fort is currently amenity grass which is frequently cut (plates 1 and 2).

Within the ramparts the area is dominated by amenity grassland except for the steeper slopes of the ramparts.

The amenity grass includes within the sward, daisy *Bellis perennis*, dandelion *Taraxacum officinale* agg and white clover *Trifolium repens*.

#### **Improved grassland**

There is a proposed arm of the path which will run eastwards to the hedge at the bottom of the slope through sheep grazed improved grassland which includes scattered rush *Juncus* sp and creeping thistle *Cirsium arvensis* (Plates 3 and 4).

As noted in Section 1.2, additional trails are included and these will extend the trail network into adjacent sheep grazed fields to the north and west of the fort. These fields are of similar composition to the main field already included in the report.

### Unimproved grassland

The banks of the ramparts are dominated by unmanaged grassland (Plate 5) with meadowsweet *Filipendula ulmaria*, meadow vetchling *Lathyrus pratensis*, black knapweed *Centaurea nigra*, red clover *Trifolium pratense*, dog violet *Viola canina* and wild strawberry *Fragaria vesca*.



Plate 1: Amenity grass at start point



Plate 2: Amenity grass in inner ramparts



Plate 3: Improved grassland at finish point



Plate 4: Improved grassland looking east





**Plate 5: Unimproved grassland on inner rampart**



**Plate 6: Mixed scattered trees**



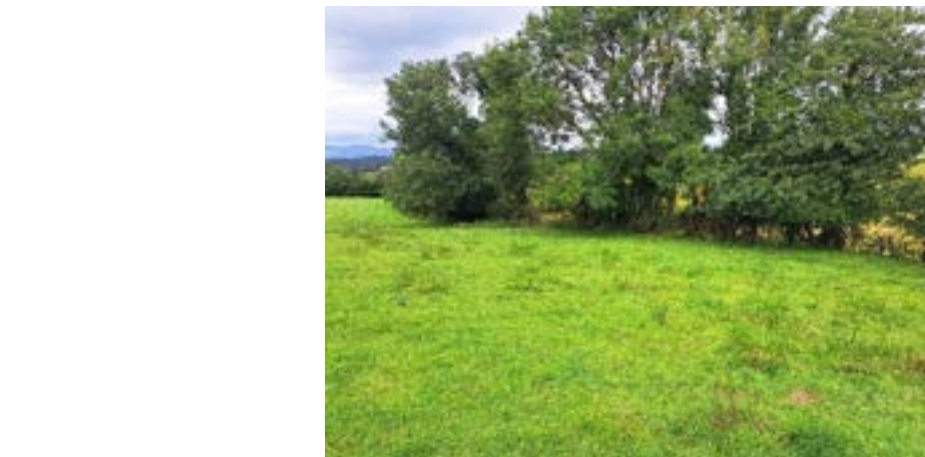
**Plate 7: Standing water (Target Note 1)**



**Plate 8: Mammal Holes (Target Note 2)**



**Plate 9: Hedges H1 and H2**



**Plate 10 Hedges H1 and H2**

**Plate 11: Hedge H3**

### Scattered Broadleaved Trees

The interior of the fort contains a range of mature trees including beech *Fagus sylvatica*, Scot's pine *Pinus sylvestris*, sycamore *Acer pseudoplatanus*, silver birch *Betula pendula*, sessile oak *Quercus petraea*, lime *Tilia* sp, ash *Fraxinus excelsior* and wild cherry *Prunus avium*.

The trees are generally in good condition except the ash many of which have broken branches, crevices and holes.

### Intact Native Species-rich Hedge with Trees

**Hedge H1:** The inner hedge on the outer bank of the rampart is rich in woody species dominated by blackthorn *Prunus spinosa* with hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, elm *Ulmus* sp. dog rose *Rosa canina*, hazel *Corylus avellana* and bramble *Rubus fruticosus*. There are several trees with ash, sessile oak and wild cherry being the most frequent.

The ground flora includes nettles *Urtica dioica*, cleavers *Galium aparine*, creeping buttercup *Ranunculus repens*, hedge woundwort *Stachys sylvestris* and herb Robert *Geranium robertianum*.

The hedge is 1.8 to 2.4 m high and thick and unmanaged.

### Intact Native Species-poor Hedge

**Hedge H2:** The outer boundary of the fort is a frequently trimmed hedge dominated by hawthorn with guelder-rose *Viburnum opulus*, hazel, bramble and Japanese rose *Rosa rugosa*. The ground flora includes nettles, cleavers, hogweed *Heracleum sphondylium*, Cuckoo-pint *Arum maculatum* and cow parsley *Anthriscus sylvestris*.

It is 2 m high and between 1.5 m to 1 m wide. It is getting thin at the base due to the frequent trimming at the same height. The hedge is fenced on the field side.

### Defunct Native Species-poor Hedge

**Hedge H3:** The boundary of the field is an old derelict hedge with blackthorn, holly, elder, hawthorn and bramble. There are several ash and wild cherry trees. There is no ground flora as sheep graze to the base.

The two hedges which run in a north south direction to the west of the fort are in a similar condition to the above hedge but with long sections of intact hedge with numerous gaps where the sheep have walked through the hedge line in the past.

### Target Notes

Following the site survey various features have been plotted as Target Notes and described in Table 4.2 below.

Target Notes	Notes
1	Flooded area (temporary standing water)
2	Mammal holes - rabbit

Table 4.2: Target Notes



#### 4.4 SPECIES

##### 4.4.1 Bats

There were several ivy-clad trees which are suitable to support roosting bats in the summer. Some of the trees also have crevices, holes and damage which could be used as roost sites.

##### 4.4.2 Other Mammals

There were a couple of semi-collapsed entrance holes on the ramparts (Target Note TN2) but these were not large enough to be badgers. The presence of rabbits on site suggests these holes were part of an old warren.

##### 4.4.3 Birds

Birds recorded during the surveys include robin *Erithacus rubecula*, blue tit *Cyanistes caeruleus*, blackbird *Turdus merula*, song thrush *Turdus philomelos*, chaffinch *Fringilla coelebs*, hedge sparrow *Prunella modularis* and woodpigeon *Columba palumbus*.

## 5. POTENTIAL IMPACTS FROM THE WORKS

### 5.1 SUMMARY OF THE PROPOSALS

The works will involve the installation of:

- A Grass path between Hedges H1 and H2
- Removal of 2 m of species-poor hedge at Point A
- Installation of grass path within the improved grassland field
- Installation of additional grass paths to the southwest and northwest of the fort through improved grassland fields
- Removal of short sections of hedge to facilitate the additional paths.

### 5.2 ASSESSMENT OF THE POTENTIAL IMPACTS DURING CONSTRUCTION

As the works are very low key, no detrimental impacts are anticipated during the construction phase.

#### 5.2.1 Designated Nature Conservation Sites

The path works will not have a direct impact upon any local, national or internationally designated sites.

#### 5.2.2 Habitats

The provision of a grass path will only directly impact the existing amenity grass and improved grassland habitats. These habitats are of only low ecological value and their modification would not be a significant detrimental impact.

A small section of species poor hedge will need to be removed to facilitate the construction of the original planned trail extension, but this will not be a significant detrimental impact.

Additional sections of hedge may have to be removed to facilitate the installation of the additional trails to the southwest and northwest of the fort but again this will not be a significant detrimental impact.

#### 5.2.3 Species

**Bats:** There are several mature and semi-mature ivy clad trees which would be suitable to support a bat roost.

Whilst there will not be a direct impact on any trees there is a risk of disturbance from both the construction works and from public usage.

**Badgers:** No evidence of badgers (setts, tracks, hairs or latrines) was recorded from the site or within a 25 m buffer zone.

**Nesting Birds:** The hedges and trees are suitable to support nesting birds and during construction there is the potential to disturb nesting birds which may cause them to abandon their nests.

There is a small section of hedge (2 m) to be removed and there is a small risk of damage to any nests present.

Additional sections of hedge may have to be removed to facilitate the installation of the additional trails to the southwest and northwest of the fort and again nesting birds may be impacted.

#### 5.2.4 Invasive Non-native Species (INNS)

No animals or plants listed on Schedule 9 Part I and Part II of the Wildlife (Northern Ireland) Order 1985 (as amended) on 17th August 2011 as part of the Wildlife and Natural Environment Act (NI) 2011 were found during the field survey. INNS are not a significant issue.

### **5.3 ASSESSMENT OF THE POTENTIAL IMPACTS DURING OPERATIONAL PHASE**

There are no additional impacts anticipated on the local wildlife.

## 6. PROPOSED ECOLOGICAL MITIGATION DURING CONSTRUCTION

### 6.1 POTENTIAL IMPACTS UPON HABITATS AND SPECIES

At present the main potential impact upon the wildlife interests of the site would be:

- Harm/disturbance to nesting birds, nestlings, eggs and nests
- Harm/disturbance to roosting bats
- Damage to trees including root systems

It should be reiterated the risk to wildlife is very small and although the measures below seem onerous they should be undertaken with a “light touch” and be proportional to the risks.

### 6.2 PRE-START ECOLOGICAL SURVEYS

A general ecological walkover survey of the site should be undertaken prior to works commencing and this will include a check for any badger setts which may have appeared.

### 6.3 GENERAL MITIGATION PROPOSALS

This will include the following:

- A simple Construction Ecological Management Plan (CEMP) will be produced with the following framework:
  - Chapter 1 Introduction
  - Chapter 2 Description of the Scheme
  - Chapter 3 General Construction Information
  - Chapter 4 Environmental Management Framework, (including roles and responsibilities, checking, monitoring, auditing and corrective action)
  - Chapter 5 Communication and Training
  - Chapter 6 Incident/Emergency Response including an Ecological Emergency Plan and contact details for relevant organisations.
  - Chapter 7 Biodiversity Protection and Mitigation Plans (For individual species and sensitive habitats)
  - Chapter 8 Environmental Management Plans (Topics include, noise and vibration, water, soils, materials and waste management plans, people and communities).
  - Chapter 9 Ecological Mitigation of Construction Activities
- To manage the ecological issues an Ecological Clerk of Works (ECOW) will be appointed. This will need to only be a part time/visiting role only.
- Any vegetation clearance which may be required should be undertaken outside of the peak nesting bird season (1<sup>st</sup> March to 31<sup>st</sup> August).
- Excavated material which contain non-native species will be removed to agreed locations within the site or to off-site.
- Works within the vicinity of trees with the potential to support bat roosts should be undertaken in April and/or the period between mid-September and mid -November to avoid the main maternity and hibernation periods.

## 6.4 PRE-START PHASE

During the tender process joint site visits between the tenderers, client and the proposed ECoW is to be undertaken to ensure:

### Tender Stage

- The proposed tenderers are aware of the ecological constraints of the site.
- The proposed routes of the paths are clearly understood by the contractors and any access routes, storage areas/site compound locations can be discussed.

### Pre-start Stage

Once the contractor has been selected the following should be undertaken:

- The proposed work corridors should be surveyed by the ECoW prior to works starting to ensure there have been no changes to the ecological interests. This survey should be undertaken at least one week prior to works starting.
- The root protection area of all retained mature trees will be clearly demarcated.
- The ECoW should review the proposed method statement from the contractor to ensure it does not compromise the ecological interests of the sites.

## 6.5 CONSTRUCTION PHASE

Once works are due to start the ECoW shall:

- Produce and delivery of an ecological induction to all site operatives and sub-contractors.
- Ensure all sensitive ecological features are clearly demarcated prior to the start of works.

During the construction phase the ECoW will:

- Supervise works in sensitive areas or, at sensitive times.
- Provide information for the public regarding the works that are being undertaken and the protection / mitigation measures that are being implemented. The ECoW may also be required to directly engage with the public during the works.
- Monitor and audit the ecological protection measures during the construction.
- Attend progress meetings with client/contractor as appropriate.
- Undertake toolbox talks as required to cover specific issues/changes to works etc.
- Be responsible for overseeing the construction of any mitigation features required as part of the project, this can include habitat restoration / construction, the installation of specific structures for species mitigation, and construction of enhancements for example, ponds and hibernacula.

On completion of the works the ECoW shall:

- Produce a completion Report.
- Undertake any post completion monitoring required.

### 6.5.1 Prevention of Disturbance/Harm to Nesting Birds

All vegetation clearance should be undertaken outside of the nesting season generally regarded to be 1<sup>st</sup> March to 31<sup>st</sup> August.

Any vegetation clearance between the above dates should be subject to a pre-start nesting survey (within 48 hours) prior to works commencing. If a nesting bird is found, a suitable exclusion zone will be set up.

### **6.5.2 Prevention of Disturbance/Harm to Roosting Bats**

The preference is for works should be carried out between September and November or April.

No new trails are being constructed, new trails will be demarcated by mowing a grass corridor and existing trails will continue to be maintained by mowing. Three small sections of hedgerow will be removed to facilitate access, vegetation will be removed to ground level and additional soil will be added and sown with grass seed i.e there will be no disturbance of the soil surface.

### **6.5.3 Prevention of Disturbance/Harm to Badgers**

The route of the trails should be surveyed for badgers prior to construction and the proposed hedge crossing points should be located at least 25 m from any badger setts which may be present.

## 7. PROPOSED ECOLOGICAL ENHANCEMENTS

Although the detrimental impacts upon the habitats are expected to be minimal there are opportunities for a range of ecological enhancements to be undertaken as part of the trail construction.

### **Hedge planting**

A native species rich hedge should be planted on each boundary between Points C and D.

### **Creation of deadwood piles**

The creation of piles of dead wood will provide sources of rotting wood ideal for woodboring insects and fungi.

### **Wildflower seed sowing**

As part of the re-instatement work the margins of the trails will need to be sown with a suitable wildflower and grass mix.

In the open areas a suitable meadow mix should be sown.

Where the trail circumvents the fort the wildflower mix should be suited to shade and semi-shade conditions.

In areas away from the immediate trail margins any areas of bare soil should be sown with a suitable annual wildflower mix as this will be an abundant nectar and pollen for insects as well as providing a visual impact.

### **Install bird and bat boxes**

There is scope to provide both bird and bat boxes on the mature trees around the fort.

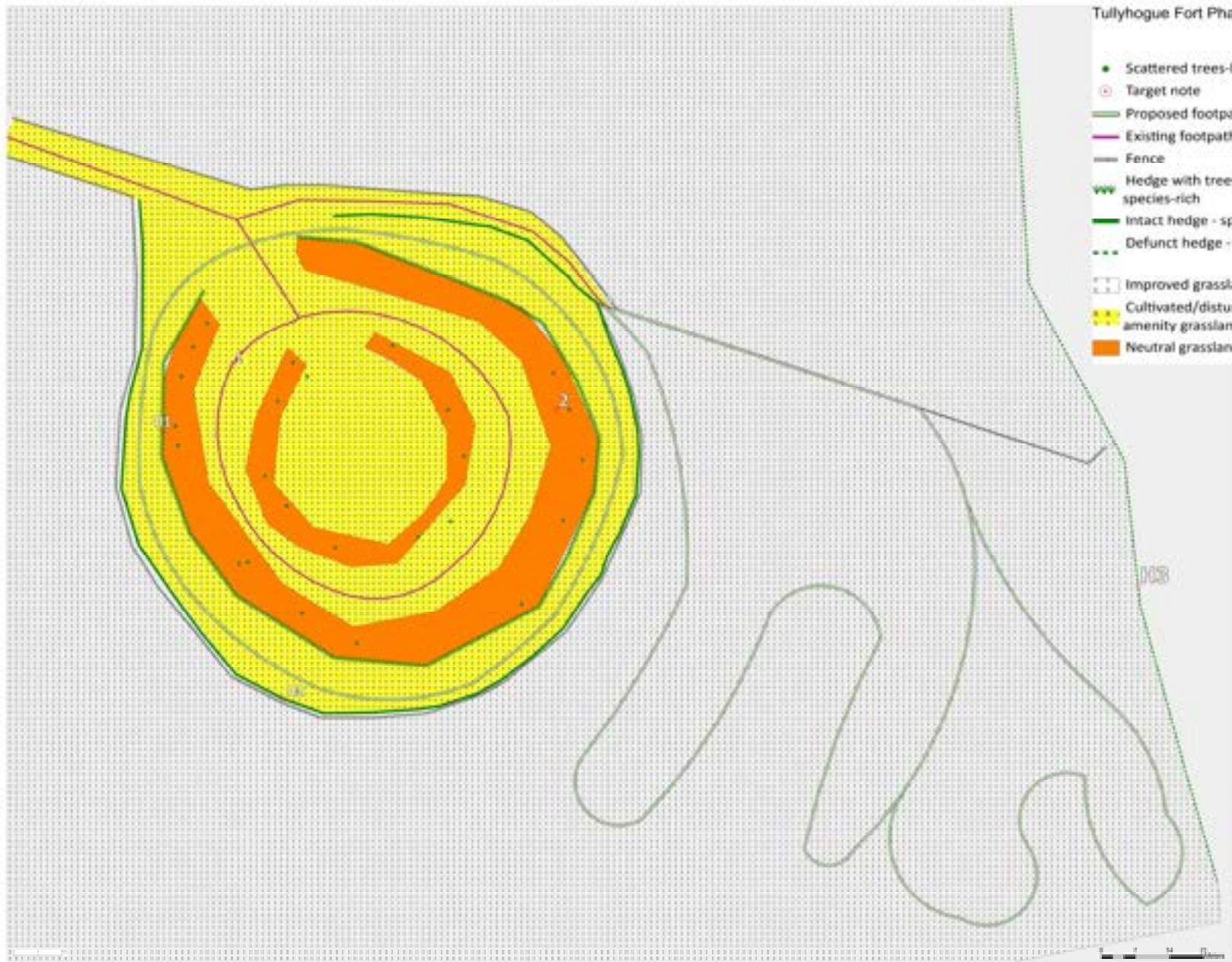
## 8. DRAWINGS

Drawing UWT-2023-25-01 Phase I Habitat Survey

Drawing Tullaghoge Revised Existing and Potential Trails V2



Tullyhogue Fort Phase 1 Habitat Survey



- Scattered trees-broadleaf
- Target note
- Proposed footpath
- Existing footpath
- Fence
- ww Hedge with trees - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Improved grassland
- Cultivated/disturbed land - amenity grassland
- Neutral grassland - unimproved

Project: Tullyhogue Fort Trail  
 Survey: Extension Phase 1 Habitat Survey  
 Date: 12/05/2023  
 Client: Northern Ireland Environment Agency (NIEA)  
 Location: Tullyhogue Fort, Londonderry  
 Scale: 1:5000  
 Author: G. Smith, J. O'Sullivan

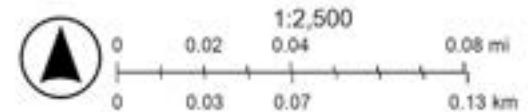


Ulster Wildlife  
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 Tel: 028 726 2200  
 Email: ulsterwildlife@nra.gov.uk



— Tullaghoge potential trail V2

— Tullaghoge existing trail



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## APPENDICES

### APPENDIX 1 ECOLOGICAL CLERK OF WORKS

#### A1.1 Roles and Responsibilities

The main role of the ECoW is to ensure the works are undertaken in compliance with legislation, planning conditions and good practice by Client and Contractor.

The ECoW will provide guidance on any required DEARA-NI licence methodology & mitigation if necessary.

The ECoW will also ensure any mitigation proposed by the contractor is appropriate to the issue.

This will require the ECoW to undertake:

- Pre-construction checks with regards to targeted protected habitats and species.
- Regular checks regarding the works progress and feed back to contractor, project team and Client
- Complete relevant documentation on an ongoing basis.
- Input into meetings.
- Work with the project team to provide solutions to any issues that arise during construction.
- Oversee construction workers in sensitive areas.
- Implement and maintain any ecological exclusion zones.
- Provide information for the public regarding the works that are being undertaken and the protection / mitigation measures that are being implemented. The ECoW may also be required to directly engage with the public during the works.
- Manage and undertake any post-construction monitoring required.

#### A1.2 ECoW – Required Skills and Experience

The skills and experience required include:

- Qualified, chartered and experienced ecologist – CIEEM to at least associate level
- Minimum 1 year of relevant ECoW experience.
- Sound ecological knowledge of relevant habitats and species to the project.
- Good knowledge of and experience in applying NI nature conservation legislation and best practice.
- Independent professional and an ability to communicate.
- The ability to produce and deliver concise and relevant toolbox talks to contractors.
- Possess an understanding of the engineering / construction requirements and methodology of a scheme.
- The confidence and experience to direct contractors in their operations when required.
- Flexibility to changes in ways of working, adapting method and approach accordingly.
- Ongoing input into design and methodology as the scheme progresses.
- Ability to be practical and come up with solutions and advice where necessary.



## REFERENCES AND BIBLIOGRAPHY

- Biodiversity Strategy Proposals – Northern Ireland DoE Environment and Heritage Service.
- Habitats Online website
- Planning NI website – Sites of Local Conservation Interest
- [http://www.daera.gov.uk/niea/protected\\_areas\\_](http://www.daera.gov.uk/niea/protected_areas_)
- [http://www.daera.gov.uk/niea/ni\\_priority\\_habitats\\_sep\\_11.pdf](http://www.daera.gov.uk/niea/ni_priority_habitats_sep_11.pdf)
- [http://www.daera.gov.uk/niea/northern\\_ireland\\_priority\\_species\\_list.pdf](http://www.daera.gov.uk/niea/northern_ireland_priority_species_list.pdf)
- Schedules within The Wildlife (Northern Ireland) Order 1985
- Schedule 2 – The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)
- [http://www.planningni.gov.uk/indx/policy/dev\\_plans/devplans\\_az.htm](http://www.planningni.gov.uk/indx/policy/dev_plans/devplans_az.htm)
- Biological records – <http://www.nmni.com/CEDaR/IRF>



# Archaeological Baseline Survey

Project:

Tullaghoge Fort Walking Trails

Planning Reference:

N/A

Author

Ross Bailey

Date

25th October 2023

Version

1





	<b>Quality Management System</b>		<b>Reference:</b>	<b>7.03C</b>
	DESKTOP REPORT		<b>Issue:</b>	<b>08</b>
	<b>ARCHAEOLOGICAL BASELINE SURVEY AND WRITTEN SCHEME</b>		<b>Date:</b>	<b>23/02/2021</b>
	<b>OF INVESTIGATION</b>		<b>Authorised:</b>	<b>QMS Manager</b>

Site Name: Tullaghoge Fort Walking Trails  
 Project Type: Archaeological Baseline Survey  
 Planning Reference: N/A  
 Commissioned by: Outdoor NI  
 Author: Ross Bailey  
 NAC reference: 23053

**DEPARTMENT FOR COMMUNITIES; HISTORIC ENVIRONMENT DIVISION (DFC; HED) TEAMS WITH RESPONSIBILITY FOR THIS PROJECT:**

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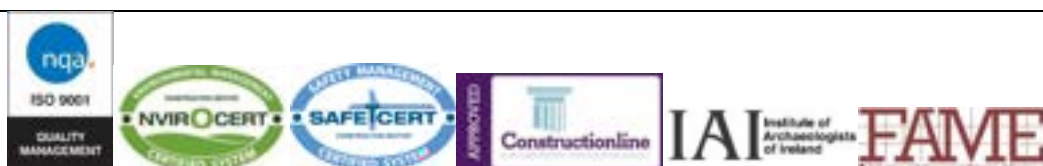
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## Quality Assurance

**Only NAC personnel can make alternations to this report, in order to adhere to our quality assurance guidance all revisions/alternation must be approved by a senior member of staff and will be recorded on this page:**

Rev	Date	Details	Reason	Prepared by	Checked by	Approved by	Doc No.
1	13.10.2023	Tullaghoge Fort Walking Trails, County Antrim, Archaeological Baseline Assessment	To accompany planning application	Ross Bailey	Jonathan Barkley	Jonathan Barkley	DRAFT
2	23.10.2023	Tullaghoge Fort Walking Trails, County Antrim, Archaeological Baseline Assessment	Amended with extra detail from client.	Ross Bailey	Jonathan Barkley	Jonathan Barkley	251023b

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## EXECUTIVE SUMMARY

<b>Site Name:</b>	Tullaghoge Fort Walking Trails		
<b>County:</b>	Tyrone		
<b>Planning Reference:</b>	N/A		
<b>Planning Condition Nos:</b>	N/A		
<b>ITM:</b>	682327E, 874348N		
<b>Irish Grid Ref:</b>	<b>Eastings:</b>	282379	<b>Northings:</b> 374360
<b>Records Reviewed</b>	<b>Yes</b>	<b>Comments</b>	
<b>A: HISTORIC ENVIRONMENT RECORD FOR NORTHERN IRELAND</b>			
i	NI Site & Monuments Record (NISMR)	<input checked="" type="checkbox"/>	
ii	Industrial Heritage Record (IHR)	<input checked="" type="checkbox"/>	
iii	Register of Historic Parks, Gardens & Demesnes	<input checked="" type="checkbox"/>	
iv	Defence Heritage Record	<input checked="" type="checkbox"/>	
v	Maritime Heritage Record	<input checked="" type="checkbox"/>	
Vi	Listed Buildings	<input checked="" type="checkbox"/>	
vii	Battle Sites	<input checked="" type="checkbox"/>	
<b>B: STATUTORY DESIGNATIONS – ARE ANY PRESENT:</b>			
i	State Care Site	<input checked="" type="checkbox"/>	
ii	Scheduled Monument Site	<input checked="" type="checkbox"/>	
<b>C: LOCAL DEVELOPMENT PLANS FOR RELEVANT DESIGNATIONS &amp; ZONINGS</b>			
i	Areas of Significant Archaeological Interest (ASSI)	<input checked="" type="checkbox"/>	
ii	Areas of Archaeological Potential (AAP)	<input checked="" type="checkbox"/>	
<b>D: REVIEW OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS</b>		<input checked="" type="checkbox"/>	
<b>E: REVIEW OF CARTOGRAPHIC MATERIAL</b>		<input checked="" type="checkbox"/>	
<b>F: REVIEW OF AVAILABLE HISTORIC &amp; MODERN AERIAL PHOTOS</b>		<input checked="" type="checkbox"/>	
<b>G: FINDSPOT RECORDS AT ULSTER MUSEUM</b>		<input checked="" type="checkbox"/>	
<b>H: HISTORIC RECORDS HELD AT PRONI</b>		<input checked="" type="checkbox"/>	
<b>I: BIBLIOGRAPHIC REVIEW</b>		<input checked="" type="checkbox"/>	
Walkover Survey undertaken & results included?		<input checked="" type="checkbox"/>	
Assessment of Archaeological Potential?		<input checked="" type="checkbox"/>	
Assessment of Archaeological Impacts?		<input checked="" type="checkbox"/>	
Archaeological Mitigation Strategy required?		<input checked="" type="checkbox"/>	
Summary of Recommended Mitigation Strategy:			
[to be confirmed when final details of proposals are confirmed]			
Additional Works Required:		-	



# 1 INTRODUCTION

## BACKGROUND

- 1.1 This Archaeological Baseline Survey was prepared in October of 2023 by Northern Archaeological Consultancy Ltd, having been commissioned by Outdoor NI Ltd to give a baseline indication of expected archaeological impacts, and if/where required derive a recommended scheme of investigation/mitigation for these suitable to address either a BH3 evaluation request, or BH4 conditions, whichever may arise during the planning application.
- 1.2 All investigation/mitigation measures detailed in this report must be approved by the Department of Communities, Historic Environment Division (DfC: HED) and Mid and East Ulster Council for the specific purpose of BH3 evaluation or BH4 mitigation works, as may be requested by HED, and then executed after an archaeological excavation licence has been issued by HED.

## AUTHOR

- 1.3 Ross Bailey is a senior desktop researcher, lithic specialist, archaeological surveyor, GIS technician, and site director with NAC Ltd. He has worked on hundreds of Archaeological Desktop Reports that span the public and private sector from large scale infrastructure to small scale single plot developments, undertaken dozens of site and building surveys, and been involved with numerous large and small scale excavations as both a site director and excavator. Ross is a Member of the Institute of Archaeologists of Ireland (MIAI).

## AIMS & OBJECTIVES

- 1.4 The aims of the assessment are to:
- i. Identify the nature and extent of any archaeological remains which may exist within the boundaries of the proposed development, via desk-based assessment and field visit, and any potential impacts to them from the proposed development.
  - ii. Develop a suitable scheme of physical testing and detection to allow accurate evaluation of, and mitigate potential impacts upon, any archaeological remains which may survive below the surface.
- 1.5 The objectives of this report are to establish the archaeological potential of the proposed development site through desktop assessment and recommend schemes of mitigation of identified impacts, which will:
- a. Reduce the risk of discovery of unexpected remains at the time of the client undertaking the proposed works;
  - b. Mitigate the impact of the proposed works by allowing for detailed excavation and recording or preservation in situ, as deemed appropriate by the client and HED, for any archaeological remains arising within the investigation site.



## PREVIOUS STUDIES RELATING TO THE PROPOSED DEVELOPMENT SITE

- 1.6 A wide array of previous studies, from historical publications through geophysical survey, to small-scale excavation have addressed the proposed development site in the past. Where appropriate, these will be referenced in the current report.

## 2 STANDARDS & GUIDANCE

- 2.1 This assessment follows the guidelines of Planning Policy Statement 6 (PPS 6) Planning, Archaeology and the Built Heritage with particular reference to Built Heritage Sections 1 - 6<sup>1</sup> which set out policies for the protection and conservation of archaeological remains and features of the built heritage.

- 2.2 Department for Communities (DfC): Historic Environment Division (HED) are responsible for protecting, conserving and promoting the historic built environment. They keep an archive of historic monuments, buildings, twentieth century military structures, maritime and industrial sites, parks and gardens.

- 2.3 The legislative basis for the protection of the built environment in Northern Ireland is set out within the following:

- Historic Monuments and Archaeological Objects (NI) Order 1995;
- The Planning (General Permitted Development) Order (Northern Ireland) 2015 and;
- The Planning (Northern Ireland) Act 2011 Part A (Chapter 1) which sets out legislative provision for the protection of listed buildings, conservation areas and areas of special architectural or historic interest.

- 2.4 All archaeological works on this project have been undertaken in line with the following guidance:

- DfC: HED, Development and Archaeology, Guidance on Archaeological Works in the Planning Process (2019)
- DfC: HED, Guidance on Setting and the Historic Environment (2018);
- the Institute for Archaeologists of Ireland (IAI) Code of Conduct for Archaeological Assessment (IAI 2006);
- DfC: HED (formally NIEA) Excavation Standards Manual;
- Department of Environment (DOE), Historic Environment Division, Development and Archaeology (2004); and
- The Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2, Cultural Heritage Assessment (Highways England, 2019).

- 2.5 These guidelines have informed the desktop assessment of the archaeological background of the site. Where specific scoping responses and guidance may be absent, professional judgement and an understanding of the requirements of HED have informed specific details of the assessment such as the extent of the assessment area and structure of this report.

<sup>1</sup> Planning Policy Statement 6 (Northern Ireland, 1999): Planning Archaeology and the Built Heritage [http://www.planningni.gov.uk/index/policy/planning\\_statements\\_and\\_supplementary\\_planning\\_guidance/pps06.htm](http://www.planningni.gov.uk/index/policy/planning_statements_and_supplementary_planning_guidance/pps06.htm)

- 2.6 All archaeological fieldwork arising from this report will be carried out in accordance with (where appropriate):
- (CIfA, 2020c) *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. Chartered Institute for Archaeologists: Reading, October 2020.
  - (CIfA, 2020d) *Standard and guidance for Archaeological Excavation*. Chartered Institute for Archaeologists: Reading, October 2020.
  - (CIfA, 2020e) *Standard and guidance for Archaeological Field evaluation*. Chartered Institute for Archaeologists: Reading, October 2020.
  - (CIfA, 2020f) *Standard and guidance for an Archaeological Watching Brief*. Chartered Institute for Archaeologists: Reading, October 2020.
  - (CIfA, 2021) *Code of Conduct*. Reading: Chartered Institute for Archaeologists, October 2021.
  - Understanding Historic buildings – a guide to good practice prepared by English Heritage (2016)
  - Environmental Good Practice Guide for Archaeological Excavations, Version 4 (NIEA 2012)
  - DEM156/15 Management of Archaeological Investigations on Major Road Improvement Schemes (DEM, 2015)

#### **PLANNING POLICY**

- 2.7 In addition to PPS6, the Strategic Planning Policy Statement (SPPS) also provides planning policy which is a material consideration in the determination of planning application in Northern Ireland.
- 2.8 Regional Development Strategy 2035 sets out guidance in relation to conservation, protection and enhancement of the Historic Environment (RG11).

#### **STUDY AREAS**

- 2.9 This baseline assessment is intended to highlight potential archaeological issues and inform potential HED requests for BH3 evaluations, or BH4 mitigation imposed during the planning process, or to allow easy expansion into a full archaeological impact assessment should such be requested during planning consultation. To this end, a study area of 1000m radius has been used for portions of the study pertaining to the surrounding NI Sites and Monuments Record (NISMR) and for potential settings impacts, and a smaller 500m study area for sites of later heritage (Industrial Heritage and Listed Buildings). These radii fit with standard acceptable study areas for assessments within urban core areas, evaluations and programmes of work, and are also sufficient for baseline studies of the wider archaeological context within urban areas.

## RESOURCES

- 2.10 An examination of desktop resources was undertaken followed by a walk over survey of the area. These include:
- DfC: HED Northern Ireland Sites and Monuments Record (NISMR);
  - Sites and Monuments 'SM7' files for sites within or bordering the proposed site or likely to be impacted on by the proposals;
  - DfC: HED databases including industrial heritage, historic gardens, battle sites, defence heritage, excavations, and listed buildings;
  - Previous archaeological excavations within or adjacent to the site identified by searching the excavations.ie database;
  - Relevant Ordnance Survey (OS) maps of the period 1830-1955;
  - Relevant online aerial photograph collections;
  - Ulster Museum finds databases;
  - Ordnance Survey Memoirs;
  - Drift and solid geology maps.

## 3 LOCATION AND PHYSICAL SETTING

### LOCATION

- 3.1 The proposed development site is located in the fields surrounding the State Care monument of Tullaghoge Fort, (282515E, 374299N) (Figure 1, 2). The site lies a short distance to the east/southeast of the Killymoon River, lying to the east of the Tullywiggan Road, approximately 500m north of the historic core of Tullaghoge. The site lies in the townland of Ballymully Glebe (suggested origin perhaps *Ir. Baile Mullaigh 'farmstead of the summit'* (McKay, 2009)), in the parish of Desertcreat, and the barony of Dungannon Upper. The Placenames NI information also notes that "the mullach 'summit' referred to in the name must be the summit of the hill on which stands Tullaghoge Fort. The hill itself rises to over 300 feet. Tullaghoge Fort is a ringfort and was the royal abode of the O'Neill's until the fourteenth century and continued to be their inauguration site until the late 16th century" (*ibid*).

### PHYSICAL BACKGROUND

- 3.2 The proposed site lies on bedrock of the Rockdale Limestone Formation overlaid with glacial till. The site lies between the 70m and 100m OD contours which define the hill upon which Tullaghoge Fort sits, with the fort itself lying in and around the 100m OD contour.

### DEVELOPMENT SITE AT PRESENT

- 3.3 The site was visited on 11<sup>th</sup> of October in fine weather (Plates 1-5). Access was made from the car park which lies c. 350m west-southwest of the monument. From the car park a tarmac path was followed northwards. A brief inspection of the 'ground echo of Great Hall' portion of the proposed development, looking both east from this path and by following an existing small path that led parallel southwards to

an information sign before terminating at a wire fence. This was otherwise not part of the proposed path route. Nothing of archaeological significance was noted and there was no surface sign of the corn drying kiln plotted nearby in the NISMR.

- 3.4 The southern half of the proposed paths was walked first, starting from the point closest to the carpark. The proposed path commences from here and would pass through the existing post and wire fence (there are small trees and shrubs intermittently here). The proposed route then heads approximately southeast through a large pasture field (grass was short with rushy areas), used for sheep grazing at the time of the visit. The field in the relevant area generally rose from west to east towards the monument and fell north to south towards a field boundary which has variable amounts of mature trees and hedge. The proposed tracks initially follow the contour of the lower slope then cut upslope northeast towards the first proposed seating point, then back south towards the next seating point, and then upslope to a fork where the track would split in two shortly before passing through the eastern boundary of the field and into the scheduled area around the monument. The boundary at the point where the two tracks would pass through consisted from north to south of an outer post and wire fence (barbed top), an earthen bank, hawthorns planted along its upslope face and a shallow ditch beyond. Intermittent large stones were noted on the outer edge of the ditch. A large stump of a mature tree exists close to where the northern if the two tracks would pass through. The northern spur of this proposed path heads north-east through rushy pasture which slopes down from east to west and terminates near a post and wire fence close to the monument.
- 3.5 The route of the southern of the pair of proposed tracks instead heads southeast briefly downslope then eastwards again, roughly following the contour of the lower slope. There were no obvious surface remains of the corn drying kiln placed here in the NISMR. A large boulder lay nearby. The proposed track then splits again to the southeast of the fort. One track weaves to the north then south then north again. Nothing was observed at the location of the proposed seating in this area. The proposed track then approaches the east side of the monument before reaching and perhaps crossing an existing post and wire fence before terminating. The other branch of the track has a loop detour to the extreme southeast corner lower slope of the field. The rest of the track heads along the slope (all through slightly rushy short-cropped pasture) past another large boulder to reach a post and wire fence. Close to where it would cross the fence there are some concrete/ 20<sup>th</sup> century brick/iron remains of some agricultural structure. This is identical on both sides of the fence. Thereafter the proposed path passes upslope to the northwest where views open up to the north where the field falls away and other hills rise beyond it. The final two proposed seat areas occupy the slopes here to the north of the fort. Nothing was observed on the pasture slope in this area. Finally, the path reaches the western boundary of the field. This consists of an area of brambles on the east side then a low bank with thorn trees on its face and a post and wire fence on the western side. The proposed path would then pass through an area of grass to reach an existing path to the west.

- 3.6 No previously unknown areas of archaeological potential were observed, only the fort itself, and the two boulders in the eastern portion of the site which are potential, though currently unprovable, candidates for the core or location of the inaugural chair of the O'Neills.

## 4 THE PROPOSAL

- 4.1 The proposed development (Figure 3) consists of approximately 1.3km of mown walking trail looping through the fields surrounding Tullaghoge Fort, expanding the available pathways for visitors. It has been indicated that these paths will be non-invasive, and simply consist of trails of cutgrass through longer rewilded meadowland. All indicated signage/interpretation points are indicated as being fixed to existing fenceposts, seating, or trees, to avoid the need for invasive works.
- 4.2 A new lectern indicated on the edge of the fort itself, along with seating at various points around the existing and proposed trails and great Hall area. All seating is indicated as set on the surface of the ground to avoid the need for invasive works. A 'light touch ground echo' of the 'Great Hall' is proposed at the western end of the site, set into the area previously subjected to archaeological investigations to create an anchor point for a corresponding Augmented Reality. This is indicated as minimal physical works required, with raised beds set onto the site of the hall and replicated to differentiate it from the surrounding grasses.
- 4.3 Wooden sculptures are indicated as set on or fixed to existing trees or wooden post fencing, and carved end of life trees in-situ are raised as another proposed source for non-invasive woodcarvings.
- 4.4 In total the proposals consist of two additional lecterns, two stone seats, 4 timber log seats, 5 wooden sculptures, 8 viewfinders/interpretations points, and 2 areas of landscaping for the Great Hall. As detailed in the Fort Access and Interpretation Study, the sections of trail break down as follows:

Section	Length (m)	Trail type	Trail corridor description	Rationale	Works required	Infrastructure required
1	656	1.5m wide mown grass path	Trail following the 90m contour around the fort from the north to the west via the eastern side of the hill. Minimal gradients. No drainage issues.	To provide access to previously inaccessible areas on site, feature of built heritage interest and to provide unobstructed 360° views of the surrounding countryside.	Make 2x 2m wide opening in existing fencing and species poor defunct hedge running 1) north and 2) south from turning circle. Make 2m wide opening in fence line running east on eastern side of fort. Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. Bench x2 to be placed on top of ground (no in ground works). No gates required. No drainage requirements.
2	209	1.5m wide mown grass path	Trail travelling east from the fort to the site of the Great Hall and exit to the car park. It travels from the 90m	To provide access to the site of the 'Great Hall' directly from the fort, to provide the last trail section to achieve a looped	Make a 2m wide opening in fence line separating access trail to Great Hall to field parcel 19B. Leave openings flat and sow grass seed if required. Annual maintenance	Waymarker disk to be placed on existing fence post at opening. Bench x2 to be placed on top of ground (no in

			contour to the 70m contour, resulting in a 23m drop in elevation over 200m. No drainage issues.	walk and to provide access to previously inaccessible areas on site.	programme for grass mowing required.	ground works). No gates required. No drainage requirements.
3	408	1.5m wide mown grass path	Trail linking fort to return leg of trail. Minimal gradients. No drainage issues.	To provide a linkage for those who wish to complete a circular loop on site, by travelling to the fort and back again, i.e those who do not wish to travel down or across the slope the east of the fort.	Make 2x 2m wide opening in fence line separating field parcels 19B and 20, and field parcel 20 and the fort itself. Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. No gates required. No drainage requirements.
4	105	1.5m wide mown grass path	Trail linking fort to Section 1 and on to Section 5. Steep gradients requiring several switch backs.	To provide access to previously inaccessible areas on site and for those who wish to visit the fort and then on to the three built heritage features on the eastern slope of the fort.	Make 2x 2m wide opening in fence line separating field parcels 19D and 20, and field parcel 20 and the fort itself (both on northeastern side of fort). Leave openings flat and sow grass seed if required. Annual maintenance programme for grass mowing required.	Waymarker disk to be placed on existing fence posts at openings. Bench x1 to be placed on top of ground (no in ground works). No gates required. No drainage requirements.
5	223	1.5m wide mown grass path	Trail providing access from Section 1 to Section 5. Steep gradients requiring several switch backs.	To provide access to previously inaccessible areas on site and for those who wish to visit the third built heritage feature on the eastern slope of the fort.	Annual maintenance programme for grass mowing required.	None

**Table 1: Summary Detail of Trail Types and Required Works.**

## 5 ARCHAEOLOGICAL CONTEXT OF THE SITE

### HISTORICAL BACKGROUND

- 5.1 The following history is not intended to be an in-depth critical analysis, but instead should be read as a short contextual background to the archaeological character of the proposed development site.
- 5.2 At the opening of Irish history in the 5th century, the Early Medieval era, the area of the proposed



development site lay within the territory of a group of tribes known as the Airghialla or 'hostage givers'. The development location seems to have been within the territory of the Ui Thuintre tribe. The area later fell under the power of the Cenel Eoghan branch of the Ui Neill tribe. The Ui Neill were descendants of the legendary 'Niall of the Nine Hostages' (his hostages may have been kings of the nine petty kingdoms of the Airghialla). The Ui Neill's original Ulster territories were in the Donegal area. The Cenel Eoghan were descendants of a son of Niall called Eoghan and were located initially in the Inishowen (from Inis Eoghain or 'land of Owen') area of Donegal, with an early capital or royal site there at Ailech or Grianan Fort.

- 5.3 This Sept eventually expanded eastwards across what is now County Tyrone (from Tir Eoghan or 'Land of Eoghan'). The crowning of a Cenel Eoghan king at Tullaghoge near Cookstown in 937 AD shows that they had expanded across the Sperrins at this stage. They seem to have driven out the existing Airghialla tribe, the Ui Thuintre during the 11th and 12th centuries. The 11th century 'Book of Rights' portrays the Tullaghoge branch of the Cenel Eoghan as the most important. This territory of the Cenel Eoghan was reflected in the rural deanery of Tullaghoge, which comprised that part of the Diocese of Armagh that lay in Tyrone and Londonderry. This territory included all three baronies of Dungannon and part of the neighbouring Loughinsholin and East Omagh baronies.
- 5.4 The status of this division of Tyrone as the king-producing territory of the Cenel Eoghan was complete by 1101AD when Grianan Fort, the original capital, was destroyed. Tullaghoge thereafter became the capital and royal inauguration site of the Cenel Eoghan.
- 5.5 The ruined church of Derryloran probably occupies the site of a pre-Norman church, 'Domnach Libuik' which was associated with St Luran, from whom the name Derryloran 'oak wood of Luran' was derived. The church is associated in later tradition with the events after the battle of Moira in 637, but the earliest certain record of a church here is in a calendar of saints, written about 800, which recorded that St Luran's festival was on the 29 October. This church, together with other churches in the area, was plundered by Ruaidri MacDunn Shleibhe, King of Ulster, in 1195. Derryloran was later listed as a parish church in the papal taxation of 1306 and from the late 14th century to the mid-16th century the names of many of its rectors and vicars are known, the most commonly recorded name being O'Connellan. The church that stands today is probably that recorded as 'almost finished' in the 1622 survey. This building contained re-used Medieval stone in its structure. Worship ceased in the church in 1822 and the remains of the building are now within state care.
- 5.6 In the later 12th century, after an invasion by the Connaught-based High King Rory O'Connor, the territory of Tullaghoge was split into northern and southern divisions at Slieve Gallion (given to the McLoughlin and O'Neill clans respectively). However, later in the 12th century, the territory was again unified under an O'Neill chief. The territory of Tullaghoge was the royal division of the Cenel Eoghan for the rest of the Medieval period, ruling over the other segments (barony-sized petty chiefdoms) of the Cenel Eoghain. The power centre of the O'Neills in the Medieval period shifted a short distance from Tullaghoge to Dungannon, where a royal castle, house and friary were located. There is little point in

discussing the political details of the area under the O'Neills, as this is not susceptible to archaeological analysis.

- 5.7 The inauguration stone of the O'Neills, the '*Leac na Ri*' or 'king's stone' was located at Tullaghoge. Tradition notes that this stone was blessed by St Patrick and by the 16th century it had been incorporated into a ceremonial chair. In 1602, when Mountjoy defeated the O'Neills, it was recorded that he broke up this stone chair to mark his victory. After that long war with Elizabeth I of England, political intrigues and the flight of the Irish chiefs overseas at the start of the 17th century, the area was earmarked for plantation by 'loyal British Protestant subjects'. At this time, before the plantation and despite the devastating war, there were still estimated to be c. 5000 adult males in the County of Tyrone. Various parts of Tyrone were granted to different people under differing terms. The precinct of Dungannon was granted to servitors (army veterans) and natives (Gaelic Irish). However, the northern part of Dungannon formed the precinct of Mountjoy, which was given over to Scottish undertakers. The land of Tullaghoge was within the precinct of Mountjoy. Approximately 1000 acres of this were granted to a Robert Lindsey, the son of Sir Thomas Lindesay, the Searcher General of Leith, in 1604. Pynnar's survey of 1619 states that at this period the land belonged to Mrs Lindsey, wife of the late Robert Lindsey. After a period of living at Tullaghoge village, the Lindsey's built Loughry House and made it their family home. It is well recorded that Dean Swift was a frequent visitor of the Lindsey's and is said to have written part of Gulliver's Travels at Loughry. The family remained proprietors of the estate until the late 19th century when Loughry House became the Ulster Dairy School.
- 5.8 Around the time of plantation, Allan Cook gained lease for year renewable under the see of Armagh, for land adjoining Tullaghoge, upon which the old town of Cookstown was built in 1609. A patent for markets was granted to Cook on the 3rd of August 1628, however during the course of the Rebellion in 1641 the town was completely destroyed by Royalist troops. Although its markets and fairs were resumed when peace was restored the village itself was deserted for more than a century. By the time of the Restoration in 1660, Cook's interest in the lands surrounding the old town was taken over by the Stewarts of Killymoon, themselves grantees in the plantation of 1609. William Stewart was interested in town planning and was much impressed by the broad thoroughfares being constructed in Dublin and was eager to build a town on a similarly grandiose scale.
- 5.9 Little is known about the specific townlands of Loughry and Rockhead, but much is known about the ownership of the land in the general area. Bodley's plantation maps, dated 1609 (T/1652/11 and 12), highlight the complexity of Mountjoy precinct. Hill notes that Mountjoy was included in 1609 as part of Dungannon, but Tullaghoge was not surveyed. The name Mountjoy stopped being used after 1620 and the land was included in Dungannon precinct. The modern townlands were not recorded on Bodley's maps. The Civil Survey of 1654 (T/371/F) records that a James Stewart, son of William and a Scottish Protestant, was proprietor of much of the townlands in Derryloran. Petty's Downe Survey of 1654-6 (T/2313/1/22) notes that much of the parish of Derryloran and surrounding lands were bishop's lands and it also notes 'Killmoone' as unforfeited. Both of these surveys name the individual townlands in the parish, but neither Loughry or Rockhead were recorded. This would suggest that the modern townland

names greatly differ from those in the 17th century. The Book of Survey and Distribution of 1661 (T/370/C) does not shed further light on the situation.

### **CARTOGRAPHIC EVIDENCE**

- 5.10 A search was made at the Public Records Office of Northern Ireland for all pre-OS maps of the area. The following maps were consulted but indicated little of use. A map of Ireland of 1567 by Goghe (MPF1.68) merely labelled the area as 'O'Nele', with Lough Neagh and Dungannon the closest reference points marked. A 1580 map of northeast Ulster with notes by Burghley (MPF1.90) showed the area of Tullaghoge west of Lough Neagh but did not mark it. A 1600 map of Lough Neagh and east Tyrone (T/1493/44) did not cover the area of the proposed development.
- 5.11 Boazio's 1602 map of Ulster (T/1669/3) showed Dungannon and Mountjoy fort. The general area was marked as 'Sr Arthur O'Neals Country'. There was also another fort marked to the north of Dungannon.
- 5.12 Barthelet's map of Dungannon Castle and Tullaghoge of 1602 (T/1244/11) (Figure 4) gives an oblique representation of these sites. This included a detailed drawing of the inaugural chair at Tullaghoge, which is thought to have been drawn before the chair was destroyed by Mountjoy. The chair appears to consist of a roughly square boulder, with three flat slabs of stone butted against it forming the sides and back, all sitting on what is illustrated as either a stone outcropping, or bare earth. Similarly, on the illustration of Tullaghoge Fort itself, the fort is depicted at the crest of a hill, with a large hall within, a smaller building adjacent to the larger, and two paths leading out of the fort. One is marked leading eastwards a short distance to the stone chair on the eastern slope, and one leading westwards and then southwards and away from the site. The Killymoon River is clearly marked to the northwest, with a small stone-built church sitting directly to the east of the hill of Tullaghoge and directly south of the river. Given the oblique birds-eye viewpoint, it is questionable how accurately this illustration can be taken, but it remains useful as a general indication of respective location and positioning of the early 17<sup>th</sup> century elements of the site.
- 5.13 The site was also depicted on an array of Barthelet's other maps, albeit in less detail:
- Barthelet's 1602 map of forts in the Lough Neagh area (T/1244/17) showed only Dungannon and 'Clanno', but did not extend quite as far west as Tullaghoge.
  - Barthelet's map of Ulster, dated 1602 (T/2543/1), showed the locations of Dungannon, Mountjoy fort and Tullaghoge, the latter of which was depicted as a large mound with a chair on top.
  - Barthelet's campaign map of southeast Ulster marks the hill of Tullogh-oge, although given the scale of the map, in corresponding less detail than his detailed illustration. It does however contain the annotation 'Tullogh-Oge on this hill were 4 stones in the manner of a chaire, wherein the Oneale this manie yeres have been made [...] The same now taken away by his Lege.'
- 5.14 All available later maps of the area simply marked the spot without giving any appreciable additional detail to add to interpretations, for example Norden's map of Ulster of 1610 (T/1493) was simply marked

'Tulogh Og' with a small hill. Bodley's map of the Barony of Dungannon of 1609 (T/1652/ 11 & 12) included the precinct of Mountjoy. However, Tullaghoge was not included in this survey.

- 5.15 The next useful detailed mapping of the site which was available was the 1<sup>st</sup> edition OS 6 inch map (Tyrone Sheet 38, 1833) (Figure 5) showed Tullaghoge Fort as a circular banked enclosure with internal ditch and tree planting in the centre, with a well-marked just outside the eastern limit. The fort at this period sat in a rectangular field which was bounded by farm lanes on the northern, southern, and western sides. The proposed walking trails overlie this field, and cross the northern and western lanes into adjacent fields. The southeastern loop of the trail also overlies a small building and yard, now obviously no longer extant.
- 5.16 The 2<sup>nd</sup> edition OS 6 inch map (Tyrone Sheet 38, 1854) was not available for the area; online coverage was absent for this mapsheet. The Griffiths Valuation maps, however, are based upon 2<sup>nd</sup> edition mapping, and so these were consulted. By the time of the 2<sup>nd</sup> edition, the east-west lane to the north of the fort had been removed, and the eastern half of the proposed development site amalgamated into a single field. Tullaghoge Fort itself was again mapped as a series of concentric circles denoting banks and ditches, and was also still clearly marked as planted with trees. The small building and yards in the southeastern corner of the proposed development site were no longer extant, the area appearing as blank field on this edition.
- 5.17 On the 3<sup>rd</sup> OS 6-inch map (Tyrone Sheet 38, 1906) (Figure 6) the southern branch of the lane which bisected the site north-south on the 1<sup>st</sup> and 2<sup>nd</sup> editions was no longer extant and simply marked as a field boundary. This aside no substantial changes were noted from the previous edition. The 4<sup>th</sup> edition mapped the site similarly to the 3<sup>rd</sup>, save with less defined hachuring in the interior of the fort. Barring the modern addition of the carpark and existing paths, these editions map the site largely as it stands today.

#### **MAPPED ARCHAEOLOGICAL HERITAGE WITHIN/ADJACENT TO PROPOSED DEVELOPMENT AREA**

- 5.18 Whilst the focus of the proposed development is obviously the State Care site of Tullaghoge Fort, the immediate area contains archaeological sites from a wide variety of periods (Figure 6, 7).
- 5.19 The earliest phase of Irish prehistory, the Mesolithic (8000-3750BC), is represented by a single Early Mesolithic flint cache (TYR038:056), located approximately 600m to the southeast on the opposite side of the Killymoon River, closer to the river. In general the Mesolithic is very poorly represented in Tyrone. Fish was one of the most important sources of food during this period before the introduction of agriculture when fishing, hunting and gathering were the staples of subsistence. Camps of this period leave no surface traces and are only noted when finds (usually flint tools) are unearthed through ploughing or excavation. The location of TYR038:056, beside the river but upslope on the higher, drier ground, is reminiscent of the similar setting of the Mount Sandel Mesolithic occupation site. The presence of the lithic assemblage suggests wider Mesolithic exploitation of the area. No details of the lithics were available on the Sites and Monuments Record, simply a brief summary of 'Early Mesolithic lithic assemblage - fine blades and bladelet cores.'

- 5.20 The earliest phase of Tullaghoge Fort (TYR036:016) itself has occasionally been raised as an Early Medieval bivallate rath, but the morphology of the site does not entirely support this as there is no evidence for an external ditch – topographical nor geophysical survey has uncovered any traces of an external ditch. Whilst this is not conclusive evidence of its absence, the surviving morphology of the banks and ditches more closely resembles a Neolithic henge although equally there is no corroborating evidence for this from the limited physical testing on site. Excavations in the area of the carpark at Tullaghoge uncovered artefactual evidence for Middle Neolithic occupation of the area, with an associated radiocarbon date of 3653-3524BC. Neolithic occupation of the site would support a possible henge interpretation of the monument, and would offer parallels with other sites such as the Maguire inauguration site at Cornashee which sits atop a potential prehistoric cairn.
- 5.21 Two cereal drying kilns are located within the fields containing the proposed development (TYR038:055, TYR038:060). These were uncovered during excavations to investigate anomalies on geophysical survey results from a series of surveys undertaken on Tullaghoge Fort and in the fields immediately around. Artefact and radiocarbon dating of these features indicates they belong to the Early Medieval period, dating to the early 7<sup>th</sup> and 8<sup>th</sup>-10<sup>th</sup> centuries AD respectively. These are obviously indicative of Early Medieval agricultural activity in the area around the site, but thus far there is no conclusive evidence as to whether this was related to any Early Medieval occupation within Tullaghoge Fort itself.
- 5.22 The date of the later kiln (AD722 – 965) partially overlaps with the first mention of Tullaghoge in the Annals of Ulster, when the site was the location of a peace agreement between the *Cenél nÉogain* and the *Ulaid*. The site is mentioned again, described as being attacked in 1111 by the Ulaid in retribution for an attack on the *Ulaid* inauguration site at Crew Hill in Antrim in 1099. Whilst detail from the Annals can often be questionable in terms of specific dating, this at least corroborates the importance of the location in the tail end of the Early Medieval and into the Medieval period. The aforementioned field investigations at the site uncovered two oval features at the western end of the proposed development area, close to the carpark, dating to the 11<sup>th</sup> to 13<sup>th</sup> centuries AD, and interpreted as two small houses. Whilst these two small structures do not directly relate to any of the mentions in the Annals, the earliest portion of the date range does corroborate settlement related to Tullaghoge in and around the dates mentioned in the Annals.
- 5.23 The site is a focal point for the northern O’Neill from the thirteenth century until the Flight of the Earls when the site changes hands in the very early 17<sup>th</sup> century. It is first explicitly named as an inauguration site in 1432 in the Annals of Ulster with the raising of Eoghan Ó Neill as king at ‘Tullach Oc’. Various late 16<sup>th</sup> to early 17<sup>th</sup> century depictions show or describe the site as the stone where the ‘Oneale’ is named, and show an inauguration ceremony, whilst Barthlett’s illustrations (described above) from the early 17<sup>th</sup> century illustrate the site towards the end of the Nine Years War, and give the aforementioned description of the chair being removed. It is reported that this occurred during an attack by Mountjoy in 1602 which destroyed the seat, but detail is vague as to the extent of any other destruction on the site at the time. Whilst no investigations to date have uncovered evidence for the buildings illustrated within Tullaghoge by Barthlett, the general form does conform to the ‘hall’ uncovered in investigations in the area of the

new carpark at the western edge of the development site, in addition to the two small buildings dating to the 11<sup>th</sup> to 13<sup>th</sup> centuries, also uncovered a third building, 15m by 9m, which may have had a similar footprint to those illustrated by Barthlett.

- 5.24 The accompanying data for the Gazetteer of Historic Nucleated Urban Settlement gives a useful summary history of the later history of the site:

*'Pre-Plantation the lands belonged to the O'Hagan family and the graveyard (TYR 038:014) to the west of the village is associated with this family. Members of the Lindsay family who were granted the land upon which the village is located in the 17th century were also buried in the graveyard. The land was granted to a Robert Lindsey in 1610 (Hill 1877, 288) and Pynner in 1619 noted that there was a bawn and timber house on the estate. The earthworks of the fort of Tullyhogue (TYR 038:016) being reused as the bawn. Although lessees and cottagers are noted there is no specific reference to a village (ibid.). By 1622, however the bawn and dwelling house were no longer in use with Mrs Lindsay described as living 'at the foot of the said hill (presumably referring to the fort of Tullyhogue] in a little thatched house (without any storey), the foundation whereof is stone and clay, some 6 foot high covered with thatch' (Treadwell 1964, 00).'*

- 5.25 Whilst it is likely that the 'living at the foot of said hill in a little thatched house' most likely indicates the southern foot of the hill by the modern village of Tullaghoge, there is also the possibility that it was the western foot of the hill, which would possibly correlate to the 15m 'hall' structure, although that size perhaps stretches the definition of a little thatched cottage. From this point, however, the focus of the occupation in the area shifts to the village of Tullaghoge, and there is little discussed or described of archaeological pertinence until the lanes and buildings as described on the Ordnance Survey six-inch maps further develop the site.

#### **REMAINING ARCHAEOLOGICAL SITES AND MONUMENTS WITHIN THE STUDY AREA**

- 5.26 Fifteen archaeological monuments were recorded within the study area on the NISMR (Figure 6). Several of these have already been discussed above as within or proximate to the proposed development. The remainder are discussed below.
- 5.27 The earliest phase of Irish prehistory, the Mesolithic (8000-3750BC), is represented by a single Early Mesolithic flint cache (TYR038:056), as discussed above.
- 5.28 Within 1km of the proposed development site, the Neolithic (37500-2500BC) and Bronze Age (2500-600BC) are not represented by any certainly dated sites, although the State Care standing stone 800m to the northeast (TYR039:020) most likely dates to one of these periods. Additionally, the morphology of Tullaghoge Fort (TYR038:016) with its lack of external ditch may be closer to a modified hengiform enclosure, which would place the origin of the Fort in the Neolithic as a high status site. A little further afield lies the Neolithic megalithic 'court tomb' at Killymoon Demesne (TYR038:031), and a Bronze Age (2500-600BC) 'wedge tomb' at Loughry, known as the 'Giant's Grave' (TYR038:020). This latter site was

surrounded by the sites of urn burials, it is thought that this may have been the centre of a pre-historic cemetery. The Iron Age (c. 600BC-450AD) is not represented in the immediate area.

- 5.29 The Early Medieval period (c. 450-1150AD) is the most prolific era in terms of surviving archaeological sites in Ireland. By far the most common sites of the Early Medieval period in Ireland were ringforts. These were semi-defensive sites containing the (normally wood, wicker, turf or drystone walled) habitations of the wealthier of the secular land-owning classes of the period. These are also known as raths, forts or enclosures, and the stone walled examples are known as cashels. Few of these, however, are found within 1km of Tullaghoge Fort itself, with the possible enclosure at Donaghrisk (TYR 038:021) being a possible exception. Tullaghoge Fort, as discussed above, was also a site of activity in the Early Medieval period, as attested by the corn drying kilns, although the fort itself does not conform. No Early Medieval ecclesiastical sites lie within the 1km study area, although the holy well TYR038:015, may suggest the presence of one nearby even though it is more commonly linked to the possible Medieval friary.
- 5.30 The Medieval period (1150-1550AD) is represented by the Tullaghoge Fort itself (TYR038:016), two pre-19<sup>th</sup> century roads which may have origins in the medieval period (TYR038:058 and 059), and a possible medieval origin to graveyard TYR038:014; there are claims that a priory was founded here in the late 13<sup>th</sup> century by the O'Hagan family, but no sources or substantiation for this is given.
- 5.31 The Plantation period (1605-1690) is represented again by inauguration site at Tullaghoge (TYR038:016) and possible adjacent post-medieval terraces and earthworks (TYR038:061) and also the settlements of Tullaghoge (TYR029:054) and Grange (TYR039:069), along with an 19<sup>th</sup> century landscaped tree ring (TYR038:050).

NISMR No	Site Type	Period	Protection	Townland	Grid Ref
TYR038:014	Graveyard	Uncertain; c18th/c19th	-	Donaghrisk	H8207073970
TYR038:015	Holy well: Friar's Well	Uncertain	-	Donaghrisk	H8216074050
TYR038:016	Hilltop enclosure & inauguration site of the O'Neills: Tullaghoge Fort	Med/L. Med; E. Med.; Post-Med	State Care and Scheduled	Ballymully Glebe	H8250074300
TYR038:021	Enclosure	Uncertain	-	Donaghrisk	H8180074280
TYR038:038	A.P. Site - circular cropmark	Uncertain	-	Donaghrisk	H8204073750
TYR039:020	Standing Stone	Prehistoric	State Care and Scheduled	Grange	H8317074770
TYR038:050	Tree Ring	C18th/c19th	-	Loughry	H8188574776
TYR039:069	Historic Settlement Grange	Post-med	-	Grange	H8302775019
TYR038:054	Historic Settlement Tullyhogue	Post-med	-	Tullaghoge	H8257373788
TYR038:055	Remains of corn-drying kiln	E. Med.	-	Ballymully Glebe	H8212474388
TYR038:056	Early Mesolithic lithic assemblage - fine blades and bladelet cores.	Mesolithic	-	Ballymully Glebe	H8210874494
TYR038:058	Pre-19th century routeway - linking Tullaghoge Hill and Donaghrisk Priory	Med/ L. Med	-	Donaghrisk	H8231373889
TYR038:059	Pre-19th century routeway - linking Tullaghoge Hill and Donaghrisk Priory	Med/ L. Med	-	Ballymully Glebe	H8239374355



TYR038:060	Remains of corn-drying kiln	E. Med.	-	Ballymully Glebe	H8252174208
TYR038:061	Terraces and earthworks. Post-medieval landscaping?	Post-med	-	Ballymully Glebe	H8254374145

**Table 2: Mapped NISMR sites within study area (500m)**

### ARCHAEOLOGICAL EXCAVATIONS IN THE IMMEDIATE VICINITY OF THE SITE

- 5.32 Several phases of archaeological investigations both in terms of physical excavations and geophysical surveys have taken place within the proposed development site, the pertinent results of these have been discussed above.

### LATER HERITAGE WITHIN THE STUDY AREA

- 5.33 The study area contains three sites of Later Heritage (Figure 7); the largest is the easternmost limit of the woodlands at the periphery of the grounds of Loughry House (Historic Garden Register T-026) on the opposite side of the Killymoon River from the proposed development. Two sites of Industrial Heritage also lie in this area – IHR04856, the listed structure of Tullywiggan Bridge (also HB09/05/030 in the Listed Buildings register), and IHR04857:000:00 a beetling mill in ruins. These lie along the Killymoon River within or adjacent to the boundaries of the historic garden, and as sites linked directly with the river, are well removed from the proposed development.

Ref No	Type (Current/Former)	Period	Protection/Grade	Townland	Grid Ref
HB09/05/030 & IHR04856:000:00	Tullywiggan Bridge	1820-1839	Listed - B2	Loughry/Ballymully	H8220 7475
IHR04857:000:00	Beetling Mill (in ruins)	-	-	Loughry	H82177467
T-026	Loughry	-	Grade A	Loughry	H8140 7440

**Table 3: Later Heritage within 500m Study Area.**

### SETTINGS BASELINE

- 5.34 As the proposed development consists of low lying/ground level paths and seating, long-range visibility is negligible for the wider landscape. Whilst the surrounding 1km contains several sites of higher status (Figure 8) including listed buildings, a State Care standing stone (TYR039:020) and obviously Tullaghoge Fort itself (TYR038:016), the nature of the proposals means that with the exception of Tullaghoge Fort itself, there will be little to no apparent visible change from these sites.

Ref No	Current/ Former Use	Period	Protection	Townland	Grid Ref	Visibility
TYR038:016	Hilltop enclosure & inauguration site of the O'Neills: Tullaghoge Fort	Med/L. Med; E. Med.; Post-Med	State Care and Scheduled	Ballymully Glebe	H8250074300	High
TYR039:020	Standing Stone	Prehistoric	State Care and Scheduled	Grange	H8317074770	None
HB09/05/006	House		B1	Cookstown	H8205 7375	None

Ref No	Current/ Former Use	Period	Protection	Townland	Grid Ref	Visibility
HB09/05/020 A	House including nineteenth century and 1908 extensions	1740 - 1759	B1	Cookstown	H8140 7440	None
HB09/05/020 C	Garden house	1820 - 1839	B2	Cookstown	H8142 7432	None
HB09/05/030	Bridge	1820 - 1839	B2	Cookstown	H8220 7475	None
HB09/05/033	Farm building	1860 - 1879	B2	Cookstown	H8261 7368	None

**Table 4: Higher Status NISMR sites and Listed Building database sites within 500m Study Area.**

## 6 POTENTIAL AND IMPACT

### ARCHAEOLOGICAL POTENTIAL

- 6.1 The archaeological potential of the proposed development site is high; multiple phases of excavations and surveys within the area of Tullaghoge Fort have shown evidence for a complex multiperiod site, spanning from Mesolithic settlement along the Killymoon River, through Neolithic activity and the possibility of the Tullaghoge earthworks having their origin as a henge, through Early Medieval agricultural use evidenced by the corn drying kilns, through high status Medieval and Late Medieval use as an inauguration site and important meeting place with associated earthworks and settlement.
- 6.2 The previous excavations and surveys on the site make it clear that no portion of the fields around the fort itself can be considered completely devoid of archaeological potential.

### PHYSICAL IMPACT

- 6.3 Almost all aspects of the proposed development are non-invasive and will not impact on the physical nature of the site – paths are to be simple mown grass trails, seating is to be set upon the ground rather than requiring any excavated footing, and any signage is to be affixed to elements already in place or in stone seating set upon the ground, rather than being freestanding and requiring posts or similar. The only portion of the works that may have any physical impact are the two portions where the proposed trails pass through the mature hedge lines running north and south through the site. The site visit, however, indicated that gaps exist in these and paths could cross with minimal works required. There does, however, remain a small chance that any necessary physical works to prepare these gaps to allow the trails to pass through may cause minor levels of impact on previously undiscovered archaeological remains. As these particular boundaries have their origins in lanes mapped in the early 19th century, there is potential for these to reflect boundaries and routes which were in existence in the 18<sup>th</sup> or earlier centuries as well.

### IMPACT ON SETTINGS OF HERITAGE ASSETS

- 6.4 As detailed previously, given the low level and generally unobtrusive nature of the proposals, impacts on the settings of heritage assets are deemed to be non-existent outside the confines of the proposed development site. From Tullaghoge Fort itself, it is considered that the nature of the proposals – simple mown paths and rock/log seating – will be an effectively negligible change to the current setting quality.

The one exception to this would be the seating within the eastern half of the site. An important aspect of the setting at Tullaghoge is the relationship between the fort and the potential location of the '*Leac na Ri*' or 'king's stone'. The cartographic study has shown that period mapping appears to show this sitting to the east of the fort, potentially on a rocky outcrop. Previous studies have commented that the boulders in the fields to the east are potential candidates for the '*Leac na Ri*' or 'king's stone'. It is considered that in light of this, the introduction of simple 'convenient boulder' style stone seating in the eastern half of the site would detract from the natural boulders there and their potential status as candidates from the '*Leac na Ri*'.

## 7 SCOPE OF RECOMMENDED MITIGATION WORKS

### SCHEDULED MONUMENT CONSENT

- 7.1 It should be noted that a large portion of the proposed development site is Scheduled. All works within the scheduled area, whether deemed to have potential to cause impacts or not, must obtain Scheduled Monument Consent.

### SCOPE

#### RECOMMENDED MITIGATION (PHYSICAL)

- 7.2 Due to the nature of the proposals, physical impacts are negligible. The only possible impacts identified are the portions where the proposed trails pass through mature field boundaries/fence lines requiring any groundworks or flattening. Targeting portions of the boundaries where natural gaps occur, where possible, would minimise disturbance. The archaeological monitoring and recording of any minor works requiring ground disturbance (i.e. any minor alterations to low field boundary banks or ditches) would further reduce even these small scale impacts.

#### ADDITIONAL CONSIDERATIONS AND RECOMMENDED MITIGATION (SETTINGS)

- 7.3 As discussed, settings impacts should be predominantly neutral from the proposals, with potentially only design-stage mitigation required to ensure that the placement of any stone seating to the eastern half of the site does not detract from the existing boulders there with their potential links to the '*Leac na Ri*' and the Late Medieval critical setting of the monument.

## 8 GENERAL MITIGATION WORKS SPECIFICATION

- 8.1 Should the above project proceed through planning to a phase where archaeological fieldwork is required, whether at BH3 evaluation stage or to meet BH4 planning conditions, then the following general works specifications would apply to any required archaeological fieldwork and any following post-excavation analysis.

### **SCHEDULED MONUMENT CONSENT**

- 8.2 Scheduled Monument Consent is required for all works, whether they require archaeological monitoring or not, within the scheduled area.

### **APPOINTING THE LICENSED ARCHAEOLOGIST**

- 8.3 The appointed archaeologist will need to obtain an excavation licence prior to carrying out any of the fieldwork discussed below. Licences must be applied for from the DfC: HED, and it can take many weeks to process the application. The appointee must be approved by the DfC: HED. An Archaeological Report detailing a mitigation strategy must be first approved by the DfC: HED, and then enclosed with the licence application form. The developer or their representative must fill out the DfC: HED pro-forma agreeing to facilitate and fund the necessary mitigation measures and forward it to the archaeological consultant for submission with the licence application; DfC: HED will not issue a licence unless the application is accompanied by this form.

### **ENVIRONMENTAL GOOD PRACTICE FOR ARCHAEOLOGISTS**

- 8.4 All archaeological works on this project by NAC Ltd, and its staff, will be undertaken in line with the guidance contained within the NIEA Environmental Good Practice Guide for Archaeological Excavations document:

<https://www.communities-ni.gov.uk/sites/default/files/publications/doi/env-good-practice-for-archaeological-excavations-3.pdf>

- 8.5 The client has been made aware of the following section of the DAERA-NI standing advice for pollution prevention for site works document. The client's attention is drawn to the following excerpt, and have their own environmental policies in place to account for this risk:

#### **Good Practice Planning and Implementation**

The construction phase of a proposal is one of the most high risk stages of a development during which pollution is likely to occur.

If a development is in close proximity to a watercourse additional care will need to be taken to prevent pollution. Any 'waterway' as defined by the Water (NI) Order 1999 will pose a constraint to a construction project. Consideration must be given at preliminary planning and design stages to ensure that impact on the receiving water environment during any testing, construction and operational phases are minimised.

The applicant and appointed contractors must identify all the relevant Pollution Prevention Guidelines (PPG) and the replacement guidance series, Guidance for Pollution Prevention (GPPs) that relate to their proposal and must adhere to the guidance contained within these (see Table 1 below).

The main risks to a waterway during the construction and operational phases are from oil, hydrocarbons, fuel, chemicals, paint, suspended solids, concrete, cement and grout.

#### **Construction Method Statements**

Works to be conducted in; near (within 10 metres) or liable to affect any waterway may require a construction method statement.

Generic method statements should be submitted along with the planning application although NIEA welcome full detail, if possible, at this stage. If an application is granted permission a full, detailed, site specific method

statement may then be required from the appointed contractor(s). This will need to be submitted for our agreement a minimum of eight weeks prior to works beginning onsite.

The method statement should detail all mitigation measures identified to prevent pollution of the water environment during the construction, operational and maintenance phase of the project.

Implementing and strictly adhering to an agreed method statement is important to minimise the impact of the proposal on the water environment.

Source: (<https://www.daera-ni.gov.uk/sites/default/files/publications/daera/DAERA%20%20Standing%20Advice%20-%20WTR%20-%20Pollution%20preventing%20guidance%20-%20November%202017.pdf>)

## HEALTH AND SAFETY

- 8.6 A full risk assessment for the archaeological works will be prepared in advance of the work proceeding on site by NAC's Health & Safety officer. Copies of the risk assessment will be made available to the principal contractor and HED on request.
- 8.7 All electrical lines and services **must** be identified and marked before any trenching takes place so that an appropriate clear area can be kept.

## MONITORING OF REQUIRED WORKS

- 8.8 All works to be subjected to archaeological monitoring must be performed under supervision of the licensed archaeologist licence, until either archaeological remains, the subsoil/bedrock surface or the maximum depth/extents required for construction is reached, whichever is encountered first. Depending on the nature of the works and HED agreement, the works may be carried out mechanically until archaeological remains are encountered, after which manual methods will be required.

## AREA EXCAVATION WHEN ARCHAEOLOGICAL MATERIAL IS ENCOUNTERED DURING MONITORING

- 8.9 Where archaeological features are identified, HED may request excavation of the area to reveal the extent of the archaeological remains. Area excavation shall be set to a maximum limit of 10m beyond the last archaeological feature encountered, **or the edge of the invasive development**, whichever is reached first.
- 8.10 The archaeology must then be recorded at the surface level, ie. Drawn, photographed and accurately spatially located (see below).
- 8.11 At this stage HED may also request characterization of the archaeology, i.e. Manual excavation of a small number of features to identify their archaeological nature.
- 8.12 The above measures will not be undertaken without prior consent from the client and HED.

## EXCAVATION TECHNIQUES

- 8.13 The mechanical excavation of works to be monitored must where possible be carried out using a digger with a smooth-edged bucket, under the direction and supervision of the licensed archaeologist. A

smooth-edged bucket leaves a clean surface on the subsoil, which is important as a smooth and clean surface greatly aids the archaeologist in identifying archaeological features. Bulldozers of any type or diggers with toothed buckets would not normally be archaeologically acceptable, as these would leave a ragged surface on which archaeological features could not be easily distinguished. A toothed bucket may **only** be used to break up hard surfaces, taking care to minimise disturbance to the soil horizon beneath. The underlying surface should then be given a clean scrape with a smooth-edged bucket before any further invasive work then continues with the smooth-edged bucket only.

### **PRESERVATION *IN-SITU***

- 8.14 Preservation *in-situ* is always the preferred option when archaeological material is found. An appropriate preservation and consolidation strategy must be adopted where possible where in-situ archaeological remains are uncovered.
- 8.15 It is anticipated that any preservation strategy will consist of the archaeological material being covered with a suitable geotextile and the investigation trench reinstated.
- 8.16 Prior to preservation and re-instatement, all in-situ identified archaeological material would need to be recorded using a scaled plan. The excavation area must be geospatially recorded to produce a digital scaled map tied into the Ordnance Survey and be fully grid referenced. Once this is complete the archaeological material can then be subject to preservation and re-instatement.

### **RECORDING AND EXCAVATION**

- 8.17 If preservation in-situ is not to be undertaken for any uncovered remains for any reason, features discovered during monitoring or otherwise must be planned, sampled, recorded and written up. All archaeological works and structural recording will be carried out in accordance with the standards and guidance laid out in Section 2.
- HED currently policy indicates that 100% excavation should be considered for most features, however larger features (e.g. long ditches) and those features which have been identified as modern during initial examination may require a lesser degree of excavation and recording. Any changes to 100% excavation and recording will require prior approval from HED.
  - The discovery of possible treasure items (as defined by the Treasure Act 1996 and the Treasure (Designation) Order 2002) must be reported at once to the HED.
  - Any features of possible archaeological concern noted must be accurately located on a site plan and recorded by photographs, summary scale drawings, and written descriptions.
  - Areas which contain archaeological features will be planned at 1:50, with individual features being planned at 1:20 where additional detail is required. Sections and profiles of each feature sampled will be drawn at 1:10 or 1:20, depending on the size of the feature. All plans, sections and profiles will be related to Ordnance Datum, in metres.

### **ARCHAEOLOGICAL PERSONNEL**

- 8.18 All of the archaeological measures outlined in this section must be carried out and/or directed by a licensed archaeologist. All archaeological work must be carried out by qualified archaeologists under the direction of the archaeological licence holder.

### **TIMING OF WORKS**

- 8.19 When considering the timing of the works and future development, the client should allow for the possibility of required archaeological works to manually excavate and record, or arrange for preservation in-situ of, any material found during archaeological works. It is therefore advised that all archaeological work is carried out as far in advance of construction as possible.

### **COMPLETION OF ON-SITE WORKS**

- 8.20 On-site works will be considered completed upon the following:
- i. All areas requiring archaeological pre-excavation/monitoring have been excavated;
  - ii. All widening around archaeological remains (where necessary) has been completed.
  - iii. All archaeological remains to be preserved in-situ have been planned, covered with suitable geotextile, and backfilled.
  - iv. All archaeological remains not to be preserved in-situ have been subjected to detailed excavation and recording to an extent agreed upon by HED.
  - v. Notification has been given by the appointed archaeologist to both the client and to HED, notifying them of the completion of on-site works.
- 8.21 The appointed archaeologist will, at this stage, produce a summary report of the results of the investigation for submission to the client and HED.

### **POST EXCAVATION ANALYSIS AND REPORT**

- 8.22 In addition to funding the fieldwork, the client must also fund post-excavation analysis of the findings and the writing up of the findings by the licensed archaeologist. Funding may also be required for specialist archaeological services, such as radiocarbon dating, osteoarchaeology, etc., depending on the nature on any discoveries. These services are a basic requirement for the assessment of some types of evidence. The post-excavation process will be monitored by the client and DfC: HED.

### **DETAILS ON ARCHIVING STANDARDS**

- 8.23 Archives will be created and stored in line with best practice as defined by the Archaeological Archives Forum of the Council for British Archaeology:  
[http://www.archaeologyuk.org/archives/Archives\\_Best\\_Practice.pdf](http://www.archaeologyuk.org/archives/Archives_Best_Practice.pdf)
- 8.24 All materials (paper and artefactual) deriving from the works will be stored at a location to be agreed with DfC: HED.



**PUBLICATIONS**

- 8.25 Where significant archaeological material is encountered the results will be published as both academic and popular reports, at a level of detail appropriate to the works, and as agreed by the client and DfC: HED.

**9 COPYRIGHT AND CONFIDENTIALITY**

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## 10 SELECT BIBLIOGRAPHY

AAF (2007) *Archaeological Archives. A guide to best practice in creation, compilation, transfer and curation*. Archaeological Archives Forum

Byrne, F. (2001) *Irish Kings and High-Kings*, 2nd edition. Dublin: Four Courts Press.

CIfA (2020a) *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*. Reading: Chartered Institute for Archaeologists, October 2020.

CIfA (2020b) *Standard and guidance for the archaeological investigation and recording of standing buildings or structures*. Chartered Institute for Archaeologists: Reading, October 2020.

CIfA (2020c) *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. Chartered Institute for Archaeologists: Reading, October 2020.

CIfA (2020d) *Standard and guidance for Archaeological Excavation*. Chartered Institute for Archaeologists: Reading, October 2020.

CIfA (2020e) *Standard and guidance for Archaeological Field evaluation*. Chartered Institute for Archaeologists: Reading, October 2020.

CIfA (2020f) *Standard and guidance for an Archaeological Watching Brief*. Chartered Institute for Archaeologists: Reading, October 2020.

CIfA (2021) *Code of Conduct*. Reading: Chartered Institute for Archaeologists, October 2021.

Day, A., McWilliams, P., Royal Irish Academy and Studies, I. (1991). *Parishes of County Down II, 1832-4, 1837 : North Down & the Ards*. Belfast: Institute Of Irish Studies In Association With The Royal Irish Academy.

DEM (2015) *Management of Archaeological Investigations on Major Road Improvement Schemes, Director of Engineering Memorandum (DEM 156/15)*. Transport NI.

DfC: HED (2018) *Guidance on Setting and the Historic Environment*. Belfast: Department for Communities: Historic Environment Division

DOE:EHS (2004) *Excavations: Excavation Standards Manual*, 2nd edn., Belfast: Department of the Environment: Environment and Heritage Service.

English Heritage (2007) *Conservation Principles for the Sustainable Management of the Historic Environment: Second Stage Consultation*, London.

English Heritage (2016) *Understanding Historic buildings – a guide to good practice* prepared by English Heritage

FitzPatrick, E., (2004) *Royal Inauguration in Gaelic Ireland, c.1100 to 1600*, Boydell Press, Woodbridge.

Hayes-McCoy, G.A. (1964) *Ulster and other Irish Maps c. 1600*. Dublin: Stationary Office for the Irish Commission.

IAI (2006) *Institute for Archaeologists of Ireland (IAI) Code of Conduct for Archaeological Assessment*

Keenan, D. (2004) *The True Origins of Irish Society*. Bloomington: Xlibris Corporation.

Lewis, S. (1840) *A Topographical Dictionary of Ireland: comprising the several counties, cities, boroughs, corporate, market, and post towns, parishes, and villages, with historical and statistical descriptions. Volume I, 2nd ed.* London: S. Lewis and Co.

MacAirt, S. and MacNiocaill, G. (Translation) (1983) *The Annals of Ulster (to A.D. 1131)*. Dublin: Dublin Institute for Advanced Studies.

McKay, P. (2009) *Place-Names of Northern Ireland*.

McNeill, T. (1980) *Anglo-Norman Ulster*. Edinburgh: John Donald Publishers Ltd.

Mallory, J.P and McNeil, T.E. (1995) *The Archaeology of Ulster*, 2nd edition. Belfast: Institute of Irish Studies, The Queen's University Belfast.

Mason, W.S. (1819) *A Statistical Account or Parochial Survey of Ireland, drawn up from the communications of the clergy. Volume III*, Dublin: Printed at the Faulkner Press for John Cumming, M.N. Mahon, Hodges and McArthur, C.P. Archer and R. Millikin, Dublin; Longman, Hurst, Rees, Orme and Browne, and John Nichols, Son and Bentley, London; and Archibald Constable and Co. Edinburgh.

NIEA (2012) *Environmental Good Practice Guide for Archaeological Excavations*, Version 4. Northern Ireland Environment Agency.

O'Donovan, J. (ed.) (1856) *Annals of the Kingdom of Ireland, by the Four Masters, from the earliest times to the year 1616*. 2nd edition. Dublin.

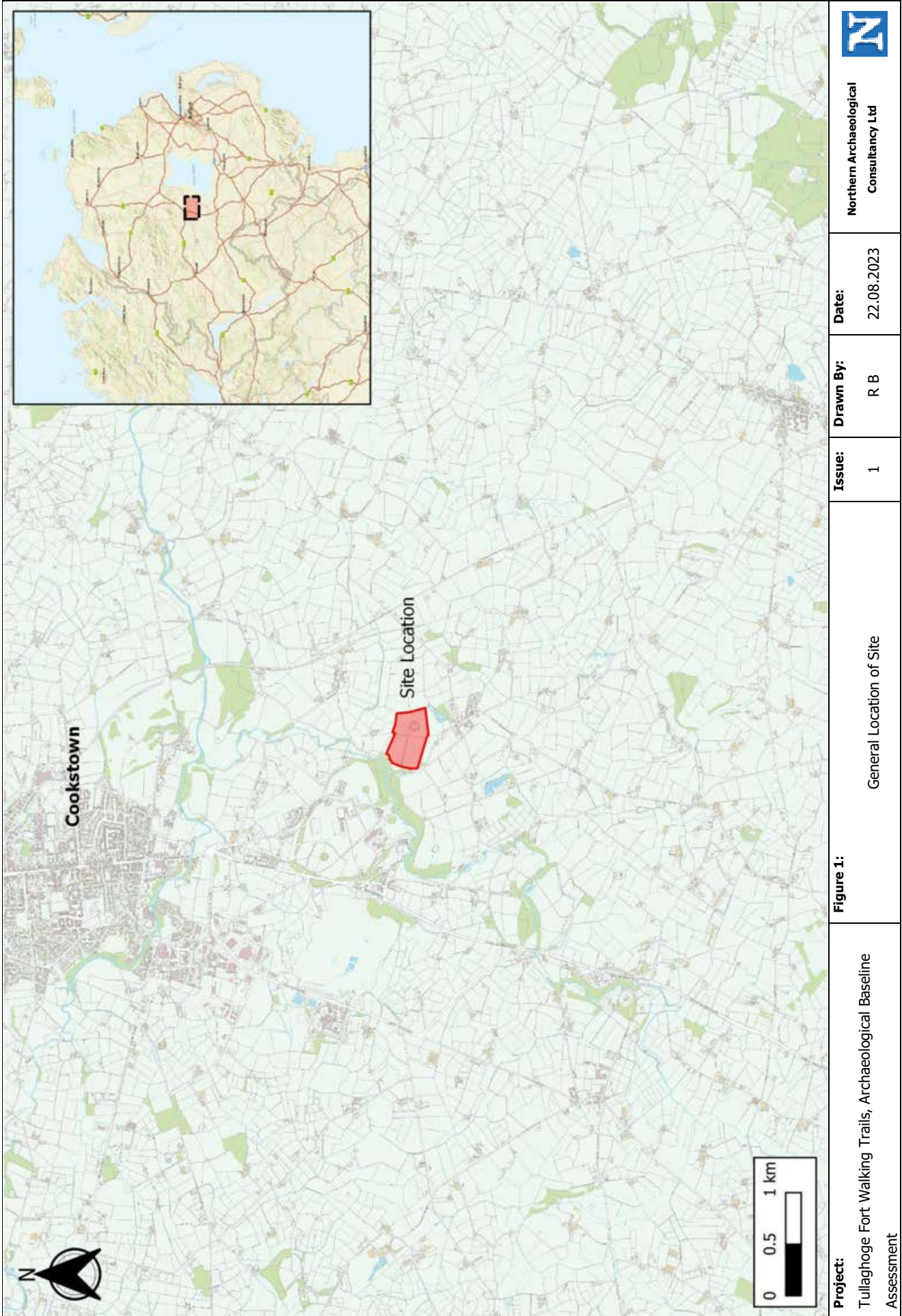
O'Kelly, M.J. (1989) *Early Ireland*, Cambridge: University Press.

O'Neill, S. (1988) *Tullaghoge and the O'Neill Inauguration Chair*. Journal of the O'Neill Country Historical Society

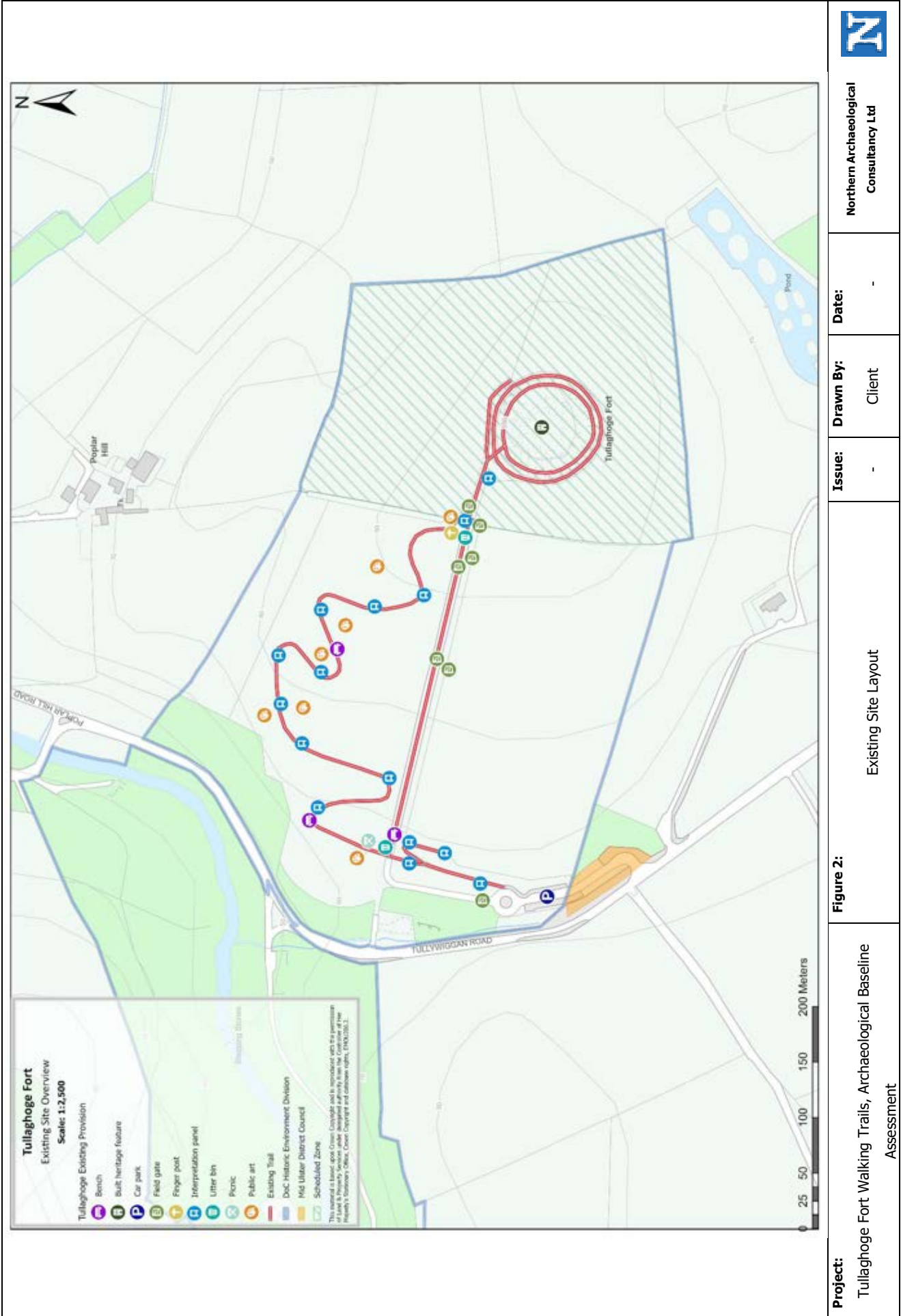
Otway-Ruthven, A.J. (1993) *A History of Medieval Ireland*, 3rd edition. New York: Barnes & Noble Books

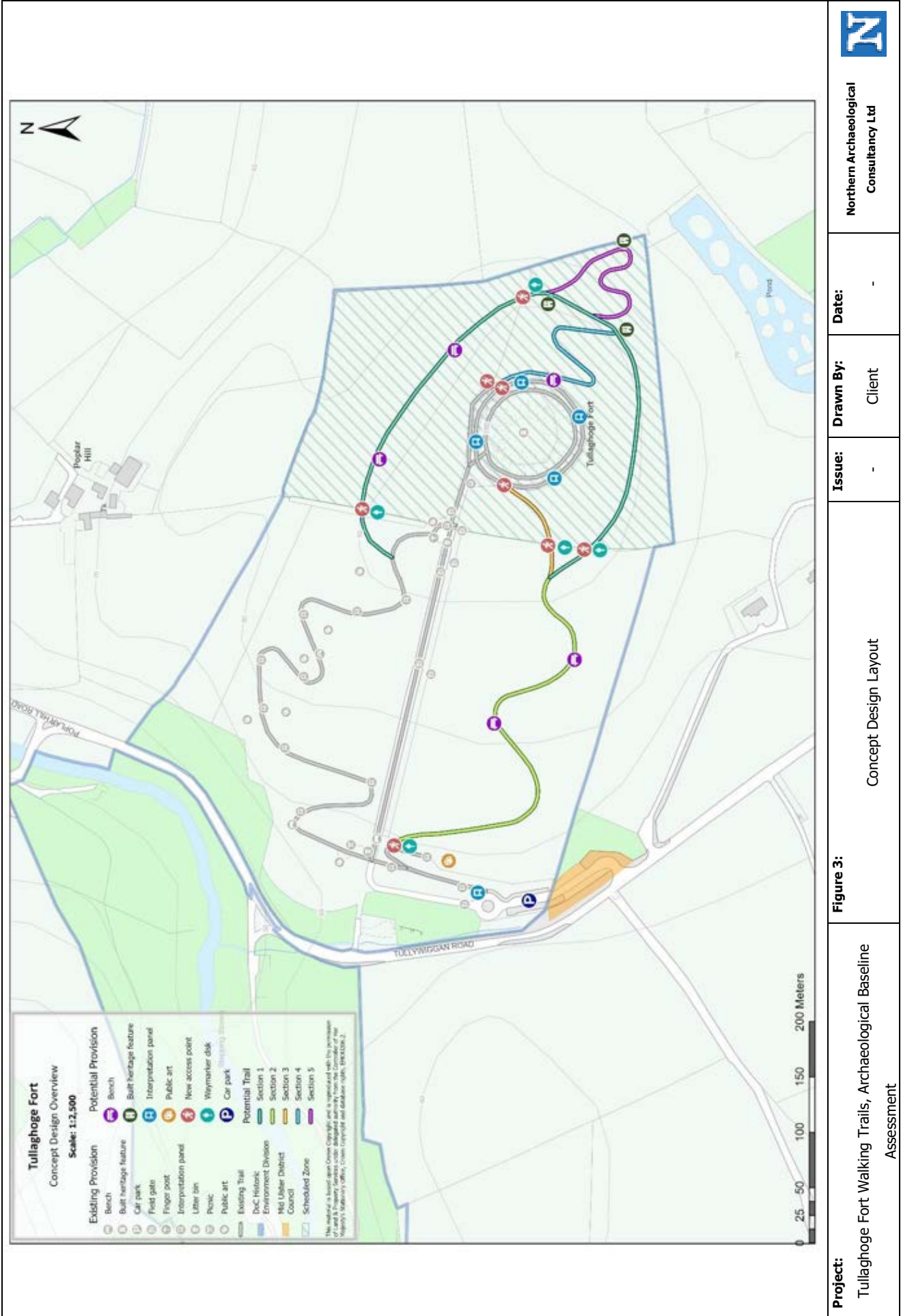
Porter, Rev. T. (1857) *Tullaghog*. Ulster Journal of Archaeology Series 1: 235 – 42.

## APPENDIX 1: ILLUSTRATIONS







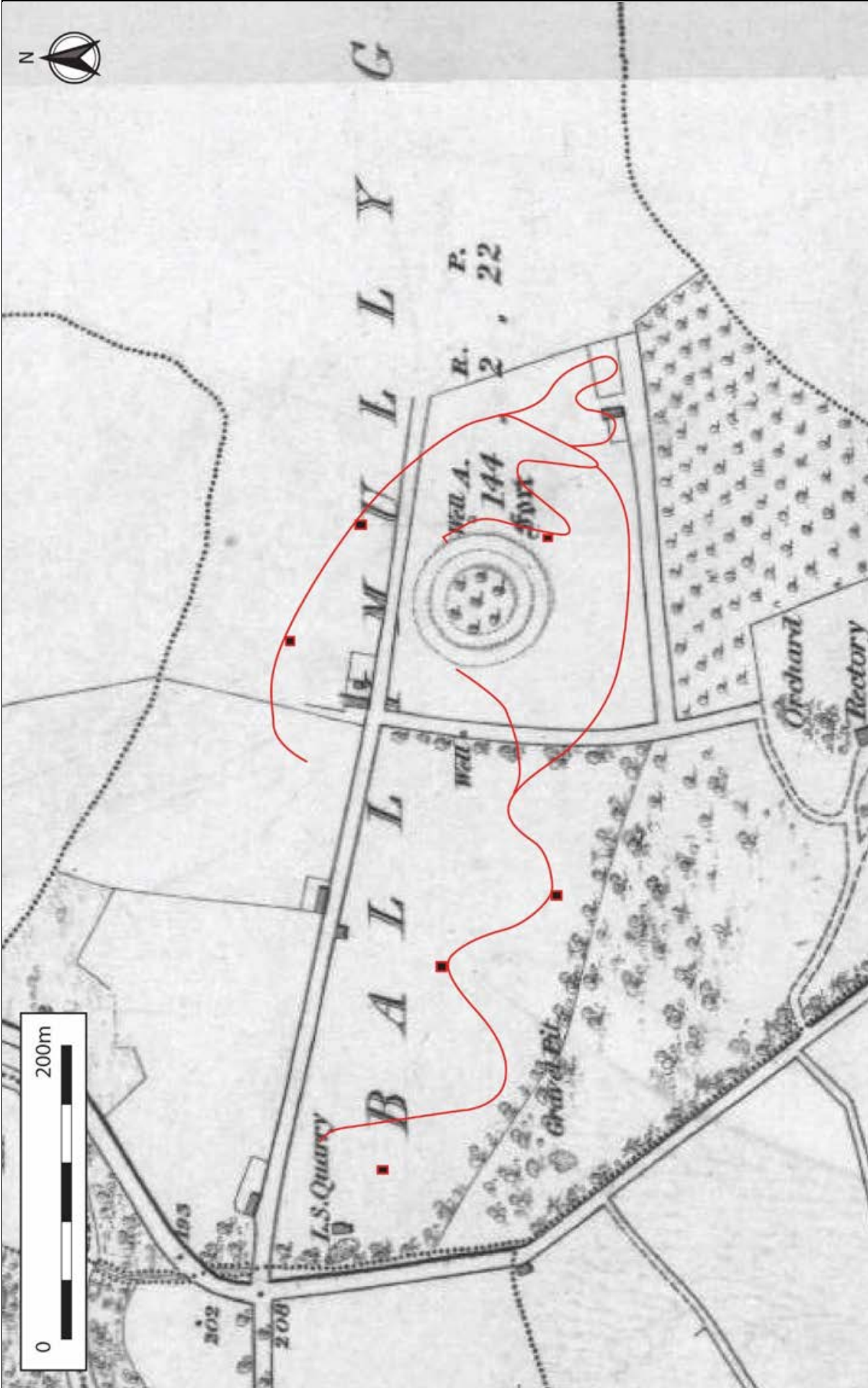




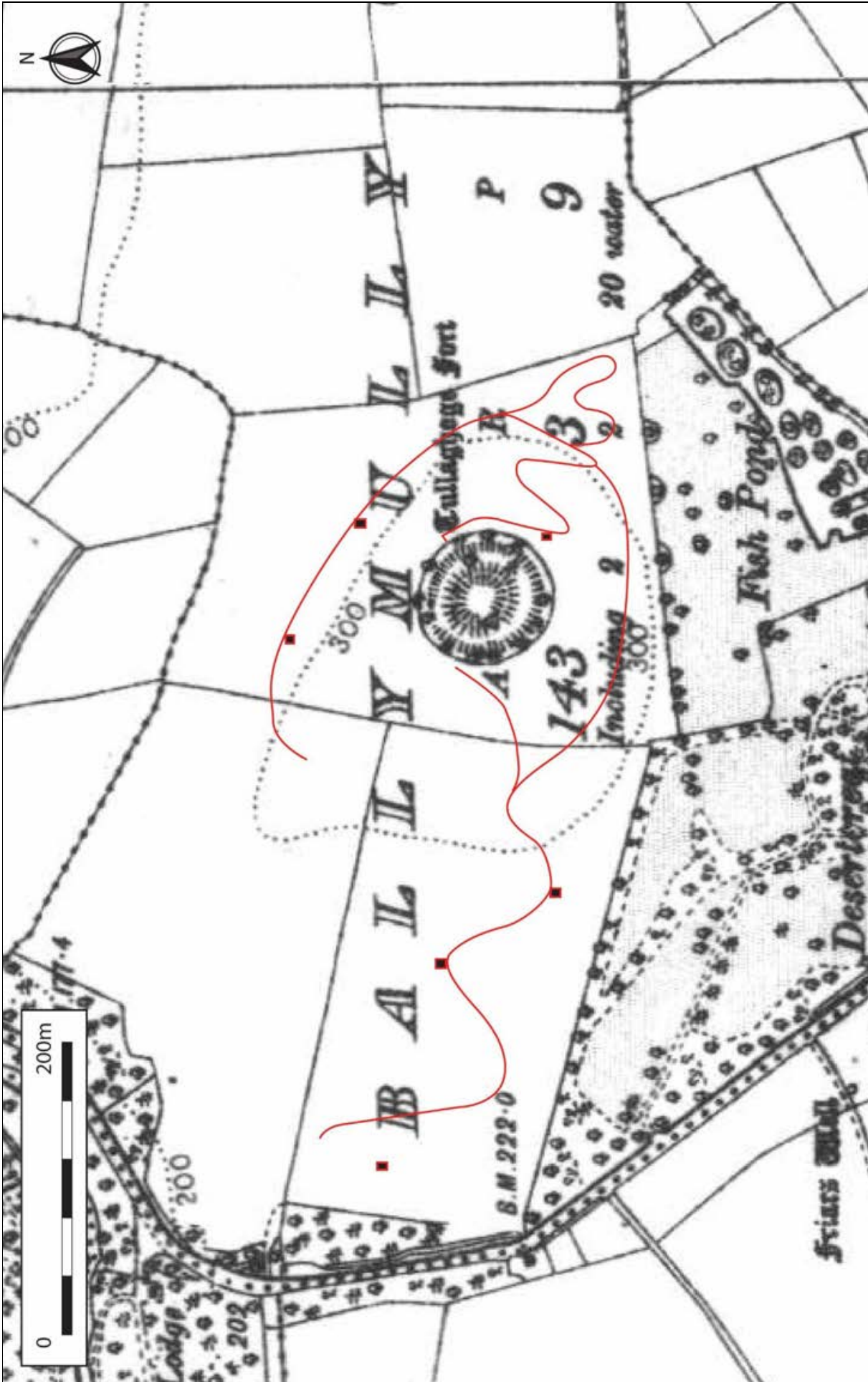


<p><b>Project:</b> Tullaghoge Fort Walking Trails, Archaeological Baseline Assessment</p>	<p><b>Figure 4:</b> Tullaghoge as illustrated by Barthlett 1602.</p>	<p><b>Issue:</b> 1</p>	<p><b>Drawn By:</b> R B</p>	<p><b>Date:</b> 22.08.2023</p>	<p><b>N</b> Northern Archaeological Consultancy Ltd</p>
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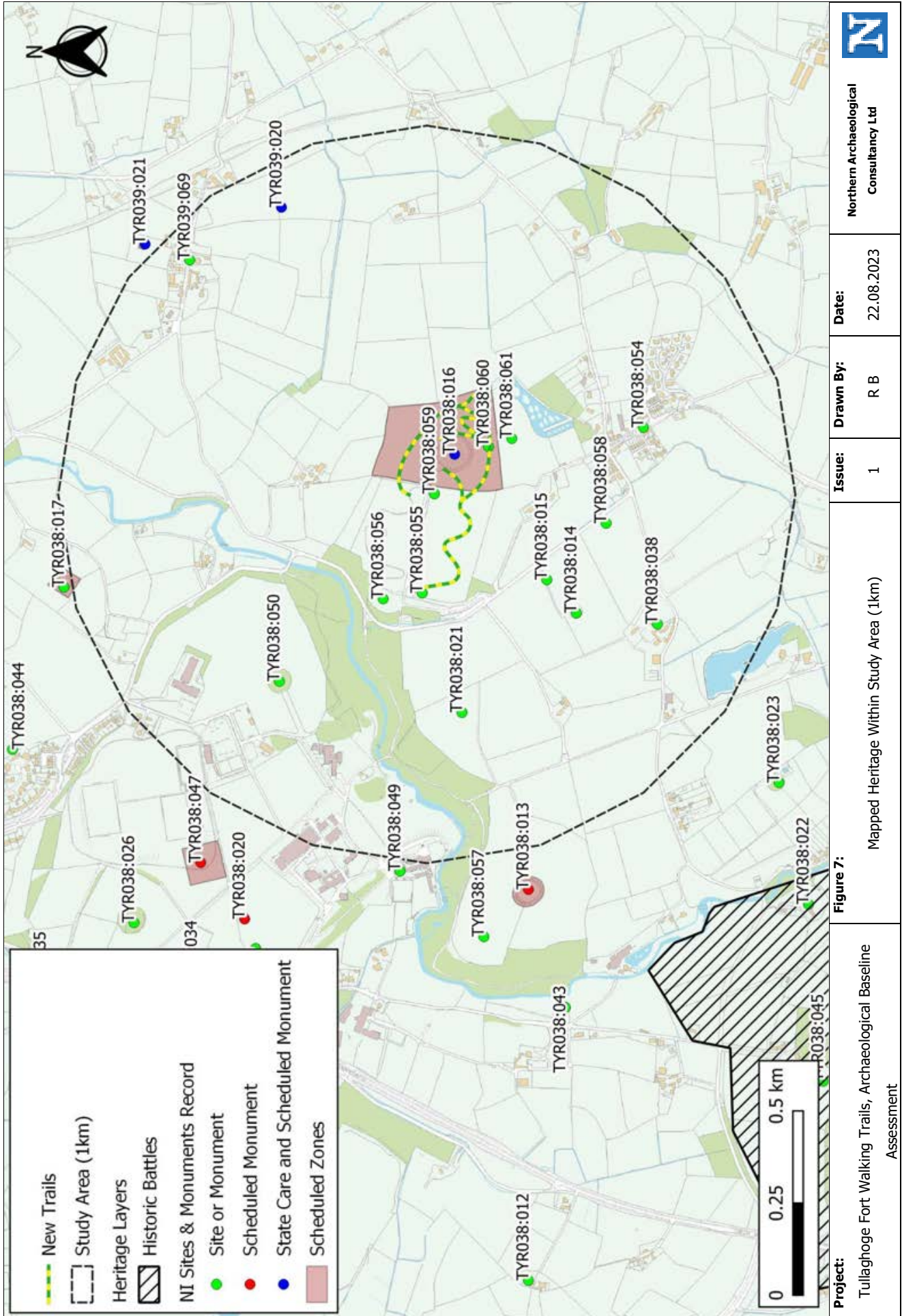


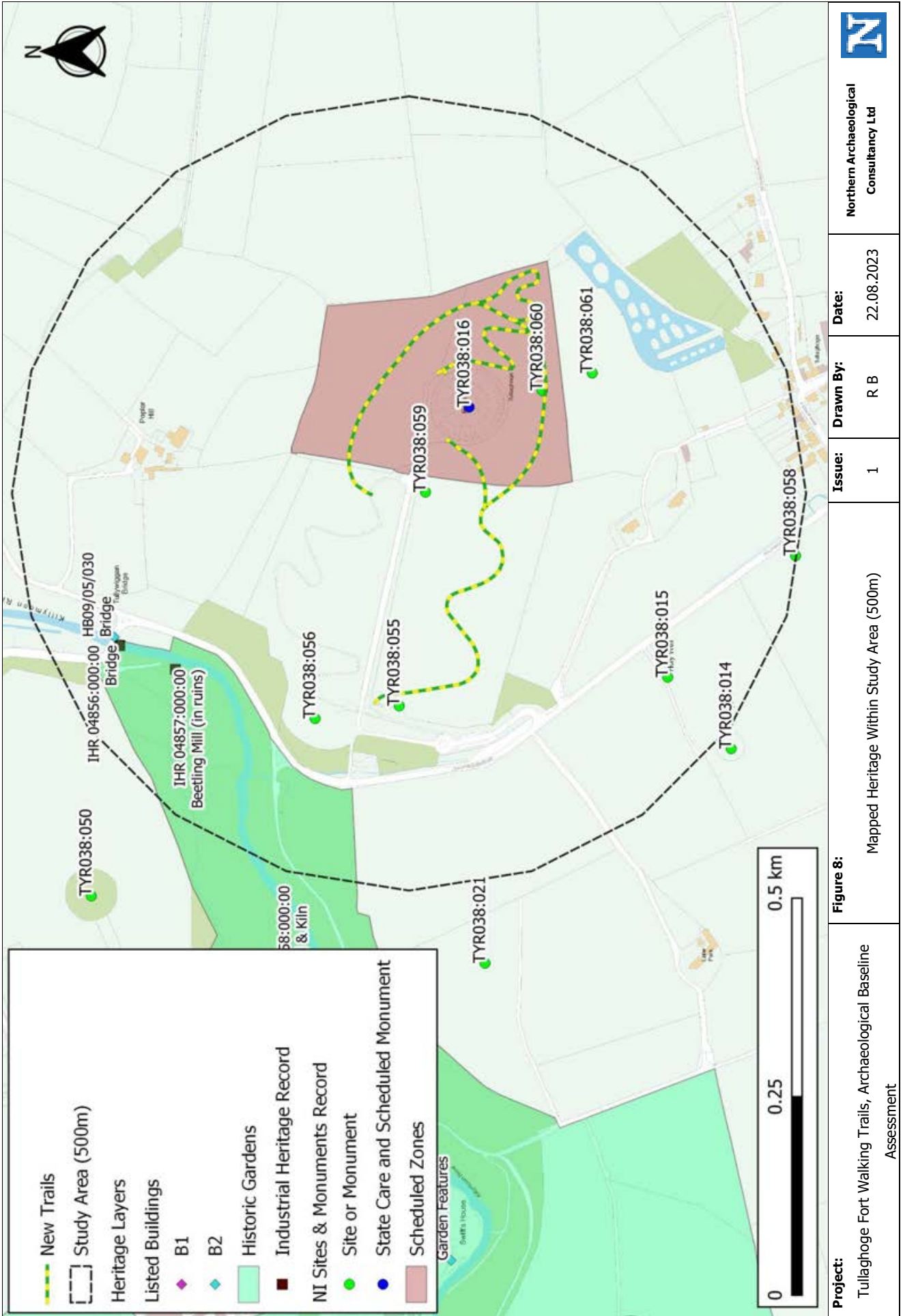
<p><b>Project:</b> Tullaghoge Fort Walking Trails, Archaeological Baseline Assessment</p>	<p><b>Figure 5:</b> Proposed works on 1<sup>st</sup> edition OS mapping</p>	<p><b>Issue:</b> 1</p>	<p><b>Drawn By:</b> R B</p>	<p><b>Date:</b> 22.08.2023</p>	<p><b>Northern Archaeological Consultancy Ltd</b></p> 
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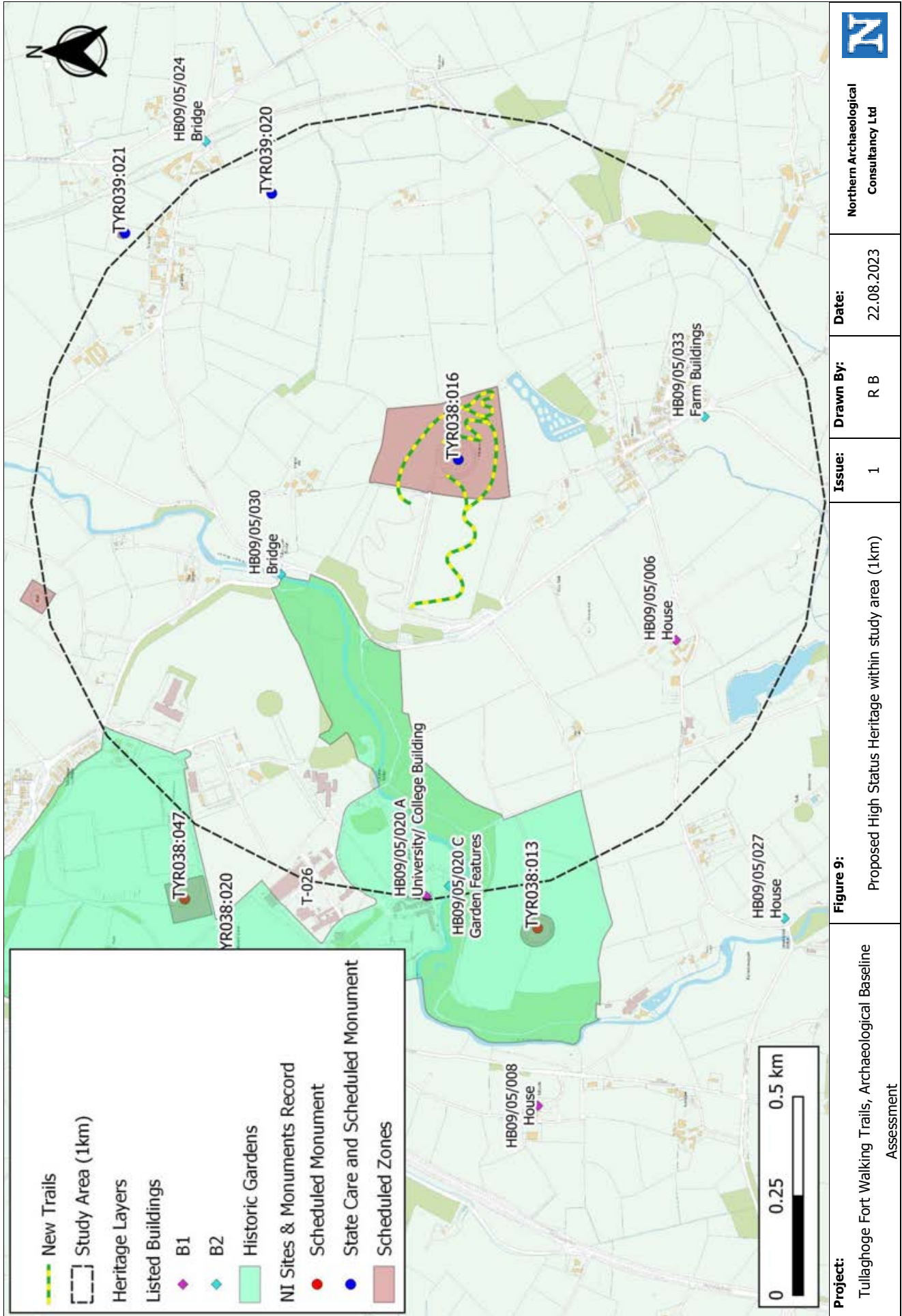
<p><b>Project:</b> Tullaghoge Fort Walking Trails, Archaeological Baseline Assessment</p>	<p><b>Figure 6:</b> Proposed works on 3<sup>rd</sup> edition OS mapping.</p>	<p><b>Issue:</b> 1 <b>Drawn By:</b> R B <b>Date:</b> 22.08.2023</p>	<p><b>N</b> Northern Archaeological Consultancy Ltd</p>
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**APPENDIX 2: PLATES**

**Plate 1: End of existing gravel path /site of corn drying kiln looking south**





**Plate 2: View east-southeast across lower field beside carpark.**



**Plate 3: View east from midpoint of southern field.**





**Plate 4: South-eastern field, looking north to eastern edge of Tullaghoge Fort.**



**Plate 5: Northern portion, looking west from just north of Tullaghoge Fort.**



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Mid Ulster District Council

# Tullaghoge Fort

Interpretation experience extension

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Issue 2 | 12 October 2023

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Tandem

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**OUR CONCEPT:**

**Expand the site offering  
and extend dwell times**

- Continue the Tullaghoge story beyond the fort into the fields around.
- Introduce a new 'Secret Nature Trail' around the outer path.
- Bring the Great Hall to life.

**INTERPRETATION VISION:**

For over 500 years the O'Neill clan ruled Tyrone. Their legacy is rooted at Tullaghoge, but their influence was felt across Ireland.

Explore the ceremonial home of the O'Neill dynasty and feel immersed in a landscape steeped in history.

The interpretation at Tullaghoge will be extended to bring new stories to the fore. From the legends of the great stone(s), where O'Neill's were inaugurated, to the strategic and symbolic views that can be seen around the fort – these stories will invite visitors to see this place through the eyes of the O'Neill's.

The stories will also be expanded to include the landscape around the fort, and how it has changed over time. New mown paths and seating opportunities will invite visitors to sit and take in the views, and explore the biodiversity and wildlife.

**Overall, the new interpretation proposals will enhance the visitor experience at Tullaghoge, increasing dwell time and providing a multi-faceted day out for visitors.**





An awareness of current and target visitors to Tullaghoge Fort is important to understand how the current offering can be expanded and enhanced.

#### **LOCAL VISITORS**

Tullaghoge Fort receives a high level of local visitors, who use the site for walking and recreation.

#### **DOMESTIC VISITORS**

Recent tourism figures show a consistent rise in visitor numbers over the past ten years.


In 2014, visitor numbers were 8,000, and have increased to 10,800 in 2019. 2020 saw visitor numbers increase by 30% to 14,000. Colloquial reports confirm this increase due to the impact of the Covid-19 crisis.

#### **NATIONAL VISITORS**

Tullaghoge has the potential to be a stand-out visitor attraction in Mid-Ulster. A well-positioned visitor experience has the potential to attract higher numbers of national and international visitors to Tullaghoge.



# Continuing the story



## Tullaghoge: The Place of the Uí Néill

As the Cenél nEogain expanded their territory, some of their dynasty moved to a new powerbase at Tullaghoge. Later, they adopted the name Ua Néill (O'Neill).

**800-1000**

The origins of the Uí Néill family stretch back to the 6th century AD. At that time, the descendant of a warrior known as Niall Nígíallach (Niall of the Nine Hostages) conquered northwest Ulster, mainly Co. Donegal. This large group became known as the northern Uí Néill.

Traditionally, the Cenél nEogain had held their royal seat at Ailech in northeast Donegal. However, as they moved eastwards, Tullaghoge became more and more important to them. The modern county of Tyrone, in which Tullaghoge lies, was only a part of the much larger territory of Tí Eogain.

**1000-1050**

It was made up of several dynastic families including one descended from Niall Nígíallach's son, Eogan, and known as the Cenél nEogain the kindred of Eogan. By the 800s, the Cenél nEogain became the dominant dynasty extending their territory and power eastwards and southwards.

**1050-1100**

Around the 11th century, some of the Cenél nEogain adopted the name Uí Néill (later O'Neill), thus establishing one of the most powerful families in Ulster for the next few centuries. By the 13th century, Tullaghoge had superseded Aileach and became the centre of power for the Uí Néill kingship.

**800-1000** The family that would become known as the O'Neills, came from a warrior family that descended from Niall Nígíallach, who was one of the nine sons of the Dagda.

**800** The Cenél nEogain entered the territory of Clery and Tyrone.

**1000** The territory of the Cenél nEogain along the shores of Lough Linnane and O'Neil and made for Lough.


**1010** Brian O'Neil defeated Domnall Mac Lochlainn and became king of the Cenél nEogain. Tullaghoge is mentioned in the inauguration annals.

**1020** Brian O'Neil leads forces against the approaching Anglo-Normans at Downpatrick, but is defeated and killed. Brian's nephew, Aodh, became known as the O'Neil.

**1050-1100** Domnall nEogain takes over power in Clery and Tyrone, but Tullaghoge remains his stronghold.

**1050-1100** Domnall's immediate heir, Donn, receives the title of the O'Neil and succeeds to the throne of the Cenél nEogain. Donn names his son Malacholm as his heir.

**1050-1100** Donn is overthrown and Donn leads a campaign against Malacholm, which he wins and becomes the O'Neil.



## The Struggle for Supremacy

In the 11th century, a fierce struggle for power broke out between two families, the Mac Lochlainns and the Ó Néills. It would last for over 150 years.

**1100-1200**

While both families traced their ancestry to Niall of the Nine Hostages, the Mac Lochlainn and Ó Néill branches were descendants of kings.

These kings were called Lochlainn, son of Malacholm who died in 1025 and Niall Glúndaibh who died much earlier in 919. Although related, the two families battled fiercely over the kingship of the Cenél nEogain for at least 150 years. The conflict continued until the Ó Néill finally took control from the Mac Lochlainn after the battle of Cairneirge in 1241.

**1100-1200**

The family that would become known as the O'Neills, came from a warrior family that descended from Niall Nígíallach, who was one of the nine sons of the Dagda.

**1100** The Cenél nEogain entered the territory of Clery and Tyrone.

**1100** Two branches of the Cenél nEogain along the shores of Lough Linnane and O'Neil and made for Lough.


**1110** Brian O'Neil defeated Domnall Mac Lochlainn and became king of the Cenél nEogain. Tullaghoge is mentioned in the inauguration annals.

**1120** Brian O'Neil leads forces against the approaching Anglo-Normans at Downpatrick, but is defeated and killed. Brian's nephew, Aodh, became known as the O'Neil.

**1150-1200** Domnall nEogain takes over power in Clery and Tyrone, but Tullaghoge remains his stronghold.

**1150-1200** Domnall's immediate heir, Donn, receives the title of the O'Neil and succeeds to the throne of the Cenél nEogain. Donn names his son Malacholm as his heir.

**1150-1200** Donn is overthrown and Donn leads a campaign against Malacholm, which he wins and becomes the O'Neil.



## The Battle of Cairneirge

In 1241, the Ó Néills defeated their rivals the Mac Lochlainns at the Battle of Cairneirge. They would go on to hold the kingship for the next 362 years.

**1241**

The bitter struggle between the Mac Lochlainn and Ó Néill families finally ended in the 13th century. At the Battle of Cairneirge, Brian Ó Néill won a decisive victory over Domnall, the head of the Mac Lochlainn, and his supporters. The fight was fierce and bloody. Domnall and several generations of the Mac Lochlainn clan leadership were killed, leaving out any possible successors to his kingship. The reign of the Mac Lochlainn in the region ended forever.

Brian Ó Néill was supported in battle by Malacholm O'Donnell (the head of the O'Donnell family) from Donegal and the O'Quinn (O'Quinn) and O'Meara (O'Meara) families of Tyrone. Soon after his victory, he was installed as king. The Ó Néills would go on to rule for the next 362 years. Ruling their dominion over time the title gained an inauguration gradually changed from King to, simply, O'Neill.

**1241**

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**1241** Donn is overthrown and Donn leads a campaign against Malacholm, which he wins and becomes the O'Neil.



## A New Base at Dungannon

In the 14th century, the increasingly powerful Ó Néill family established a new base at Dungannon. Inauguration ceremonies continued at Tullaghoge and the fort remained central to Ó Néill ritual and tradition.

**1300-1400**

In the 14th century, a castle was built on the hill at Dungannon. It provided a panoramic view of the surrounding countryside and was a strong, strategic location for the increasingly powerful Ó Néill.

Dungannon would remain a family seat until Domnall's descendant, Aodh, Mór, the Great O'Neill, fell Ulster in 1607 at what is known as the Flight of the Earls. Throughout all that time Tullaghoge remained central to Ó Néill ritual and tradition, and inauguration ceremonies continued to take place here.

**1300-1400**

The family that would become known as the O'Neills, came from a warrior family that descended from Niall Nígíallach, who was one of the nine sons of the Dagda.

**1300** The Cenél nEogain entered the territory of Clery and Tyrone.

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**1300-1400** Domnall nEogain takes over power in Clery and Tyrone, but Tullaghoge remains his stronghold.

**1300-1400** Domnall's immediate heir, Donn, receives the title of the O'Neil and succeeds to the throne of the Cenél nEogain. Donn names his son Malacholm as his heir.

**1300-1400** Donn is overthrown and Donn leads a campaign against Malacholm, which he wins and becomes the O'Neil.

## Continuing the story

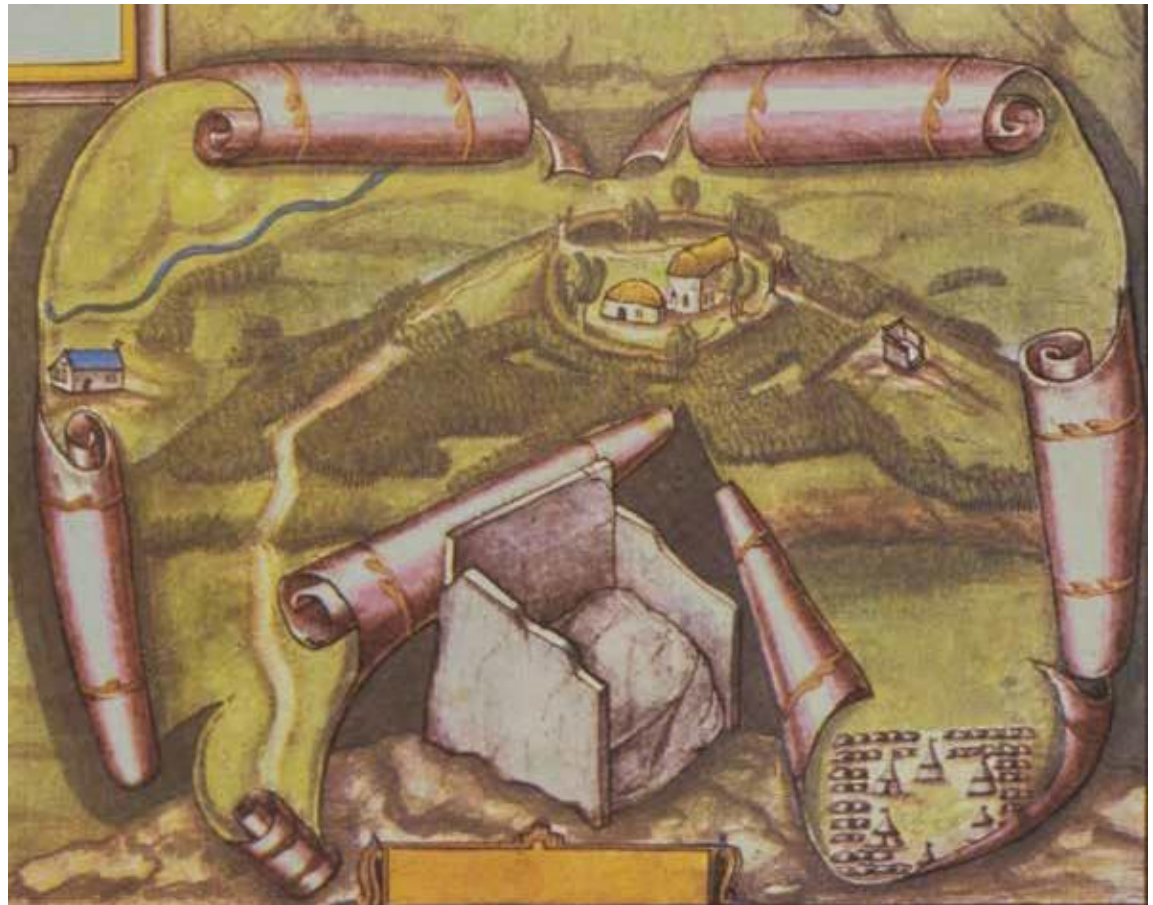
‘On the hill around the fort there are three large rocks. Their presence on a site that otherwise has no stonewalls or even single boulders suggests they may have been deliberately brought to Tullaghoge at some time in the past.’

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Summary statement following geological examination by Ian Enlander.

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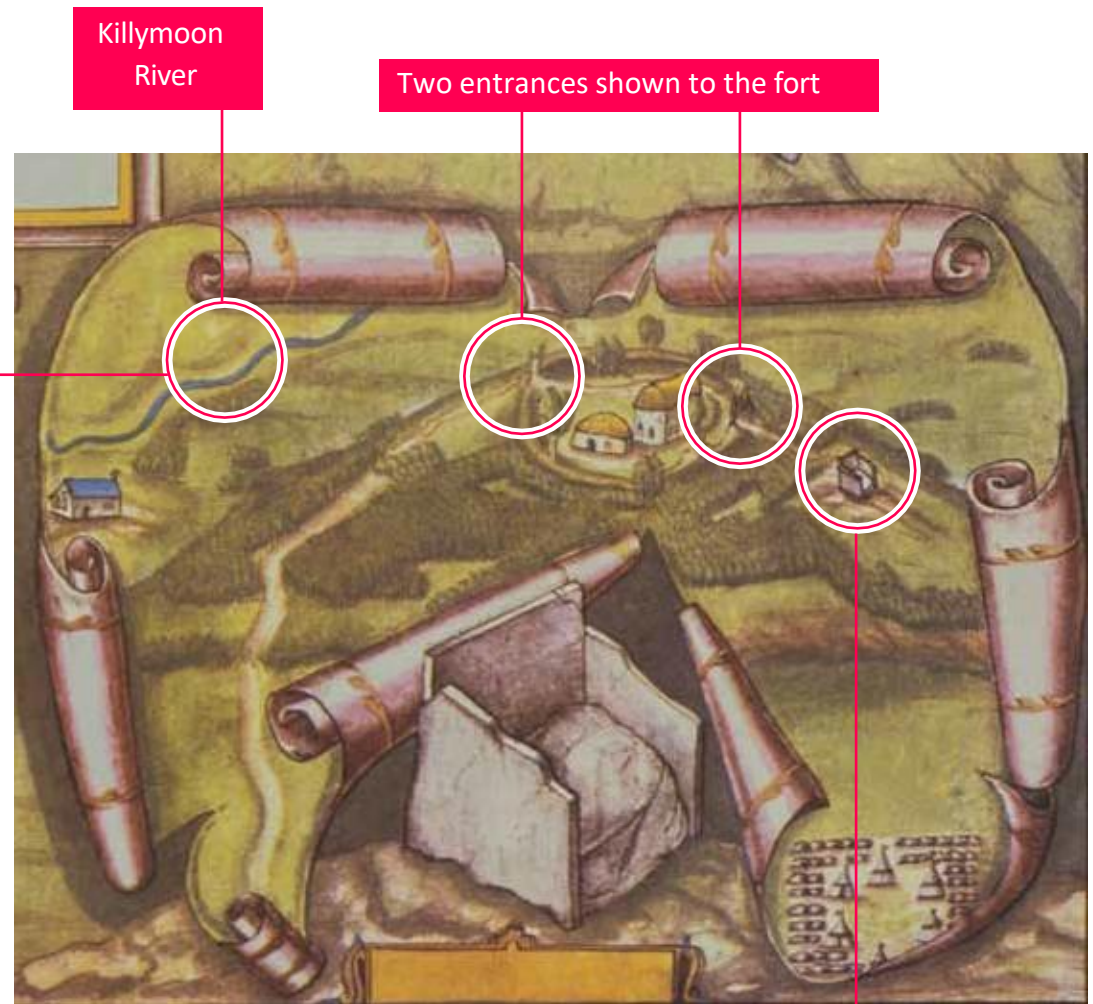
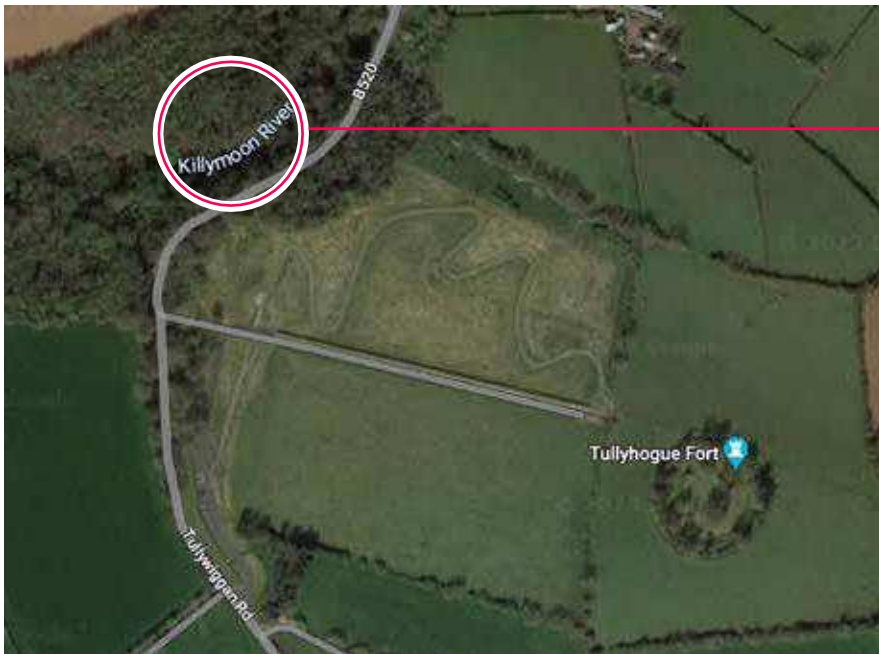
The three ‘stones’



Depiction of stone inauguration chair at Tullaghoge. Richard Bartlett, 1602.



## Examining the Bartlett Map



Killymoon  
River

Two entrances shown to the fort

'Seat' outside the fort facing east

## Path extension



Three stones



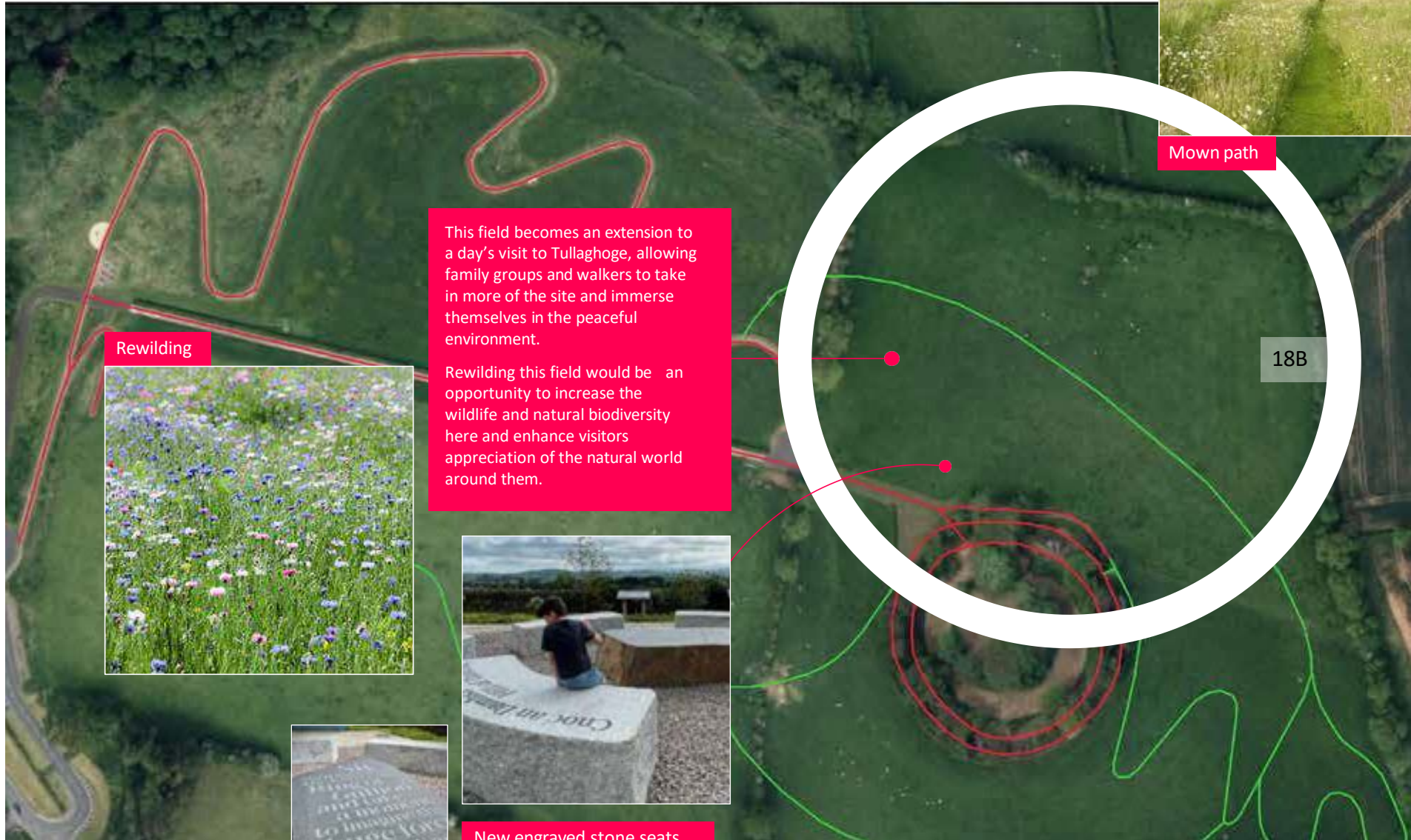


## Path extension

A modest mown path through the eastern field brings the story of the Leac na Rí closer to visitors, as they situate themselves in the landscape and imagine the historic ceremonies that may have taken place here.



Mown path



This field becomes an extension to a day's visit to Tullaghoge, allowing family groups and walkers to take in more of the site and immerse themselves in the peaceful environment.

Rewilding this field would be an opportunity to increase the wildlife and natural biodiversity here and enhance visitors appreciation of the natural world around them.

Rewilding



New engraved stone seats





## Proposed developments



Three stones





## Proposed developments



**A digital layer of interpretation**

Using the existing MUDC app interface, an additional layer of interpretation could be introduced across the site on a Tullaghoge app.

Within the fort the 'golden slipper' could be passed overhead or, within the field, the soldiers could be attempting to destroy this ceremonial site.

*The destruction of the 'seat'*

Continue the story

Indicative visuals only

AR experience

20

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## Biodiversity at Tullaghoge

## Proposed developments









## Proposed developments

**The secret nature trail**

**Tell a new story**

**Elements of surprise**

Utilising existing end of life trees, place hidden 'guardians' – the Great Wolfhounds still watching over, for friend or foe.

All interventions to be 'set on' or 'fixed' existing trees or wooden post fencing.

**Carved end of life tree**

**Mini discovery points**

**What's growing here?**

**Who's living here?**

**Carved creatures and messages**

**The secret path**

The image shows an aerial view of a green field with a red path and green lines. A central circular inset shows a close-up of a tree trunk. Surrounding the map are several images: a tree trunk, a carved tree trunk with a wolf-like figure, a wooden post with carvings, a circular stone with a bird carving, a carved fox, and a person walking on a path. Text boxes provide details about the proposed developments, including 'Elements of surprise' and 'Mini discovery points'.

## Proposed developments - Viewpoints

**The secret nature trail**

**Tell a new story**

**The secret path**

**The Sperrins**

**The Glens**

**The Mournes**

**Dungannon**

**Viewpoint interventions**

These interventions will be accompanied by viewpoints cut in the hedge — framing the surrounding areas that can be seen from the fort. From the Sperrins to the west, the Glens of Antrim and Slemish to north east and the Mournes to the south east, these views may have been both symbolic and strategic.

**What would the O'Neill's have seen?**

**What would they not have seen?**

The diagram features an aerial view of the fort with a central white circle containing a red-lined circular inset. Green lines trace paths around the fort. Labels with arrows point to 'The Sperrins', 'The Glens', 'The Mournes', and 'Dungannon'. A pink box titled 'Viewpoint interventions' explains the concept of hedge-cut viewpoints. Two red boxes pose questions about historical visibility. Three inset photos show a person on a path, a landscape view, and a view through trees.



## Proposed developments - Viewpoints

The secret nature trail

Tell a new story

Viewpoints

Look into the distance

The secret path

What would the O'Neill's have seen?

What would they not have seen?

Stimulate the senses

This block features a central aerial map of Tullaghoge Fort with several development points highlighted. A red line traces a path around the fort, and a green line indicates a nature trail. A circular inset shows a closer view of the fort's interior. Surrounding the map are several photographs: a woman looking at a wooden signpost in a forest, a young boy using a wooden telescope, a woman walking on a path through trees, a view of a valley from a hillside, a woman looking out over a landscape, and a young boy holding a large wooden horn. Text boxes with arrows point to specific features on the map and photos.

---

## The Great Hall

## Proposed developments





## Proposed developments



Continue the story

Bringing the Great Hall to life

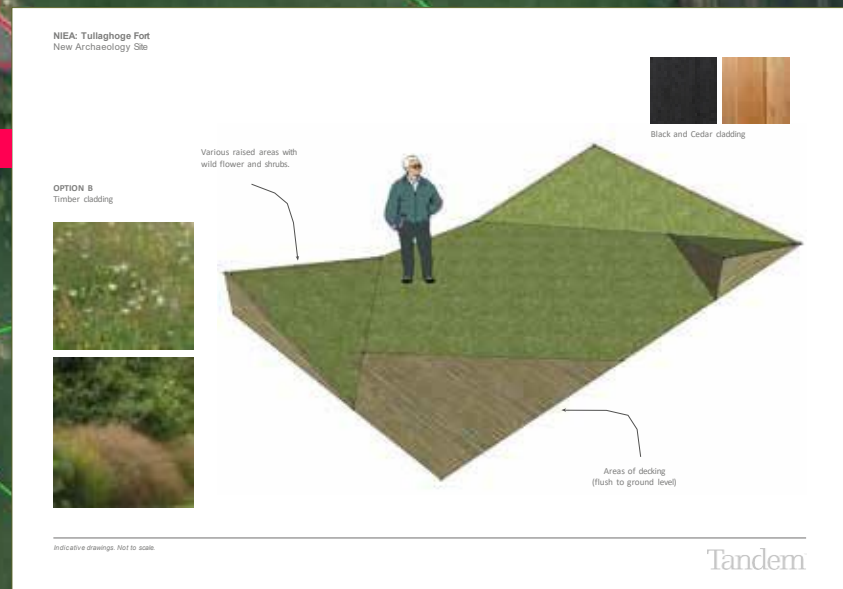
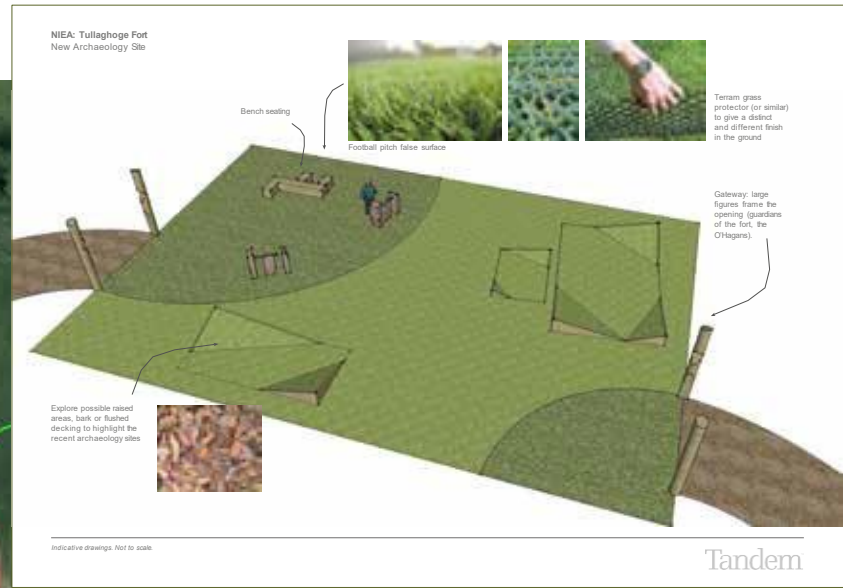
Low-impact interventions

Making the scale of the Great Hall tangible

**Light touch 'echo' of the Great Hall**

Raised beds 'set on' to the site of the Great Hall and replanted to differentiate from surrounding grassed areas. Creating anchor point for placement of 'AR' Great Hall and hear the sounds of the whispers, arguments and celebrations first hand.

Previous proposal





## Proposed developments

Indicative background image only



Augmented Reality reconstruction

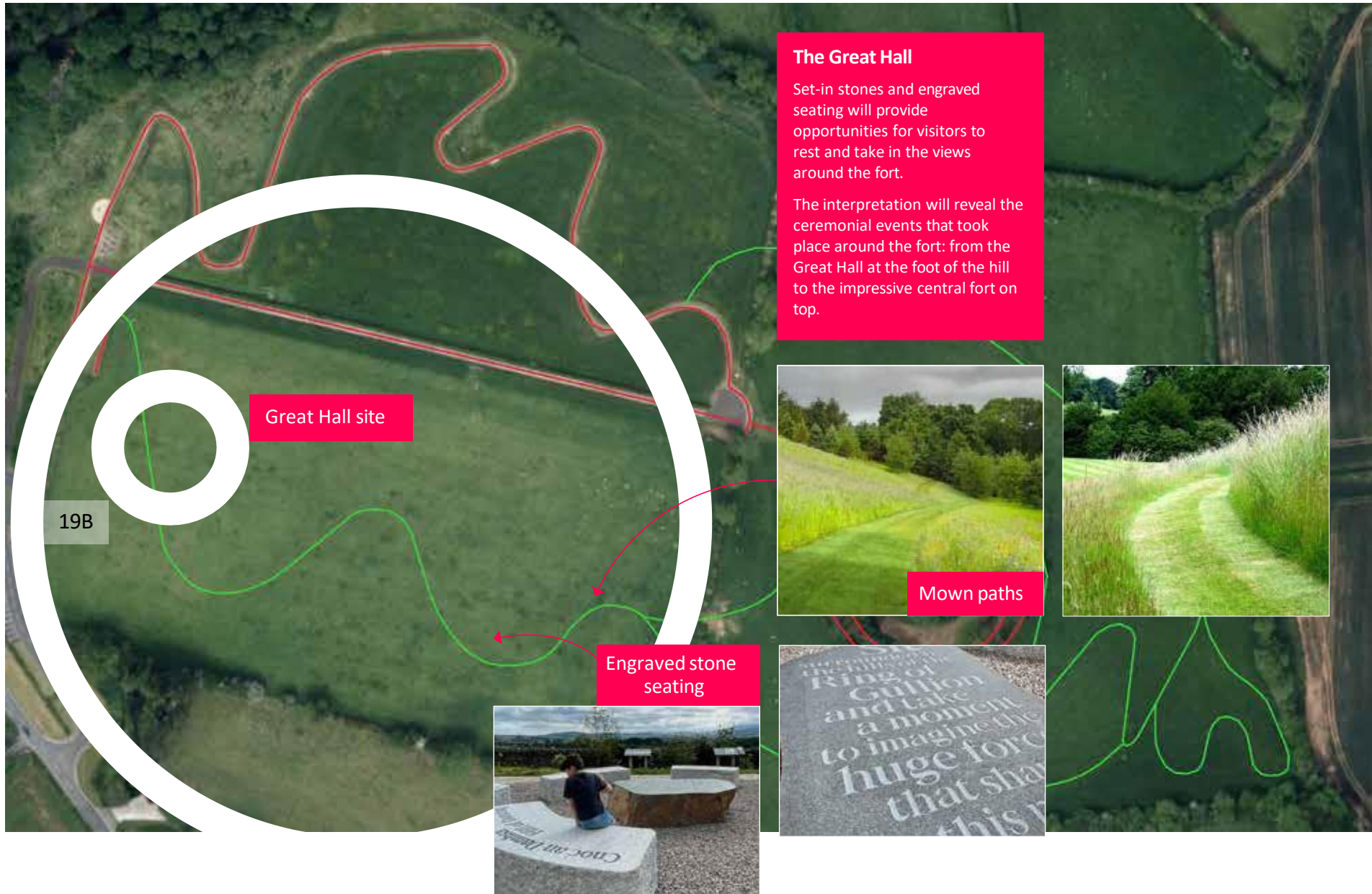
### A digital layer of interpretation

Using the existing MUDC app interface, an additional layer of interpretation could be introduced across the site on a Tullaghoge app.

A grand procession will be seen making its way up to the fort, whilst the Great Hall will be brought to life with celebrations following the inauguration ceremony.



## Path extension



---

## Overview

## Dwell Times





## High-level Cost Plan

	Qty	Budget Range
<b>Additional Lecturn(s)</b>	2	£4,000–6,000
<b>Stone Seats</b>	2	£15,000–25,000
<b>Timber log seats</b>	4	£3,000–4,500
<b>Wooden Sculptures</b>	5	£5,000–8,000
<b>Viewfinders/ Interpretation Point</b>	8	£14,000–20,000
<b>Great Hall – Landscaping</b>	2	£8,000–16,000
<b>AR Content Development</b>		£25,000–45,000
<b>Interpretive Consultation and Design Professional fees</b>		£15,000–25,000
Exclusions: planning, hard landscaping, contractor prelims, groundworks		

## Next steps

- 
- Interpretation Plan
- 
- Detailed Design
- 
- Technical Design
- 
- Procurement
-

# Tandem™

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We can help you tell your story



Tandem, Rollo House, 6 High Street, Hollywood, County Down BT18 9AZ  
+44 (0) 28 9042 5590

# **Sliabh Beagh Ecotourism Feasibility Study**

## **Work Packages 1, 2 and 3 RIBA / RIAI Stage 2 Concepts Report**

**DRAFT v1**

November 2023

Prepared by Outdoor Recreation NI on behalf of  
Monaghan County Council  
Fermanagh and Omagh District Council  
Mid Ulster District Council





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DRAFT

## 1 INTRODUCTION

In 2023, Outdoor Recreation NI (ORNI) was commissioned by Monaghan County, Mid Ulster District and Fermanagh and Omagh District Councils to determine the feasibility of developing the wider Sliabh Beagh area as an ecotourism destination. This included the identification of opportunities to enhance the existing recreation provision (walking, cycling and equestrian) to allow the area to be promoted as a multi-activity destination.

An extensive audit and gap analysis was carried out on the existing trail systems to identify opportunities to improve accessibility, connectivity, and sustainability. In total, 16.78km of recreation trails were developed to RIBA / RIAI Stage 2 (concept level) for work packages 1, 2 and 3 relating to walking, cycling and equestrian. This report outlines concept level recommendations for these opportunities in cognizance of all other work packages, client and partnership consultation, opportunities identified through extensive fieldwork and professional judgement. An online dashboard is available to view these proposals in more detail [Sliabh Beagh Feasibility Study \(arcgis.com\)](https://arcgis.com). Alternatively, a shapefile of the proposed lines is available from ORNI on request.

Council/County	Route Name	Requirements
MUDC	Favour Royal Link	New build and upgrade Large footbridge required
	Burkes Waterfall	New build and upgrade
	Fardross Equestrian Loop	New build
	Fardross Arc	New build and upgrade
	Browns Hill	New build and upgrade
	Lumfords Glen	New build Earthworks and infrastructure required
	Crockaclevan Lough	New build
FODC	Lough Navaddage	New build
	Lough Natroey	New build
	Two Loughs	New build
	Carnmore Viewpoint	New build and upgrade
	Doon Forest Loop	New build
	Tully Forest Loop	New build and upgrade
FODC/MUDC	Mullynavale Loop	Replacement stiles and waymarking only
FODC/MCC	Mullaghfad Antrawer Link	New build
MCC	Lough Antrawer	New build and upgrade Small footbridge required
	Sliabh Beagh Way	New build and upgrade
	Barratitoppy Link	New build and upgrade
	Lough Bradan Link	New build
	Penal Cross Link	New build and upgrade
	Eshgloghfin Link	New build
	Bragan Esh Link	New build
	Knockatallon Eshacrin Link	New build



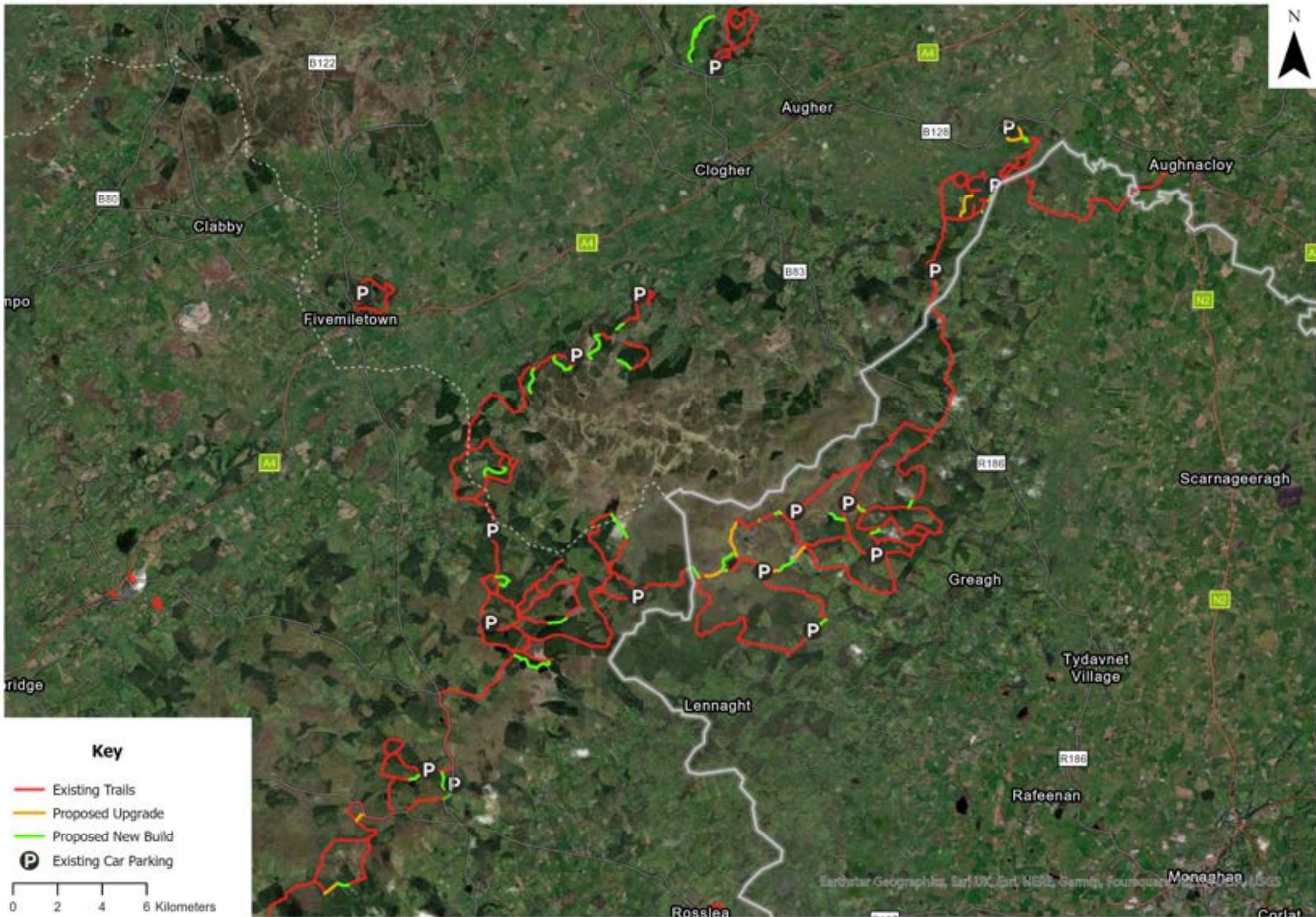


Figure 1: RIBA/RIAI Stage 2 proposed trails across the Slabh Beagh region

## 2 Stage 2 Concepts

### 2.1 Favour Royal Link

Council Area	MUDC
<b>Location / Setting</b>	Favour Royal Forest
<b>Description</b>	Favour Royal Forest consists mainly of coniferous forest blocks with limited topography. The forest is segregated by the River Blackwater.
<b>Landownership and Management</b>	Favour Royal Forest is owned and managed by Forest Service NI (FSNI).
<b>Access Points / Parking</b>	<p>Favor Royal Forest can be accessed from two existing FSNI car parks. On the northern side of the forest there is a car park off the Favour Royal Road and on the southern side there is a car park off the Altadaven/Derrygorry Road.</p> <p>There are two informal pedestrian access points to the southern portion of the forest. One forms part of the Ulster Way through Derrygorry Forest and the other provides access from the Esker Road.</p> <p>It is proposed that these car parks are retained and upgraded as trailheads.</p>
<b>Trail System / Section Description</b>	<p>There is currently one 1.3km loop walk through the forest on the northern side of the River Blackwater from Favour Royal car park, and a 2.8km loop walk through the forest on the southern side of the River Blackwater from Altadaven Road. These looped walks are currently segregated by the River Blackwater. Trailhead panels and waymarking exist at both car parks and the existing trail surface is compacted gravel.</p> <p>Installation of a pedestrian footbridge across the River Blackwater and 270m of new trail would provide connectivity between these existing looped walks and create a 5.4km network of walking trails which would significantly enhance the existing offering.</p>
<b>Constraints / Hazards</b>	<p>Cost of required pedestrian footbridge and planning permission.</p> <p>Flood risk due to proximity to the River Blackwater.</p>



	Proximity to a Local Wildlife Site on the northern bank of the River Blackwater within Favour Royal Forest.
<b>Points of Interest</b>	Within Favour Royal there is a wildflower meadow and deer lawn which can be accessed from the Favour Royal car park. South of the site along the Altnadaven Road is St Patrick's Chair and St Brigid's Well.
<b>Rationale</b>	<p>This section of new build and upgrade would link existing trails within Favour Royal Forest which are separated by the River Blackwater. This would extend the existing walking provision, creating longer looped walks within the forest, and provide connectivity between Favour Royal and Derrygorry Forests.</p> <p>This trail is proposed as a Category 2 multi-use trail suitable for pedestrians of mixed abilities including young children.</p>
<b>Section Recommendations</b>	<p>CH0-1300 upgrade of existing gravel walking trail (Category 2 multi-use trail)</p> <p>CH0-25 new build trail to footbridge (Category 2 multi-use trail)</p> <p>CH25-65 pedestrian footbridge across the River Blackwater</p> <p>CH65-310 new build trail through woodland (Category 3 multi-use trail)</p>
<b>Infrastructure Recommendations</b>	<p>2m wide pedestrian footbridge spanning the River Blackwater.</p> <p>Upgraded trailhead panels and interpretative signage at Favour Royal and Altadaven car parks with associated waymarking and trail furniture throughout Favour Royal Forest.</p>
<b>Additional Studies</b>	<p>Concept bridge design, cost estimate and planning permission.</p> <p>Detailed trail design, trail prescriptions and planning permission.</p>
<b>Estimated Construction Costs</b>	<p>1300m upgrade costing approximately £65,000 (capital costs)</p> <p>270m new build costing approximately £20,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £10,000</p> <p>Concept bridge design inc. topographic survey and flood modelling £10,000 with capital costs up to approximately £500,000.</p>

Photographs



*Figure 2: Upgrade of existing gravel walking trail*



*Figure 3: Pedestrian footbridge location across the River Blackwater*



*Figure 4: New build trail through woodland*

## 2.2 Burkes Waterfall

Council Area	MUDC
<b>Location / Setting</b>	Favour Royal Forest
<b>Description</b>	Favour Royal Forest consists mainly of coniferous forest blocks with limited topography along the proposed sections.
<b>Landownership and Management</b>	Favour Royal Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Favor Royal Forest can be accessed from the Altadaven Road with existing car parking provision just south of the Altadaven/Derrygorry Road.</p> <p>There is an informal pedestrian access point on the Altadaven Road on the western side of the forest with a small layby used for informal parking.</p> <p>It is proposed that this car park is retained and upgraded as a trailhead.</p>
<b>Trail System / Section Description</b>	<p>There is currently a 2.7km linear walk with an additional 1.2km looped walk along existing forest roads. Sections of these walking routes form part of the Ulster Way. There are currently no trailhead panels or waymarking aside from the Ulster Way. The forest can be accessed through a kissing gate off the Altadaven Road, and the existing trail surface is compacted gravel.</p> <p>Installation of 410m of new build trail and 1520m upgrade would create a 5.4km walking loop. An additional 85m of new build trail would provide access to a point of interest, Burke's Waterfall which would significantly enhance the existing offering within the forest.</p>
<b>Constraints / Hazards</b>	Presence of long-established woodland i.e., planted conifer.
<b>Points of Interest</b>	There is a hidden waterfall within the southern portion of the forest which can be accessed via an informal desire line through the woodland.
<b>Rationale</b>	This section of new build trail would provide a longer loop walk option within the forest and provide formal access to Burkes Waterfall. This would enhance the existing linear walking route option and extend the offering within the forest. It would also improve connectivity to the existing car park off the

	Altadaven Road and reduce the quantity of road walking, enhancing the quality of the walk.
<b>Section Recommendations</b>	<p>CH0-85 new build trail following current desire line from existing forest road down to Burkes Waterfall (Category 4 walking trail)</p> <p>CH0-120 upgrade of existing gravel forest road (Category 3 multi-use trail)</p> <p>CH120-530 new build trail following desire line north to Altadaven/Derrygorry Road (Category 4 walking trail)</p> <p>CH0-1400 upgrade of existing gravel forest road to improve surface quality and drainage (Category 3 multi-use trail)</p>
<b>Infrastructure Recommendations</b>	<p>Viewing area with seating at Burkes Waterfall.</p> <p>Upgraded trailhead panels and interpretative signage at Altadaven car park with associated waymarking and trail furniture throughout.</p>
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	<p>1520m upgrade costing approximately £95,000 (capital costs)</p> <p>495m new build costing approximately £35,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £20,000</p>
<b>Photographs</b>	Provided within the MUDC RIBA / RIAI Stage 3 Trail Prescriptions Report.



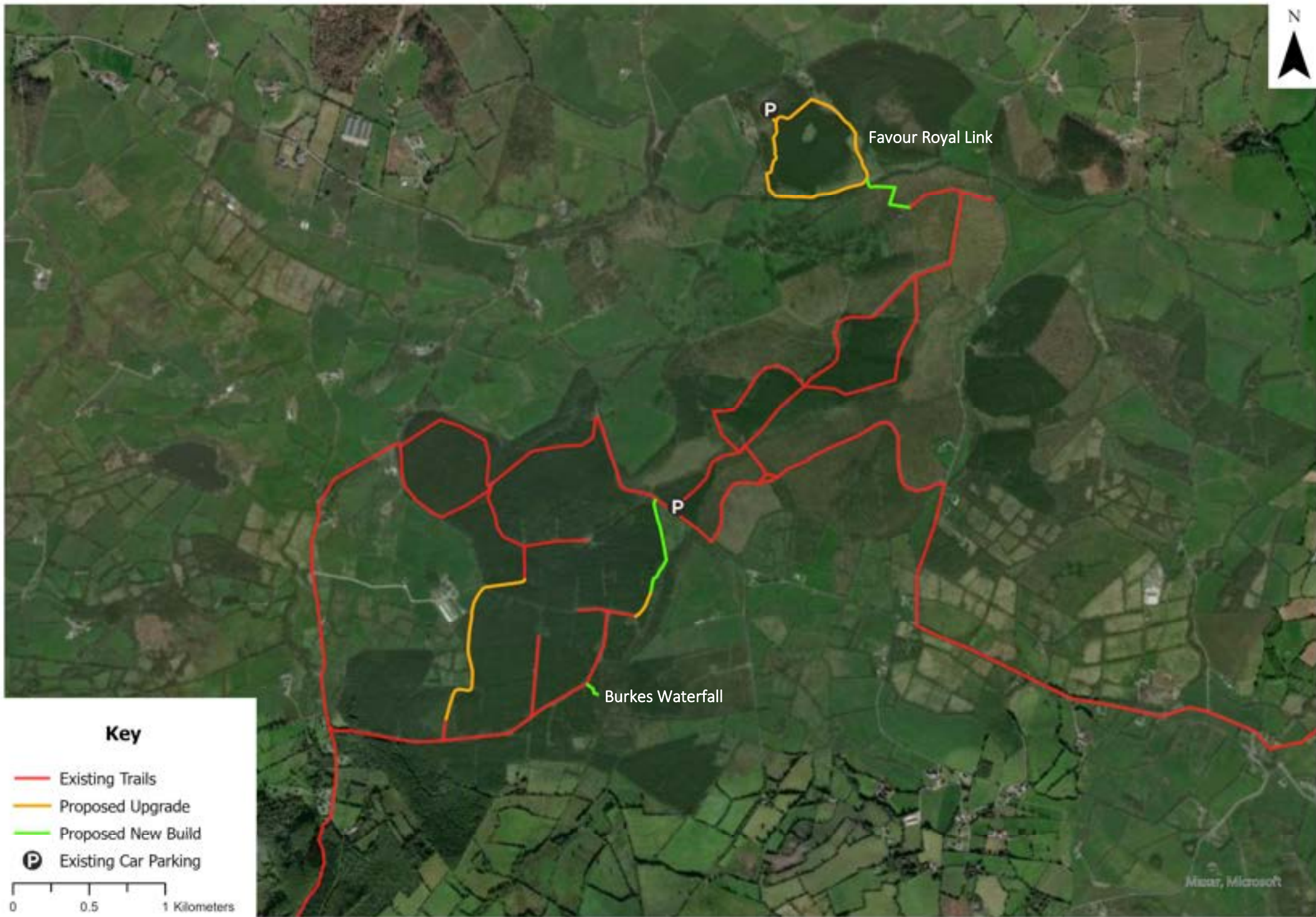


Figure 5: Proposed trails within Favour Royal Forest



## 2.3 Fardross Equestrian Loop

Council Area	MUDC
<b>Location / Setting</b>	Fardross Forest
<b>Description</b>	Fardross Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Fardross Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	Fardross Forest can be accessed from Fardross Road with existing car parking provision close to the junction of the Slatmore and Fardross Roads. There are several informal pedestrian access points where the existing forest roads enter the forest. It is proposed that a new trailhead facility is developed at Clogher Valley Horses Welcome for equestrian users.
<b>Trail System / Section Description</b>	<p>There is currently no recreation provision within the proposed forest blocks within Fardross Forest. There are a series of existing linear forest roads and local quiet roads which combined with 2.5km of new build trail would provide a 12km network of equestrian trails within the forest.</p> <p>Existing access gates would need to be upgraded to enable unrestricted equestrian access using equestrian friendly gates as shown in Appendix B. The existing forest roads provide a suitable compact gravel trail for equestrian use, new build sections should be constructed to an equivalent standard.</p>
<b>Constraints / Hazards</b>	Sections of the proposed new build trail fall within Special Protection Area (SPA) designation as well as Priority Habitat – Peatland and a Local Wildlife Site – Little Golan.
<b>Points of Interest</b>	The viewpoint located at the top of the Fardross Road provides panoramic views of the Clogher Valley below.
<b>Rationale</b>	These sections of new build trails would link existing forest roads to form an equestrian loop suitable for the tourist market. The combination of existing forest roads and new build trails could provide 12km of equestrian trails accessed via low trafficked roads from proposed trailhead at Clogher Valley

	Horses Welcome with potential to extend this equestrian loop with a linear trail through Mullaghfad Forest for those looking a longer trek.
<b>Section Recommendations</b>	<p>Section 1: CH0-445 new build trail through existing forest (Cat 3 multi-use)</p> <p>Section 2: CH0-1475 new build trail through existing forest (Cat 3 multi-use)</p> <p>Section 3: CH0-300 upgrade existing farm access lane (Cat 3 multi-use trail)</p> <p>Section 3: CH300-570 new build trail through existing forest (Cat 3 multi-use)</p>
<b>Infrastructure Recommendations</b>	Upgraded trailhead panels and interpretative signage at Clogher Valley Horses Welcome with associated waymarking and trail furniture throughout, including suitable equestrian access gates.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	<p>2500m new build costing approximately £180,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £20,000</p>
<b>Photographs</b>	Provided within the MUDC RIBA / RIAI Stage 3 Trail Prescriptions Report.

## 2.4 Fardross Arc

Council Area	MUDC
<b>Location / Setting</b>	Mullaghfad Forest
<b>Description</b>	Mullaghfad Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Mullaghfad Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Mullaghfad Forest can be accessed from the Alderwood and Slatmore Roads. The Carelton Cycling Trail passes through the forest, with an interpretative panel and informal layby parking on the Slatmore Road. The forest can also be accessed informally from the Kell Road along a disused lane.</p> <p>It is proposed that this informal parking is developed into formal access and parking with trailhead information and interpretative signage.</p>
<b>Trail System / Section Description</b>	The Carelton Cycling Trail passes through the forest and the route was once part of the Ulster Way. There is a 4.3km linear gravel forest road through the forest with a 1.1km arc trail. However, this 1.1km section has since fallen into disrepair and the route is no longer signposted appropriately. It is proposed that this section is reinstated to create a 1.8km loop walk from the Slatmore Road. It is recommended that existing access gates are upgraded to enable unrestricted equestrian access and facilitate off-road cycling.
<b>Constraints / Hazards</b>	The existing trail is within an SPA and borders a Special Area of Conservation (SAC) designation. Mitigation measures may be required to ensure there is no negative impact on these designations.
<b>Points of Interest</b>	Panoramic views of Fermanagh, including Cuilcagh mountain.
<b>Rationale</b>	Reinstatement of the 1.1km section of trail which has fallen into disrepair would enhance the existing recreation opportunities within the forest by creating a short loop walk along the forest boundary, with uninterrupted views out onto the open mountain.

	Improved access points with unrestricted access would provide an extension to the proposed equestrian trails in the adjacent Fardross Forest and enable looped walking and cycling trails.
<b>Section Recommendations</b>	CH0-365 upgrade surface of existing forest road (Category 3 walking trail) CH365-790 new build trail on a moderate gradient (Category 3 walking trail)
<b>Infrastructure Recommendations</b>	Formal car parking and trail head panels and interpretative signage at the Slatmore Road entrance to the forest.  Waymarking and trail furniture throughout the trails, including suitable access gates which provide unrestricted equestrian and cycling access.
<b>Additional Studies</b>	Car park design and planning permission.  Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	365m upgrade costing approximately £20,000 (capital costs) 425m new build costing approximately £30,000 (capital costs)  Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the MUDC RIBA / RIAI Stage 3 Trail Prescriptions Report.

## 2.5 Browns Hill

Council Area	MUDC
<b>Location / Setting</b>	Mullaghfad Forest
<b>Description</b>	Mullaghfad Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Mullaghfad Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Mullaghfad Forest can be accessed from the Alderwood and Slatmore Roads. The Carelton Cycling Trail passes through the forest, with an interpretative panel and informal layby parking on the Slatmore Road. The forest can also be accessed informally from the Kell Road along a disused lane.</p> <p>It is proposed that this informal parking is developed into formal access and parking with trailhead information and interpretative signage.</p>
<b>Trail System / Section Description</b>	<p>The Carelton Cycling Trail passes through the forest and the route was once part of the Ulster Way. There is a 4.3km linear gravel forest road through the forest with a 1.1km arc trail (refer to Fardross Arc, above).</p> <p>There is a 0.6km linear forest road spur heading south towards the open mountain. If developed sensitively, extending this spur by 0.2km up into the open mountain would provide a beautiful viewpoint with panoramic views of Fermanagh. This would provide a 2.2km linear walk from the Slatmore Road.</p> <p>There is also a disused gravel lane off the Kell Road which provides a 1.2km linear walk into the center of Mullaghfad Forest.</p> <p>It is recommended that existing access gates are upgraded to enable unrestricted equestrian access and facilitate off-road cycling.</p>
<b>Constraints / Hazards</b>	Extension of the forest road spur onto the open mountain would require new build trail within the SAC and SPA designations. Appropriate trail construction may involve a section of bog bridge to manage access and avoid impact to the sensitive habitat.



<b>Points of Interest</b>	The viewpoint located at the top of the forest road spur provides panoramic views of Fermanagh, including Cuilcagh mountain.
<b>Rationale</b>	<p>Formalising the desire line which extends beyond the existing forest road spur up into the open mountain provides an opportunity for walkers to access a panoramic viewpoint from Browns Hill. Any developments within this sensitive area need to be developed in consultation with NIEA to ensure the mitigations are appropriate and visitor management is employed.</p> <p>Improved access points with unrestricted access would provide an extension to the proposed equestrian trails in the adjacent Fardross Forest and enable looped walking and cycling trails.</p>
<b>Section Recommendations</b>	<p>CH0-225 existing forest road, no work required</p> <p>CH225-555 upgrade surface of existing forest road and improve drainage where required retaining natural character (Category 3 walking trail)</p> <p>CH555-770 new build trail on steep gradient (Category 4 walking trail)</p>
<b>Infrastructure Recommendations</b>	<p>Formal car parking and trail head panels and interpretative signage at the Slatmore Road entrance to the forest.</p> <p>Waymarking and trail furniture throughout the trails, including suitable access gates which provide unrestricted equestrian and cycling access.</p>
<b>Additional Studies</b>	<p>Car park design and planning permission.</p> <p>Detailed trail design, trail prescriptions and planning permission.</p>
<b>Estimated Construction Costs</b>	<p>330m upgrade costing approximately £17,000 (capital costs)</p> <p>215m new build costing approximately £16,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £10,000</p>

Photographs



*Figure 6: Upgrade surface of existing forest road and improve drainage*



*Figure 7: New build trail required on steep terrain*





Figure 8: Proposed trails within Fardross Forest

## 2.6 Lumfords Glen

Council Area	MUDC
<b>Location / Setting</b>	Knockmann Forest
<b>Description</b>	Knockmann Forest is a collection of woodlands with varying topography. The proposed sections are located along the sides of a river valley, Lumfords Glen, with steep exposed edges and river crossings.
<b>Landownership and Management</b>	Knockmann Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	Knockmann Forest can be accessed formally from Claremore Road at the northern and southern ends of the valley. A link should be created between Lumfords Glen and the existing trailhead at Knockmann Forest.
<b>Trail System / Section Description</b>	There is currently a network of 5.7km of trails, predominantly using existing forest roads, within Knockmann Forest. The proposed 2.5km trail runs the length of Lumfords Glen on the east side, with a section of trail on the west side, to form a loop within the glen. The proposed trails would complement the existing trail network and visitor facilities at Knockmann which include car parking and changing places toilet facilities.
<b>Constraints / Hazards</b>	The proposed trail runs along the east and west sides of the glen which has steep exposed edges and river crossings which will be a key constraint within the design, requiring engineering solutions to ensure a safe and robust trail.
<b>Points of Interest</b>	Lumfords Glen is a beautiful woodland setting with a steep sided valley, with a large waterfall at the northern end. In addition, there are several sites of interest locally including Knockmany Passage Tomb (Anya's Tomb), managed by the NIEA, which is located within Knockmann Forest.
<b>Rationale</b>	The addition of 2.5km of trail within Lumfords Glen would expand on the existing recreational offering at Knockmann Forest where there is existing visitor facilities and provide a unique trail within the area.
<b>Section Recommendations</b>	CH0-1750 new build trail along east side of river (Category 4 walking trail) CH0-750 new build trail along west side of river (Category 4 walking trail)

<p><b>Infrastructure Recommendations</b></p>	<p>Formal car parking, trailhead panels and interpretative signage at Knockmanny Forest. Waymarking and trail furniture throughout the trail. It is recommended that an off-road link to Knockmanny Forest is explored as part of the detailed design.</p>
<p><b>Additional Studies</b></p>	<p>Feasibility study to determine appropriate engineering design solutions. Detailed design, including any additional surveys e.g., topographic, and environmental. Detailed trail design, trail prescriptions and planning permission.</p>
<p><b>Estimated Construction Costs</b></p>	<p>Design of engineering solutions by suitably qualified engineer to RIBA Stage 3 £25,000 (excluding additional studies which are estimated at £5,000-£7,000).  2500m new build trail cost approximately £180,000 plus engineering solutions such as steps, bridges, handrails etc. determined through design (capital costs)  Trail furniture and waymarking costing approximately £20,000</p>
<p><b>Photographs</b></p>	<div> </div> <p><i>Figure 9: Existing desire lines on both sides of the river looking downstream at northern end</i></p>





*Figure 10: Desire line on west side of river looking across showing steep exposed edge*



*Figure 11: Example of bridge and steep steps required at northern end on both sides of river*



*Figure 12: Example of bridge and steps required at southern end on both sides of river*






Figure 13: Proposed trails at Lumfords Glen

## 2.7 Crockaclevan Lough

Council Area	MUDC
<b>Location / Setting</b>	Crocknagrally Forest
<b>Description</b>	Crocknagrally Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Crocknagrally Forest is predominantly owned and managed by FSNI. There is a private residence with access to Crockaclevan Lough within the centre of the forest.
<b>Access Points / Parking</b>	Crocknagrally Forest can be accessed formally from the Alderwood and Mullaghfad Roads. There are also several private farm lanes which link into the forest. A trailhead could be developed on the Alderwood Road.
<b>Trail System / Section Description</b>	There is currently a 5.7km forest road loop trail through Crocknagrally Forest. The addition of a 0.85km section of new build trail would provide a shorter 3.1km loop walk taking in Crockaclevan Lough. It is recommended that existing access gates are upgraded to enable unrestricted equestrian access and facilitate off-road cycling.
<b>Constraints / Hazards</b>	There is a private residence with access to Crockaclevan Lough within the centre of the forest. There is a cabin and bird hide at the lake, ownership of which are unknown, angling rights held by Blessingbourne Estate.
<b>Points of Interest</b>	Crockaclevan Lough is a beautiful, remote, and tranquil location. Providing access and a short loop walk would significantly enhance the existing recreation offering within the forest.
<b>Rationale</b>	The addition of a 0.85km section of new build trail would provide a shorter 3.1km loop walk and the opportunity to extend the trail beyond the forest road onto singletrack alongside water, improving the user experience.
<b>Section Recommendations</b>	CH0-850 new build trail along southern side of lough, 15m back from edge of lough (Category 3 walking trail)
<b>Infrastructure Recommendations</b>	Formal car parking, trailhead panels and interpretative signage at the Alderwood Road entrance to the forest. Waymarking and trail furniture

	throughout the trails, including suitable access gates which provide unrestricted equestrian and cycling access.
<b>Additional Studies</b>	Car park design and planning permission.  Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	850m new build costing approximately £61,000 (capital costs)  Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	 <p><i>Figure 14: New build trail 15m back from the edge of lough</i></p>



## 2.8 Lough Navaddage

Council Area	FODC
<b>Location / Setting</b>	Jenkin Forest
<b>Description</b>	Jenkin Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Jenkin Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Jenkin Forest can be accessed formally from Jenkin Road and informally from Mullaghfad and Eshnadarragh Roads.</p> <p>It is proposed that formal parking is developed at Jenkin Lough with trailhead information and interpretative signage.</p>
<b>Trail System / Section Description</b>	<p>There is currently limited formal recreation provision within Jenkin Forest. There is however a short section of singletrack which forms a 3.8km loop trail from Jenkin Lough utilising existing forest roads.</p> <p>The addition of 0.75km of new build trail would create a 4.9km loop trail around Lough Navadge from the proposed trailhead.</p>
<b>Constraints / Hazards</b>	The proposed new build trail falls within SPA designation.
<b>Points of Interest</b>	Jenkin Forest is forested upland environment containing several small loughs which provide a scenic, remote, and tranquil outdoor space.
<b>Rationale</b>	The addition of a 0.75km section of new build trail would provide an additional 4.9km loop around Lough Navadge from the proposed trailhead. Additional looped trails would significantly enhance the existing recreation offering within the forest and develop the forest as an activity hub. These small loops can be combined to create a series of longer multi-use trails.
<b>Section Recommendations</b>	CH0-750 new build trail around eastern side of lough, 15m back from edge of lough (Category 3 multi-use trail)



<p><b>Infrastructure Recommendations</b></p>	<p>Formalise car parking and install trailhead panels and interpretative signage at Jenkin Lough.</p> <p>Waymarking and trail furniture throughout the trail network, including suitable access gates which provide unrestricted off-road cycling access.</p>
<p><b>Additional Studies</b></p>	<p>Car park design and planning permission.</p> <p>Detailed trail design, trail prescriptions and planning permission.</p>
<p><b>Estimated Construction Costs</b></p>	<p>750m new build costing approximately £54,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £10,000</p>
<p><b>Photographs</b></p>	<div> <p>The photograph shows a scenic view of Lough Navaddage, a small lake surrounded by lush green vegetation and trees. A blue arrow is overlaid on the image, tracing a path that starts on the left side of the foreground, moves horizontally across the middle ground, and then curves around the right side of the lake, pointing towards the water. The sky is overcast with grey clouds.</p> </div> <p><i>Figure 15: Proposed new build trail around Lough Navaddage</i></p>

## 2.9 Lough Natroey

Council Area	FODC
<b>Location / Setting</b>	Jenkin Forest
<b>Description</b>	Jenkin Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Jenkin Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Jenkin Forest can be accessed formally from Jenkin Road and informally from Mullaghfad and Eshnadarragh Roads.</p> <p>It is proposed that formal parking is developed at Jenkin Lough with trailhead information and interpretative signage.</p>
<b>Trail System / Section Description</b>	<p>There is currently limited formal recreation provision within Jenkin Forest. There is however a short section of singletrack which forms a 3.8km loop trail from Jenkin Lough utilising existing forest roads. The addition of 0.625km of new build trail would connect the existing forest roads leading to Lough Natroey to create a 7km loop trail around Lough Natroey from the proposed trailhead. It is recommended that existing access gates are upgraded to facilitate off-road cycling.</p>
<b>Constraints / Hazards</b>	The proposed new build trail falls within SPA designation.
<b>Points of Interest</b>	Jenkin Forest is forested upland environment containing several small loughs which provide a scenic, remote, and tranquil outdoor space.
<b>Rationale</b>	The addition of a 0.625km section of new build trail would provide an additional 7km loop around Lough Natroey from the proposed trailhead. Additional looped trails would significantly enhance the existing recreation offering within the forest and develop the forest as an activity hub. These small loops can be combined to create a series of longer multi-use trails.
<b>Section Recommendations</b>	CH0-625 new build trail along southern edge (Category 3 multi-use trail)

<b>Infrastructure Recommendations</b>	Install trailhead panels and interpretative signage at Jenkin Lough. Waymarking and trail furniture throughout the trail network, including suitable access gates which provide unrestricted off-road cycling access.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	625m new build costing approximately £45,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the FODC RIBA / RIAI Stage 3 Trail Prescriptions Report.

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## 2.10 Two Loughs

Council Area	FODC
<b>Location / Setting</b>	Jenkin Forest
<b>Description</b>	Jenkin Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Jenkin Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	Jenkin Forest can be accessed formally from Jenkin Road and informally from Mullaghfad and Eshnadarragh Roads.  It is proposed that formal parking is developed at Jenkin Lough with trailhead information and interpretative signage.
<b>Trail System / Section Description</b>	There is currently limited formal recreation provision within Jenkin Forest. There is however a short section of singletrack which forms a 3.8km loop trail from Jenkin Lough utilising existing forest roads.  The addition of 1.4km of new build trail would provide access to Lough Asladee and Lough Tawy and combined with existing forest roads and a section of singletrack, create a 5.6km loop trail from the proposed trailhead.
<b>Constraints / Hazards</b>	The proposed new build trail falls within SPA designation.
<b>Points of Interest</b>	Jenkin Forest is forested upland environment containing several small loughs which provide a scenic, remote, and tranquil outdoor space.
<b>Rationale</b>	The addition of a 1.4km section of new build trail would provide an additional 5.6km loop from the proposed trailhead connecting six small loughs. Additional looped trails would significantly enhance the existing recreation offering within the forest and develop the forest as an activity hub. These small loops can be combined to create a series of longer multi-use trails.
<b>Section Recommendations</b>	CH0-1400 new build trail (Category 3 multi-use trail)

<p><b>Infrastructure Recommendations</b></p>	<p>Install trailhead panels and interpretative signage at Jenkin Lough. Waymarking and trail furniture throughout the trail network, including suitable access gates which provide unrestricted off-road cycling access.</p>
<p><b>Additional Studies</b></p>	<p>Detailed trail design, trail prescriptions and planning permission.</p>
<p><b>Estimated Construction Costs</b></p>	<p>1400m new build costing approximately £100,000 (capital costs) Trail furniture and waymarking costing approximately £10,000</p>
<p><b>Photographs</b></p>	<div> </div> <p><i>Figure 16: Proposed new build trail looking west</i></p> <div> </div> <p><i>Figure 17: Proposed new trail build looking east</i></p>



## 2.11 Mullynavale Loop

Council Area	FODC/MUDC
<b>Location / Setting</b>	Mullaghfad Forest
<b>Description</b>	Mullaghfad Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Mullaghfad Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Mullaghfad Forest can be accessed informally from Mullynavale Road. There is an existing car park off Mullynavale Road where the Sliabh Beagh Way exits the forest. It is proposed that this car park is developed with trailhead information and interpretative signage.</p> <p>Construction access can be gained using the existing forest access roads.</p>
<b>Trail System / Section Description</b>	<p>There is currently no formal recreation provision within Mullaghfad Forest. The addition of 0.85km of trail combined with existing forest roads would create a 6.3km loop trail from the existing car park and proposed trailhead.</p>
<b>Constraints / Hazards</b>	The proposed new build trail falls within SPA and Priority Habitat – Peatland designations.
<b>Points of Interest</b>	This loop trail would bring the user up into the upland environment and provide them with a view of Sliabh Beagh and the ‘3 County Hollow’.
<b>Rationale</b>	The addition of 0.85km of trail would create a 6.3km loop trail which would bring the user up into the upland environment and provide them with a view of Sliabh Beagh and the ‘3 County Hollow’. The development of access to the ‘3 County Hollow’ was deemed inappropriate due to the environmental sensitivities of the landscape.
<b>Section Recommendations</b>	No construction required, stiles and waymarking only.
<b>Infrastructure Recommendations</b>	Install trailhead panels and interpretative signage at the existing car park off Mullynavale Road. Waymarking and trail furniture throughout the trail with



	viewpoint seating and interpretation at the highest point. Access gates within the forest should provide unrestricted off-road cycling access.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	Trail furniture and waymarking costing approximately £20,000
<b>Photographs</b>	 <p><i>Figure 18: Proposed waymarked trail following fenceline on open hillside</i></p>  <p><i>Figure 19: Replacement stile required and waymarking</i></p>





Figure 20: Proposed trails within Crocknagrally Forest, Jenkin Forest and Mullaghfad Forest

## 2.12 Carnmore Viewpoint

Council Area	FODC
<b>Location / Setting</b>	Carnmore Viewpoint
<b>Description</b>	Carnmore Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Carnmore Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	There is an existing car park off the Carnmore Road, it is proposed that this car park is developed with trailhead information and interpretative signage.
<b>Trail System / Section Description</b>	There is currently an informal short loop walk from the existing car park to the viewpoint. The addition of 0.39km of new build trail could provide a short accessible loop walk around the viewpoint from the proposed trailhead.
<b>Constraints / Hazards</b>	The proposed new build trail falls within SPA and ASSI designations.
<b>Points of Interest</b>	This loop trail would provide an accessible walk with panoramic views of the surrounding landscape.
<b>Rationale</b>	The addition of new build and upgrade trail would create a short accessible loop trail with panoramic views.
<b>Section Recommendations</b>	CH0-390 new build gravel trail (Category 3 walking trail) CH0-640 upgrade existing gravel trail (Category 3 walking trail)
<b>Infrastructure Recommendations</b>	Install trailhead panels and interpretative signage at existing car park. Waymarking and trail furniture throughout with viewpoint seating.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	390m new build costing approximately £28,000 (capital costs) 640m upgrade costing approximately £32,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the FODC RIBA / RIAI Stage 3 Trail Prescriptions Report.

## 2.13 Doon Forest Loop

Council Area	FODC
<b>Location / Setting</b>	Doon Forest
<b>Description</b>	Doon Forest consists mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Doon Forest is owned and managed by FSNI.
<b>Access Points / Parking</b>	Doon Forest can be accessed from the Carnmore, Drumshancorick and Corraghy Roads. There is an existing car park off the Carnmore Road at Carnmore viewpoint. It is proposed that this car park is developed with trailhead information and interpretative signage.
<b>Trail System / Section Description</b>	<p>The Ulster Way and Sliabh Beagh Way pass through Doon Forest and the forest roads are used informally for walking and cycling. There are angling stands at Lough Corry within Doon Forest.</p> <p>The addition of 1.975km of new build trail combined with existing forest roads and quiet country roads would create a series of loop trails of varying lengths from the proposed trailhead.</p>
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA designation.
<b>Points of Interest</b>	These loop trails would expand on the existing offering at Carnmore and provide a range of opportunities for walking and off-road cycling.
<b>Rationale</b>	The addition of 1.975km of new build trail would create a series of loops of up to 6.5km which would be suitable for walking. The sections of new build trail would provide access to Carnmore and Kimran Loughs which would complement the existing access to Lough Corry.
<b>Section Recommendations</b>	<p>Section 1: CH0-265 new build trail (Category 3 multi-use trail)</p> <p>Section 2: CH0-1270 new build trail (Category 3 multi-use trail)</p> <p>Section 3: CH0-440 new build trail (Category 3 multi-use trail)</p>



<b>Infrastructure Recommendations</b>	Install trailhead panels and interpretative signage at the existing car park at Carnmore viewpoint. Waymarking and trail furniture throughout the trail. Access gates should provide unrestricted off-road cycling access.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	1975m new build costing approximately £142,000 (capital costs) Trail furniture and waymarking costing approximately £20,000
<b>Photographs</b>	Provided within the FODC RIBA / RIAI Stage 3 Trail Prescriptions Report.

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Figure 22: Proposed trails within Carnmore Forest and Doon Forest

## 2.14 Tully Forest Loop

Council Area	FODC
<b>Location / Setting</b>	Tully and Knocknalosset Forests
<b>Description</b>	Tully and Knocknalosset Forests consist mainly of coniferous forest blocks with varying topography along the proposed sections.
<b>Landownership and Management</b>	Tully and Knocknalosset Forests are owned and managed by FSNI.
<b>Access Points / Parking</b>	<p>Tully and Knocknalosset Forests can be accessed from the Corraghy and Aghanglough Roads.</p> <p>The closest existing car park is approximately 4.5km away at Carnmore viewpoint. A new car park and trailhead would need to be established closer to Tully and Knocknalosset Forests to promote these forests for recreation.</p>
<b>Trail System / Section Description</b>	<p>The Ulster Way and Sliabh Beagh Way pass through Tully and Knocknalosset Forests and the forest roads are used informally for walking and cycling.</p> <p>The addition of 400m of new build trail and 700m of upgrade combined with existing forest roads and quiet country roads would create a series of loop trails of varying lengths and take a section of the Sliabh Beagh Way off-road.</p> <p>It is recommended that existing access gates are upgraded to facilitate off-road cycling.</p>
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA designation.
<b>Points of Interest</b>	Expands the forest road network and available recreation opportunities. Tully Forest can be accessed from Killyfole Lough using Mount Darby Road and Corflugh Forest.
<b>Rationale</b>	The addition of 400m of new build trail and 350m upgrade would create a loop trail within Tully and Knocknalosset Forests of up to 6.3km which would be suitable for walking and off-road cycling. Upgrading the existing 350m section of the old Ulster Way Route through Knocknalosset Forest would take a short section of the Sliabh Beagh Way off-road.

<p><b>Section</b></p> <p><b>Recommendations</b></p>	<p>CH0-350 upgrade existing forest road (Category 3 multi-use trail)</p> <p>CH350-750 new build trail (Category 3 multi-use trail)</p> <p>CH0-350 upgrade of old Ulster Way Route (Category 3 multi-use trail)</p>
<p><b>Infrastructure</b></p> <p><b>Recommendations</b></p>	<p>Establish a suitable location for a new car park and trailhead. Waymarking and trail furniture throughout the trail. Access gates should provide unrestricted off-road cycling access.</p>
<p><b>Additional Studies</b></p>	<p>Detailed trail design, trail prescriptions and planning permission.</p>
<p><b>Estimated Construction Costs</b></p>	<p>400m new build costing approximately £36,000 (capital costs)</p> <p>700m upgrade costing approximately £45,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £10,000</p>
<p><b>Photographs</b></p>	<div> </div> <p><i>Figure 23: Proposed new build trail through conifer plantation beyond existing forest road</i></p>





Figure 24: Proposed trails within Tully Forest and Knocknalosset Forest



## 2.15 Mullaghfad Antrawer Link

Council Area	FODC/MCC
<b>Location / Setting</b>	Mullaghfad Forest and Eshbrack Bog
<b>Description</b>	Mullaghfad Forest consist mainly of coniferous forest blocks and Eshbrack Bog consists mainly of wet heath and upland blanket bog with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Mullaghfad Forest is owned and managed by FSNI and Eshbrack Bog is owned and managed by An Taisce.
<b>Access Points / Parking</b>	Mullaghfad Forest can be accessed from Mullynavale Road and Eshbrack Bog can be accessed from the L5030 Road. There is currently a car park where the Sliabh Beagh Way exits Mullaghfad Forest onto Mullynavale Road, and another at the top of the L5030 Road.
<b>Trail System / Section Description</b>	The Ulster Way and Sliabh Beagh Way travel along the northern side of Lough Antrawer, along an existing access road and then across the open hillside towards Mullaghfad Forest. The proposed new build trail will upgrade and further establish this link. It is recommended that existing access gates are upgraded to facilitate off-road cycling.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA and NHA designation.
<b>Points of Interest</b>	This established link connects Mullaghfad Forest to Eshbrack Bog and expands the recreation offering within the upland area whilst protecting and enhancing the biodiversity.
<b>Rationale</b>	The upgrade and installation of new build trail across this section of upland blanket bog would make this link accessible to more users including cyclists and help to protect the bog by establishing one trail and prevent trail braiding.
<b>Section Recommendations</b>	CH0-45 new build gravel trail north-south (Category 3 multi-use trail) CH45-445 new build boardwalk trail north-south (Category 3 multi-use trail) CH445-580 new build gravel trail north-south (Category 3 multi-use trail)

<b>Infrastructure Recommendations</b>	Upgrade of existing car parks outlined above to establish trailhead locations. Waymarking and trail furniture throughout the trail. Access gates should provide unrestricted off-road cycling access.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	580m new build costing approximately £84,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the MCC RIBA / RIAI Stage 3 Trail Prescriptions Report.

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## 2.16 Lough Antrawer

Council Area	MCC
<b>Location / Setting</b>	Eshbrack Bog
<b>Description</b>	Eshbrack Bog consists mainly of wet heath and upland blanket bog with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Eshbrack Bog is owned and managed by An Taisce.
<b>Access Points / Parking</b>	Eshbrack Bog can be accessed from the L5030 Road where there is currently a car park at Eshnaglogh / Barratitopy.
<b>Trail System / Section Description</b>	The Ulster Way and Sliabh Beagh Way travel along the northern side of Lough Antrawer. The proposed new build trail will upgrade and further establish this trail to make it accessible to more users.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA and NHA designation.
<b>Points of Interest</b>	This trail provides a looped walk around Lough Antrawer and provides access to the upland area whilst protecting and enhancing the biodiversity.
<b>Rationale</b>	The upgrade and installation of new build trail across this section of upland blanket bog would make this link accessible to more users and help to protect the bog by establishing one trail and prevent trail braiding.
<b>Section Recommendations</b>	CH0-530 upgrade existing access road west-east (Category 3 multi-use trail) CH530-570 new build gravel trail west-east (Category 3 multi-use trail) CH570-1275 new build bog bridge trail west-east (Category 3 walking trail) CH570-725 new build gravel trail west-east (Category 3 multi-use trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing car park at Eshnaglogh / Barratitopy to establish a trailhead. Waymarking and trail furniture throughout the trail. Access gates should provide unrestricted off-road cycling access.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.

<p><b>Estimated Construction Costs</b></p>	<p>530m upgrade costing approximately £26,000 (capital costs)</p> <p>880m new build costing approximately £96,000 (capital costs)</p> <p>1no. wooden footbridge required £10,000 (capital costs)</p> <p>Trail furniture and waymarking costing approximately £10,000</p>
<p><b>Photographs</b></p>	<p>Provided within the MCC RIBA / RIAI Stage 3 Trail Prescriptions Report.</p>

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## 2.17 Sliabh Beagh Way

Council Area	MCC
<b>Location / Setting</b>	Eshbrack Bog
<b>Description</b>	Eshbrack Bog consists mainly of wet heath and upland blanket bog with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Eshbrack Bog is owned and managed by An Taisce.
<b>Access Points / Parking</b>	Eshbrack Bog can be accessed from the L5030 and Eshnaglogh Roads. There is currently a car park at Eshnaglogh / Barratitoppy at the top of the L5030.
<b>Trail System / Section Description</b>	The Ulster Way and Sliabh Beagh Way cross the upland blanket bog between the Eshnaglogh Road and Lough Antrawer. The proposed new build trail will upgrade and further establish this trail to make it accessible to more users.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA and NHA designation.
<b>Points of Interest</b>	These trail upgrades will enhance access to the upland area whilst protecting and enhancing the biodiversity.
<b>Rationale</b>	The installation of new build bog bridge sections across the upland blanket bog would help to protect the bog by establishing one trail to prevent trail braiding and allow damaged parts of the bog to recover by removing footfall.
<b>Section Recommendations</b>	<p>CH0-1000 upgrade existing access road south-north (Cat 3 multi-use trail)</p> <p>CH1000-1165 new build bog bridge west-east (Category 3 walking trail)</p> <p>CH1785-1840 new build bog bridge west-east (Category 3 walking trail)</p> <p>CH2250-2410 new build bog bridge west-east (Category 3 walking trail)</p> <p>CH2410-2660 upgrade existing access road (Category 3 multi-use trail)</p>
<b>Infrastructure Recommendations</b>	Upgrade of existing car park at Eshnaglogh / Barratitoppy to establish a trailhead. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.

<b>Estimated Construction Costs</b>	1090m upgrade costing approximately £55,000 (capital costs) 380m new build costing approximately £54,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the MCC RIBA / RIAI Stage 3 Trail Prescriptions Report.

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## 2.18 Barratitoppy Link

Council Area	MCC
<b>Location / Setting</b>	Eshbrack Bog / Eshnaglogh Forest
<b>Description</b>	Eshbrack Bog consists mainly of wet heath and upland blanket bog and Eshnaglogh Forest consists mainly of coniferous forest blocks with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Eshbrack Bog is owned and managed by An Taisce and Eshnaglogh Forest is owned and managed by Coillte.
<b>Access Points / Parking</b>	Eshbrack Bog can be accessed from the L5030 and Eshnaglogh Forest can be accessed from the Eshnaglogh Road. There is currently a car park at Eshnaglogh / Barratitoppy at the top of the L5030.
<b>Trail System / Section Description</b>	There is currently an old farm lane which extends from the L5030 east to an abandoned farmhouse, and a forest access road which extends from the Eshnaglogh Road west to the start of the forest block. There is currently no link between the two disused access roads. The proposed new build trail will upgrade these existing disused access roads and establish a link between them.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA and partially within a NHA designation.
<b>Points of Interest</b>	This new build section of trail will provide a link between these existing disused access roads which can be used by a variety of users for recreation.
<b>Rationale</b>	The upgrade of existing disused access roads and installation of new build boardwalk and gravel trail will provide a link between the L5030 and Eshnaglogh Roads which can be used by a variety of recreation users including cyclists.
<b>Section Recommendations</b>	CH0-490 upgrade existing access road west-east (Category 3 multi-use trail) CH490-1090 new build trail west-east (Category 3 multi-use trail) CH1090-1520 upgrade existing access road west-east (Cat 3 multi-use trail)

<b>Infrastructure Recommendations</b>	Upgrade of existing car park at Eshnaglogh / Barratitoppy to establish a trailhead. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	920m upgrade costing approximately £46,000 (capital costs) 600m new build costing approximately £88,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the MCC RIBA / RIAI Stage 3 Trail Prescriptions Report.

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## 2.19 Lough Bradan Link

Council Area	MCC
<b>Location / Setting</b>	Eshbrack Bog
<b>Description</b>	Eshbrack Bog consists mainly of wet heath and upland blanket bog with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	This section of Eshbrack Bog is owned and managed by Coillte.
<b>Access Points / Parking</b>	Lough Bradan can be accessed from the L11356 Road with car parking nearby at the Penal Cross.
<b>Trail System / Section Description</b>	There is currently no formal access to Lough Bradan. The proposed new build trail will provide a formal access.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA and partially within a NHA designation.
<b>Points of Interest</b>	This new build trail will facilitate access to Lough Bradan whilst protecting and enhancing the biodiversity.
<b>Rationale</b>	The installation of new build trail could help to protect the bog by establishing one trail to prevent trail braiding.
<b>Section Recommendations</b>	CH0-470 new build trail (Category 3 walking trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing car park at the Penal Cross to establish a trailhead. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	470m new build costing approximately £34,000 (capital costs) Trail furniture and waymarking costing approximately £10,000



Photographs



*Figure 25: Proposed new build trail down to Lough Bradan*



*Figure 26: Proposed new build trail 15m back from the edge of Lough Bradan*

## 2.20 Penal Cross Link

Council Area	MCC
<b>Location / Setting</b>	Eshbrack Bog and Eshgloghfin Forest
<b>Description</b>	This section of Eshbrack Bog consists mainly of wet heath and cutover bog and Eshgloghfin Forest comprises mainly of coniferous forest blocks with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Landownership on this section of Eshbrack Bog is unknown. Eshgloghfin Forest is owned and managed by Coillte.
<b>Access Points / Parking</b>	The Penal Cross can be accessed from the L11356 Road with car parking at the highest vantage point above the Penal Cross.
<b>Trail System / Section Description</b>	Currently access down to the Penal Cross and promoted walking trails within Eshgloghfin Forest, proposed trail will provide formal link between these trails.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA designation.
<b>Points of Interest</b>	This new build trail will provide a link between existing promoted trails featuring the Penal Cross and Mass Rock.
<b>Rationale</b>	This new build trail will provide a link between existing promoted trails which will extend the overall recreation offering within the area.
<b>Section Recommendations</b>	CH0-100 upgrade existing access lane (Category 3 multi-use trail) CH100-300 new build trail (Category 3 multi-use trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing car park at the Penal Cross to establish a trailhead. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	100m upgrade costing approximately £5,000 (capital costs) 200m new build costing approximately £15,000 (capital costs) Trail furniture and waymarking costing approximately £10,000
<b>Photographs</b>	Provided within the MCC RIBA / RIAI Stage 3 Trail Prescriptions Report.

## 2.21 Eshgloghfin Link

Council Area	MCC
<b>Location / Setting</b>	Eshgloghfin Forest
<b>Description</b>	Eshgloghfin Forest consists mainly of coniferous forest blocks with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Eshgloghfin Forest is owned and managed by Coillte.
<b>Access Points / Parking</b>	Eshgloghfin Forest can be accessed by the L10011 and L50501 Roads. There is currently car parking on the L10011 Road at the Esh Walk trailhead.
<b>Trail System / Section Description</b>	There is currently a 9km promoted looped walk within Eshgloghfin Forest with an additional 400m walk following a small stream to 'Poll an Aifrin' the Mass Rock. The proposed new build trail would provide a link from the Mass Rock up onto the existing forest road above to create an additional loop walk.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA designation.
<b>Points of Interest</b>	This new build trail will provide a link between 'Poll an Aifrin' and the forest road above to create an additional loop walk.
<b>Rationale</b>	This new build trail will provide an additional promotable looped walk utilising the network of existing forest roads and the 'Poll an Aifrin' trail.
<b>Section Recommendations</b>	CH0-250 new build trail (Category 3 walking trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing car park and trailhead on the L10011 Road. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	250m new build costing approximately £18,000 (capital costs) Trail furniture and waymarking costing approximately £10,000

Photographs



*Figure 27: Proposed extension of 'Poll an Aifrin' trail*

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## 2.22 Bragan Esh Link

Council Area	MCC
<b>Location / Setting</b>	Eshgloghfin Forest
<b>Description</b>	Eshgloghfin Forest consists mainly of coniferous forest blocks with moderately varying topography along the proposed sections.
<b>Landownership and Management</b>	Eshgloghfin Forest is owned and managed by Coillte.
<b>Access Points / Parking</b>	Eshgloghfin Forest can be accessed by the L10011 and L50501 Roads. There is currently car parking on the L10011 Road at the Esh Walk trailhead.
<b>Trail System / Section Description</b>	There is currently a 9km promoted looped walk within Eshgloghfin Forest. The proposed new build trail would provide a link into the northern forest block which would extend the overall recreation offering.
<b>Constraints / Hazards</b>	The proposed new build trail falls within a SPA designation.
<b>Points of Interest</b>	This new build trail will provide a link between two forest blocks which would extend the overall recreation offering within the area.
<b>Rationale</b>	This new build trail will provide an additional promotable looped walk utilising the northern forest block, L11353, L11354 and proposed Penal Cross link.
<b>Section Recommendations</b>	CH0-250 new build trail (Category 3 multi-use trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing car park and trailhead on the L10011 Road. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	250m new build costing approximately £18,000 (capital costs) Trail furniture and waymarking costing approximately £10,000



Photographs



*Figure 28: Proposed new build trail linking coniferous forest blocks*

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## 2.23 Knockatallon Eshacrin Link

Council Area	MCC
<b>Location / Setting</b>	Land adjacent to the L1003 Road.
<b>Description</b>	Private farmland adjacent to a busy road.
<b>Landownership and Management</b>	Private land.
<b>Access Points / Parking</b>	Existing car parking and trailhead at Knockatallon Hotel.
<b>Trail System / Section Description</b>	There are currently a series of four promoted looped walks within the area referred to as the Knockatallon Looped Walks varying in length from 6-10km.
<b>Constraints / Hazards</b>	The proposed new build trail falls within private land.
<b>Points of Interest</b>	Knockatallon Looped Walks will provide a variety of walking opportunities of varying lengths within the Sliabh Beagh region.
<b>Rationale</b>	This section of new build trail would provide an off-road link from Knockatallon Hotel to the L5030 Road which would increase safety for all trail users.
<b>Section Recommendations</b>	CH0-375 new build trail (Category 3 multi-use trail)
<b>Infrastructure Recommendations</b>	Upgrade of existing trailhead at the Knockatallon Hotel. Waymarking and trail furniture throughout the trail.
<b>Additional Studies</b>	Detailed trail design, trail prescriptions and planning permission.
<b>Estimated Construction Costs</b>	375m new build costing approximately £27,000 (capital costs) Trail furniture and waymarking costing approximately £10,000

Photographs



*Figure 29: Proposed new build trail along hedge line*

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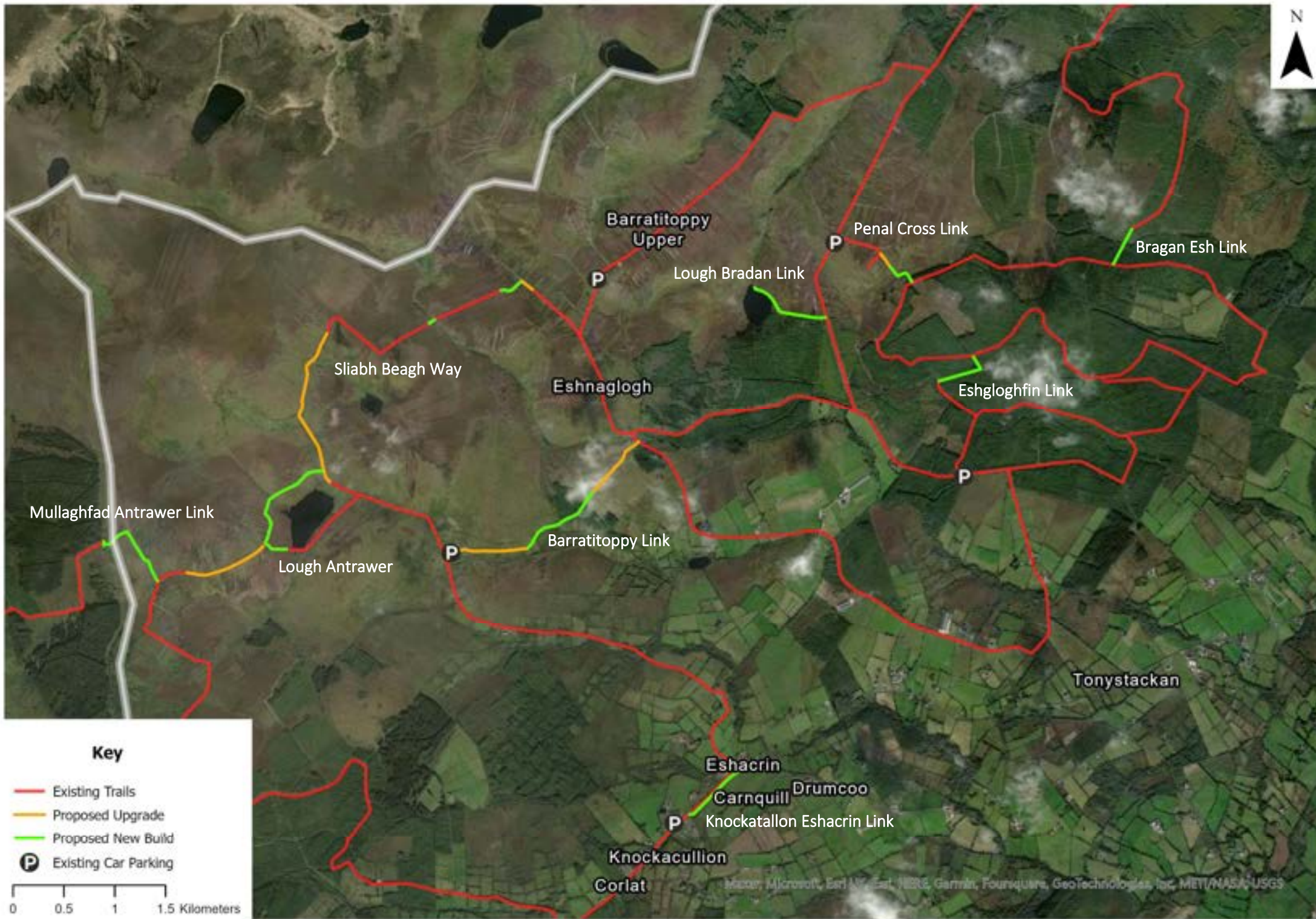


Figure 30: Proposed trails across Eshbrack Bog, Barratitoppy and Eshgloghfin Forest

### 3 Stage 3 Proposals

The scope of this project included the identification of opportunities to enhance the existing recreation provision (walking, cycling and equestrian) to allow the area to be promoted as a multi-activity destination. Following an extensive audit and gap analysis which was carried out on the existing trail system, a total of 16.78km of recreation trails were developed to RIBA / RIAI Stage 2 (concept level).

The rationale for how these trails were shortlisted is detailed below. The focus within this project has been to maximise the potential for development and promotion of walking loops, a long-distance cycling route, shorter cycling loops and equestrian trails by utilising existing trails and forest roads within public land where possible and improving connectivity through short new build sections. The region was considered holistically with a focus on maximising the multi-activity potential within the scope of the project; to progress priority walking and cycling trails up to a total of 5km to RIBA Stage 3 and prepare trail construction prescriptions. However, a total of 8.90km were shortlisted to progress to RIBA / RIAI Stage 3 (shovel ready) as these were seen as strategically important in creating a multi-activity destination across the three counties/council areas.



County/Council	Route Name	Trail Required	Stage 3	Rationale
MUDC	Favour Royal Link	270m new build 1300m upgrade Large footbridge	No	Design of footbridge would require flood modelling, flood risk assessment and a topographic survey which is outside of the scope of this study. Due to flood risk, an engineer has advised that longer ramps than usual would be required to access the bridge and that the bridge would need to be raised to a level that is 600mm above the Q100 water level, resulting in a potentially expensive bridge. New build trail is dependent on a footbridge to create a link between forest blocks. Due to the potential cost of the bridge it was determined that this option would not provide value for money to the client and therefore it was not selected to be progressed at this time.
	Burkes Waterfall	495m new build 1520m upgrade	Yes	Installation of 410m new build trail and 1520m upgrade would create a 5.4km walking loop. An additional 85m of new build trail would provide access to a point of interest, Burke's Waterfall, significantly enhancing the existing trail network.
	Fardross Equestrian Loop	2500m new build	Yes	Installation of 2500m new build trail combined with existing forest roads could provide 12km of equestrian trails accessed via low trafficked roads. This trail could begin at Clogher Valley Horses Welcome where there is potential for equestrian hire.
	Fardross Arc	425m new build 365m upgrade	Yes	Installation of 425m new build trail and 365m upgrade would reinstate an existing trail which has fallen into disrepair through lack of maintenance and create a short loop walk along the forest boundary with beautiful views across the open mountain.

	Browns Hill	215m new build 330m upgrade	No	Trail requires new build trail within SPA and SAC designations and is likely to have a negative impact on the surrounding habitat. Similar views can be gained from the Fardross Arc trail.
	Lumfords Glen	2500m new build Engineering design	No	Installation of 2500m new build trail through Lumfords Glen would provide a unique trail through the glen and extend the existing network at Knockmanny Forest. However, significant earthworks and infrastructure is required to make this trail safe which will require engineering design and additional studies which are outside of the scope of this study. It is recommended that a feasibility study and engineering design is developed for this trail which has significant potential and would complement the proposed network.
	Crockaclevan Lough	850m new build	No	Installation of 850m new build trail would provide an additional 3.1km loop walk within Crocknagrally Forest. However, due to the existing network of trails within Crocknagrally Forest, this trail was not selected for progression.
FODC	Lough Navaddage	750m new build	No	Installation of 750m new build trail would provide an additional 4.9km loop around Lough Navaddage from the proposed trailhead at Lough Jenkin. However, due to the existing network of trails within Jenkin Forest, this trail was not selected for progression.
	Lough Natroey	625m new build	Yes	Installation of 625m new build trail would provide an additional 7.0km loop around Lough Natroey from the proposed trailhead at Lough Jenkin. This short section of new build would significantly expand the network within Jenkin Forest and create a series of off-road cycling loops of varying distances.

	Two Loughs	1400m new build	No	Installation of 1400m new build trail would provide an additional 5.6km loop from the proposed trailhead at Lough Jenkin. However, due to the existing network of trails within Jenkin Forest, this trail was not selected for progression.
	Carnmore Viewpoint	390m new build 640m upgrade	Yes	Installation of 390m of new build trail and 640m upgrade would create a series of short loop walks with panoramic views to enhance the existing recreation offering.
	Doon Forest Loop	1975m new build	Yes	Installation of 1975m new build trail would create a series of loops of up to 6.5km which would be suitable for walking. The sections of new build trail would provide access to Carnmore and Kimran Loughs which would complement the existing access to Lough Corry.
	Tully Forest Loop	400m new build 700m upgrade	No	Installation of 400m new build trail would create a loop trail within Tully and Knocknalosset Forests of up to 6.3km which would be suitable for walking and off-road cycling. However, due to the landscape and potential within Doon Forest, Carnmore Viewpoint and Jenkin Forest, this trail was not selected for progression within this project.
FODC/ MUDC	Mullynavale Loop	Waymarking	N/A	No planning required as no new build trail recommended. Upgrade of existing stiles required and installation of waymarking and interpretive signage to create a 6.3km loop trail which would allow the visitor to experience the upland environment and provide them with a view of Sliabh Beagh and the '3 County Hollow' without impacting on the sensitivities of the landscape.


FODC/ MCC	Mullaghfad Antrawer Link	580m new build	Yes	Installation of 580m new build trail across this section of upland blanket bog would enhance the existing Sliabh Beagh Way and make this link accessible to more users including cyclists as well as help to protect the bog by establishing one trail to prevent trail braiding and allow the bog to recover by removing footfall.
MCC	Lough Antrawer	880m new build 530m upgrade Small footbridge	Yes	Installation of 880m new build trail across this section of upland blanket bog would enhance the existing Sliabh Beagh Way and make this link accessible to more walkers as well as help to protect the bog by establishing one trail to prevent trail braiding and allow the bog to recover by removing footfall.
	Sliabh Beagh Way	380m new build 1090m upgrade	Yes	Installation of 380m new build bog bridge sections along the existing Sliabh Beagh Way across the upland blanket bog would help to protect the bog by establishing one trail to prevent trail braiding and allow the bog to recover by removing footfall.
	Barratitoppy Link	600m new build 920m upgrade	Yes	Installation of 600m new build and 920m upgrade of existing disused access roads would provide a multi-use link between the L5030 and Eshnaglogh Roads, providing an alternative to the Sliabh Beagh Way across the upland blanket bog at this location for cyclists.
	Lough Bradán Link	470m new build	No	Installation of 470m new build trail would provide a linear trail to Lough Bradán. However, upgrades to the existing Sliabh Beagh Way and linkages were prioritised within MCC to maximise the potential trail network within the scope of the project.

Penal Cross Link	200m new build 100m upgrade	Yes	Installation of 200m new build and 100m upgrade would provide a link from the Penal Cross into Eshgloghfin Forest which currently has 9km of promoted trails, the Knockatalon Looped Walks, to expand the existing trail network.
Eshgloghfin Link	250m new build	No	Installation of 250m new build trail would extend the existing 'Poll an Aifrin' trail to connect it to an existing forest road. However, upgrades to the existing Sliabh Beagh Way and linkages were prioritised within MCC to maximise the potential trail network within the scope of the project.
Bragan Esh Link	250m new build	No	Installation of 250m new build trail would provide a connection between Eshgloghfin Forest and the L11353 Road. However, upgrades to the existing Sliabh Beagh Way and linkages were prioritised within MCC to maximise the potential trail network within the scope of the project.
Knockatallon Eshacrin Link	375m new build	No	Installation of 375m new build trail would provide an off-road connection between Knockatalon and L5030 Road Eshgloghfin Forest and the L11353 Road. However, upgrades to the existing Sliabh Beagh Way and linkages were prioritised within MCC to maximise the potential trail network within the scope of the project.



## 4 Appendices

### 4.1 Appendix A – Trail Category Descriptions

Key trail attributes	Category 2 Multi-Use Trail
Description	<p>These are trails that are accessible to a wide range of users and abilities but NOT ALL users due to issues relating to trail gradients, trail surfaces and trail features. Users include:</p> <ul style="list-style-type: none"> <li>• Pedestrians of mixed abilities including young children and some baby buggies</li> <li>• Cyclists of all abilities other than very young children or bikes with stabilizers or wheels less than 400mm</li> <li>• Category Two Multi Use Trails are not suitable for those of limited mobility or with impaired vision</li> </ul>
Width	<p>Refer to Section Information.</p> <p>Optimal width 1.8m</p>
Surface	<p>Consistent sealed surfaces and can include asphalt and compacted stone or gravel</p>
Gradients	<ul style="list-style-type: none"> <li>• Maximum average gradient - not more than 5%</li> <li>• Maximum absolute gradient - not more than 10% for more than 50m</li> </ul>
Lines of Sight	<p>Minimum 30m</p>
Trail Features	<p>Small level changes of not more than 60mm deep and not less than 300mm width.</p> <p>Grade reversals of not less than 10m in length and not more than 1m depth. Bridges must be not less than 2m wide and must have handrails throughout</p> <p>Category Two Multi Use Trails should not include steps.</p>
Suitable for	<p>All users</p>
<p>The photo below shows a Category 2 Multi-Use Trail. Note the wide flat trail with good lines of site.</p> 	

Key trail attributes		Category 3 Multi-Use Trail
Description	<p>These are trails that are less accessible than both Category One and Category Two Multi Use Trails and are therefore more suited to specific users and activities. Category Three Multi Use Trails are suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Pedestrians – walkers and runners of mixed but NOT ALL abilities.</li> <li>• Cyclists – cyclists of mixed abilities using off road mountain bikes only.</li> <li>• Equestrians – of all abilities.</li> </ul> <p>Category Three trails are not suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Those of limited mobility or impaired vision.</li> <li>• Those with a standard child’s pushchair.</li> <li>• Bikes with wheels less than 50mm, tag-alongs, trailers, or child carriers.</li> </ul>	
Width	<p>Refer to Section Information.</p> <p>Optimal width - 1.5m</p>	
Surface	<p>Variable but stable surfaces can be slightly uneven and include some loose material. Surfaces may include compacted stone and gravel, soil, grass, sand, and mud.</p>	
Gradients	<ul style="list-style-type: none"> <li>• Maximum average gradient - not more than 8%</li> <li>• Maximum absolute gradient - not more than 15% for more than 300m</li> </ul>	
Lines of Sight	<p>Minimum 20m</p>	
Trail Features	<p>These trails can include level changes such as steps, roots, rocks, potholes, water bars and drains. Level changes must not exceed 150mm height in relation to pedestrian only trails and be not more than 50mm in relation to all other trails including cycling and equestrian trails.</p> <p>Grade reversals not less than 4m in length and not more than 1m depth.</p> <p>Timber boardwalks of not less than 1200mm width and not more than 300mm height above ground level.</p> <p>Bridges should be not less than 1200mm width with handrails throughout.</p>	
Suitable for	<p>All users</p>	
<p>Examples of Category Three trails may be found in country and forest parks but are less likely to be found in urban or semi-urban settings. The photo below is an example of a purpose-built Category Three Multi Use Trail within Castleward, County Down. In this case the trail has been designed for walkers and off-road cyclists. Note the limited clearance between the trees and the relatively flat trail surface.</p>		



Key trail attributes	Category 4 Walking Trail
Description	<p>Category Four Walking Trails have variable gradients and surfaces and may be found in a very wide variety of environments including more remote upland sites.</p> <p>These are trails where access is more restricted by issues such as gradients, trail surfaces and the nature and size of trail features. This means these trails may not be suitable for use by all user groups at the same time. Category Four Walking Trails are suitable for the following users only:</p> <ul style="list-style-type: none"> <li>• Pedestrians – mixed ability walkers and runners</li> </ul> <p>Category Four Multi Use Trails are not suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Off-road cyclists</li> <li>• Equestrians – leisure and endurance riders</li> <li>• Those with limited mobility or impaired vision</li> <li>• Off road cyclists using bikes other than mountain bikes - not tag-alongs, trailers, child seats and stabilizers</li> <li>• Those with baby buggies</li> <li>• Novice equestrians</li> </ul>
Width	<p>Refer to Section Information.</p> <p>Optimal width - Minimum 600mm wide   Maximum 1.2m wide</p>
Surface	<p>Very variable and uneven including loose material, rocks, mud, gravel, soil, roots, grass, and other vegetation. Surfaces may change suddenly and vary over short distances.</p>
Gradients	<p>Average gradients of 10%, maximum gradients should not exceed 20% for not more than 50m.</p>
Lines of Sight	<p>Minimum 15m</p>
Trail Features	<p>These trails can feature unexpected and sudden level changes caused by steps, roots, rocks, ditches, drains and water bars of not more than 300mm in relation to pedestrian only trails.</p> <p>Trails should include obstructions to prevent use by other trail users as shown in photographs below.</p> <p>Turns of up to 180 degrees.</p> <p>Grade reversals of not less than 2.5m length and not more than 1.5m depth.</p> <p>Boardwalks not less than 600mm wide and not more than 1500mm high above ground level.</p> <p>Bridges should be not less than 1m wide and should have handrails throughout if more than 1500mm high above ground level.</p> <p>May feature encroaching vegetation and have limited clearance in relation to trees etc.</p>



Suitable for

Walkers only

The photographs below show examples of purpose-built Category Four Walking Trails. Note the narrow trail and the level changes as well as the uneven surfaces and obstacles.



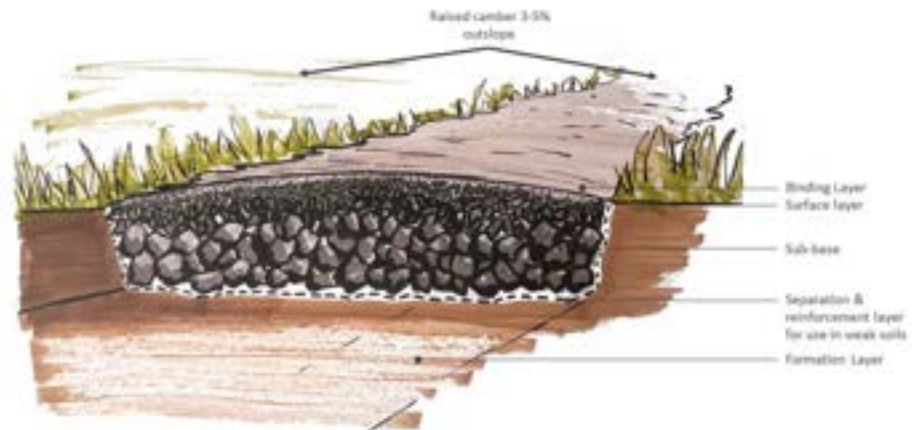


## 4.2 Appendix B – Infrastructure Specifications

Infrastructure Item	Detail
<p><b>Trailhead Information Panel</b></p> <p>To be supplied by client</p> <p>Installation only by contractor</p>	<p>For information:</p> <ul style="list-style-type: none"> <li>- Trailhead information panel - 980mm x 720mm in a hardwood frame. 5mm panels will be full colour, aluminium with scratch resistant enamel resin coating, UV, water and heat resistant (Dibond or Primadura or similar).</li> <li>- Each panel requires 2No. 100mm x 75mm x 1.75m support post and 2No. 75mm x 50mm x 475mm bearers in pressure treated UK-grown FSC oak.</li> <li>- In concrete foundations (to a depth of 700mm).</li> </ul> <div style="display: flex; justify-content: space-around;">   </div>
<p><b>Waymarker posts</b></p> <p>To be supplied and installed by contractor.</p>	<p>For information:</p> <ul style="list-style-type: none"> <li>- Waymarker posts (not routed) at the junction of trails.</li> <li>- Pressure treated UK-grown FSC approved oak.</li> <li>- Dimensions 125mm x 125mm x 1400mm with pointed tops.</li> <li>- In concrete foundations.</li> </ul> <div style="display: flex; justify-content: space-around;">   </div>

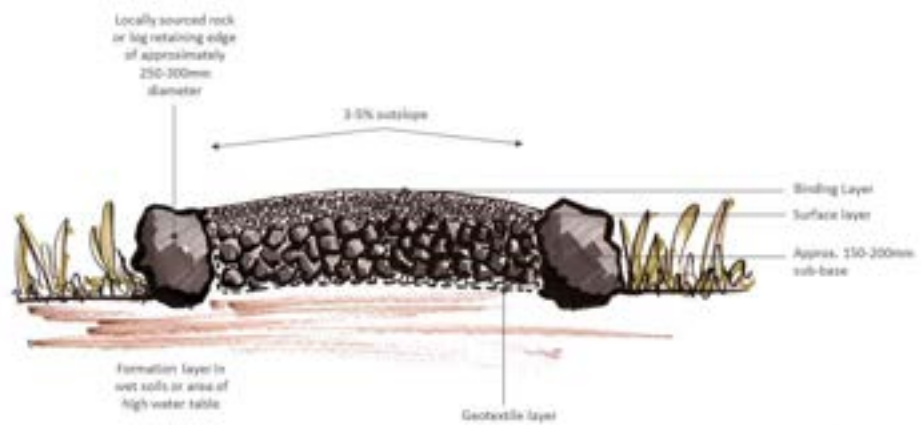
Typical raised  
camber  
formation

Trail formation & raised camber

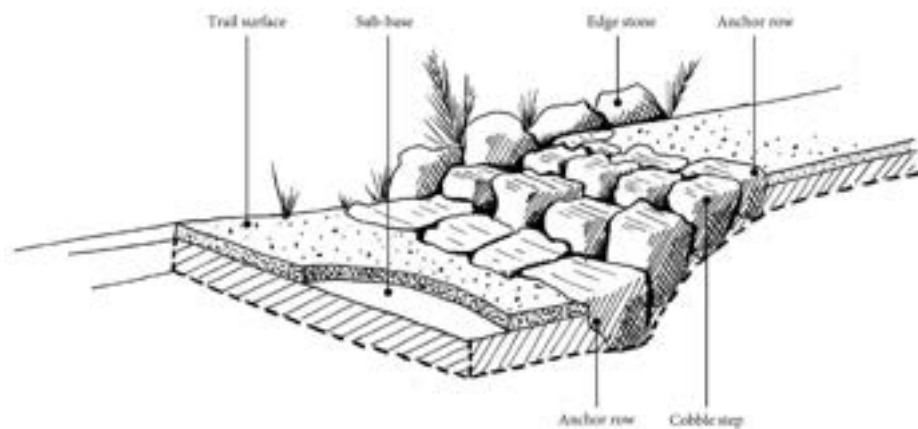


Typical Raised  
causeway  
formation

Raised causeway

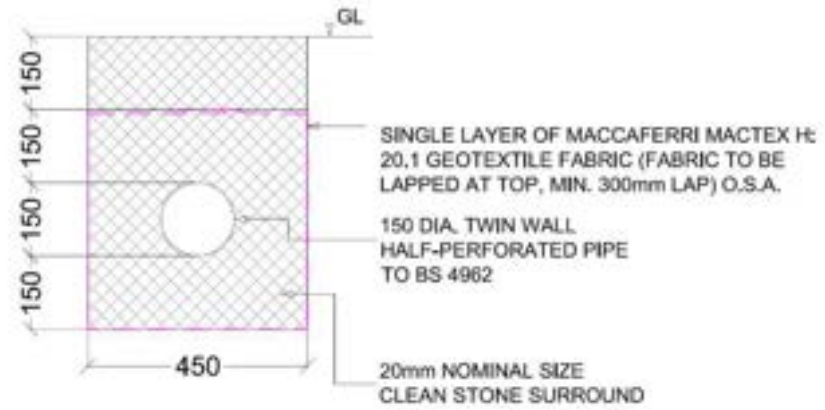


Typical stone  
step formation



Typical  
culvert/topside  
ditch  
construction  
detail with  
stone headwall

To be identified by contractor and agreed with client.



Typical culvert / topside ditch build up



Stone headwall example side view



Stone headwall example path view





Stone headwall example side view

Typical  
footbridge  
construction



Example stone  
water bars



Example restrictive access gate to facilitate off-road cycling



Example restrictive access gate to facilitate equestrian use (including locking post)





# **Sliabh Beagh Ecotourism Feasibility Study**

## **Work Packages 1, 2 and 3 RIBA Stage 3 Trail Prescriptions Report**

### **Mid Ulster District Council Area**

**Draft v1**

November 2023

Prepared by Outdoor Recreation NI on behalf of  
Mid Ulster District Council



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## 1 INTRODUCTION

In 2023, Outdoor Recreation NI (ORNI) was commissioned by Monaghan County, Mid Ulster District and Fermanagh and Omagh District Councils to determine the feasibility of developing the wider Sliabh Beagh area as an ecotourism destination. This included the identification of opportunities to enhance the existing recreation provision (walking, cycling and equestrian) to allow the area to be promoted as a multi-activity destination.

An extensive audit and gap analysis was carried out on the existing trail systems to identify opportunities to improve accessibility, connectivity, and sustainability. In total, 16.78km of new recreation trails were developed to RIBA / RIAI Stage 2 (concept level) – these are outlined within the document Work Packages 1, 2 and 3 – RIBA / RIAI Stage 2 Concepts Report. Of these, a total of 8.90km were shortlisted to progress to RIBA / RIAI Stage 3 (shovel ready). This report outlines construction prescriptions for those shortlisted trails and linkages within Mid Ulster District Council. These are summarized in the following table and overleaf in Figure 1 and Figure 2.

An online dashboard is available to view these proposals in more detail [Sliabh Beagh Feasibility Study \(arcgis.com\)](#). Alternatively, a shapefile of the proposed lines is available from ORNI on request.

Council / County	Trail Name Forest Name	Section ID
Mid Ulster District Council	Burkes Waterfall Favour Royal Forest	<ul style="list-style-type: none"><li>• Section 1 – 410m 1.5m wide gravel trail with steps</li><li>• Section 3 – 85m 1.5m wide gravel trail with steps</li></ul>
Mid Ulster District Council	Fardross Arc Fardross Forest	<ul style="list-style-type: none"><li>• Section 2 – 425m 1.5m wide gravel trail</li></ul>
Mid Ulster District Council	Fardross Equestrian Fardross Forest	<ul style="list-style-type: none"><li>• Section 1 – 1475m 2.5m wide gravel trail</li><li>• Section 2 – 300m 3.0m wide gravel trail</li><li>• Section 3 – 270m 2.5m wide gravel trail</li><li>• Section 4 – 445m 2.5m wide gravel trail</li></ul>

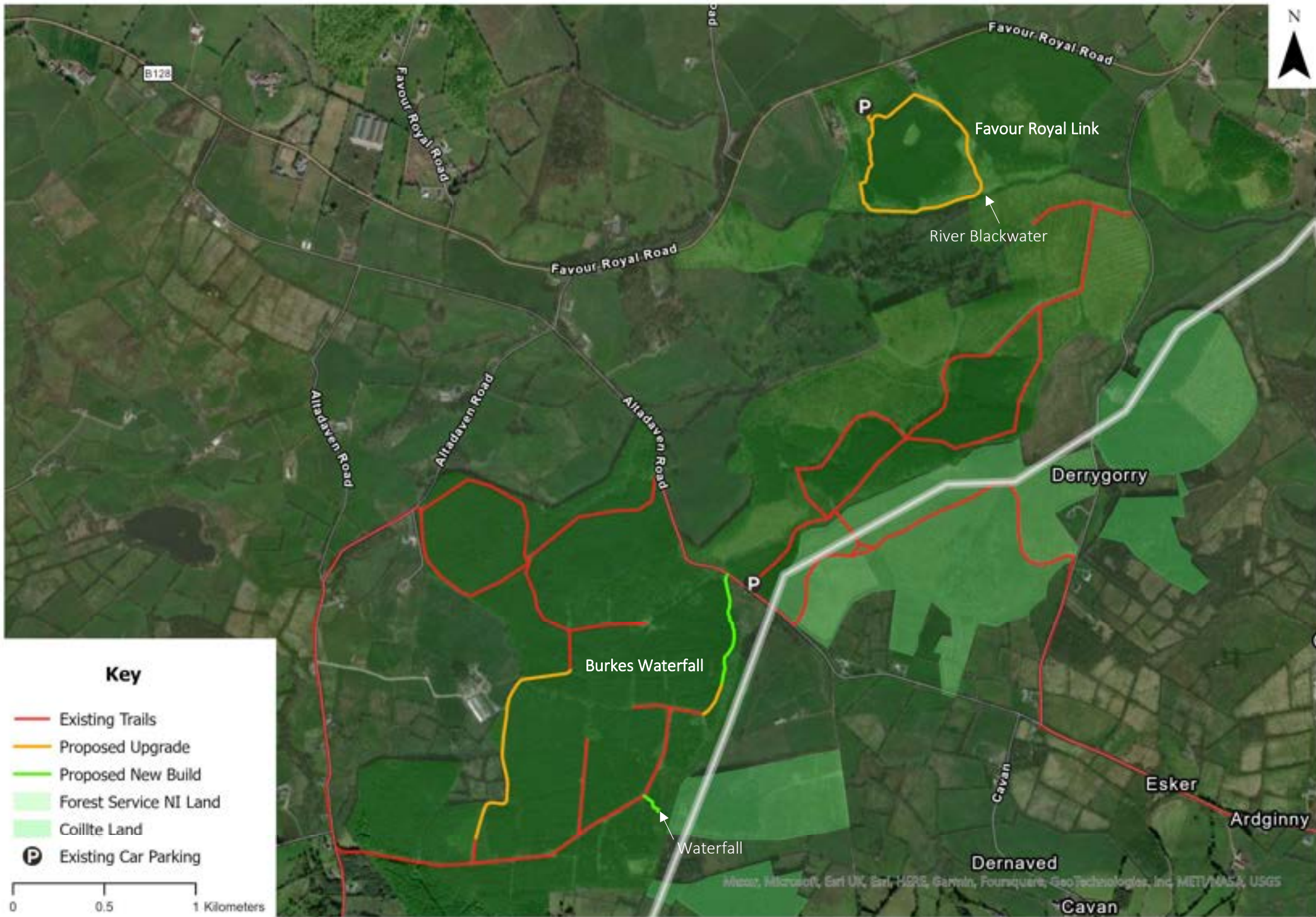


Figure 1: Favour Royal Forest Proposals Overview





Figure 2: Fardross Forest Proposals Overview



## 1.1 Aim

The construction prescriptions outlined within this report are to be used to inform design and build contracts as progressed by the client Mid Ulster District Council.

## 1.2 General Construction Notes Summary

**Appendix A** summarises key construction notes relevant for all sections. Details relating to trail specifications (including trail category information) can be found in **Appendix B** with further guidance available within '*Principles and Standards for Trail Development in Northern Ireland*' (ORNI, 2013). Examples and specifications for trail surface and infrastructure items are outlined within specific trail section prescriptions with additional detail provided in **Appendix C**. The mitigation measures outlined in the Preliminary Ecological Appraisal (PEA) and Habitats Regulations Assessment (HRA) must be followed during throughout the construction process as detailed in **Appendix D**. Start and finish grid references for each section can be seen in **Appendix E**.

## 2 TRAIL PRESCRIPTIONS

Chapter 2 outlines the construction specifications for the proposed trail sections within Mid Ulster District Council, located in Favour Royal and Fardross Forests.

As the trails and linkages within this document are being progressed through Permitted Development, there is not specified planning application area (new build trails only). However, it would be prudent to consider a 10.0m wide corridor (centred on the proposed trail line) within which the new trail surface (up to 3.0m wide) and construction corridor are positioned. This allows sufficient room for the trail surface to be positioned appropriately, without adversely impacting any additional natural and/or built heritage features that may be identified during the developed design and construction phases. It is the contractor's responsibility to ensure that all conditions of outlined by the Planning Authority and Council relating to the Certificate of Lawfulness are met. Refer to drawings and documentation provided separately.

## 2.1 Favour Royal Loop

The following outlines the construction prescriptions for the proposed trail upgrade in Favour Royal Forest.

Section	Works Required	Trail Category	Trail Use	Trail Width	Approx. Length
1	Upgrade, compacted gravel with terram	2	Walking, Cycling	1.8m	1450m
	1x trailhead panel				
	5x wooden waymarker posts at trail junctions				
	20 x waymarker disks to be located on waymarker posts				

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Figure 3: Favour Royal Loop Section 1

**Land Ownership:** FSNI

**Trail Grade:** Category 2 (walking/cycling)

**Total length:** 1450m upgrade

**Start / End Point:** Favour Royal Forest car park

**Trail Width:** 1.8m<sup>1</sup>

**General description of trail section, ground conditions, topography, and vegetation cover:**

Proposed section within Favour Royal Forest comprises minimal topography through a conifer plantation. The bedrock geology is sandstone with subordinate argillaceous rocks and limestone, overlain with glacial till and pockets of alluvium. No flood modelling information available for Favour Royal Forest. However, there is a flood risk potential from the River Blackwater which flows adjacent to the south side site.

**Trail Detail:**

- **Trail construction technique:** Upgrade, compacted gravel trail with terram where required with raised camber (raised causeway profile through wet areas). To meet the Category 2 trail specification detailed in **Appendix B** as far as possible. May require widening in places.
- **Proposed trail formation and corridor clearance requirements:** Consistent, compacted gravel surfacing across full length. Clearance should be kept to a minimum where possible.
- **Drainage, structural and technical features required:**  
Drainage works comprising culverts with stone headwalls and topside ditching as required to improve drainage – to be identified by contractor and agreed with client.
- **Infrastructure items:** Outlined in Section 2.1 table above. Specifications for which can found in Appendix C.

**Constraints / Hazards:**

Section 1 is not located within any ecologically designated areas and involves the widening and resurfacing of an existing trail.

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<sup>1</sup> Existing trail surface and subbase will require widening at locations along the section to achieve desired width of 1.8m - contractor to establish through site visit.

Photographs:



*Figure 5: Favour Royal Section 1*

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## 2.2 Burkes Waterfall

The following outlines the construction prescriptions for the proposed trail sections in Favour Royal Forest.

Section	Works Required	Trail Category	Trail Use	Trail Width	Approx. Length
1	New build, compacted gravel with terram and stone steps for 50m	4	Walking	1.5m	410m
	1x trailhead panel				
	3x wooden footbridges (1.5m wide, 2-5m span, with handrails and non-slip surface)				
2	Upgrade existing forest road, compacted gravel	4	Walking	1.5m	110m
3	New build, compacted gravel with terram and stone steps for 10m	4	Walking	1.5m	85m
	1x wooden footbridge (1.5m wide, 2-3m span, with handrails and non-slip surface)				
4	Upgrade existing forest road, compacted gravel with drainage as required	3	Walking, Cycling	2.5m	810m
	1x wooden restrictive access gate to facilitate off-road cycling and pedestrian access				
15x wooden waymarker posts at trail junctions					
60 x waymarker disks to be located on waymarker posts					

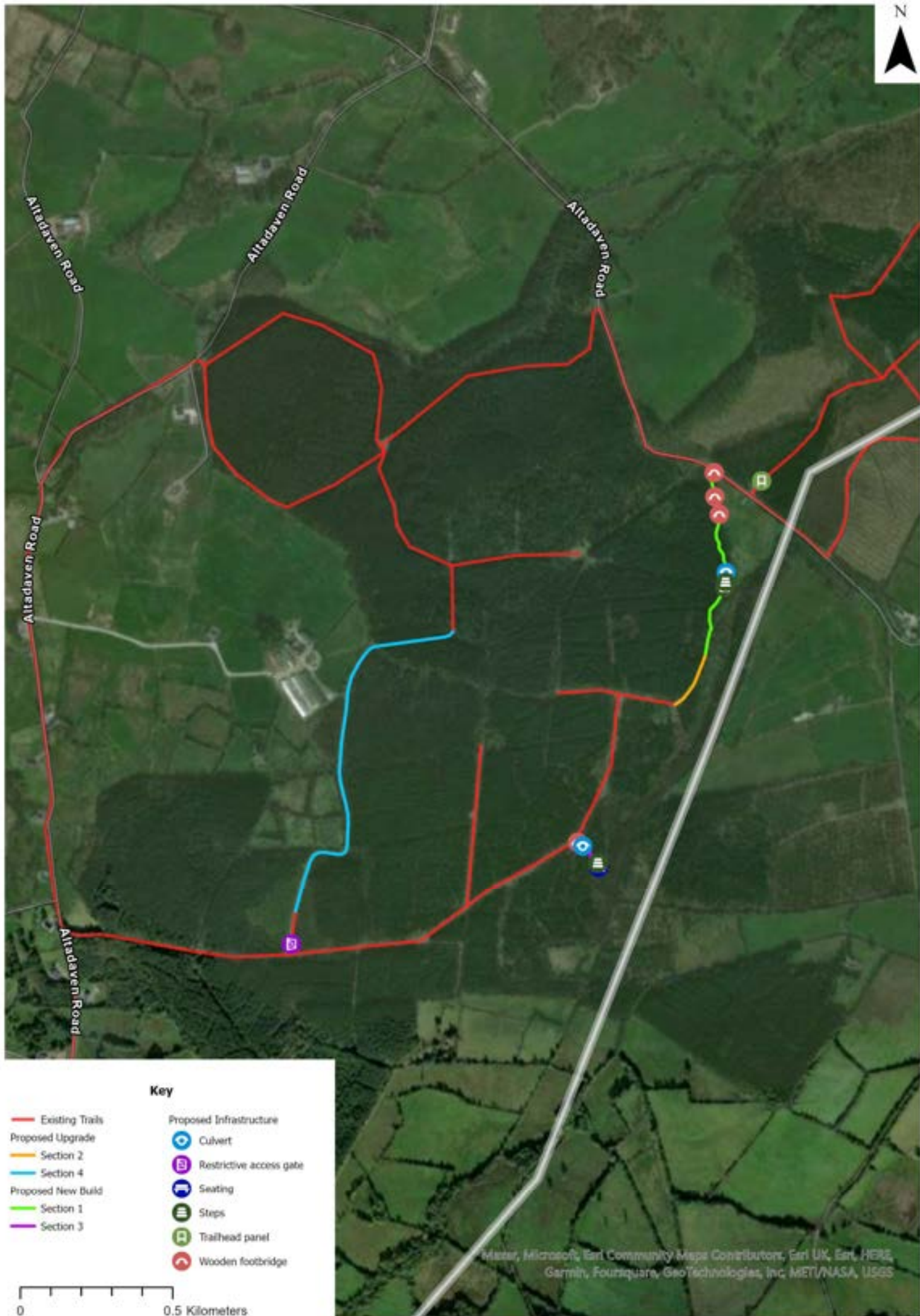


Figure 6: Burkes Waterfall Proposal



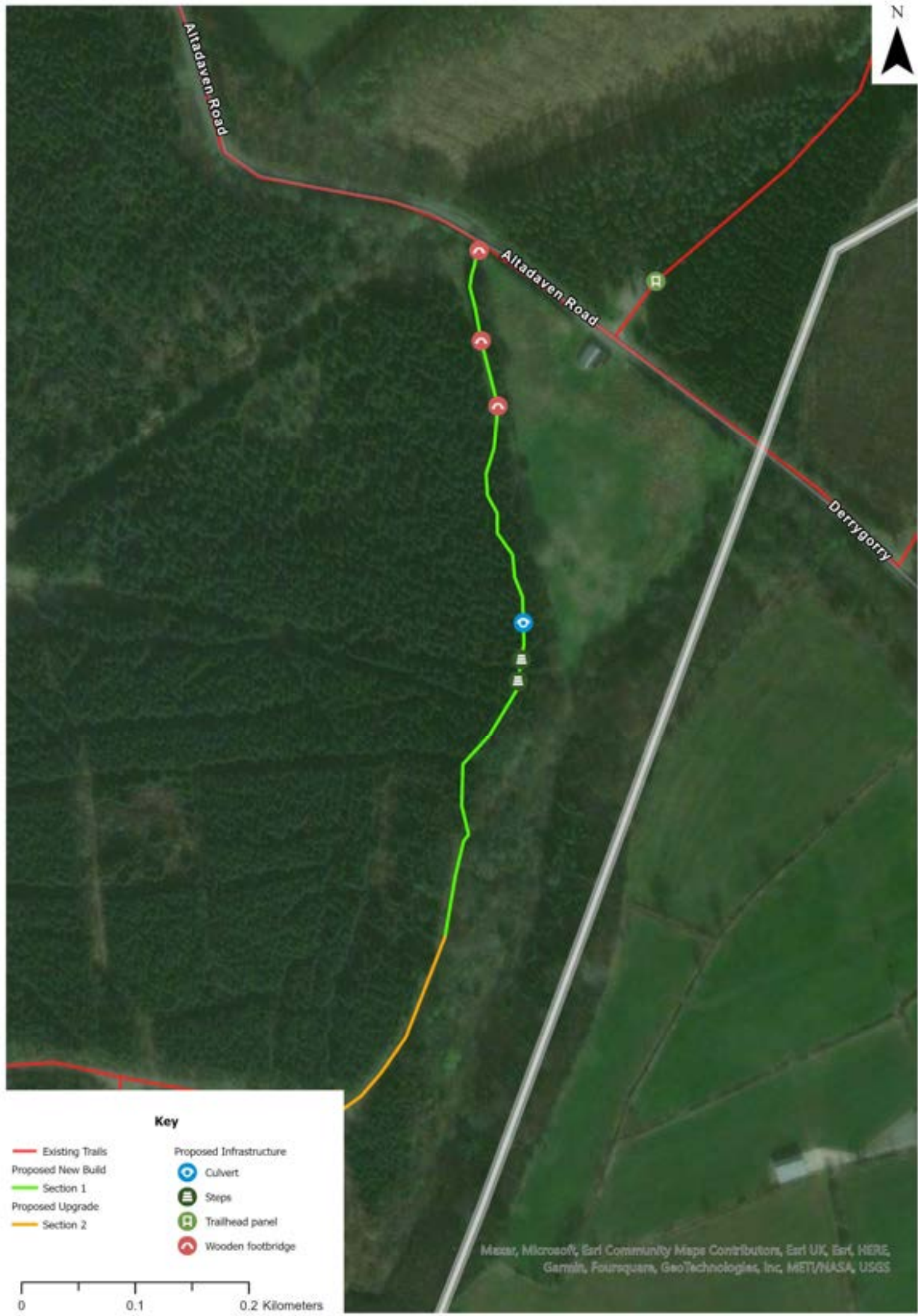


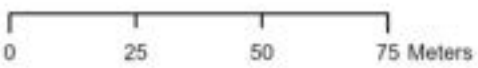
Figure 7: Burkes Waterfall Section 1





**Key**

- Existing Trails
  - Proposed New Build
  - Section 3
- Proposed Infrastructure
-  Culvert
  -  Seating
  -  Steps
  -  Wooden footbridge



Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, FourSquare, GeoTechnologies, Inc, METI/NASA, USGS

Figure 8: Burkes Waterfall Section 3

**Land Ownership:** FSNi

**Trail Grade:** Category 3/4 (multi-use/walking)

**Total length:** 495m new build and 920m upgrade

**Start / End Point:** Favour Royal/Derrygorry car park

**Trail Width:** 1.5-2.5m

**General description of trail section, ground conditions, topography, and vegetation cover:**

Proposed sections within Favour Royal Forest comprise of moderately undulating topography with steep sections through a conifer plantation. The bedrock geology is sandstone with subordinate argillaceous rocks and limestone, overlain with glacial till and pockets of alluvium.

No flood modelling information available for Favour Royal Forest. There are no significant adjacent water courses therefore flooding is not anticipated.

**Trail Detail:**

- **Trail construction technique:** Sections 1-3, new build and upgrade, compacted gravel trail with terram and stone steps where required with raised camber and raised causeway profile through wet areas. To meet the Category 4 trail specification detailed in **Appendix B** as far as possible. Section 4, upgrade of existing forest road, compacted gravel surface with drainage improvements as required. To meet the Category 3 trail specification detailed in **Appendix B** as far as possible.
- **Proposed trail formation and corridor clearance requirements:** Consistent, compacted gravel surfacing across full length. Will require clearance of scrub and felling of small trees to achieve new trail corridor. Clearance should be kept to a minimum where possible, especially Section 3 which should retain the 'natural' feel of the forest.
- **Drainage, structural and technical features required:**

Drainage works comprising culverts with stone headwalls and topside ditching as required to improve drainage, including but not limited to the following locations – to be identified by contractor and agreed with client.

  - Section 1 CH215 (north to south)
  - Section 3 CH18 (north to south)

Wooden pedestrian footbridges 1.5m wide spanning 2-5m required at approximately the following locations – to be identified by contractor and agreed with client.

  - Section 1 CH5, CH55, CH90 (north to south)
  - Section 3 CH5 (north to south)

Stone steps required at approximately the following locations – to be identified by contractor and agreed with client.

  - Section 1 CH240 (north to south)
  - Section 3 CH60 (north to south)

Existing FSNi gates throughout Favour Royal Forest should be modified to include wooden restrictive access gates to facilitate off-road cycling on existing forest roads.
- **Infrastructure items:** Specifications for which can found in Appendix C.



### Constraints / Hazards:

Section 1 is located within a 'long established woodland'. A Preliminary Ecological Appraisal (PEA) and Habitats Regulations Assessment (HRA) have been carried out and a copy of the reports are provided separately. A summary of the findings, including constraints, mitigations, and responsibilities is provided in **Appendix D**.

It is the responsibility of the contractor to ensure that all identified constraints and mitigations are considered, and that all legal obligations are met throughout the design and build contract. This includes any Conditions of Planning which are binding and will be monitored by their respective statutory agencies. All works are to be supervised by a contractor appointed ECoW.

### Photographs:



*Figure 9: Burke's Waterfall Section 1*



*Figure 10: Burke's Waterfall Section 2*



*Figure 11: Burke's Waterfall Section 3*



*Figure 12: Burke's Waterfall Section 4*



Figure 13: Section 1 CH5



Figure 14: Section 1 CH55



Figure 15: Section 1 CH90



Figure 16: Section 1 CH215



Figure 17: Section 1 CH240



Figure 18: Section 1 CH5





Figure 19: Section 3 CH60



Figure 20: Section 3 existing FSNI gate

DRAFT

### 2.3 Fardross Arc

The following outlines the construction prescriptions for the proposed trail sections in Fardross Forest.

Section	Works Required	Trail Category	Trail Use	Trail Width	Approx. Length
1	Upgrade, compacted gravel	3	Walking	1.5m	365m
2	New build, compacted gravel with terram	3	Walking	1.5m	425m
	1x trailhead panel				
	1x wooden restrictive access gate to facilitate off-road cycling and pedestrian access				
5x wooden waymarker posts at trail junctions					
20 x waymarker disks to be located on waymarker posts					

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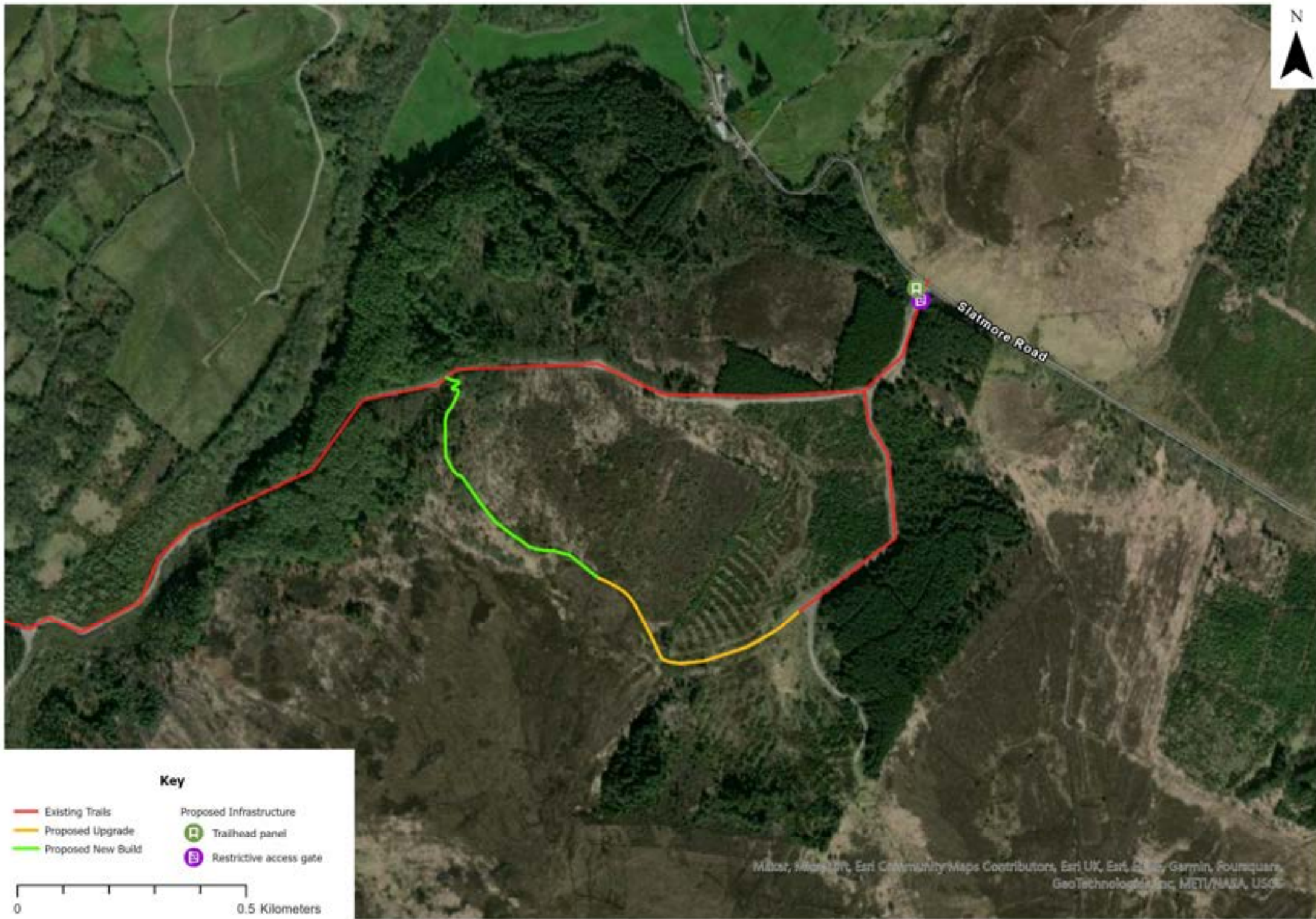


Figure 21: Fardross Walking Proposals



**Land Ownership:** FSNI

**Trail Grade:** Category 3 (walking)

**Total length:** 425m new build and 365m upgrade

**Start / End Point:** Slatmore Road proposed trailhead

**Trail Width:** 1.5m

**General description of trail section, ground conditions, topography, and vegetation cover:**

Proposed sections within Favour Royal Forest comprise of moderately undulating topography with a mixture of wet heath, wet grassland, bog woodland, conifer plantation, wet willow-alder-ash woodland, and upland blanket bog. The bedrock geology is sandstone with subordinate argillaceous rocks and limestone overlain with peat.

No flood modelling information available for Favour Royal Forest. As the proposed trail is within the upland environment there is unlikely to be a flood risk potential.

**Trail Detail:**

- **Trail construction technique:** New build and upgrade, compacted gravel trail with terram where required and raised camber and raised causeway profile through wet areas. To meet Category 3 trail specification detailed in **Appendix B** as far as possible.
- **Proposed trail formation and corridor clearance requirements:** Consistent, compacted gravel surfacing across full length. Will require clearance of scrub and felling of small trees to achieve new trail corridor.
- **Drainage, structural and technical features required:**  
Drainage works comprising culverts with stone headwall and topside ditching as required to improve drainage – to be identified by contractor and agreed with client.  
Existing FSNI gates throughout Fardross Forest should be modified to include wooden restrictive access gates to facilitate off-road cycling on existing forest roads.
- **Infrastructure items:** Specifications for which can found in **Appendix C**.

**Constraints / Hazards:**

Sections located within SPA and adjacent to ASSI and SAC. A Preliminary Ecological Appraisal (PEA) and Habitats Regulations Assessment (HRA) have been carried out and a copy of the reports are provided separately. A summary of the findings, including constraints, mitigations, and responsibilities is provided in **Appendix D**.

It is the responsibility of the contractor to ensure that all identified constraints and mitigations are considered, and that all legal obligations are met throughout the design and build contract. This includes any Conditions of Planning which are binding and will be monitored by their respective statutory agencies. All works are to be supervised by a contractor appointed ECoW.

Photographs:



Figure 22: Fardross Arc Section 1



Figure 23: Fardross Arc Section 2



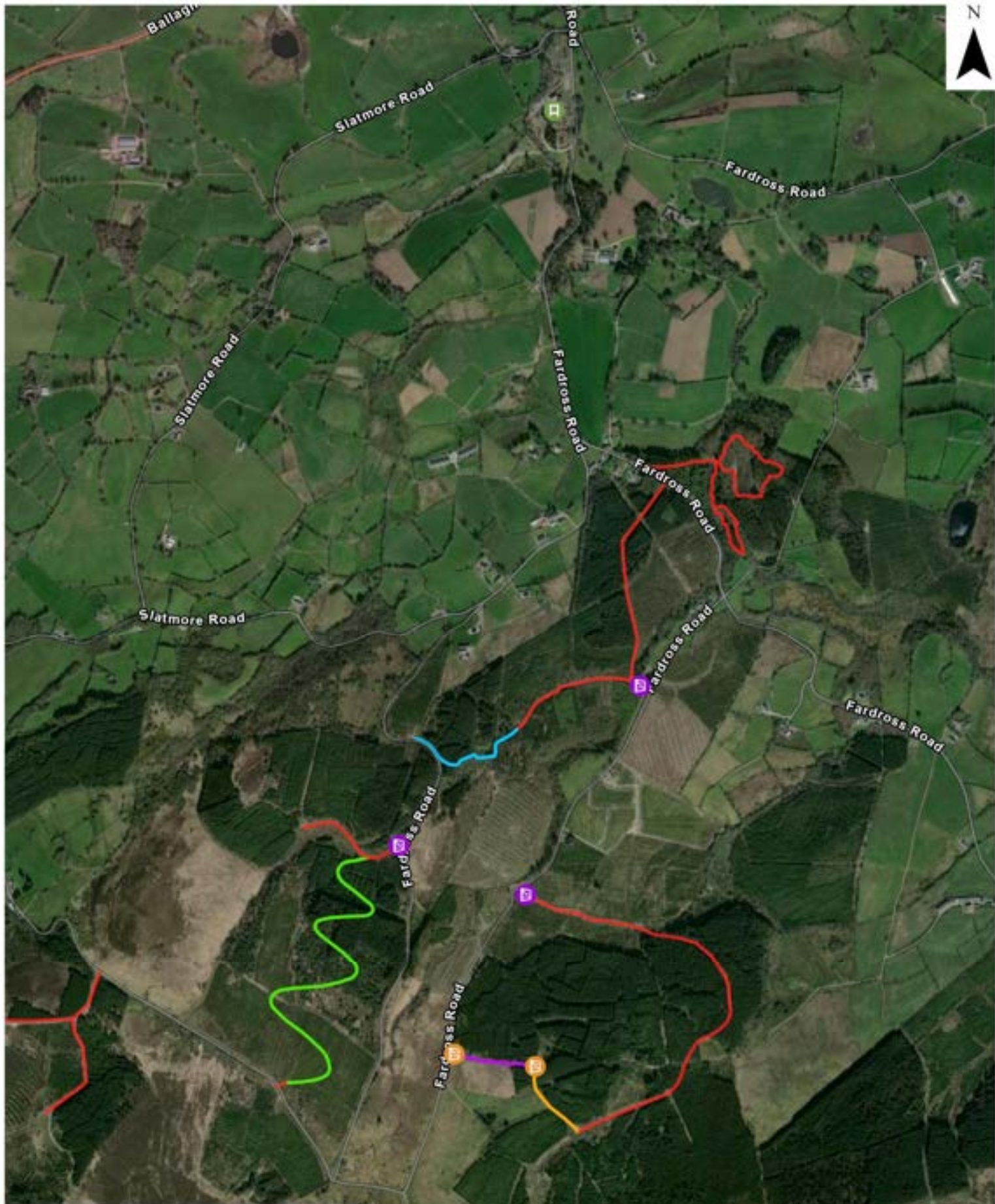
Figure 24: Favor Royal Forest existing FSNI gate and proposed trailhead

## 2.4 Fardross Equestrian

The following outlines the construction prescriptions for the proposed trail sections in Fardross Forest.

Section	Works Required	Trail Category	Trail Use	Trail Width	Approx. Length
1	New build, compacted gravel with terram	3	Equestrian, Walking	2.5m	1475m
2	New build, compacted gravel with terram	3	Equestrian, Walking	3.0m	300m
	Remove existing farm gate to provide equestrian access.				
	Install 300m stockproof fencing to segregate users from adjacent farmland.				
	Install farm gate into adjacent farmland segregated by new stockproof fencing.				
	Install farm gate at CH300 to segregate users from farm animals and private land.				
3	New build, compacted gravel with terram	3	Equestrian, Walking	2.5m	270m
4	New build, compacted gravel with terram	3	Equestrian, Walking	2.5m	450m
1x trailhead panel					
3x restrictive access gates to facilitate unrestricted equestrian access					
15x wooden waymarker posts at trail junctions					
60 x waymarker disks to be located on waymarker posts					





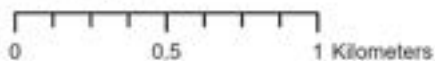
**Key**

Proposed New Build

- Section 1
- Section 2
- Section 3
- Section 4
- Existing Trails

Proposed Infrastructure

- Trailhead panel
- Farm gate
- Restrictive access gate



Mapbox, Microsoft, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnology, Inc, NAVTEQ, USA, USGS

Figure 25: Fardross Equestrian Proposals



**Land Ownership:** FSNi

**Trail Grade:** Category 3 (multi-use)

**Total length:** 2495m new build

**Start / End Point:** Clogher Valley Horses Welcome

**Trail Width:** 2.5-3.0m

**General description of trail section, ground conditions, topography, and vegetation cover:**

Proposed sections within Fardross Forest comprise of undulating topography with a mixture of conifer plantation, recently felled woodland, woodland flora, ash hazel woodland, mixed broadleaf woodland, wet grassland, wet heath, and upland blanket bog. The bedrock geology is sandstone with subordinate argillaceous rocks and limestone overlain with peat and diamicton till.

No flood modelling information available for Fardross Forest. As the proposed trail is within the upland environment there is unlikely to be a flood risk potential.

**Trail Detail:**

- **Trail construction technique:** New build, compacted gravel trail with terram where required and raised camber and raised causeway profile through wet areas. To meet Category 3 trail specification detailed in **Appendix B** as far as possible.
- **Proposed trail formation and corridor clearance requirements:** Consistent, compacted gravel surfacing across full length. Will require clearance of scrub and felling of small trees to achieve new trail corridor.  
Existing FSNi gates throughout Fardross Forest should be modified or replaced as necessary to facilitate unrestricted equestrian use.
- **Drainage, structural and technical features required:**  
Drainage works comprising culverts with stone headwall and topside ditching as required to improve drainage – to be identified by contractor and agreed with client.

**Constraints / Hazards:**

Sections 1-3 are located within a SPA. A Preliminary Ecological Appraisal (PEA) and Habitats Regulations Assessment (HRA) have been carried out and a copy of the reports are provided separately. A summary of the findings, including constraints, mitigations, and responsibilities is provided in **Appendix D**.

It is the responsibility of the contractor to ensure that all identified constraints and mitigations are considered, and that all legal obligations are met throughout the design and build contract. This includes any Conditions of Planning which are binding and will be monitored by their respective statutory agencies. All works are to be supervised by a contractor appointed ECoW.

Photographs:



Figure 26: Fardross Equestrian Section 1



Figure 27: Fardross Equestrian Section 2



Figure 28: Fardross Equestrian Section 3



Figure 29: Fardross Equestrian Section 4



Figure 30: Section 1 replace existing FSNI gate



Figure 31: Section 2 replace existing farm gate

### 3 Appendices

#### 3.1 Appendix A – Construction Notes

The following table summarises the key construction notes relevant for all sections. CDM Regulations (NI) 2016 must be adhered to throughout the construction process.

Contract	<ul style="list-style-type: none"> <li>• <b>All construction details and method statements to be agreed with client and landowner prior to construction.</b></li> <li>• Contractor must specify and satisfy themselves on requirements for construction of all sections following site visit(s). A site visit day is included within the tender period.</li> <li>• This prescription document provides outline design only to provide the basis for a ‘<i>design and build</i>’ contract. Designs are based on site walkovers and on digital mapping. No thorough site survey work has been carried out (including ground conditions) or detailed design of any section therefore all prescriptions are based on estimates and will require further, detailed design prior to commencing works.</li> <li>• All chainages are approximate and for guidance purposes only.</li> </ul>
Health and Safety and Environment	<ul style="list-style-type: none"> <li>• Ecological constraints – including minimising impact to unplanted areas, ecologically sensitive habitats, or recently planted areas. <b>All works to be carried out under the supervision of an Ecological Clerk of Works appointed by the contractor.</b></li> <li>• Each site will remain live and accessible to the public throughout the build period (unless agreed with the client / landowner) therefore consideration to be given to retaining access for other users near the trail construction and materials loading areas.</li> <li>• Site security and health and safety fencing and signage to be installed as appropriate along trail corridors and at all access points to inform employees and visitors of specific hazards, health and safety requirements and prevent unauthorised access.</li> <li>• Plans indicating the location of underground or buried services (electricity, water etc.) are to be provided separately. It is the contractor’s responsibility to ensure all plans are up to date and identify the location of services within the works areas with third party suppliers and landowners.</li> <li>• Adequate pollution prevention measures must be implemented to prevent runoff of contaminated surface waters (silt, fuel etc.).</li> <li>• It is vital that each trail is accessed via the trail corridor during construction and that no additional haul routes are created without agreement with the landowner.</li> </ul>
Access	<ul style="list-style-type: none"> <li>• All access is subject to agreement with the client and landowner (FSNI, Coillte, An Taisce etc.) – no agreements are to be made between the contractor and third-party private landowners without client initiating.</li> <li>• Good lines of communication between the contractor and the client and FSNI should be maintained throughout the project. Access restrictions should be identified through access agreements with FSNI.</li> <li>• Safe public access must be always retained during the construction period unless agreed with the client / landowner.</li> <li>• Occasional access may be required for forestry operations. If this is required, the contractor will be notified and agreed access arrangements put in place.</li> </ul>
Machinery	<ul style="list-style-type: none"> <li>• To be kept to a functional minimum and to be agreed with the landowner and client for all sections in a method statement prior to construction. Machinery size to be kept to a functional minimum to avoid disturbance and clearance of vegetation beyond the trail corridor and to be suitable for ground conditions.</li> <li>• The contractor is responsible for the security of materials, stores, machinery etc. and should implement appropriate security measures.</li> </ul>
Trail Construction	<ul style="list-style-type: none"> <li>• Further information on trail categories is provided in <b>Appendix B</b> – trail widths within these prescriptions differ to those outlined within the categories. The trail widths outlined throughout the prescriptions should be met where possible (and subject to agreement with the client).</li> <li>• Trails should be constructed in a manner which takes account of landscape, land use and protected habitats and species to reduce visual and physical impact.</li> <li>• The trail surface and subbase must be compacted, consistent and stable throughout. May include compacted crushed stone and geotextile membrane as required.</li> <li>• Trails to be accessed along trail corridor only during construction. If additional access points other than the start and finish of each section are required along a section, these must be agreed with the client / landowner. Additional access points should be minimised to avoid unnecessary damage to the landscape.</li> <li>• Roots of trees must be protected. Subbase and surface to be hand finished around roots. High brush height – 2.5m. No trees to be felled or trimmed without agreement from the client / landowners. Where tree stability is an issue, client / landowner must be notified.</li> <li>• Making up of levels required to achieve specified trail gradients - levels should only be made up with suitable imported fill. All imported materials to be used along the trail tread only.</li> <li>• All spoil to be managed with consideration for backslope, drainage, proximity to trail tread and landscaping. Deposit spoils on uphill side or spread across remainder of site (to be agreed with client).</li> <li>• No loose material, blending of backslope, and demarcation and landscaping throughout.</li> <li>• Borrow pits must not be used, deposit spoils on uphill side or spread across remainder of site (to be agreed with client).</li> <li>• The trail corridor and access points should be reinstated to their original condition or better following construction.</li> </ul>
Drainage	<ul style="list-style-type: none"> <li>• Drainage requirements are the responsibility of the contractor. The drainage plan submitted as part of the tender process must be followed to ensure that appropriate measures are taken to ensure suitable drainage is installed along the trail system.</li> </ul>



### 3.2 Appendix B – Trail Category Descriptions

Key trail attributes	Category 2 Multi-Use Trail
<b>Description</b>	These are trails that are accessible to a wide range of users and abilities but NOT ALL users due to issues relating to trail gradients, trail surfaces and trail features. Users include: <ul style="list-style-type: none"> <li>• Pedestrians of mixed abilities including young children and some baby buggies</li> <li>• Cyclists of all abilities other than very young children or bikes with stabilizers or wheels less than 400mm</li> <li>• Category Two Multi Use Trails are not suitable for those of limited mobility or with impaired vision</li> </ul>
<b>Width</b>	Refer to Section Information. Optimal width 1.8m
<b>Surface</b>	Consistent sealed surfaces and can include asphalt and compacted stone or gravel
<b>Gradients</b>	<ul style="list-style-type: none"> <li>• Maximum average gradient - not more than 5%</li> <li>• Maximum absolute gradient - not more than 10% for more than 50m</li> </ul>
<b>Lines of Sight</b>	Minimum 30m
<b>Trail Features</b>	Small level changes of not more than 60mm deep and not less than 300mm width. Grade reversals of not less than 10m in length and not more than 1m depth. Bridges must be not less than 2m wide and must have handrails throughout Category Two Multi Use Trails should not include steps.
<b>Suitable for</b>	All users

The photo below shows a Category 2 Multi-Use Trail. Note the wide flat trail with good lines of site.





Key trail attributes	Category 3 Walking/Multi-Use Trail
<b>Description</b>	<p>These are trails that are less accessible than both Category One and Category Two Multi Use Trails and are therefore more suited to specific users and activities. Category Three Multi Use Trails are suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Pedestrians – walkers and runners of mixed but NOT ALL abilities.</li> <li>• Cyclists – cyclists of mixed abilities using off road mountain bikes only.</li> <li>• Equestrians – of all abilities.</li> </ul> <p>Category Three trails are not suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Those of limited mobility or impaired vision.</li> <li>• Those with a standard child’s pushchair.</li> <li>• Bikes with wheels less than 50mm, tag-alongs, trailers, or child carriers.</li> </ul>
<b>Width</b>	<p>Refer to Section Information.</p> <p>Optimal width - 1.5m</p>
<b>Surface</b>	<p>Variable but stable surfaces can be slightly uneven and include some loose material. Surfaces may include compacted stone and gravel, soil, grass, sand, and mud.</p>
<b>Gradients</b>	<ul style="list-style-type: none"> <li>• Maximum average gradient - not more than 8%</li> <li>• Maximum absolute gradient - not more than 15% for more than 300m</li> </ul>
<b>Lines of Sight</b>	<p>Minimum 20m</p>
<b>Trail Features</b>	<p>These trails can include level changes such as steps, roots, rocks, potholes, water bars and drains. Level changes must not exceed 150mm height in relation to pedestrian only trails and be not more than 50mm in relation to all other trails including cycling and equestrian trails.</p> <p>Grade reversals not less than 4m in length and not more than 1m depth.</p> <p>Wooden boardwalks of not less than 1200mm width and not more than 300mm height above ground level.</p> <p>Bridges should be not less than 1200mm width with handrails throughout.</p>
<b>Suitable for</b>	<p>All users</p>
<p>Examples of Category Three trails may be found in country and forest parks but are less likely to be found in urban or semi-urban settings. The photo below is an example of a purpose-built Category Three Multi Use Trail within Castleward, County Down. In this case the trail has been designed for walkers and off-road cyclists. Note the limited clearance between the trees and the relatively flat trail surface.</p>	



Key trail attributes	Category 4 Walking Trail
Description	<p>Category Four Walking Trails have variable gradients and surfaces and may be found in a very wide variety of environments including more remote upland sites.</p> <p>These are trails where access is more restricted by issues such as gradients, trail surfaces and the nature and size of trail features. This means these trails may not be suitable for use by all user groups at the same time. Category Four Walking Trails are suitable for the following users only:</p> <ul style="list-style-type: none"> <li>• Pedestrians – mixed ability walkers and runners</li> </ul> <p>Category Four Multi Use Trails are not suitable for the following users:</p> <ul style="list-style-type: none"> <li>• Off-road cyclists</li> <li>• Equestrians – leisure and endurance riders</li> <li>• Those with limited mobility or impaired vision</li> <li>• Off road cyclists using bikes other than mountain bikes - not tag-alongs, trailers, child seats and stabilizers</li> <li>• Those with baby buggies</li> <li>• Novice equestrians</li> </ul>
Width	<p>Refer to Section Information.</p> <p>Optimal width - Minimum 600mm wide   Maximum 1.2m wide</p>
Surface	<p>Very variable and uneven including loose material, rocks, mud, gravel, soil, roots, grass, and other vegetation. Surfaces may change suddenly and vary over short distances.</p>
Gradients	<p>Average gradients of 10%, maximum gradients should not exceed 20% for not more than 50m.</p>
Lines of Sight	<p>Minimum 15m</p>
Trail Features	<p>These trails can feature unexpected and sudden level changes caused by steps, roots, rocks, ditches, drains and water bars of not more than 300mm in relation to pedestrian only trails.</p> <p>Trails should include obstructions to prevent use by other trail users as shown in photographs below.</p> <p>Turns of up to 180 degrees.</p> <p>Grade reversals of not less than 2.5m length and not more than 1.5m depth.</p> <p>Boardwalks not less than 600mm wide and not more than 1500mm high above ground level.</p> <p>Bridges should be not less than 1m wide and should have handrails throughout if more than 1500mm high above ground level.</p> <p>May feature encroaching vegetation and have limited clearance in relation to trees etc.</p>

Suitable for

Walkers only

The photographs below show examples of purpose-built Category Four Walking Trails. Note the narrow trail and the level changes as well as the uneven surfaces and obstacles.



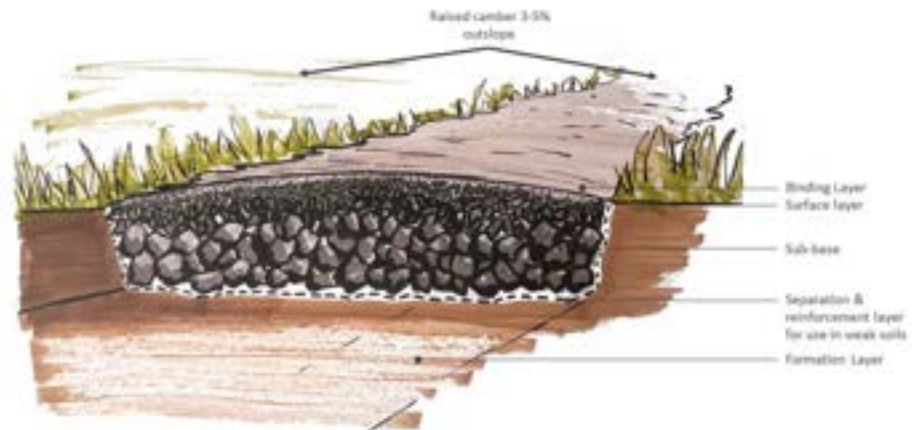


### 3.3 Appendix C – Infrastructure Specifications

Infrastructure Item	Detail
<p><b>Trailhead Information Panel</b></p> <p>To be supplied by client</p> <p>Installation only by contractor</p>	<p>For information:</p> <ul style="list-style-type: none"> <li>- Trailhead information panel - 980mm x 720mm in a hardwood frame. 5mm panels will be full colour, aluminium with scratch resistant enamel resin coating, UV, water and heat resistant (Dibond or Primadura or similar).</li> <li>- Each panel requires 2No. 100mm x 75mm x 1.75m support post and 2No. 75mm x 50mm x 475mm bearers in pressure treated UK-grown FSC oak.</li> <li>- In concrete foundations (to a depth of 700mm).</li> </ul> <div style="display: flex; justify-content: space-around;">   </div>
<p><b>Waymarker posts</b></p> <p>To be supplied and installed by contractor.</p>	<p>For information:</p> <ul style="list-style-type: none"> <li>- Waymarker posts (not routed) at the junction of trails.</li> <li>- Pressure treated UK-grown FSC approved oak.</li> <li>- Dimensions 125mm x 125mm x 1400mm with pointed tops.</li> <li>- In concrete foundations.</li> </ul> <div style="display: flex; justify-content: space-around;">   </div>

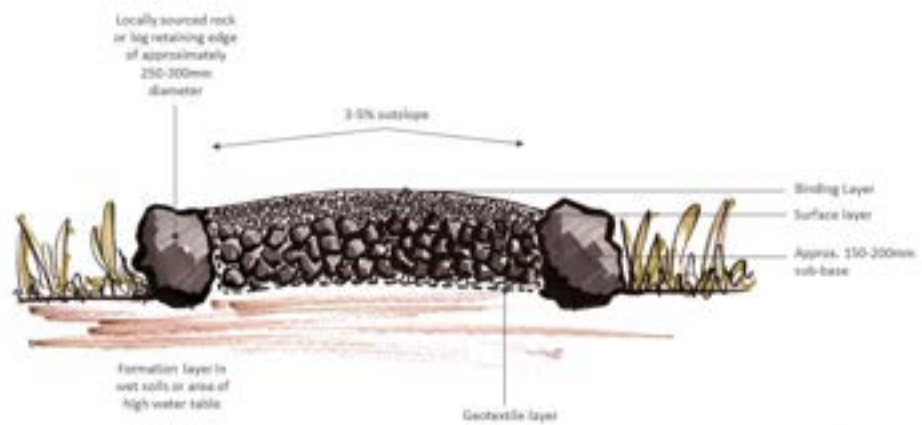
Typical raised  
camber  
formation

Trail formation & raised camber

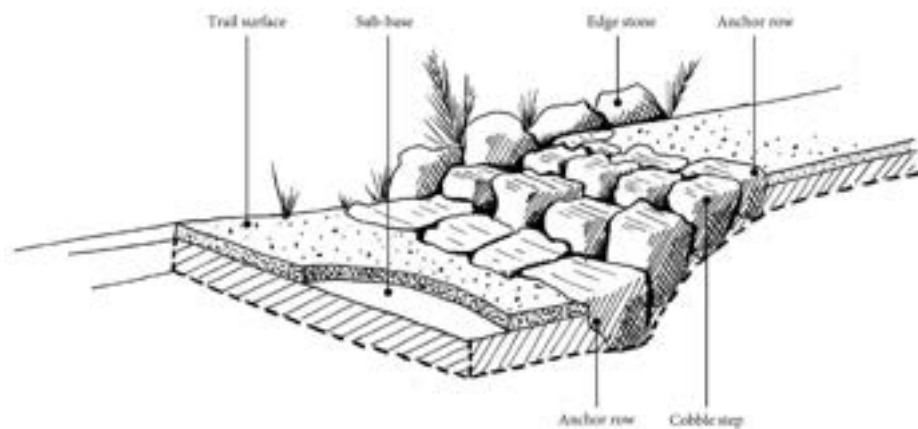


Typical Raised  
causeway  
formation

Raised causeway

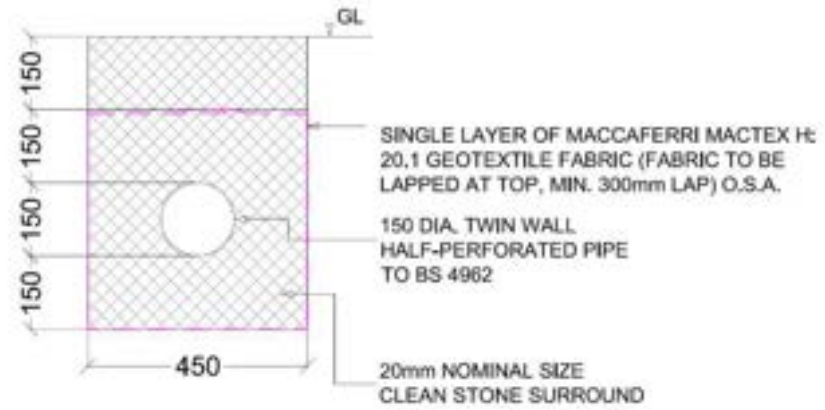


Typical stone  
step formation



Typical  
culvert/topside  
ditch  
construction  
detail with  
stone headwall

To be identified by contractor and agreed with client.



Typical culvert / topside ditch build up



Stone headwall example side view



Stone headwall example path view





Stone headwall example side view

Typical  
footbridge  
construction



Example stone  
water bars





Example restrictive access gate to facilitate off-road cycling



Example restrictive access gate to facilitate equestrian use (including locking post)



Example stock proof fencing



Example farm gate (including locking post)



### 3.4 Appendix D – Ecological Information

A Preliminary Ecological Appraisal (PEA) and Habitats Regulations Assessment (HRA) have been carried out to assess the conservation values of Favour Royal and Fardross Forests, the likely presence of rare or protected and notable species, and to identify any features, habitats or species that would constitute potential constraints to the development or give rise to adverse effects on the integrity of European sites.

The PEA concludes that although some residual effects will arise from the proposed developments, the cumulative effects of mitigation, compensation and enhancement will have a neutral or positive overall effect on biodiversity. The proposed trails will introduce several changes across the habitats and the species which rely on them with predicted impacts on the surrounding ecology, but the impacts of increased footfall can be minimised to an extent through the usage of information signs and screening.

The Stage 2 HRA concludes that the development will not adversely affect the integrity of any European site, either alone or in combination with other relevant plans or programmes, and subject to securing the mitigation prescribed below in relation to the Hen Harrier, which largely relates to restrictions in working times and having a trained ornithologist on site as an Ecological of Works during construction. Therefore, a Stage 2 Appropriate Assessment is not required.

Measures are outlined below to mitigate against significant impacts to species known (or assumed to) occur within the development footprint, as well as measures which could improve the overall conservation of the areas. It is important that the following measures are read in conjunction with the full Preliminary Ecological Appraisal Report and Habitats Regulations Assessment Report.

It is the responsibility of the contractor to ensure that all identified constraints and mitigations are considered, and that all legal obligations are met throughout the design and build contract. This includes any Conditions of Planning which are binding and will be monitored by their respective statutory agencies. All works are to be supervised by a contractor appointed Ecological Clerk of Works (ECOW).

### 3.4.1 Burkes Waterfall

	Possible Impacts	Mitigation and Construction Measures	Biodiversity Enhancements
<b>Statutory Protected Sites</b>	Proposed routes do not overlap with any protected sites.		Biodiversity signage describing the flora and fauna present on site and their benefits for biodiversity such as information on birds and wetland birds which could be erected at various points along the route to encourage an engagement with nature.
<b>Flora</b>	Potential habitat loss through the removal of existing vegetation and soil. This would directly destroy the habitat of any plants and animals that live in the area. The trail could degrade the existing habitat by introducing pollution, noise, and other disturbances.	<ul style="list-style-type: none"> <li>Working corridor will be as small as possible.</li> <li>Working areas demarcated prior to the commencement of works.</li> <li>Fencing erected around hedgerows and trees to be retained to protect against accidental damage.</li> <li>No storage or dumping of materials will be carried out outside the working area.</li> <li>Habitats reinstated to conditions prior to works within working area where possible.</li> </ul>	A larger strip of conifers should be removed along the routes within conifer plantation and replaced with a 10-15 metre strip of broadleaf woodland to improve wildlife habitat and biodiversity.
<b>Birds</b>	Habitat not deemed optimal for roosting and nesting locations.	<p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>Rank vegetation along proposed route removed outside of the breeding bird season (September to February inclusive).</li> </ul>	
<b>Mammals</b>	No evidence of mammal species was found during surveying. The trees inside the conifer plantation are young and not suitable for dens.	<p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>Disturbance to trees (which could hold natal dens) between February to September to be avoided.</li> </ul> <p><i>Operational measures:</i></p> <ul style="list-style-type: none"> <li>Signage containing visitor's code of conduct installed at all access/ egress points.</li> </ul>	



<b>Invertebrates</b>	<p>No protected invertebrates recorded or found during the surveys however wet grassland habitats may be suited to the likes of the Marsh Fritillary Butterfly which has European protected status. An extensive invertebrate survey was not carried out.</p>		
<b>Amphibians</b>	<p>The wetland habitat is highly suitable for frogs and newts and likely support populations that are of local importance (higher value). Specific surveys targeting the Common or Viviparous Lizard were not carried out.</p>	<p><i>Pre-construction:</i></p> <ul style="list-style-type: none"> <li>• Stone walls (or other potential hibernacula sites) which may be impacted will be removed by hand during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards.</li> </ul>	
<b>Bats</b>	<p>No potential bat roosting habitats were identified during the surveys, however, an expansive survey for bat roosts was not carried out. The removal of mature conifer trees which have the potential to host roosting bats may impact this species.</p>	<ul style="list-style-type: none"> <li>• Tree surgery undertaken between September and mid-November.</li> <li>• Trees to be removed will be appraised for the presence of cavities or for mature trees.</li> <li>• If cavities are identified, they will be checked / assessed by a suitably qualified, experienced, and licensed ecologist.</li> <li>• If bats or signs of bats are identified, works on the relevant tree will cease, the NIEA must be contacted and given time to advise. A licence to carry out such work may sometimes be necessary.</li> </ul>	<p>Addition of Bat boxes to encourage bats to roost in areas where few roosts are present.</p>

### 3.4.2 Fardross Arc

	Possible Impacts	Mitigation and Construction Measures	Biodiversity Enhancements
<b>Statutory Protected Sites</b>	Route overlaps with the Slieve Beagh Mullaghfad-Lisnaskea SPA and is adjacent to a Slieve Beagh RAMSAR, Slieve Beagh ASSI and Slieve Beagh SAC.		Biodiversity signage describing the flora and fauna present on site and their benefits for biodiversity such as information on birds and wetland birds which could be erected at various points along the route to encourage an engagement with nature.
<b>Flora</b>	Potential habitat loss through the removal of existing vegetation and soil. This would directly destroy the habitat of any plants and animals that live in the area. The trail could degrade the existing habitat by introducing pollution, noise, and other disturbances.	<ul style="list-style-type: none"> <li>• Working corridor will be as small as possible.</li> <li>• Working areas demarcated prior to the commencement of works.</li> <li>• Fencing erected around hedgerows and trees to be retained to protect against accidental damage.</li> <li>• No storage or dumping of materials will be carried out outside the working area.</li> <li>• Habitats reinstated to conditions prior to works within working area where possible.</li> </ul>	<p>Opportunity for habitat restoration to upland blanket bog within the areas designated as recently felled woodland/wet heath and cutover bog habitat.</p> <ul style="list-style-type: none"> <li>• Removal of timber products and brash in recently felled woodland.</li> <li>• Blocking drainage by damming will help restore bog hydrology.</li> <li>• Removal of encroaching conifer seedlings/saplings.</li> </ul>
<b>Birds</b>	Vantage Point surveys (outside breeding and nesting seasons) were carried out which identified 29 birds including the Hen Harrier at VP2 overlooking the Sliabh Beagh Bog (SAC, SPA,	<p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>• Rank vegetation along proposed route removed outside of the breeding bird season (September to February inclusive).</li> <li>• Landscaped screening comprising of an earth bank and hedging is proposed to ensure visual disturbance to Hen</li> </ul>	Bird watching hides could be constructed in some areas which would prevent significant disturbance but also give visitors the ability to watch Hen Harriers and Curlews and

	ASSI). No breeding or roosting surveys have been carried out to date.	Harrier and other ground nesting birds from users is minimised. In the interim (until hedging is suitably established), to provide adequate screening, a brushwood-type fencing will supplement.	to look out over the blanket bog.
<b>Mammals</b>	No evidence of mammal species was found during surveying.	<p><i>Pre-construction measures:</i></p> <ul style="list-style-type: none"> <li>• Otter holt and natal den survey to be carried out prior to construction (within 3 months).</li> </ul> <p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>• Disturbance to trees (which could hold natal dens) between February to September to be avoided.</li> </ul> <p><i>Operational measures:</i></p> <ul style="list-style-type: none"> <li>• Signage containing visitor's code of conduct installed at all access/ egress points.</li> </ul>	Addition of Pine Martin and Red Squirrel boxes within study area.
<b>Invertebrates</b>	No protected invertebrates recorded or found during the surveys however wet grassland habitats may be suited to the likes of the Marsh Fritillary Butterfly which has European protected status. An extensive invertebrate survey was not carried out.		
<b>Amphibians</b>	The wetland habitat is highly suitable for frogs and newts and likely support populations that are of local importance (higher value). Specific surveys targeting the Common or Viviparous Lizard were not carried out.		
<b>Bats</b>	No potential bat roosting habitats were identified during	<ul style="list-style-type: none"> <li>• Tree surgery undertaken between September and mid-November.</li> </ul>	

	<p>the surveys, however, an expansive survey for bat roosts was not carried out.</p>	<ul style="list-style-type: none"><li>• Trees to be removed will be appraised for the presence of cavities or for mature trees.</li><li>• If cavities are identified, they will be checked / assessed by a suitably qualified, experienced, and licensed ecologist.</li><li>• If bats or signs of bats are identified, works on the relevant tree will cease, the NIEA must be contacted and given time to advise. A licence to carry out such work may sometimes be necessary.</li></ul>	
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### 3.4.3 Fardross Equestrian

	Possible Impacts	Mitigation and Construction Measures	Biodiversity Enhancements
<b>Statutory Protected Sites</b>	Routes overlap with the Slieve Beagh Mullaghfad-Lisnaskea SPA.		Biodiversity signage describing the flora and fauna present on site and their benefits for biodiversity such as information on birds and wetland birds which could be erected at various points along the route to encourage an engagement with nature.
<b>Flora</b>	Potential habitat loss through the removal of existing vegetation and soil. This would directly destroy the habitat of any plants and animals that live in the area. The trail could degrade the existing habitat by introducing pollution, noise, and other disturbances.	<ul style="list-style-type: none"> <li>• Working corridor will be as small as possible.</li> <li>• Working areas demarcated prior to the commencement of works.</li> <li>• Fencing erected around hedgerows and trees to be retained to protect against accidental damage.</li> <li>• No storage or dumping of materials will be carried out outside the working area.</li> <li>• Habitats reinstated to conditions prior to works within working area where possible.</li> </ul>	<p>Opportunity for habitat restoration to upland blanket bog within the areas designated as recently felled woodland/wet heath and cutover bog habitat.</p> <ul style="list-style-type: none"> <li>• Removal of timber products and brash in recently felled woodland.</li> <li>• Blocking drainage by damming will help restore bog hydrology.</li> <li>• Removal of encroaching conifer seedlings/saplings.</li> </ul>
<b>Birds</b>	Vantage Point surveys (outside breeding and nesting seasons) were carried out which identified 29 birds.	<p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>• Rank vegetation along proposed route removed outside of the breeding bird season (September to February inclusive).</li> </ul>	

<b>Mammals</b>	Evidence of Red Squirrel, Pine Martin and Otter were noted within the area.	<p><i>Pre-construction measures:</i></p> <ul style="list-style-type: none"> <li>• Otter holt and natal den survey to be carried out prior to construction (within 3 months).</li> </ul> <p><i>Construction measures:</i></p> <ul style="list-style-type: none"> <li>• Disturbance to trees (which could hold natal dens) between February to September to be avoided.</li> </ul> <p><i>Operational measures:</i></p> <ul style="list-style-type: none"> <li>• Signage containing visitor's code of conduct installed at all access/ egress points.</li> </ul>	Addition of Pine Martin and Red Squirrel boxes within study area.
<b>Invertebrates</b>	No protected invertebrates recorded or found during the surveys however wet grassland habitats may be suited to the likes of the Marsh Fritillary Butterfly which has European protected status. An extensive invertebrate survey was not carried out.		
<b>Amphibians</b>	The wetland habitat is highly suitable for frogs and newts and likely support populations that are of local importance (higher value). Specific surveys targeting the Common or Viviparous Lizard were not carried out.	<p><i>Pre-construction:</i></p> <ul style="list-style-type: none"> <li>• Stone walls (or other potential hibernacula sites) which may be impacted will be removed by hand during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards.</li> </ul>	
<b>Bats</b>	No potential bat roosting habitats were identified during the surveys, however, an expansive survey for bat roosts was not carried out. The removal of mature conifer	<ul style="list-style-type: none"> <li>• Tree surgery undertaken between September and mid-November.</li> <li>• Trees to be removed will be appraised for the presence of cavities or for mature trees.</li> </ul>	

	trees which have the potential to host roosting bats may impact this species.	<ul style="list-style-type: none"><li>• If cavities are identified, they will be checked / assessed by a suitably qualified, experienced, and licensed ecologist.</li><li>• If bats or signs of bats are identified, works on the relevant tree will cease, the NIEA must be contacted and given time to advise. A licence to carry out such work may sometimes be necessary.</li></ul>	
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### 3.5 Appendix E – Grid reference for start and finish point of each section

The following table gives the start and finish point grid reference for each proposed section of new build and upgrade. An online dashboard is available to view these proposals in more detail [Sliabh Beagh Feasibility Study \(arcgis.com\)](#). Alternatively, a shapefile of the proposed lines is available from ORNI on request.

Trail Name Forest Name	Section ID	Start Grid Reference	Finish Grid Reference
Favour Royal Loop	Section 1	H 61244 51481	H 61272 51579
Burkes Waterfall Favour Royal Forest	Section 1	H 61244 51481	H 61272 51579
	Section 2	H 61233 51427	H 61175 51334
	Section 3	H 60991 51073	H 61036 51022
	Section 4	H 60747 51467	H 60455 50930
Fardross Arc Fardross Forest	Section 1	H 50040 46896	H 50298 46856
	Section 2	H 49842 47152	H 50042 46898
Fardross Equestrian Fardross Forest	Section 1	H 51012 46957	H 51246 47623
	Section 2	H 51488 47046	H 51738 47009
	Section 3	H 51738 47009	H 51875 46825
	Section 4	H 51379 47975	H 51683 48009



# Habitats Regulation Assessment

Slieve Beagh Eco-tourism project,  
Mid-Ulster District Council



Date of Issue: October 2023  
Issued by: Flynn Furney Environmental Consultants  
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## 1. Introduction

Regulation 43 of the Habitats Regulations, which implement a requirement of the Habitats and Birds Directives, requires an appropriate assessment to be undertaken of plans and projects which are likely to have a significant effect on an international site in Northern Ireland, either alone or in combination with other plans or projects. This is known as Habitats Regulations Assessment (HRA) and provides for assessment of the implications of a land use plan for international sites in view of their conservation objectives. International sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Ramsar sites are also subject to HRA as a matter of policy. It is accepted practice to also carry out HRA for International sites in adjoining countries where there is potential for a cross border effect.

### 1.2. Background information

Sliabh Beagh (also known as 'Slieve Beagh') is a 250-square-mile mountainous area straddling the national borders of the Republic of Ireland and Northern Ireland. It is known for its natural beauty and biodiversity, with rolling blanket bog, moorlands, expansive woodland, and tranquil lakes. The Sliabh Beagh Eco-tourism Feasibility Project is a cross-border initiative funded by the Shared Island programme to generate well-developed local authority projects that will be in a position to secure funding for the construction or implementation stages. This includes a number of proposed new build routes in Tyrone in the areas of Fardross Glen and Favour Royal Forest. The study aims to develop and implement sustainable tourism infrastructure that will protect and enhance the region's natural and cultural heritage.

## 2. Legislative and Procedural Context

### 2.1. Legislative background

2.1.1. The EC Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) establishes the requirement for an assessment of potential impacts upon Natura 2000 sites in Article 6(3) and 6(4): 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'

2.1.1. Article 6(3).

2.1.3. The Habitats Directive was transposed into Northern Ireland legislation by the Conservation (Natural Habitats, etc) (Northern Ireland) Regulations 1995.

2.1.4. Regulation 17(1) of the Regulations relates the requirement for Appropriate Assessments (henceforth AAs) of projects potentially impacting Natura 2000 Sites: 'Where a proposed road



development., is.. likely to have a significant effect thereon either individually or in combination with other developments, the Minister for the Environment shall ensure that an appropriate assessment of the implications for the site in view of the site's conservation objectives is undertaken.'

- 2.1.5. Additionally, Article 18(1) of the Regulations states: 'Where an operation or activity is being carried out, or is proposed to be carried out, on any land that is not within... a European Site, and is liable to have an adverse effect on the integrity of the site concerned either alone or in combination with other operations or activities, the Minister shall ensure that an appropriate assessment of the implications for the site in view of the site's conservation objectives is undertaken.'
- 2.1.6. Article 43 of the Regulations specifies the need for an assessment of implications upon European Sites (Natura 2000 sites). It should be noted that Article 43(5) requires that: 'In the light of the conclusions of the assessment, and subject to Regulation 44, the authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site.'
- 2.1.7. Regulation 62(1) specifically relates the need for AAs to road schemes, stating: 'Regulations 43 and 44 (requirement to consider effect on European site) apply in relation to any plan or project by the Department to construct a new road or to improve, within the meaning of the Roads (Northern Ireland) Order 1993, an existing road.'
- 2.1.8. The Habitats Directive was transposed into the Irish Republic's legislation by the European Communities (Natural Habitats) Regulations 1997 (as amended). Under Regulation 15, operations neither directly connected with nor necessary to the management of the site, but likely to have a significant effect on the site, either alone or in combination with other operations or activities, will be subject to an assessment of the implications upon Natura 2000 sites in view of those sites' conservation objectives.
- 2.1.9. Regulation 16 states that: 'Having regard to the conclusions of the assessment under Regulation 15 (1), the Minister may decide to give consent for the operation or activity only after having ascertained that it will not adversely affect the integrity of the site and, if the Minister considers it to be appropriate, having obtained the opinion of the general public.'
- 2.1.10. Following the EC Directive and the national regulations, if the outcomes of this screening process cannot demonstrate with objective evidence that the proposal will not adversely affect the integrity of the site, the second stage of AA should be recommended.

## 2.2. Natura 2000 and Ramsar Sites

- 2.2.1. Natura 2000 sites are Sites of European Community Importance and consist of SACs which are designated under European Directive (92/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna, hereby referred to as the 'Habitats Directive', and SPAs, which are designated under the Conservation of Wild Birds Directive (79/409/EEC). Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. Originally intended to protect sites of importance, especially as waterfowl habitat, the Convention has broadened its scope over the years to cover all aspects of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.

Although Ramsar sites are not legislated under European legislation, national planning policy (PPS2) recommends they should be afforded the same level of consideration and protection as Natura 2000 sites.

## 2.3. HRA Process

2.3.1. The purpose of a HRA under Article 6 is to assess the impacts of a project, in combination with the effects of other plans and projects, against the conservation objectives of Natura 2000 sites and to ascertain whether that project would adversely affect the protection or integrity of such a site.

2.3.2. Guidance from the European Commission (EC, 2000 & 2001) and DMRB Volume 11 have been used in this preliminary assessment. A summary of the stages followed in this assessment is shown in Figure 2 in Appendix 2, DMRB Volume 11 Figure 4.2 Generic Screening Process for the Assessment of the Implications on European Sites. In summary, the HRA should include the following stages, the need for each being dependent upon the outcomes of the preceding stage:

- Stage 1 – Screening;
- Stage 2 – Appropriate Assessment;
- Stage 3 – Assessment of alternative solutions;
- Stage 4 – Consideration of imperative reasons of overriding public interest;
- Stage 5 – Consideration of compensatory measures.

2.3.3. These stages form the context of this report with details of the procedure followed during the screening stage provided in Section 3 Screening Methodology.

2.3.4. Stage 1 of the process is intended to identify whether the project is 'likely to have a significant effect' upon a European site, referred to as 'screening'. If the screening process identifies the potential for significant adverse impacts on Natura 2000 sites, stage two of the HRA needs to be completed. This considers any potential impacts in greater detail, including whether mitigation measures are required. If an adverse impact upon the site's integrity cannot be ruled out, then stage 3 will need to be undertaken to assess whether alternative solutions exist. If there are no alternatives having a lesser effect upon the Natura 2000 site/s in question, the project can only be implemented if there are 'imperative reasons of overriding public interest', as detailed in Article 6(4). In essence, the work at Stage 1 will determine whether further stages of the HRA process are required.

2.3.5. In accordance with the Habitats Regulations, a HRA is required when, in view of a European site's objectives, a project:

- is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans and/or projects); and
- is not directly connected with or necessary to the management of the site.

2.3.6. In addition, Regulation 48(5) of the Habitat Regulations places emphasis on competent authorities to only approve projects, in which impacts on a European site have been "ascertained". It is important that this precautionary principle is applied to any screening assessment. A case ruling (Waddenzee case C-127/02) stated that any plan or project not

directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects'.

2.3.7. Therefore, if sufficient information is not available or where there is an element of doubt and further research is needed, the HRA should proceed to Stage 2 of the assessment.

## 3. Screening Methodology

### 3.1. Context and Methodology

3.1.1. The legal parameters for a HRA are prescribed in Northern Irish law under the Habitats Regulations and Republic of Ireland's law under the European Communities (Natural Habitats) Regulations 1997 (as amended); however, there is no standardised method for conducting such an assessment. For the purposes of this report, guidance on the process provided by the DMRB Standard HD 44/09 and the European Commission documents (EC, 2000 & 2001) have been adhered to.

3.1.3. In summary the methodology includes the following tasks:

- determining if the project is directly connected with the management of the site;
- a description of the project including mitigation;
- the identification of relevant European sites that may be impacted upon;
- a description of relevant European sites including qualifying features, current condition and threats, and key ecosystem factors (conservation objectives);
- an identification of potential routes through which conservation objectives of relevant sites could be impacted upon; and
- where possible effects have been identified, a preliminary appraisal of the project upon the integrity and protection of those sites.

### 3.2. Conservation Objectives

3.2.1. The EC Habitats Directive clearly states that the purpose of conservation is the maintenance of biodiversity. This statement does not allow for any form of biodiversity loss, and has a presumption in favour of increasing the value and stock of biodiversity through implementation of applicable Regulations. The EC Guidance (2000) states that the Natura 2000 data form requires that:

3.2.2. All Annex I habitat types present on a site and all Annex II species occurring at the site should be mentioned in the appropriate place in the data form. This information forms the basis for a Member State establishing 'the site's conservation objectives'.

3.2.3. The conservation objectives are therefore normally associated with these Annex I & II species and habitats which form the reasons for the site's designation; the qualifying features and primary reasons for selection. Those relevant to this report are described in Section 5.

### 3.3. Assessment of the Likelihood of Significance of Event

3.3.1. The assessment of significance should be made in relation to the specific features and environmental conditions of the site concerned, taking particular account of its conservation objectives (EC 2000). There is no one measure of significance, but the EC guidance suggests the likelihood of changes to relevant indicators should be used to establish changes in these conservation objectives. For instance, the indicators of most relevance to the Lough Foyle Ramsar would be the quality and extent of habitats, species present and their population size and vegetation characteristics.

3.3.2. For the assessment of significance of potential impacts upon the conservation objectives of each site identified, the following should be considered:

- deterioration of habitats or the habitats of qualifying species;
- disturbance to qualifying species.
- to ensure for the qualifying species that the following are maintained in the long term:
  - a) population of the species as a viable component of the site;
  - b) distribution of the species within the site;
  - c) distribution and extent of habitats supporting the species;
  - d) structure, function and supporting processes of habitats supporting the species; and
  - e) no significant disturbance of the species.
- To ensure for the qualifying habitat that the following are maintained in the long term:
  - a) extent of the habitat on the site;
  - b) distribution of the habitat within the site;
  - c) structure and function of the habitat;
  - d) processes supporting the habitat;
  - e) distribution of typical species of the habitat;
  - f) viability of typical species as components of the habitat; and
  - g) no significant disturbance of typical species of the habitat.

3.3.3. In the context of development projects there is no mechanism in European law or domestic statute for the approval of a development that would result in a loss of European biodiversity interest.

### 3.4. Consultation and Analysis

3.4.1. For consultation, the following statutory bodies were approached for comment/screening opinion, and the information provided will be used to inform the assessment:

- Department of Agriculture, Environment and Rural Affairs (Environment, Marine & Fisheries Group & NIEA). The response received can be found in Appendix A.

3.4.2. The following non-statutory bodies were also consulted as to the content and results of the HRA process as they have a specialist knowledge of and interest in the species and habitats forming the subject of this assessment:

- Royal Society for the Protection of Birds (RSPB);
- Raptor Ireland Study Group.
- Ulster Wildlife Trust



## 4. Description of the project

The Sliabh Beagh Eco-Tourism Destination Feasibility Study seeks to identify opportunities to help develop the Sliabh Beagh area as an eco-tourism destination. It is Funded through the 'Shared Island' programme to deliver a series of cross-border local authority projects. As part of this project, a number of new build trails are proposed for development across Monaghan County, Fermanagh and Omagh and Mid Ulster District Council areas. This report will examine the new build route sections in Mid Ulster District Council area.

The project is within the Slieve Beagh – Mullaghfad - Lisnaskea SPA which comprises a single land unit extending between Slatbeg in the north-east and Coolnasillagh in the south-west and incorporating the Slieve Beagh massif, Mullaghfad Forest and Lisnaskea Forest. Slightly more than half the eastern boundary is formed by the border with the Republic of Ireland, and that side of the Sliabh Beagh Mountains encompasses the Republic of Ireland (RoI) Sliabh Beagh SPA. Other protected sites in close proximity to the new build routes include Sliabh Beagh SAC (NI) & Sliabh Beagh RAMSAR site.

## 5. Relevant European Site Descriptions

The geographical extent of the assessment extends beyond the boundaries of the project area. Following the methodology in Section 5, European sites of nature conservation importance that occur within the project boundary or those that are considered to be within the area of influence have been identified. This assessment was carried out using the source-pathway-receptor (SPR) approach, a standard tool in environmental assessment. The SPR concept in ecological impact assessment relates to the idea that for the risk of an impact to occur, a source is needed (e.g., a development site); an environmental receptor is present (e.g., a lake); and finally, there must be a pathway between the source and the receptor (e.g., a watercourse linking the development site to the lake). Even though there might be a risk of an impact occurring, it does not necessarily mean that it will occur, and in the event that it does occur, it may not have significant effects on the receiving environment. Identification of a risk means that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the receptor. In this instance, the most relevant receptors are any relevant Natura 2000 sites with connectivity to the proposed works. These receptors were considered during the desktop study stage of this screening assessment in order to assess the potential for significant effects upon their Qualifying Interests (QIs) and COs.

Table 1: Relevant European Sites

Site Name	Designation	Qualifying features	Current Condition and Threats
Slieve Beagh – Mullaghfad – Lisnaskea UK9020302	SPA	The site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting nationally important populations of the following species: <ul style="list-style-type: none"> <li>• Hen Harrier <i>Circus cyaneus</i></li> </ul>	10 breeding pairs are known to exist on the site (Conservation Objectives 2015). No significant decrease in breeding population against national trends. Threats include Reduction of habitat, expansion of forestry areas, forestry activities, disturbances to nests, predation and research activities such as ringing.
Slieve Beagh UK0016622	SAC	European priority interest(s): <ul style="list-style-type: none"> <li>• Blanket bogs (for which this is considered to be one of the best areas in the United Kingdom)</li> <li>• European Dry Heaths (for which the area is considered to support a significant presence.)</li> <li>• Natural dystrophic lakes and ponds (for which this is considered to be one of the best areas in the United Kingdom)._</li> </ul>	Both on-site and off-site activities can potentially affect SAC/ASSI features. The site’s Conservation Objectives (2010) list the following threats: peat cutting, burning, drainage, grazing, afforestation, nitrogen deposition, damaging recreational activities, fly-tipping, dumping of alum sludge, changes in surrounding land use and climate change.
Slieve Beagh	RAMSAR	The site qualifies under Criterion 1a of the Ramsar Convention by being a particularly good representative example of a blanket bog. It is one of the largest expanses of intact upland peatland in Northern Ireland. The extensive blanket bog, which covers most of the site, exhibits the full range of characteristic vegetation and structural features associated with this type of habitat.	**Similar to those listed above
Sieve Beagh	SPA (IRL)	[A082] Hen Harrier <i>Circus cyaneus</i>	Reduction in the extent and condition of heath and bog and associated habitats; reduction in the extent and condition of low intensity managed grasslands and associated habitats; Reduction in the extent and condition of hedgerows; Age structure of forest estate; and disturbance to breeding sites.

## 6. Receiving Environment

### 6.1. Habitats

A description of the habitats of significant ecological value that were observed within the immediate surroundings of the works area are listed below, with descriptions adapted from “A Guide to Habitats in Ireland” by Julie A. Fossitt, 2000.

Routes: Favour Royal Link & Burke’s Waterfall

Overlap with protected sites: None.

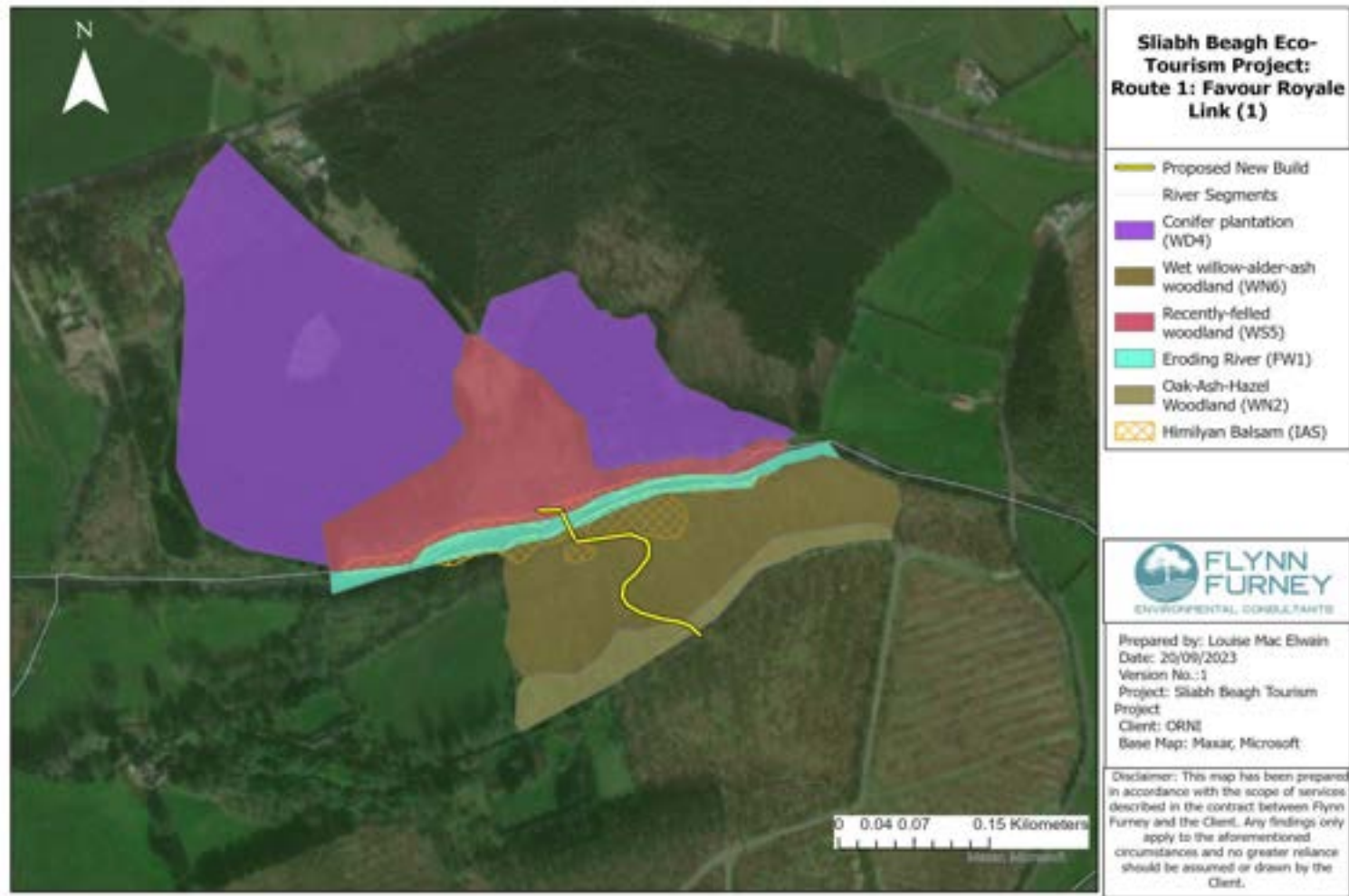


Figure 1: Habitat map in and around Favour Royale Link. .



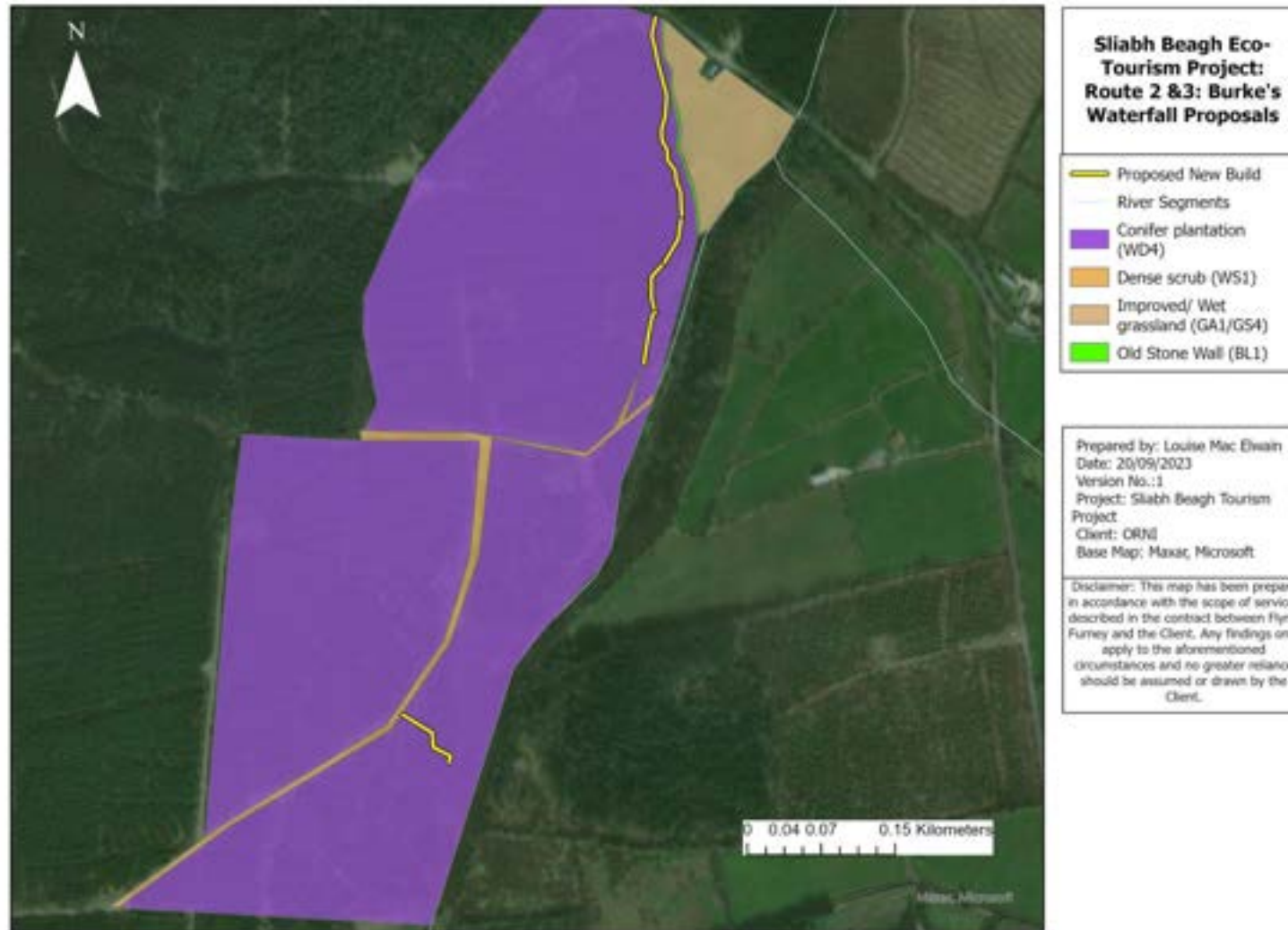


Figure 2: Habitat map of Favour Royal Forest.

### *Habitats present*

Favour Royal Forest is mainly made up of coniferous forest blocks that lie close to the main Augher and Aughnacloy roads. The Ulster Way passes through this forest and there are several other waymarked trails. The proposed trail route passes through broadleaf woodland and crosses the River Blackwater. It also passes through sections of conifer forestry. Habitats are described below.

Oak-Ash-Hazel Woodland (WN2): This woodland has a high percentage of Pedunculate Oak *Quercus robur* and Hazel *Corylus avellana*, with interspersed Ash *Fraxinus excelsior* and Holly *Ilex aquifolium* and Ivy *Hedera helix*. Ground flora consisted of Wood Anemone *Anemone nemorosa*, Bluebell *Hyacinthoides non-scripta*, Wood Avens *Geum urbanum*, Sanicle *Sanicula europaea*, Early Dog-violet *Viola reichenbachiana*, Lords and Ladies *Arum maculatum*, Wood Speedwell *Veronica montana*, and ferns (*Dryopteris filix-mas*, *Polystichum setiferum*, *Asplenium scolopendrium*, *Athyrium filix-femina*).

Wet-Willow-Alder-Ash (WN6): This category denotes the damp woodland type on site which is dominated by Birch *Betula spp.*, with occasional Willow *Salix spp.* and Hazel *Corylus avellana*. Oak *Quercus spp.* can also be found, but is relatively rare. This represents a planted broadleaf woodland and trees are of uniform spacing and age. The ground flora is typical of a damp broadleaf woodland with abundant ferns (Broad Buckler-fern *Dryopteris dilatata*, Soft Shield-fern *Polystichum setiferum*, Hart's-tongue *Asplenium scolopendrium*), Remote sedge *Carex remota* and Wood-sorrel *Oxalis acetosella*. Other frequent herbs were Opposite-Leaved golden-saxifrage *Chrysosplenium oppositifolium*, Herb-robert *Geranium robertianum*, Wood Avens *Geum urbanum*, Sanicle *Sanicula europaea*, Wood Speedwell *Veronica montana* and Wild angelica *Angelica sylvestris*.

Himalayan/Indian balsam *Impatiens glandulifera* was found in large stands nearer to the riverbank. Himalayan balsam is listed as an Invasive Alien Species of Union Concern in European legislation, and cannot be sold, exchanged, cultivated or released into the environment. Under Article 19 of Invasive Alien Species Regulation (1143/2014) Himalayan balsam has been identified as a Widely Spread Species in Northern Ireland and as such, management measures must be put in place to minimise its impacts. Current legislation states that this species must not be permitted to reproduce, be grown or cultivated; or released into the environment. The presence of *I. glandulifera* in the Blackwater Catchment is well documented. It was targeted through Action C10 of The IRD Duhallow LIFE Project (2015). However, its presence is still prolific on the stretch of the river within the study area.

Eroding upland river (FW1): The River Blackwater represents a large, deep, fast-flowing river. The bed is characterised by exposed bedrock and loose rock. Pebbles, gravel and coarse sand have accumulated in places, but finer sediments are rarely deposited due to the fast flow. It is deeply cut with high banks. Himalayan balsam is abundant along the bank stretches. A lack of deep rooting bank vegetation on the northern side of the river has resulted in bank erosion and collapse in places.

Conifer Plantation (WD4): These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed. This blocks

out much of the light reaching the ground and thus leads to a reduced diversity of ground flora. Sitka Spruce *Picea sitchensis* and Lodgepole Pines *Pinus contorta* were the main planted species.

Old stone wall (BL1): This old stone wall is important for wildlife. It supports a diverse flora with abundant lichens, mosses and ferns (*Asplenium trichomanes* and *A. ruta-muraria*). Other common components were Stonecrops *Sedum spp.*, Herb-robert *Geranium robertianum* and Navelwort *Umbilicus rupestris*. Dry stone walls are great habitat for lizards and a variety of insects.

Improved/ wet grassland (GA1/GS4): This is grassland which has been reseeded for agriculture with an abundance of perennial Rye grass *Lolium spp.* and is species-poor. The presence of reed (*Juncus spp.*) indicates wetter soils in areas. However, the site is lacking the species diversity of a typical wet grassland.

Route: Fardross Arc

Overlap with protected sites: SPA NI, adjacent to ASSI & SAC NI

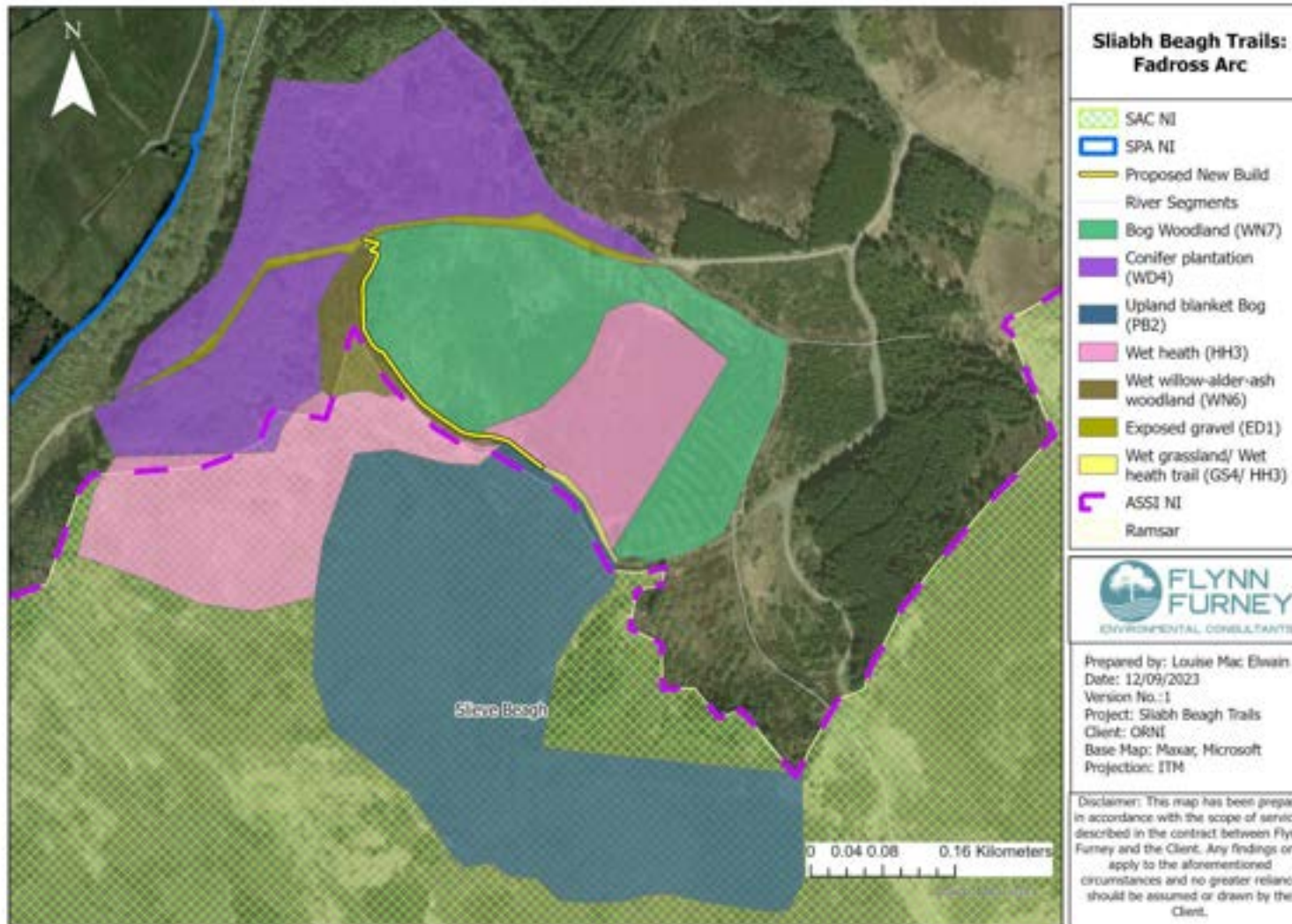


Figure 3: Habitat map of Fardross Arc.



## Habitats

Wet grassland/ Wet heath trail (GS4/ HH3): The route trajectory follows a dirt trail which is currently being used and kept open by grazing cattle. Ground flora were mostly common of wet grasslands and contained Lesser spearwort *Ranunculus flammula*, Tormentil *Potentilla erecta*, Wild angelica *Angelica sylvestris*, Creeping buttercup *Ranunculus repens* and patches of rushes such as *Juncus effusus* & *Juncus acutiflorus*. Some shrubs of Hazel *Corylus avellana* and *Salix aurita* have begun to colonise the path in places.



Figure 4: View of trail through Fadross glen arc.

The less trodden areas (fringes) of this path had similar make up to a wet heath habitat. These areas are dominated by Ling *Calluna vulgaris* & Cross-leaved *Erica teralix*. Other occasional species included Bell heather *Erica cinerea*, Heat Rush *Juncus squarrosus*, Devil's-Bit scabious *Succisa pratensis*, Tormentil *Potentilla erecta* and Hard Fern *Blechnum spicant*. Some sections contained dense Bracken *Pteridium aquilinum* stands.

Bog Woodland (WN7): The woodland on site has formed over cutover type peat which is well drained in the upper layers, likely developed within the last 40 years. Downy Birch *Betula pebescens* is the dominant species, with occasional Willow *Salix spp.* and Rowan *Sorbus acuparia*. Purple Moor-grass *Molinia caerulea* and Bilberry *Pteridium aquilinum* are frequent.

Links with Annex 1: Annex 1 bog woodland refers to woodlands of intact raised bog. The woodland surveyed does not conform to this category.

Conifer Plantation (WD4): These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, locking out much of the light reaching the ground and thus reducing the diversity of ground flora. Sitka Spruce *Picea sitchensis* and Lodgepole Pines *Pinus contorta* were the main planted species.

Wet willow-alder-ash woodland (WN6): This category of woodland is present in very wet areas that are dominated by Willow (*Salix spp.*) and Alder (*Alnus glutinosa*). Ground flora is 'grassy' in appearance with carpets of Remote sedge *Carex remota* and Creeping bent *Agrostis stolonifera*. This vegetation composition and the damp soils present may be indicative of a peat flush.

Upland Blanket Bog (PB2): This habitat type is used for blanket bog which occurs 150 metres above sea level. These bogs are rain fed and their peat is acidic. The vegetation is characterised by the presence of ericoid shrubs and in particular Ling heather *Calluna vulgaris*, Crowberry *Empetrum nigrum* and Bilberry *Vaccinium myrtillus*. A dense layer of Sphagnum is present on the bryophyte layer, in addition to trailing Bog cranberry *Vaccinium oxycoccos* and stands of Reindeer lichen *Cladonia spp.*



Occasional herbs such as Bog asphodel *Narthecium ossifragum* and tussocks of Hare's tail Cottongrass *Eriophorum vaginatum* can be seen stretching across this bog.

Links with Annex 1 habitats: This blanket bog is still capable of peat formation and corresponds to the priority habitat **blanket bog 7130**.



Figure 5: View across the blanket bog from Fadross Glen Arc.

Wet heath (HH3): This category has been used for areas of cutover bog where the vegetation has recolonised to a sufficient extent to be included in this category. Peat has been extracted and depth reduced. It was mostly dominated by Purple Moor-grass *Molina caerulea* with occasional Ling Heather, Bilberry and Cross-leaved heather. Devil's-bit scabious, Tormentil and rushes such as Sharp-flowered rush and Heath rush were also present. Trees have begun to colonise the area with Birch and Sitka Spruce present on occasion.

Route: Fardross Equestrian Loop (1,2,3)

Overlap with protected sites: SPA NI

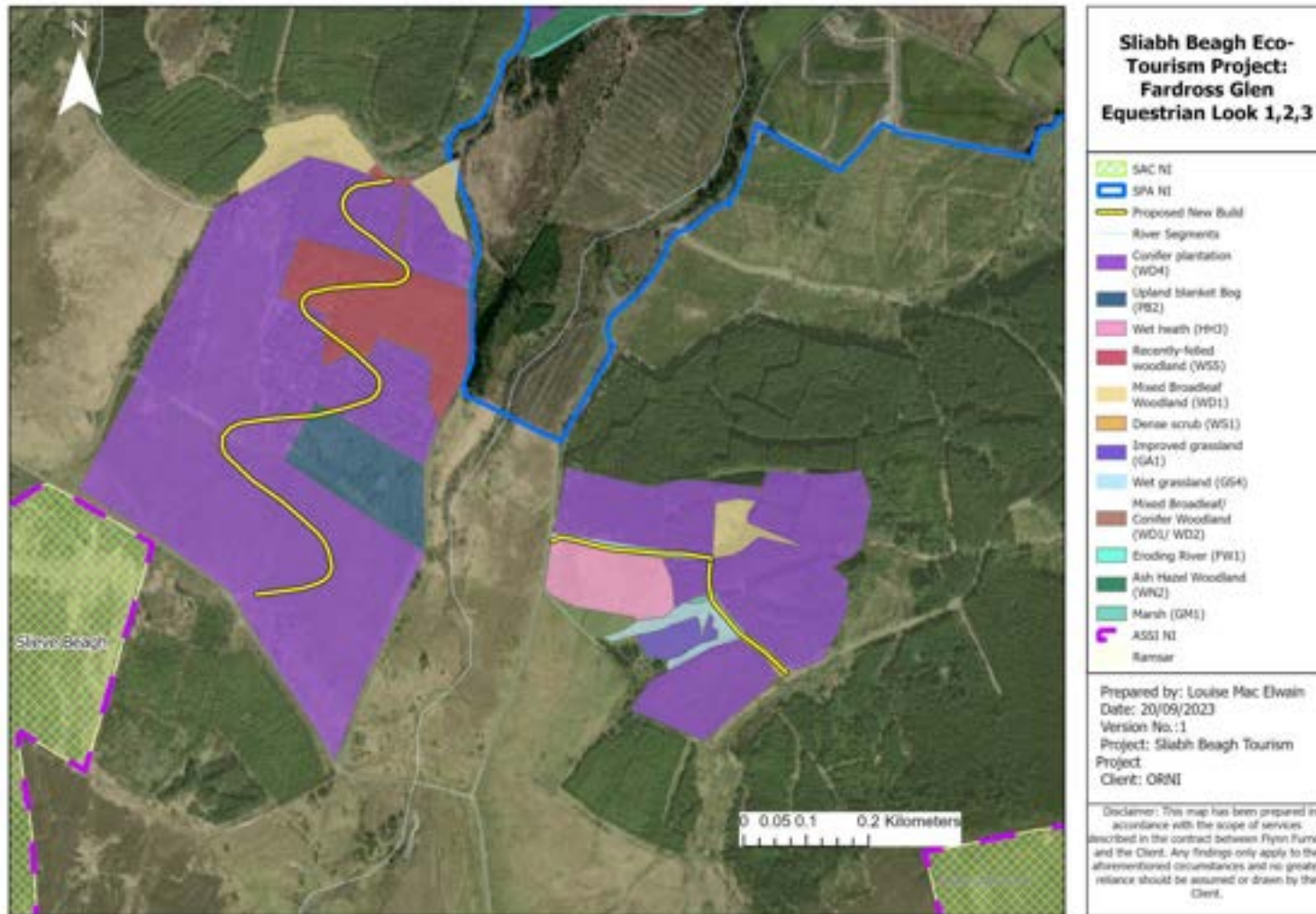


Figure 6: Fardross Glen Equestrian loop 1,2,3.

## Habitats

Recently felled woodland (WS5): This designates areas of plantation that have been clear-felled but have not been replanted or converted to another land use. Common colonisers of open ground among the conifer tree stumps and brash (discarded woody material) include Rosebay Willowherb *Epilobium angustifolium*, Foxglove *Digitalis purpurea* and ferns. *Juncus conglomeratus* and *Juncus effusus* were frequent, with an occasional ground cover of moss (*Polytrichum spp.*). Sitka spruce saplings have begun to seed and colonise areas.

Conifer plantation (WD4): These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, blocking out much of the light reaching the ground and thus leading to a reduced diversity of ground flora. Sitka Spruce *Picea sitchensis* and Lodgepole Pine *Pinus contorta* were the main planted species.

Upland Blanket Bog (PB2): The vegetation is characterised by the presence of ericoid shrubs and in particular Ling heather *Calluna vulgaris* and Bilberry *Vaccinium myrtillus*. A dense layer of Sphagnum is present on the bryophyte layer, along with stands of Reindeer lichen *Cladonia spp.*. Occasional Bog asphodel *Narthecium ossifragum* and Cross-leaved heather can be found. Devil's-bit scabious was present in patches nearer the road.

Wet grassland (GS4): Trail 17 runs down through an old forestry track which consists of wet grassland and colonising Gorse *Ulex europaeus* and Willow *Salix spp.*. Wet grassland species include Crested dogstail *Cynosurus cristatus*, Square stalked St. John's Wort *Hypericum tetrapterum*, Tormentil *Potentilla erecta*, Germander speedwell *Veronica chamaedrys* and Sharp-flowered rush *Juncus acutiflorus*.

Another section of wet grassland is mapped at the edge of an agricultural field but has been improved and is not species rich. It contained a dense rush cover and was very wet at the time of surveying, grading into a small section of marsh.

Wet Heath (HH3): This habitat is found to the south of the trail. It was being grazed by cattle at the time of surveying. It is species-rich with abundant Ling Heather, Asphodel, Tormentil, Hard Rush and Sharp-flowered Rush. It also contained patches of Reindeer lichen (*Cladonia spp.*).

Route: Fardross Glen Equestrian Route 4.

Overlap with protected sites: SPA NI.



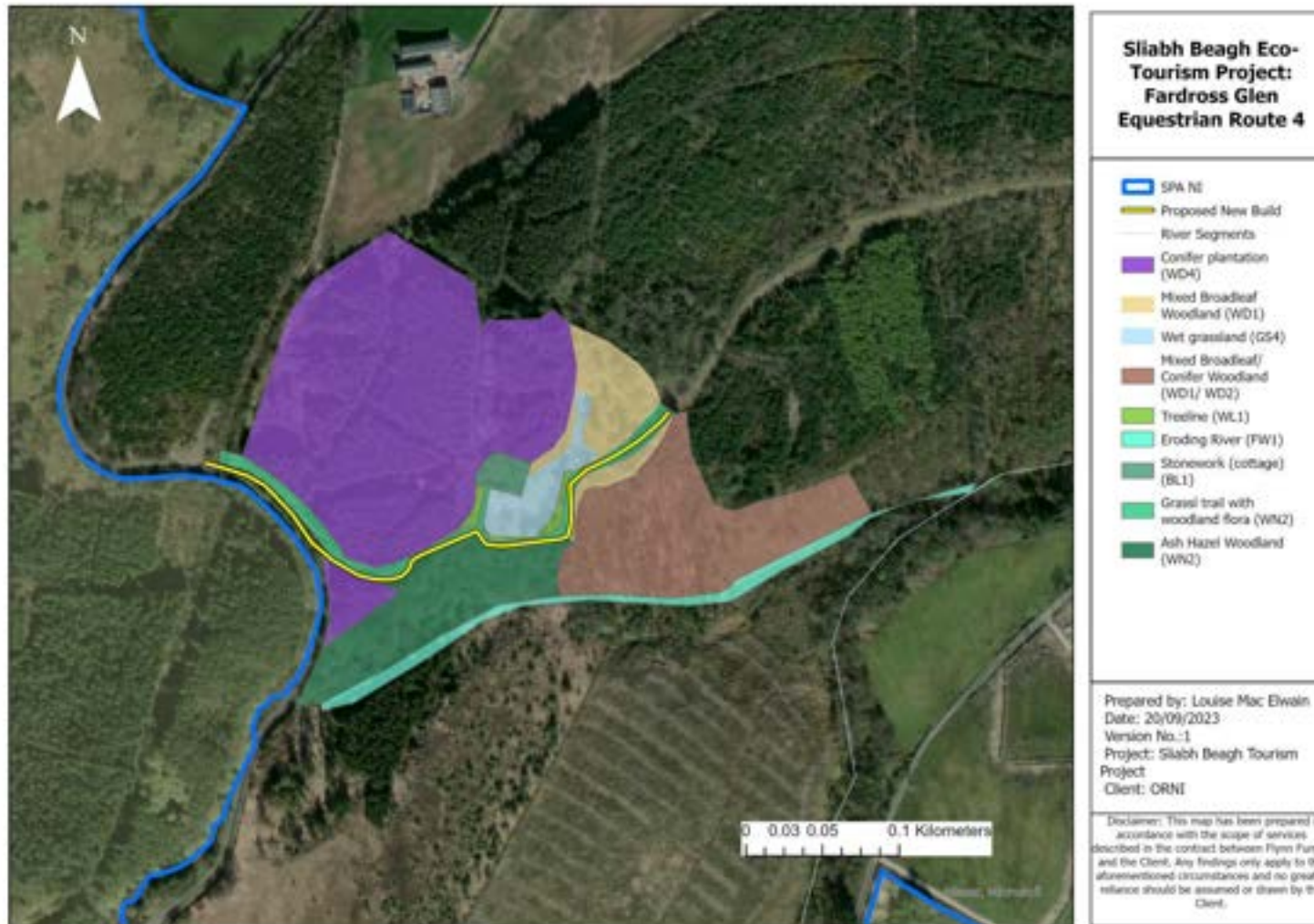


Figure 7: Fardross Glen Equestrian Route 4.

## Habitats

This route follows an old right of way which passes through a mixed broadleaf woodland. There is a river running through the woodland which joins up the Fardross stream. An old stone wall runs the length of the old right of way and an old cottage is located around 30 metres north of the proposed route. A hunting tree stand with ladder was also located along the route.

Grass trail with woodland flora (WN2): This old right of way runs along a grass trail within a woodland. Ground flora were similar to that found in a native Ash-hazel woodland and included abundant Wood Sorrel *Oxalis acetosella*, Herb Robert *Geranium robertianum* and Bent grasses *Agrostis spp.* Other abundant species include Ivy *Hedera helix*, Wood Anemone *Anemone nemorosa*, Wood Avens *Geum urbanum*, Sanicle *Sanicula europaea*, Early Dog-violet *Viola reichenbachiana*, Lords and Ladies *Arum maculatum*, Wood Speedwell *Veronica montana*, and ferns (*Dryopteris filix-mas*, *Polystichum setiferum*, *Asplenium scolopendrium*, *Athyrium filix-femina*). Some Willow shrubs *Salix spp.* have begun to colonise the trail in places.



Figure 8: Fardross Glen Right of way

Conifer Woodland: These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, blocking out much of the light reaching the ground and thus reducing the diversity of ground flora. Sitka Spruce *Picea sitchensis* and Lodgepole Pines *Pinus contorta* were the main planted species.

Ash Hazel Woodland (WN2): Ash *Fraxinus excelsior*, Beech *Fagus sylvatica* and Sycamore *Acer pseudoplatanus* are the main tree species in the canopy. The shrub layer is composed of Hazel *Corylus avellana* and Hawthorn *Crataegus monogyna*. Other species such as Rowan *Sorbus acuparia* and Willow *Salix spp.* were occasional. Ground flora were similar to those as described above under the grassland trail.

Mixed Broadleaf/ Conifer Woodland (WD2): This is an area of woodland which has been recolonised with Pines, Willows and Birch. Ground flora includes Bilberry *Vaccinium myrtillus*, Hard Fern *Blechnum spicant*, Great Wood-rush *Luzula sylvatica* and Velvet Bent *Agrostis canina*.

Wet grassland (GS4): This grassland contains frequent rushes *Juncus effusus* which become more abundant on the lower slopes. Grasses such as Perennial grasses *Lolium spp.* Yorkshire-fog *Holcus lanatus*, Creeping Bent *Agrostis stolonifera* and Marsh Foxtail *Alopecurus geniculatus* are also present. Overall, the area was not overly species rich.

Old stonework (cottage) (BL1): This category represents an old stone cottage surrounded by a number of low stone walls. An old Sycamore (~160 years old) and Yew tree *Taxus bacatta* are also located next to the cottage.



Treeline (WL1): An old stone wall and treeline runs along the trail, providing nice habitat for an abundance of ferns and moss. A treeline has grown from the bank and old stone wall and contains a mix of Hawthorn and Holly, with occasional Rowan and Crab apple *Malus sylvestris*.

## 6.2. Birds

Hen Harrier Vantage Point (VP) surveys were carried out on the 6<sup>th</sup> of September 2023. The vantage points had been selected prior to the surveys during habitat assessments and the conditions were recorded for each vantage point before the surveys began. This included visibility, rain, wind and cloud conditions. The methodology that was used for the VP surveys was the Countryside Bird Survey (CBS) methodology. This methodology usually follows a transect but the methodology was adapted to use a vantage point instead. Each bird observation was recorded. The species of bird was recorded using the CBS bird species code list. The distance of each bird observed from the VP was recorded using Google Earth Pro, along with the direction of flight. Other bird species heard but not seen were also recorded. Each survey lasted two hours in total. Maps of the VP locations can be seen below. The BoCCI list is used to identify bird species that are at risk of extinction or that are in need of conservation action. The BoCCI 2020- 2026 list is a joint publication by BirdWatch Ireland and RSPB Northern Ireland, and it is based on the latest data on bird populations and trends.



Figure 6: Vantage Point locations

## Results

The results of the survey are laid out in the table below:

Species Observed	Scientific Name	Description/ Activities	BOCCI Status	Sliabh Beagh SPA Codes	Location
Swallow	<i>Hirundo rustica</i>	Circled in all directions (approx. 3)	Amber		VP1
Chiffchaff	<i>Phylloscopus collybita</i>	Singing in willow trees	Green		VP1

House martin	<i>Delichon urbicum</i>	Singing in distance (not seen)	Amber		VP1
Wren	<i>Troglodytes troglodytes</i>	Calling from willow trees	Green		VP1
Chaffinch	<i>Fringilla coelebs</i>	Singing in willow trees	Green		VP1
Dunnock	<i>Prunella modularis</i>	Singing in willow trees	Green		VP1
Blue tit	<i>Cyanistes caeruleus</i>	Singing in willow trees	Green		VP1
Buzzard	<i>Buteo buteo</i>	Two buzzards circling high in the sky as they hunt from south to west of VP1 (approx. 2)	Green		VP1
Wren	<i>Troglodytes troglodytes</i>	Calling from willow trees	Green		VP2
Meadow pipit	<i>Anthus pratensis</i>	Singing in the distance	Red		VP2
Chiffchaff	<i>Phylloscopus collybita</i>	Singing in willow trees	Green		VP2
Raven	<i>Corvus corax</i>	Flying above heath from west to east of VP2	Green		VP2
Swallow	<i>Hirundo rustica</i>	Circling above heath (approx. 6)	Amber		VP2
Hen harrier	<i>Circus cyaneus</i>	<b>Observed low flying/ hunting over heath from east to west of VP2</b>	Amber	[A082]	VP2
Raven	<i>Corvus corax</i>	Calling in the distance	Green		VP3
Wren	<i>Troglodytes troglodytes</i>	Heard singing in the conifer plantation	Green		VP3
Meadow pipit	<i>Anthus pratensis</i>	Observed in flight above young conifers west to east of VP3 facing NW	Red		VP3
Swallow	<i>Hirundo rustica</i>	Observed in flight above young conifers in all directions (approx. 11)	Amber		VP3
Wood pigeon	<i>Columba palumbus</i>	Observed flying from tree to tree in the conifer plantation	Green		VP3
Swallow	<i>Hirundo rustica</i>	Observed circling above young conifer plantation (approx. 7)	Amber		VP3
Long tailed tit	<i>Aegithalos caudatus</i>	Heard singing in distance	Green		VP3
Crossbill	<i>Loxia curvirostra</i>	Heard singing in distance	Green		VP3
Wren	<i>Troglodytes troglodytes</i>	Heard singing in distance	Green		VP3
Robin	<i>Erithacus rubecula</i>	Observed flying between willow trees	Green		VP3
Goldcrest	<i>Regulus regulus</i>	Heard singing in distance	Amber		VP3
Siskin	<i>Carduelis spinus</i>	Heard singing in conifer plantation	Green		VP3
Dunnock	<i>Prunella modularis</i>	Heard singing in willow	Green		VP3

Blue tit	<i>Cyanistes caeruleus</i>	Heard singing in willow	Green		VP3
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A Hen Harrier was observed at Vantage Point 2. Its flight path can be seen below.



Figure 8: Hen Harrier flight path.

## Discussion

Vantage point surveys carried out as part of this assessment can only give limited data. This is based on the fact that surveys were not carried out during the optimal period to determine Hen Harrier activity, and thus possible disturbance during breeding and nesting seasons. In addition, only one survey per site was conducted. There are several reasons why one vantage point bird survey is not sufficient to say which birds visit a site:

1. **Limited field of view:** A vantage point bird survey can only cover a limited area. This means that it is possible that some birds will be present at the site but not be visible from the vantage point.
2. **Bird movement:** Birds are constantly moving, so it is possible that some birds will fly over or through the site without being seen from the vantage point.
3. **Cryptic species:** Some bird species are very good at camouflaging themselves, making them difficult to see. These species may be present at the site but not be detected during a vantage point survey.
4. **Observer error:** Even experienced observers can miss birds. This is especially true in dense vegetation or in poor lighting conditions.

To get a more accurate picture of the bird species that visit a site, it is necessary to conduct multiple surveys from different vantage points and at different times of day and year. This will help to increase the chances of detecting all of the bird species and nesting/roosting areas that are present at the site.

However, during our survey, one Hen Harrier was observed at VP2. This vantage point overlooks optimum Hen Harrier habitat in Sliabh Beagh Bog (SAC & SPA). The large heather mats across upland blanket bog within the SAC are optimal habitat for Hen Harrier breeding and roosting.

Other habitats within the area were not deemed optimal for roosting and nesting locations.

## 7. Assessment of Potential Impacts

This section considers the impacts of the proposed project, as described in Section 4, upon the qualifying features of the Natura 2000 site, as identified in Section 5. This section identifies the potential impacts the project will have upon the designation criteria of the identified Ramsar, SAC and SPA sites.

### Habitat loss

The proposed trail development could result in habitat loss through the removal of existing vegetation and soil. This would directly destroy the habitat of any plants and animals that live in the area. The trail could degrade the existing habitat by introducing pollution, noise, and other disturbances. Habitat degradation can make it less suitable for plants and animals to live in.

The proposed works do not lie inside the SAC or directly impact any annexed habitat which is associated with Sliabh Beagh SAC's conservation objectives. The same can be said for the RAMSAR and ASSI sites.

It can be concluded, on the basis of objective information, that the proposed development will not have a significant effect on any European site as a result of habitat loss and no scientific doubt remains as to the absence of such effects.

### Pollution Events

There is a risk involved with any activity involving the use of machinery within, or in proximity to, freshwater habitats, that a pollution incident might arise and result in spills or leaks of polluting substances into the water. The risk of such pollution events occurring must be managed to ensure their likelihood is low, and that there are effective measures put in place in the event that they do occur, to prevent any wide reaching or short-term adverse effects.

As set out above, the proposed works will take place at locations which sometimes overlap with freshwater habitats, such as The River Blackwater. It is considered that given the nature of the proposals, which are small in scale and will not involve the use of large volumes of hydrocarbon fuels or other chemicals, that any potential pollution incidents arising as a result of the proposed development will be minor. No pools or lakes are found within proximity to the proposed route trails. Additionally, best practise will avoid any impacts to freshwater habitats.



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It can be concluded, on the basis of objective information, that the proposed development will not have a significant effect on any European site as a result of water quality and habitat deterioration and no scientific doubt remains as to the absence of such effects.

## Aerial Noise & Visual Disturbance

The Hen Harrier *Circus cyaneus* is a territorial, ground-nesting bird of prey that typically breeds in open upland bog and heather moorland, and their associated habitat. There is a worrying decline in Hen Harrier numbers in Northern Ireland, with a fall of 22% since 2010. Under the EU Birds Directive all member states are required to take measures to ensure the survival of Hen Harriers at favourable conservation status. Human activities in the vicinity of breeding birds can lead to increased rates of nest desertion (White & Thurow 1985), and reduced rates of site occupancy (Webber *et al.* 2013), territory establishment (Bötsch *et al.* 2017), breeding success (Balotari-Chiebao *et al.* 2016), and survival (Ruhlen *et al.* 2003). Hen Harriers are sensitive to disturbance, especially during the breeding season. Recreational activities such as hiking, biking, and dog walking can flush birds from their nests, which can lead to nest abandonment or predation.

A study by Caravaggi *et al.*, 2020 showed that recreational activities impact Hen Harrier nesting sites. Systematic reviews have demonstrated that recreational activities can negatively impact breeding birds (e.g. Steven *et al.* 2011; Larson *et al.* 2016) including above-ground foragers (Bötsch *et al.* 2017) and upland species such as Golden Plovers *Pluvialis apricarius* (Finney *et al.* 2005). Thus, there exists the potential for disturbance of prospecting Hen Harriers early in the breeding season and/or foraging Hen Harriers once territories have been established. A review of hen harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock *et al.* 2007). Although no such distances have been suggested for disturbance at roost sites, it is known that human activities can cause abandonment of Hen Harrier roost sites (Clarke and Watson 1990).

Both the construction and the use of the proposed route and its users have the potential to cause disturbance to nesting or roosting Hen Harrier as the site is located adjacent to highly suitable habitat. Disturbance is a risk at the nest/roost site itself but also along the flight corridors used by Hen Harrier entering and exiting the roost site. Disturbance along flight corridors may alter Hen Harrier behaviour which may have secondary effects such as consequential energetic costs and roost and foraging habitat fragmentation. Disturbance resulting from the route may cause short-term displacement of roosting Hen Harrier, for example during times of high activity along the route. This displacement may be temporary and short-term where birds continue to use the roost site after the disturbance event. If birds are repeatedly exposed to disturbance events from recreational users, it may result in long-term displacement of Hen Harrier from the roost site.

In the absence of mitigation by design or otherwise, the presence of walkers and dogs along the route has the potential to cause disturbance and potentially either short-term or long-term displacement of winter roosting or summer breeding Hen Harrier. This may affect the conservation status of the species in relation to the relevant SSCO. Similarly, the laying of trails during sensitive seasons has the potential to cause disturbance if machinery is used and loud noises occur. Relevant SSCOs that may

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be affected include numbers of individuals attending the roost/nest and disturbance at the nest/roost site.

The large heather mats across upland blanket bog within the SAC are optimal habitat for Hen Harrier breeding and roosting, specifically route 14 (Fardross Arc) which overlooks the SAC. A Hen Harrier was also identified in this area during vantage point surveys.

No breeding or roosting surveys have been carried out to date.

## 8. Stage 1 Screening Appraisal for Appropriate Assessment

Stage One Screening was completed in accordance with Section 2 of this report. The proposed project has been considered in the context of the European sites (their Qualifying Interests and Special Conservation Interests and any Conservation Objectives which have been set). Pathways have been identified with connectivity to the proposed project using the Source-Pathway-Receptor model.

From the finding of the Screening, it is concluded that:

- the proposed project is not directly connected with or necessary to the management of any European site.
- the possibility of likely significant Water Quality and Habitat Deterioration effects can be discounted for without further evaluation and analysis, or the application of measures intended to avoid or reduce harmful effects of the potential project on European sites.
- The possibility for likely significant noise and visual disturbance effects could not be discounted at this stage.
- All other likely significant effects can be excluded.

Having regard to the methodology employed and the findings of the Screening, it has been concluded that a Stage 2 Appropriate Assessment of the implications of the proposed project on any European site is required for:

- Visual and Noise disturbance effects on the Hen Harrier populations at the Sliabh Beagh SPA (Republic of Ireland) and the Slieve Beagh – Mullaghfad – Lisnaskea SPA (Northern Ireland).

## 9 STAGE 2 APPRAISAL FOR APPROPRIATE ASSESSMENT

### 9.1. Introduction

The assessment considers the potential for adverse effects that development of trails in Slieve Beagh could have on the integrity of any European site, with respect to its conservation objectives, structure and function. EC guidance (EC 2021) states that the integrity of a site involves its ecological functions and the decision as to whether it is adversely affected should focus on, and be limited to, the site's conservation objectives.

The potential effects have been assessed in the absence of any mitigation measures and also with reference to the precautionary principle.

## 9.2. Approach to Assessment

In line with the relevant guidance, this stage of the Appropriate Assessment consists of three main steps:

- **Impact Prediction:** where the likely impacts of the project are examined. A source-pathway-receptor model has been used to assess potential for impact;
- **Assessment of Effects:** where the effects of the project are assessed as to whether they have any adverse effects on the integrity of European Sites as defined by conservation objectives; and
- **Mitigation Measures:** where mitigation measures are identified to ameliorate any adverse effects on the integrity of any European Site.

## 9.3 Impact Prediction

The methodology for the assessment of impacts is derived from the Assessment of Plans and Projects in relation to Natura 2000 Sites (EC, 2021). When describing changes/activities and impacts on ecosystem structure and function, the types of impacts that are commonly presented include:

- Direct and indirect effects;
- Short and long-term effects;
- Construction, operational and decommissioning effects; and
- Isolated, interactive and cumulative (or 'in-combination') effects.

A 'source-pathway-receptor' approach has been applied for this assessment:

- The source relates to the principles and priorities outlined in the FAPP which have the potential to adversely impact European sites, e.g. emissions of pollutants to water.
- The pathway relates to how proposed development could potentially impact European sites, e.g. habitat loss/ fragmentation, disturbance to species, impacts to water quality.

The proposed project will not result in any significant land take or fragmentation of an internationally protected site. It lies within an SPA. It is not within an SAC, however, any protected habitats found on site, and protected under nearby Natura sites, could be impacted.

The hydrological connectivity of the site was previously discussed; however, no significant impacts would be expected given the scale of the project. No outdoor lighting is to be used on proposed trails, thus species disturbance from lighting is not expected.

The construction of these projects will involve the clearing of vegetation, which can have impacts on protected nesting bird species which utilise the site. However, under the Wildlife Act, all clearance works will have to be carried out outside of bird nesting season.

An increase in human activity is expected due to new access trails and increased connections to other recreational routes across the bog. An increase in dog walkers may also be expected. This may result in species disturbance.

Species disturbance during construction is likely if construction is carried out during breeding seasons or near to roosting areas for protected species.

The use of construction equipment and the resurfacing and construction of footpaths and pavements, construction of elevated boardwalks and provision of access through the sites, could result in the spread of invasive species, which could in turn spread to surrounding protected sites.

## 3. Ecological Assessment

### 3.1 Conservation objectives

The conservation objectives of the **NI SLIEVE BEAGH – MULLAGHFAD – LISNASKEA - SPECIAL PROTECTION AREA (SPA) UK9020302** are laid out below. Given that Hen Harrier is a mobile Qualifying Interest (QI) there is a possibility for construction to impede the conservation objectives of this site. The conservation objectives for the site are as follows:

1. To maintain or enhance the population of the qualifying species (Hen Harrier).
2. Fledging success sufficient to maintain or enhance population.
3. To maintain or enhance the range of habitats utilised by the qualifying species.
4. To ensure that the integrity of the site is maintained.
5. To ensure there is no significant disturbance of the species.
6. To ensure that the following are maintained in the long term:
  - Population of the species as a viable component of the site
  - Distribution of the species within the site
  - Distribution and extent of habitats supporting the species
  - Structure, function and supporting processes of habitats supporting the species.

The seven project routes are within the boundaries of Slieve Beagh SPA. The Conservation Objective for Slieve Beagh SPA is to 'To restore the favourable conservation condition of Hen Harrier in Slieve Beagh SPA, which is defined by the following list of attributes and targets:

1. Population size
2. Productivity Rate
3. Spatial utilisation by breeding pairs
4. Extent and condition of heath bog and associated habitats
5. Extent and condition of low intensity managed grasslands and associated habitats.
6. Extent and condition of hedgerows
7. Age structure of forest
8. Disturbance to breeding sites.'

The Habitats Directive (EU, 1992) describes how favourable conservation status of a species can be described as being achieved when: "population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced nor likely to be



reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.”

### 3.2 Qualifying Features, sensitivities and predicted impacts

The importance of the Slieve Beagh protected sites under the Habitats Directive is defined by their qualifying features or interests. The qualifying features or interests of the sites are given in Table 1, along with the specific sensitivities/ main threats relevant to each feature and the predicted impacts of the proposed development. The environmental sensitivities for each site have been derived from the baseline assessments of conservation status carried out by National Parks and Wildlife Service (NPWS) as part of the report to the EU Commission on The Status of EU Protected Habitats and Species in Ireland, submitted in 2007.

Table 1: Annex 1 species and Environmental Sensitivities associated with Slieve Beagh- Mullaghfad-Lisnaskea SPA.

Qualifying Interests and Conservation Objectives	Conservation objectives which may be impacted	Potential Impacts from Development
<p><b>Hen Harrier <i>Circus cyaneus</i></b></p> <p>To restore the favourable conservation condition of Hen Harrier in Slieve Beagh SPA</p>	<p><u>Fledging success</u>: sufficient to maintain or enhance population.</p> <p><u>To ensure there is no significant disturbance of the species</u> and</p> <p>To ensure that the following are maintained in the long term:</p> <ul style="list-style-type: none"> <li>- Population of the species as a viable component of the site</li> <li>- Distribution of the species within the site</li> <li>- Distribution and extent of habitats supporting the species.</li> </ul>	<p>The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets which relate to population demographics (i.e. population size, productivity rate) and the spatial utilisation of the SPA by breeding pairs. Factors such as intensity, frequency, timing and duration of a potentially disturbing activity need to be taken into account to determine its significance on breeding Hen Harrier in the SPA. Hen Harrier may avoid the trail and the surrounding area due to the noise, disturbance, and visual impact of the construction. This could reduce the amount of habitat available to Hen Harrier and could make it more difficult for them to find food and mates. A review of Hen Harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock <i>et al.</i> 2007). Disturbance during construction may discourage flight activity or foraging in the vicinity of the Proposed Development which may negatively impact productivity rates.</p> <p>Disturbance to Hen Harrier roosts during the winter months may result in significant impacts. Hen Harriers rely on their roost sites to rest and recuperate. Disturbance at these sites can prevent them from getting the rest they need, which can lead to reduced energy reserves. This can make it more difficult for them to find food and raise their young. Disturbance can also cause stress in Hen Harriers. Stress can have a</p>

		<p>number of negative effects on their health, including reduced breeding success, increased susceptibility to disease, and even death. In some cases, Hen Harriers may abandon their roost sites if they are disturbed too much. This can force them to find new roost sites, which can be difficult and time-consuming.</p> <p>There may be an increased risk of predation as the trail could make it easier for predators (such as dogs) to access Hen Harrier nests and breeding territories.</p>
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Table 2: Annex 1 species and Environmental Sensitivities associated with Slieve Beagh SPA (RoI).

Qualifying Interests and Conservation Objectives	Conservation objectives which may be impacted	Potential Impacts from Development
<p><b>A082 Hen Harrier</b> <b><i>Circus cyaneus</i></b></p> <p>To restore the favourable conservation condition of Hen Harrier in Slieve Beagh SPA</p>	<p><u>Population size</u>: Maintain numbers at or above 3–4 confirmed breeding pairs.</p> <p><u>Productivity rate</u>: Maintain at least 1.0–1.4 fledged young per confirmed pair. If population size of the SPA is not favourable, then the upper end of this productivity rate range is to be met. In order for estimates to be sufficiently representative of the SPA, they need to be of sufficient sample size and ideally over multiple years in order to account for inter-annual variability.</p>	<p>The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets which relate to population demographics (i.e. population size, productivity rate) and the spatial utilisation of the SPA by breeding pairs. Factors such as intensity, frequency, timing and duration of a potentially disturbing activity need to be taken into account to determine its significance on breeding Hen Harrier in the SPA. Hen Harrier may avoid the trail and the surrounding area due to the noise, disturbance, and visual impact of the construction. This could reduce the amount of habitat available to Hen Harrier and could make it more difficult for them to find food and mates. A review of Hen Harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock <i>et al.</i> 2007).</p>

	<p><u>Spatial utilisation by breeding pairs:</u> Optimal resilience depends on breeding pairs utilising the SPA to the maximum extent possible. The spatial distribution of breeding pairs is expressed by the proportion of the SPA being used by them. Breeding pairs predominantly use the area within 5km of their nest site or centre of territory, though they can travel further (e.g. Irwin <i>et al.</i>, 2012; Arroyo <i>et al.</i>, 2014). Thus, the core area used by confirmed pairs can be broadly and generically estimated by calculating the portion that lies within 5km of all recorded nest sites. Ideally, the breeding population should be well dispersed around the SPA.</p> <p><u>Disturbance to breeding sites:</u> Disturbance occurs at levels that do not significantly impact upon breeding Hen Harrier.</p>	<p>Disturbance during construction may discourage flight activity or foraging in the vicinity of the Proposed Development which may negatively impact productivity rates.</p> <p>Disturbance to Hen Harrier roosts during the winter months may result in significant impacts. Hen Harriers rely on their roost sites to rest and recuperate. Disturbance at these sites can prevent them from getting the rest they need, which can lead to reduced energy reserves. This can make it more difficult for them to find food and raise their young. Disturbance can also cause stress in Hen Harriers. Stress can have a number of negative effects on their health, including reduced breeding success, increased susceptibility to disease, and even death. In some cases, Hen Harriers may abandon their roost sites if they are disturbed too much. This can force them to find new roost sites, which can be difficult and time-consuming.</p> <p>There may be an increased risk of predation as the trail could make it easier for predators (such as dogs) to access Hen Harrier nests and breeding territories.</p>
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### 3.3. Potential Impacts

The proposed work involves the excavation of soil and transport and compaction of aggregates for pathway development. It will also involve the construction of boardwalks in some areas. Plant machinery will be used during construction, which will result in noise pollution in the area. Construction equipment, such as excavators and trucks, generate significant noise. Construction workers can also generate noise from talking, shouting, and using tools. Pile driving to support boardwalks can produce very loud noise, up to 120 decibels or more. These processes can negatively impact Hen Harrier for which both sites are designated.

Potential impacts have been identified during the AA screening process:

1. **Disturbance to breeding sites:** The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets which relate to population demographics (i.e. population size, productivity rate) and the spatial utilisation of the SPA by breeding pairs. Factors such as intensity, frequency, timing and duration of a potentially disturbing activity need to be taken into account to determine its significance on breeding Hen Harrier in the SPA. Restrictions are needed to prevent significant impacts. A review of Hen Harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock *et al.* 2007).
2. **Spatial utilisation by breeding pairs:** Optimal resilience depends on breeding pairs utilising the SPA to the maximum extent possible. The spatial distribution of breeding pairs is expressed by the proportion of the SPA being used by them. Breeding pairs predominantly use the area within 5km of their nest site or centre of territory, though they can travel further (e.g. Irwin *et al.*, 2012; Arroyo *et al.*, 2014). Thus, the core area used by confirmed pairs can be broadly and generically estimated by calculating the portion that lies within 5km of all recorded nest sites. Ideally, the breeding population should be well dispersed around the SPA. Hen Harriers may avoid the trail and the surrounding area during construction due to the noise, disturbance, and visual impact of the construction. This could reduce the amount of habitat available to Hen Harrier and could make it more difficult for them to find food and mates.
3. **Disturbance to roosting sites:** Although Hen Harrier communal roosts are predominately used between dusk and dawn, they are known to be used infrequently during daylight hours. As such there is a possibility for disturbance during the construction and operation of the trail.
4. **Increased risk of predation:** there may be an increased risk of predation as the trail could make it easier for predators (such as dogs) to access Hen Harrier nests and breeding territories.



### 3.4 Consultation

For consultation, the following statutory bodies were approached for comment/screening opinion, and the information provided will be used to inform the assessment:

- Department of Agriculture, Environment and Rural Affairs (Environment, Marine & Fisheries Group & NIEA). The response received can be found in Appendix A.

3.4.2. The following non-statutory bodies were also consulted as to the content and results of the HRA process as they have a specialist knowledge of and interest in the species and habitats forming the subject of this assessment:

- Royal Society for the Protection of Birds (RSPB);
- Raptor Ireland Study Group.
- Ulster Wildlife Trust

## 4. Schedule of Mitigation

Tables 1 & 2 examine the species and conservation objectives for which the SPAs have been given their designation. They consider whether impacts to any of these habitats or species are likely due to the proposed works.

### 4.1 Description of Possible Impacts

A description of potential impacts associated with this proposed development is given in Tables 1 & 2. The nature of the potential impacts is discussed below.

The Hen Harrier is a ground nesting bird adapted to open moorland and marginal grassland habitats. The traditional nesting habitat of Hen Harrier across Britain and Ireland has been predominantly Heather. Nest site selection for birds is chiefly associated with safety, shelter and proximity to food resources. Harriers will sometimes nest in rides (typically in heather) between plantation blocks or in lacunas within mature plantations where there is a suitable dense growth of mature heather or scrub (Ruddock *et al.*, 2012). Wilson *et al.* (2009) noted that Hen Harriers in Ireland show a preference for nesting in pre-thicket forest habitats.

Hen Harriers breed from April to June and given the heather dominated landscape surrounding the trail, impacts to foraging Hen Harriers during this season are possible. Observations of foraging behaviour (Madders, 2003a; O'Donoghue, 2012) and pellet analysis of breeding pairs, including those in forested landscapes, show that Hen Harriers also use open heath, scrub and farmland habitats for foraging during the breeding season (O'Donoghue, 2010). Although differences between surveys and analyses exist, it can be broadly stated for non-forested habitats within the Hen Harrier breeding range that heath bog, low intensity farmed grassland with well-established hedgerows and areas of scrub are the main habitats used by foraging Hen Harriers (Irwin *et al.*, 2012, O'Donoghue, 2012).

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Construction during the nesting seasons could disturb birds at the nest. Disturbance during construction may discourage flight activity or foraging in the vicinity of the Proposed Development which may negatively impact productivity rates. The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets which relate to population demographics (i.e. population size, productivity rate) and the spatial utilisation of the SPA by breeding pairs. Factors such as intensity, frequency, timing and duration of a potentially disturbing activity need to be taken into account to determine its significance on breeding Hen Harrier in the SPA.

Hen Harriers use communal roost sites during the winter months. These roosts can be located in a variety of habitats, such as reedbeds, heather moorland, and young coniferous plantations. Roost sites are important for Hen Harriers as they provide shelter from the elements and a safe place to rest. They generally roost in rank ground vegetation (Clarke and Watson 1997). In Ireland, suitable roosting habitat is typically restricted to dense vegetation, such as heather, dense rushes (*Juncus spp.*) or young commercially planted conifers. Although this species breeds in upland areas, wintering birds disperse widely and can frequently be found in lowland areas of the midlands of Ireland. As the project is aiming to be a Dark Skies initiative, there will be no lighting included with the trails. As such there is a very low possibility of walkers using trails between dawn and dusk, which are the hours when the most disturbance is predicted.

A study by Caravaggi *et al.*, 2020 showed that recreational activities impact Hen Harrier nesting sites. Systematic reviews have demonstrated that recreational activities can negatively impact breeding birds (e.g. Steven *et al.* 2011; Larson *et al.* 2016) including above-ground foragers (Bötsch *et al.* 2017) and upland species such as Golden Plovers *Pluvialis apricarius* (Finney *et al.* 2005). Thus, there exists the potential for disturbance of prospecting Hen Harriers early in the breeding season and/or foraging Hen Harriers once territories have been established. The proposed new build routes are in areas which already experience some level of disturbance. The building of the routes will result in a moderate increase in disturbance within the new build areas. The establishment of boardwalks can have positive impacts, preventing recreational users from walking cross-country and disturbing ground nesting birds. A review of Hen Harrier disturbance at nest sites suggests that disturbance can occur up to 500m from a nest site (Ruddock *et al.* 2007). Although no such distances have been suggested for disturbance at roost sites, it is known that human activities can cause abandonment of Hen Harrier roost sites (Clarke and Watson 1990).

The in-combination impacts are those that result from the combined effect of the proposed trail and other activities or developments in the area. In the case of a trail in an SPA, the in-combination impacts predicted are increased risk of predation as the trail could make it easier for predators to access Hen Harrier nests and breeding territories (e.g., dogs).

## 4.2 Mitigation

A review of the elements of the proposed works indicates that there is a potential for impacts to qualifying interests of the SPAs if appropriate mitigation measures are not undertaken. In the absence of mitigation through design or otherwise, there is a risk of the proposed routes resulting in

disturbance and displacement of Hen Harrier. Mitigation measures designed to ensure compliance with the Habitats Directive Article 6 requirements are given below. These will include restrictions on working periods, the addition of screening, and possible re-design of routes, some of which will be informed by further breeding and roosting surveys for Hen Harrier.

**Table 3. Summary of Possible Impacts and Mitigation (Hen Harrier)**

Potential Impact	Mitigation
Disturbance to nest sites and foraging grounds during breeding seasons.	<p>No works will be carried out during breeding season (April to mid-July) along route 14 (Fardross Glen Arc). This includes the clearance of vegetation and any plant in and around proposed new build trails.</p> <p>Breeding Hen Harrier surveys will be completed prior to the development of this trail. If there is the possibility of impact to breeding Hen Harrier due to trail construction, routes will be re-designed to prevent impacts.</p> <p>Bird hides and additional screening will be added to sections of the trail along the arc which overlook the SAC to reduce impacts during trail operation and optimum Hen Harrier nesting locations. These shall be designed in consultation with an ecologist and RSPB NI to ensure all impacts are minimised.</p>
Disturbance to roosting sites	<p>Any construction works, vehicular traffic, or other activity shall be confined to the period 08:00 to 18:00 Monday to Friday along all routes.</p> <p>Construction along route 14 (Fardross Glen Arc) may potentially cause impacts to roosting Hen Harrier if nests are identified. Additionally, further surveys are needed to determine the proximity of roosting areas to the proposed route 15. <b>These surveys will inform mitigation measures, which may include re-design or limitations on construction along the current route trajectory during the roosting season, if roosts are found to be too close to the project.</b></p>
Disturbance during other times	<p>The on-site Ecological Clerk of Works shall be a trained ornithologist who will regularly ensure no significant disturbance of Hen Harrier in the surrounding habitat. They will have the power to stop works if disturbance is predicted. This will allow the identification of any problems early on and to take corrective action.</p> <p>To reduce the level of disturbance to fauna, construction activities will be restricted to between 08:00 and 18:00.</p> <p>Construction areas will be cordoned off and workers will be briefed on the importance of not wandering outside designated zones. The movement of any plant will be controlled, ensuring that they will not encroach onto habitats beyond the proposed development footprint.</p> <p>All on-site construction workers will receive ToolBox talks on the sensitivities of Hen Harrier in the area.</p>

<p>Increased predation of nest sites by dogs</p>	<p>Signposts urging walkers to keep dogs on leads will help to mitigate any impacts to ground nesting birds. These signposts should not be limited to requests to keep dogs on leads and for users to stick to the trail, but should also contain information on the sensitivity of the area. They should detail the susceptibility of Hen Harrier and other ground nesting birds to disturbance, including information on seasons in which they are particularly vulnerable. Additionally, signposts which evoke a sense of stewardship and responsibility in trail users will help prevent impacts.</p> <p>Any information promoting the trails will contain paragraphs on the significance of the impact dogs can have on ground nesting birds in the area, including any online materials or associated websites.</p>
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## 5. Conclusion

This Stage 2 appraisal for HRA has considered the potential of the new trail development to give rise to adverse effects on the integrity of European sites, within both Northern Ireland (UK National Sites) and the relevant areas of the Republic of Ireland (Natura 2000 Sites), with regard to their qualifying interests, associated conservation status and the overall site integrity, alone and in combination with other relevant plans and programmes.

In considering the potential for adverse effects, it has been noted that the proposed development would have impacts on qualifying interests in the absence of mitigation. To date no roosting or breeding surveys have been carried out for Hen Harrier. In light of this, and where necessary, a precautionary approach has been adopted in the Stage 2 appraisal to ensure that the measures proposed with respect to development of the trail, where necessary, have been adequately assessed.

As such, the development will not adversely affect the integrity of any European Site, either alone or in combination with other relevant plans or programmes, and subject to securing the mitigation prescribed above, which largely relates to restrictions in working times and having a trained ornithologist on site as an Ecological of Works during construction.

In light of the conclusions of the assessment contained in this Stage 2 appraisal for HRA, the authors are of the view that the development alone, or in combination with other plans and programmes, will not adversely affect the integrity of any European site, subject to the appropriate implementation of the prescribed mitigation measures. Accordingly, and in light of the conclusions of the assessment contained here, the competent authority is enabled to ascertain that the development of the trails, alone or in combination with other relevant plans and programmes, will not adversely affect the integrity of any European site.

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## References

- Arroyo, B.; Leckie, F.; Amar, A.; Cluskie, A; Redpath, S. (2014). Ranging behaviour of hen harriers breeding in special protection areas in Scotland. *Bird Study*, 61:1, 48-55.
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal 2nd Edition. The Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins, J. ed. (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition). The Bat Conservation Trust. London. ISBN – 13 978-1-87-2745-96-1
- Curtis, T.G.F. and MacGough, H.N., 1988. *The Irish red data book*. Wildlife Service Ireland.
- Cutts, N., Phelps, A. and Burdon, D. (2009). *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*. Report to Huber INCA. Institute of Estuarine and Coastal Studies, University of Hull.
- EPA (2015b). The EPA's Draft Revised Guidelines on Information to be Contained in Environmental Impact Statements.
- European Commission (2007) Interpretation manual of European Union habitats – EUR27.
- European Commission DE (2021). Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.
- Finney, S.K., Pearce-Higgins, J.W. & Yalden, D.W. 2005. The effect of recreational disturbance on an upland breeding bird, the golden plover *Pluvialis apricaria*. *Biol. Conserv.* 390 121: 53–63
- Gilbert, G, Stanbury, A and Lewis L (2021) Birds of Conservation Concern in Ireland 2020-2026. *Irish Birds*, 9: 523–544.
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Available online at <https://www.fisheriesireland.ie/documents/624-guidelines-on>
- Invasive Species Ireland (2012). Horticulture Code of Good Practice To Prevent the Introduction and Spread of Invasive Non-native Species. Written by John Kelly March 2012. Available online at EnviroCentre Report ([invasivespeciesireland.com](http://invasivespeciesireland.com)) [Accessed 21/03/2022].
- Invasive Species Ireland (2008). Best Practice Management Guidelines: Giant Hogweed *Heracleum mantegazzianum*.
- Irwin, S., Wilson, W., O'Donoghue, B., O'Mahony, B., Kelly, T., O'Halloran, J. (2012). Optimum scenarios for Hen Harrier Conservation in Ireland; Final Report 2012. Prepared for the Department of Agriculture, Food and the Marine by the School of Biological, Earth and Environmental Sciences, University College Cork.
- Joint Nature Conservation Committee (JNCC) (2010) .Handbook for Phase 1 Habitat Survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough (UK).
- Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Larson, C.L., Reed, S.E., Merenlander, A.M. & Crooks, K.R. 2016. Effects of recreation on animals revealed as widespread through a global systematic review. *PLOS ONE* 11(12), p. 423 e0167259.
- NPWS (National Parks and Wildlife Service) (2015). Hen Harrier Conservation and the Forestry Sector in Ireland. Date 31/03/2015 Version 3.2.
- Lewis, L. J., Coombes, D., Burke, B., O'Halloran, J., Walsh, A., Tierney, T. D. & Cummins, S. (2019) Countryside Bird Survey: Status and trends of common and widespread breeding birds 1998-



- 
2016. Irish Wildlife Manuals, No. 115. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
- Lysaght, L. and Marnell, F. (Eds) (2016) *Atlas of Mammals in Ireland 2010 – 2015*, National Biodiversity Data Centre, Waterford.
- Madders, M. 2003b. A model of Hen Harrier ranging behaviour. In *Birds of prey in a changing environment* (Eds D. B. A. Thompson, S. Redpath, A. H. Fielding, M. Marquiss and C. A. Galbraith). The Stationery Office, Edinburgh
- National Roads Authority (2009). *Guidelines For The Assessment Of Ecological Impacts Of National Road Schemes*. NRA, Dublin.
- National Roads Authority (2005). *Guidelines for the Treatment of Bats Prior to the Construction of National Roads Schemes*. NRA, Dublin
- NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Road Schemes*. National Roads Authority (now Transport Infrastructure Ireland) Dublin.
- O'Donoghue, B. G. (2010). *The Ecology and Conservation of Hen Harriers (Circus cyaneus) in Ireland*. PhD Thesis submitted to University College Cork.
- O'Donoghue, B. G. (2012). Duhallow Hen Harriers *Circus cyaneus* - from stronghold to just holding on. *Irish Birds* 9: 349-356
- O'Neill, F.H., Marten, J.R., Devaney, F.M. & Perrin, P.M. (2013). The Irish semi-natural grasslands survey 2007-2012. *Irish Wildlife Manuals*, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland
- O'Neill, F.H., Marten, J.R., Devaney, F.M. & Perrin, P.M. (2013). The Irish semi-natural grasslands survey 2007-2012. *Irish Wildlife Manuals*, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland
- Ruhlen, T.D., Abbott, S., Stenzel, L.E. & Page, G.W. 2003. Evidence that human disturbance reduces Snowy Plover chick survival. *J. Field Ornithol.* 74: 300–304
- Steven, R., Pickering, C. & Castley, J.G. 2011. A review of the impacts of nature based recreation on birds. *J. Env. Manage.* 92: 2287–2294.
- White, C.M. & Thurow, T.L. 1985. Reproduction of Ferruginous Hawks exposed to controlled disturbance. *Condor* 87: 14–22
- Smith, G. F., O'Donoghue, P., O'Hora, K., & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council, Kilkenny.
- Thom, T., Hanlon, A., Lindsay, R., Richards, J., Stoneman, R. and Brooks, S. (2019). *Conserving bogs: The management handbook*, second Ed. IUCN UK Peatland Programme. Ruddock, M. & Dunlop, B.J., O'Toole, L., Mee, A., Nagle, T. (2012) *Republic of Ireland National Hen Harrier Survey 2010*. *Irish Wildlife Manual*, No. 59. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland
- Wilson, M.W., Irwin, S., Norriss, D.W., Newton, S.F., Collins, K., Kelly, T.C. & O'Halloran, J. (2009). The importance of pre-thicket conifer plantations for nesting Hen Harriers *Circus cyaneus* in Ireland. *Ibis* 151: 332-343
- Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016). *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

## Appendix A: Consultation response

**Environment, Marine & Fisheries Group  
& NIEA**



Your reference:  
Our reference: AE1-23-6334

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16 October 2023

Telephone: 028 9058 9604  
Email: [planningresponse.team@daera-ni.gov.uk](mailto:planningresponse.team@daera-ni.gov.uk)

Dear Sirs,

### **Slieve Beagh Tourism Project**

I refer to your email of 18 September 2023 regarding the above and request for comments.

We are pleased to provide comments and advice on the key environmental considerations for the Environment, Marine & Fisheries Group within DAERA.

For your convenience we have provided our comments under the following topic heading:

- Natural Environment Division
- Water Management Unit

If you wish to discuss anything raised in our response, please do not hesitate to contact the Planning Response Team using the contact details above.

Kind regards,

Planning Response Team

*Sustainability at the heart of a living, working, active landscape valued by everyone.*

If you are deaf or have a hearing difficulty you can contact the Department via the Next Generation Text Relay Service by dialling 18001 + telephone number.



#### Natural Environment Division

**Date of NED response:** 13 October 2023

NIEA Natural Environment Division (NED) acknowledge receipt of the notification from Flynn Furney who have been employed by Outdoor Recreation NI (ORNI) on behalf of Monaghan County Council, Fermanagh and Omagh County Council and Mid Ulster District Council to carry out an Ecological Impact Assessment and Appropriate Assessment Screening as part of a wider feasibility study that aims to examine the impacts of establishing new routes at a number of locations on Slieve Beagh mountain.

The proposed routes are divided into 4 sections:

- Section 1 Favour Royal: 3 routes, all within Northern Ireland
  - Route 1 links up into the south of Favour Royal Site of Local Nature Conservation Interest (SLNCI) (woodland, grassland, heronry).
- Section 2 Eshbrack: 7 routes, none in Northern Ireland
- Section 3 Lough Corry/Carnmore: 3 routes, all in Northern Ireland:
  - All within Slieve Beagh - Mullaghfad - Lisnaskea Special Protection Area (SPA), designated for Hen Harrier
  - Routes 11 & 12 link to Carnmore Area of Special Scientific Interest (ASSI), designated for Carboniferous stratigraphy
  - Route 13 links to the south of Lough Corry ASSI, designated for Oligotrophic lakes
- Section 4 Kill/Slatbeg/Fardross Mountain: 4 routes, all in Northern Ireland:
  - Routes 14, 15 & 17 within Slieve Beagh - Mullaghfad - Lisnaskea SPA, designated for Hen Harrier

NED consider it likely that the application site may contain species protected by the Habitats Directive or the Wildlife (Northern Ireland) Order 1985 (as amended).

Please note that this is a desk-based response.

#### Considerations

From a desktop assessment, using GIS and aerial photography, NED considers that there is a potential for protected/priority species and habitats to be impacted by the proposed development. NED would therefore recommend that the applicant completes a Biodiversity Checklist and Preliminary Ecological Assessment and submits these along with any ecological surveys identified as being required along with a subsequent application.

#### Mitigation Measures

NED considers that the proposal has the potential to result in environmental impacts on designated sites and other natural heritage interests. However, appropriate mitigation and ecological surveys can be incorporated into development works to negate for potentially significant impacts that may arise in respect of protected/priority species and habitats.

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A description of the measures proposed to prevent, reduce or offset any significant adverse effects on the environment caused by the development must be included in an Environmental Statement. These measures can be summarised as:

- **Avoidance:** Priority should be given to avoiding negative impacts, especially those that could be significant. Consideration should be given to alternative strategies or locations, changes to the project design and layout, changes to methods and processes, changes to implementation plans and management practices including regulating the timing of activities.
- **Mitigation:** Opportunities should be sought, wherever possible, to reduce negative impacts on the environment, ideally to the point where they are no longer significant.
- **Compensation:** Where avoidance or mitigation of negative impacts is not practicable measures to compensate for impacts should be proposed.
- **Enhancement:** Opportunities should be sought in every new development to deliver net ecological gain rather than just limiting environmental damage. Enhancement measures may lead to an increase in the biodiversity of a site.

Mitigation measures should be incorporated into the design of a project from the outset and included on plans and drawings where appropriate. Mitigation which simply comprises a list of recommendations will generally not be acceptable.

#### Further guidance

NIEA have developed a range of standing advice and a biodiversity checklist that would assist with the consideration of potential impacts of planning proposals on natural heritage interests:

- The NI Biodiversity Checklist (<https://www.daera-ni.gov.uk/articles/biodiversity-checklist>) should be used to establish if any ecological surveys are required for a complete application
- NIEA Standing Advice can be found at: <https://www.daera-ni.gov.uk/publications/standing-advice-development-land-may-affect-natural-heritage-interests>
- NED survey specifications and other planning related advice can be found at: <https://www.daera-ni.gov.uk/articles/site-surveys>

In relation to this particular application, standing advice recommended for review would include:

- DAERA Standing Advice – NED – Bats
- DAERA Standing Advice – NED – Otters
- DAERA Standing Advice – NED – Badgers
- DAERA Standing Advice – NED – The Common Lizard
- DAERA Standing Advice – NED – Smooth Newt
- DAERA Standing Advice – NED – Wild Birds
- DAERA Standing Advice – NED – Priority Species
- DAERA Standing Advice – NED – Priority Habitats
- DAERA Standing Advice – NED – Invasive Alien Plant Species

NED recommends that all survey works comply with British Standard 42020:2013, which came into effect on 31 August 2013. The British Standard provides recommendations and guidance for those



#### Natural Environment Division

engaged in planning and development, whose work might affect or have implications for conservation, or the enhancement of biodiversity.

The DAERA website <https://www.daera-ni.gov.uk/> includes:

- Details of all regional, national and international designated sites in Northern Ireland
- Northern Ireland Biodiversity Strategy
- Northern Ireland Habitat and Species Action Plans
- Areas of Outstanding Natural Beauty
- Landscape Character Areas
- Environmental Legislation

Information on the flora, fauna and geology of Northern Ireland can be obtained from the Habitas website: <http://www.habitas.org.uk/>

Site specific environmental data (e.g. species records) can be obtained from the Centre for Environmental Data and Recording (CEDaR). These can be accessed by contacting CEDaR, National Museums NI, 153 Bangor Road, Cultra, Holywood, BT18 0EU. Website: <https://www.nationalmuseumsni.org/cedar>. NED promotes the submission of biodiversity data to CEDaR, and recommends that species records generated as part of the EIA process are submitted to CEDaR.



## **Water Management Unit**

**Section Reference:** WMU/PC/ 35593-1

### **Baseline**

Water quality baseline information can be obtained from NIEA's online information request web viewer:

<https://www.daera-ni.gov.uk/articles/information-requests>

### **Key environmental considerations**

Refer to:

- DAERA Standing Advice Pre-Application Discussion Advice:

**All DAERA Standing advice referred to in this response unless otherwise stated can be found at the following link [www.daera-ni.gov.uk/water-environment-standingadvice](http://www.daera-ni.gov.uk/water-environment-standingadvice)**

### **Environmental information required**

At this stage of a development there is limited information about the circumstances, scope and nature of the project and therefore Water Management Unit can only provide 'general' advice.

Water Management Unit would direct the attention of the applicant / agent to all the Agency's DAERA Standing Advice guidance documents.

The following DAERA Standing Advice will be particularly relevant to this application:

- DAERA Standing Advice Pollution Prevention Guidance
- DAERA Standing Advice Discharges to the Water Environment

### **Further guidance**

Water Management Unit would request that any future application clearly demonstrate the following:

- How foul sewage will be disposed of from any welfare facilities during the construction phase.
- How surface water will be disposed of both during the construction and operational phases.
- Clear details of any proposed works in, near or liable to affect a waterway\* including whether or not it is culverted
- The application should clearly demonstrate compliance with all the relevant precepts contained in DAERA Standing Advice Pollution Prevention Guidance. Consideration should be given as to how it is proposed to prevent suspended solids / cement or grout / fuel entering the aquatic environment during the construction phase.

\*The applicant should note the definition of a 'waterway' as defined under the NI Water Order:

"Waterway" includes any river, stream, watercourse, inland water (whether natural or artificial) or tidal waters and any channel or passage of whatever kind (whether natural or artificial) through which water flows

In this Order any reference to a waterway includes a reference to the channel or bed of a waterway which is for the time being dry.

The risks from certain activities to the aquatic environment are greater than others and all proposed mitigation must be proportionate and commensurate to that risk.

After scoping each of the proposal against all the relevant DAERA Standing advice should the applicant require specific advice then Water Management Unit will be happy to provide comment at that stage.

The applicant should be informed that it is an offence under the Water (Northern Ireland) Order 1999 to discharge or deposit, whether knowingly or otherwise, any poisonous, noxious or polluting matter so that it enters a waterway or water in any underground strata. Conviction of such an offence may incur a fine of up to £20,000 and / or three months imprisonment.

The applicant should ensure that measures are in place to prevent pollution of surface or groundwater as a result of the activities on site, both during construction and thereafter.



# PRELIMINARY ECOLOGICAL APPRAISAL

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Sliabh Beagh Eco-Tourism Project,  
Mid-Ulster District Council

**Version 2**

Prepared By:	Ellen Irwin & Louise Mac Elwain
Reviewed by (if applicable):	Jennifer Mc Aree
Commissioned by:	ORNI
Reference number:	NA
Date of submission:	01/11/2023

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## 1. Introduction

### 1.1. Background & Scope

This Preliminary Ecological Appraisal (PEA) report was prepared for the proposed development of the new build route sections of Sliabh Beagh in the Mid Ulster District Council area (MUDC). The proposed development is an element of the Sliabh Beagh Eco-Tourism Project, which aims to identify opportunities to help develop the Sliabh Beagh area as an eco-tourism destination. The report provides a summary of the ecological survey undertaken in August and September 2023 and several recommendations on reducing potential impacts upon the local ecology.

This PEA report serves as a general baseline of the current status of the local ecology and provides an outline that can inform the design phase of the project. An Appropriate Assessment (AA) screening report, which assesses impacts upon European Protected Sites, has also been requested.

### 1.2. Site Context & Description

Sliabh Beagh is a 250-square-mile mountainous area straddling the national borders of the Republic of Ireland and Northern Ireland. It is known for its natural beauty and biodiversity, with rolling blanket bog, moorlands, expansive woodland, and tranquil lakes.

Some of the proposed project runs within the Slieve Beagh – Mullaghfad - Lisnaskea SPA which comprises a single land unit extending between Slatbeg in the north-east and Coolnasillagh in the south-west and incorporating the Slieve Beagh massif, Mullaghfad Forest and Lisnaskea Forest. Slightly more than half the eastern boundary is formed by the border with the Republic of Ireland which encompasses the Republic of Ireland (RoI) Sliabh Beagh SPA.

Other protected sites in close proximity to the new build routes include Sliabh Beagh SAC (NI) and Sliabh Beagh RAMSAR site.

### 1.3. Proposed Works

The potential development (PD) will consist of a total of six new build route sections across the MUDC area of Sliabh Beagh. These will be compacted aggregate paths.

## 2. Methodology

The process for this PEA is based on the CIEEM 2017 Guidance on the preparation of PEA reports.

### 2.1. Desk Based Studies

A desktop study was carried out to gain an understanding of the surrounding human and natural environments. This included a review of available data on the site and its immediate environs. The following sources of information were accessed:

- The National Parks and Wildlife Service (NPWS) - up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment;
- The National Biodiversity Data Centre (NBDC) website - species recordings and distributions;
- The EPA Envision and Catchments websites - data watercourses in the vicinity of the Site;
- The Geological Survey of Ireland - data on groundwater flows.

This assessment was carried out using the source-pathway-receptor (SPR) approach, a standard tool in ecological impact assessment, which proposes the idea that for the risk of an impact to occur, a source is needed; an environmental receptor is present; and finally there must be a pathway between the source and the receptor. Even though there might be a risk of an impact occurring, it does not necessarily mean that it will occur, and in the event that it does occur, it may not have significant effects on the receiving environment. Identification of a risk means that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the receptor.

When it comes to species records from the NBDC, they are only an indication of the distribution of species, not a guarantee that one species is or is not present in a given area. Absence of evidence is not evidence of absence.

## 2.2 Field Based Assessment

Field surveys were carried out on the 29th, 30th and 31st of August 2023. Baseline ecological conditions were assessed. Habitats were classified according to dominant plant species (Fossitt, 2000), (JNCC, 2010) with reference where applicable, to best practice guidance for habitat survey and mapping (Smith *et al.*, 2011) and the Census Catalogue of The Flora Of Ireland (Scannell & Synnott, 1987).

## 3. Desk Study Results

### 3.1. Statutory Protected Sites

#### Favour Royale Link

Areas where routes 1, 2 and 3 at Favour Royale Forest and the River Blackwater are proposed do not overlap with protected sites.

#### Fardross Arc

The area where route 14 at Fardross Glen Arc is planned, overlaps with the Slieve Beagh Mullaghfad-Lisnaskea SPA and is adjacent to a Slieve Beagh RAMSAR, Slieve Beagh ASSI and Slieve Beagh SAC.

#### Fardross Glen Equestrian Loop (Sections 1,2 and 3)

The proposed area of routes 15 & 17 at Fardross Glen Forestry, overlaps with the Slieve Beagh Mullaghfad-Lisnaskea SPA.

#### Fardross Glen Equestrian Loop (Section 4)

The proposed route 16 also overlaps with the Slieve Beagh Mullaghfad-Lisnaskea SPA.

### 3.2. Surface And Groundwater

The nearest watercourse is the River Blackwater which is crossed by proposed trail route 1 at Favour Royal Forest. The River Blackwater represents a large, deep, fast flowing river. This watercourse contains valuable fisheries habitat and supports stocks of brown trout among other species. The WFD Ecological status of this waterbody is Good.

Groundwater is the water that soaks into the ground from rain, or is fed by underground springs, and is important for both any related aquatic habitats and as a supply of human drinking water and therefore needs to be protected. It is mainly protected by layers of subsoils, sands or peats, of varying depths. Therefore, knowing how easy it is for rainwater (which may contain pollutants) to soak down through the subsoils is important for assessing the potential for contamination.

The vulnerability category given to a site or an area is based on how easy it is for water which may contain pollutants to reach the groundwater. Subsoil depth, type and permeability data are combined to work out the groundwater vulnerability at any given location.

The local groundwater vulnerability varies across Sliabh Beagh. Predominantly the groundwater vulnerability is considered extreme, meaning that any pollution generated on the surface is very likely to percolate down into the groundwater, either remaining there or slowly making its way to the sea.

## 4. Field Survey Results

### 4.1. Habitats & Flora

Tables in this section describe the main habitat types present along the routes with their habitat codes (Fossitt 2000). Where relevant, links to European Annex I habitats (those for whom SACs are designated) are detailed.

#### 4.1.2. Favour Royal Link and Burke's Waterfall

Favour Royal Forest is mainly made up of coniferous forest blocks that lie close to the main Augher and Aughnacloy roads. The Ulster Way passes through this forest and there are several other waymarked trails. The proposed trail route passes through broadleaf woodland and crosses the River Blackwater. It also passes through sections of dense conifer forestry. Habitats are described below.

Table 1: Natural and semi-natural habitats around/within Route 1,2 & 3.

Habitat	Code	Description
Oak-Ash-Hazel woodland	WN2	This woodland has a high percentage of Pedunculate Oak <i>Quercus robur</i> and Hazel <i>Corylus avellana</i> . With interspersed Ash <i>Fraxinus excelsior</i> and Holly <i>Ilex aquifolium</i> and Ivy <i>Hedera helix</i> . Ground flora consisted of Wood Anemone <i>Anemone nemorosa</i> , Bluebell <i>Hyacinthoides non-scriptus</i> , Wood Avens <i>Geum urbanum</i> , Sanicle <i>Sanicula europaea</i> , Early Dog-violet <i>Viola reichenbachiana</i> , Lords and Ladies <i>Arum maculatum</i> , Wood Speedwell <i>Veronica montana</i> , and ferns ( <i>Dryopteris filix-mas</i> , <i>Polystichum setiferum</i> , <i>Asplenium scolopendrium</i> , <i>Athyrium filix-femina</i> .)
Wet-Willow-Alder-Ash	WN6	This category denotes the damp woodland type on site which is dominated by Birch <i>Betula spp.</i> , with occasional Willow <i>Salix spp.</i> and Hazel <i>Corylus avellana</i> . Oak <i>Quercus spp.</i> can also be found rarely. This represents a planted broadleaf woodland and trees are of uniform spacing and age. The ground flora is typical of a damp broadleaf woodland with abundant ferns (Broad Buckler-fern <i>Dryopteris dilatate</i> , Soft Shield-fern <i>Polystichum setiferum</i> , Hart's-tongue <i>Asplenium scolopendrum</i> ), Remote sedge <i>Carex remota</i> and Wood-sorrel <i>Oxalis acetosella</i> . Other frequent herbs were Opposite-Leaved golden-saxifrage <i>Chrysosplenium oppositifolium</i> , Herb-robert <i>Geranium robertianum</i> , Wood Avens <i>Geum urbanum</i> , Sanicle <i>Sanicula europaea</i> , Wood Speedwell <i>Veronica montana</i> and Wild angelica <i>Angelica sylvestris</i> .

		Himalayan/Indian balsam <i>Impatiens glandulifera</i> was found in large stands nearer to the riverbed. Himalayan balsam is listed as an Invasive Alien Species of Union Concern in European legislation, and cannot be sold, exchanged, cultivated or released into the environment. Under Article 19 of Invasive Alien Species Regulation (1143/2014) Himalayan balsam has been identified as a Widely Spread Species in Northern Ireland and as such, management measures will be put in place to minimise its impacts. Current legislation states that this species must not be permitted to reproduce, grown or cultivated; or released into the environment. The presence of <i>I. glandulifera</i> in the Blackwater Catchment is well documented. It was targeted through Action C10 of The IRD Duhallow LIFE Project (2015). However, its presence is still prolific on the stretch of the river within the study area.
Eroding Upland River	FW1	The River Blackwater represents a large, deep, fast-flowing river. The bed is characterised by exposed bedrock and loose rock. Pebbles, gravel and coarse sand have accumulated in places, but finer sediments are rarely deposited due to the fast flow. It is deeply cut with high banks. Himalayan balsam is abundant along the bank stretches. A lack of deep rooting bank vegetation on the northern side of the river has resulted in bank erosion and collapse in places.
Conifer Plantation	WD4	These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed. This blocks out much of the light reaching the ground and leads to a reduced diversity of ground flora. Sitka Spruce <i>Picea sitchensis</i> and Lodgepole Pines <i>Pinus contorta</i> were the main planted species.
Old Stone Wall	BL1	This old stone wall is important for wildlife. It supports a diverse flora with abundant lichens, mosses and ferns ( <i>Asplenium trichomanes</i> and <i>A. ruta-muraria</i> ). Other common components are stonecrops <i>Sedum spp.</i> , Herb-robert <i>Geranium robertianum</i> and Navelwort <i>Umbilicus rupestris</i> . Dry stone walls are great habitat for lizards and a variety of insects.
Improved/Wet Grassland	GA1/ GS4	This is grassland which has been reseeded for agriculture with an abundance of perennial Rye grass <i>Lolium spp.</i> and is species poor. The presence of reed ( <i>Juncus spp.</i> ) indicates wetter soils in areas. However, the site lacks the species diversity of a typical wet grassland.

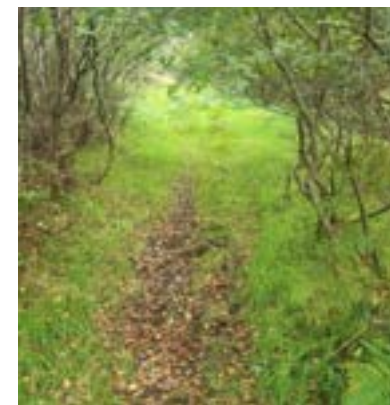
#### 4.1.3. Fardross Arc



Table 2 lists and describes the main habitat types present at Fardross Arc along with their habitat codes (Fossitt 2000). Where relevant, links to European Annex I habitats (those for whom SACs are designated) are detailed.



Table 2: Natural and semi-natural habitats around within Route 14.

Habitat	Code	Description
Wet Grassland/ Wet heath trail	GS4/H H3	<p>The route trajectory follows a dirt trail which is currently being used and kept open by grazing cattle. Ground flora were mostly typical of wet grasslands and contained Lesser spearwort <i>Ranunculus flammula</i>, Tormentil <i>Potentilla erecta</i>, Wild angelica <i>Angelica sylvestris</i>, Creeping buttercup <i>Ranunculus repens</i> and patches of rushes such as <i>Juncus effusus</i> &amp; <i>Juncus acutiflorus</i>. Some shrubs of Hazel <i>Corylus avellana</i> and <i>Salix aurita</i> have begun to colonise the path in places.</p> <p>The less trodden areas (fringes) of this path had similar make up to a wet heath habitat. Their areas are dominated by Ling heather <i>Calluna vulgaris</i> and Cross-leaved heather <i>Erica teralix</i>. Other occasional species included Bell heather <i>Erica cinerea</i>, Heat Rush <i>Juncus squarrosus</i>, Devils-Bit scabious <i>Succisa pratensis</i>, Tormentil <i>Potentilla erecta</i> and Hard Fern <i>Blechnum spicant</i>. Some sections contained dense Bracken <i>Pteridium aquilinum</i> stands.</p>
Bog Woodland	WN7	<p>The woodland on site has formed over cutover type peat which is well drained in the upper layers, likely developed within the last 40 years. Downy Birch <i>Betula pebescens</i> is the dominant species, with occasional Willow <i>Salix spp.</i> and Rowan <i>Sorbus aucuparia</i>. Purple Moor Grass <i>Molinia caerulea</i> and Bilberry <i>Pteridium aquilinum</i> are frequent.</p> <p>Links with Annex 1: Annex 1 bog woodland refers to woodlands of intact raised bog. The woodland surveyed does not conform to this category.</p>
Conifer Plantation	WD4	<p>These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, blocking out much of the light reaching the ground and thus leadin to a reduced diversity of ground flora. Sitka Spruce <i>Picea sitchensis</i> and Lodgepole Pine <i>Pinus contorta</i> were the main planted species.</p>



Wet-Willow-Alder-Ash Woodland	WN6	<p>This category contributes to very wet areas that are dominated by Willow (<i>Salix spp.</i>) and Alder (<i>Alnus glutinosa</i>). Ground flora is 'grassy' in appearance with carpets of Remote sedge <i>Carex remota</i> and Creeping bent <i>Agrostis stolonifera</i>. The vegetation composition and damp soils present may be indicative of a peat flush.</p>
Upland Blanket Bog	PB2	<p>This habitat type is used for blanket bog which occurs 150 metres above sea level. These bogs are rain fed and their peat is acidic. The vegetation is characterised by the presence of ericoid shrubs and in particular Ling heather <i>Calluna vulgaris</i>, Crowberry <i>Empetrum nigrum</i> and Bilberry <i>Vaccinium myrtillus</i>. A dense layer of Sphagnum moss is present on the bryophyte layer, along with trailing Bog cranberry <i>Vaccinium oxycoccos</i> and stands of Reindeer lichen <i>Cladonia spp.</i>. Occasional herbs such as Bog asphodel <i>Narthecium ossifragum</i> and tussocks of Hare's tail Cottongrass <i>Eriophorum vaginatum</i> can be seen stretching across this bog.</p> <p>Links with Annex 1 habitats: This blanket bog is still capable of peat formation and corresponds to the priority habitat <b>blanket bog 7130</b>.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>

Wet Heath	HH3	This category has been used for areas of cutover bog where the vegetation has recolonised to a sufficient extent to be included in this category. Peat has been extracted and depth reduced. It was mostly dominated by Purple Moor Grass <i>Molina caerulea</i> with occasional Ling Heather, Bilberry and Cross-leaved heather. Devil's bit scabious, Tormentil and rushes such as Sharp-flowered rush and Heath rush were also present. Trees have begun to colonise the area, with Birch and Sitka Spruce present on occasion.
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#### 4.1.4. Fardross Glen Equestrian Loop (sections 1,2 &3)

Table 3 lists and describes the main habitat types present at routes along the Fadoss Glen equestrian loop along with their habitat code (Fossitt 2000). Where relevant, links to European Annex I habitats (those for whom SACs are designated) are detailed.

Table 3: Natural and semi-natural habitats around/within route 15 & 17

Habitat	Code	Description
Recently Felled Woodland	WS5	This designates areas of plantation that have been clear-felled but have not been replanted or converted to another land use. Common colonisers of open ground among the conifer tree stumps and brash (discarded woody material) include Rosebay Willowherb <i>Epilobium angustifolium</i> , Foxglove <i>Digitalis purpurea</i> and ferns. <i>Juncus conglomeratus</i> and <i>Juncus effusus</i> were frequent with an occasional ground cover of moss ( <i>Polytrichum spp.</i> ). Sitka spruce saplings have begun to seed and colonise areas.
Upland Blanket Bog	PB2	The vegetation is characterised by the presence of ericoid shrubs, in particular Ling heather <i>Calluna vulgaris</i> and Bilberry <i>Vaccinium myrtillus</i> . A dense layer of Sphagnum is present on the bryophyte layer and stands of Reindeer lichen <i>Cladonia spp.</i> . Occasional Bog asphodel <i>Narthecium ossifragum</i> and Cross-leaved heather can be found. Devil's-bit scabious was present in patches nearer the road.

Wet Grassland	GS4	Trail 17 runs down an old forestry track which consists of wet grassland and colonising Gorse <i>Ulex europaeus</i> and Willow <i>Salix spp.</i> . Wet grassland species include Crested dog's-tail <i>Cynosurus cristatus</i> , Square stalked St. John's Wort <i>Hypericum tetrapterum</i> , Tormentil <i>Potentilla erecta</i> , Germander speedwell <i>Veronica chamaedrys</i> and Sharp-flowered rush <i>Juncus acutiflorus</i> . Another section of wet grassland is mapped at the edge of an agricultural field but has been improved and is not species rich. It contained a dense rush cover and was very wet at the time of surveying, grading into a small section of marsh.
Conifer Plantation	WD4	These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, locking out much of the light reaching the ground and thus leading to a reduced diversity of ground flora. Sitka Spruce <i>Picea sitchensis</i> and Lodgepole Pine <i>Pinus contorta</i> were the main planted species.
Wet Heath	HH3	This habitat is found to the south of the trail. It was being grazed by cattle at the time of surveying. It is species-rich with abundant Ling Heather, Asphodel, Tormentil, Hard Rush, Sharp-flowered. It also contained patches of Reindeer lichen ( <i>Cladonia spp.</i> ).


#### 4.1.5. Fardross Glen Equestrian Loop (Section 4)

This route follows an old access lane which passes through a mixed broadleaf woodland. There is a river running through the woodland which joins up with the Fardross stream. An old stone wall runs the length of the old right of way and an old cottage is located around 30 metres north of the proposed route. A hunting tree stand and ladder was also located along the route.

Table 4 lists and describes the main habitat types present at route 16, at Fardross Glen Right of Way along with their habitat code (Fossitt 2000). Where relevant, links to European Annex I habitats (those for whom SACs are designated) are detailed.

Table 4: Natural and semi-natural habitats around/within Route 16.

Habitat	Code	Description

Grass Trail with Woodland Flora	WN2	<p>This old right of way runs along a grass trail within a woodland. Ground flora were similar to that found in a native Ash-Hazel woodland and included abundant Wood Sorrel <i>Oxalis acetosella</i>, Herb Robert <i>Geranium robertianum</i> and bent grasses <i>Agrostis spp.</i> Other abundant species include Hederia helix, Wood Anemone <i>Anemone nemorosa</i>, Wood Avens <i>Geum urbanum</i>, Sanicle <i>Sanicula europaea</i>, Early Dog-violet <i>Viola reichenbachiana</i>, Lords and Ladies <i>Arum maculatum</i>, Wood Speedwell <i>Veronica montana</i>, and a mix of ferns (<i>Dryopteris filix-mas</i>, <i>Polystichum setiferum</i>, <i>Asplenium scolopendrium</i>, <i>Athyrium filix-femina</i>). Some Willow shrubs <i>Salix spp.</i> have begun to colonise the trail in places.</p>	
Conifer Woodland	WD3	<p>These are dense stands of planted conifers for timber production. Trees planted on boggy land are prone to being blown over and so have been densely packed, blocking out much of the light reaching the ground and thus leading to a reduced diversity of ground flora. Sitka Spruce <i>Picea sitchensis</i> and Lodgepole Pines <i>Pinus contorta</i> were the main planted species.</p>	
Ash Hazel Woodland	WN2	<p>Ash <i>Fraxinus excelsior</i>, Beech <i>Fagus sylvatica</i> and Sycamore <i>Acer pseudoplatanus</i> are the main tree species in the canopy. The shrub layer is composed of Hazel <i>Corylus avellana</i> and Hawthorn <i>Crataegus monogyna</i>. Other species such as Rowan <i>Sorbus aucuparia</i> and Willow <i>Salix spp.</i> were occasional. Ground flora was similar to that as described above under the grassland trail.</p>	
Mixed Broadleaf/Conifer Woodland	WD2	<p>This is an area of woodland which has been recolonised with Pines, Willows and Birch. Ground flora includes Bilberry <i>Vaccinium myrtillus</i>, Hard Fern <i>Blechnum spicant</i>, Great Wood-rush <i>Luzula sylvatica</i> and Velvet Bent <i>Agrostis canina</i>.</p>	
Wet Grassland	GS4	<p>This grassland contains frequent rushes <i>Juncus effusus</i>, which become more abundant on the lower slopes. Grasses such as Perennial grasses <i>Lolium spp.</i>, Yorkshire-fog <i>Holcus lanatus</i>, Creeping Bent <i>Agrostis stolonifera</i> and Marsh Foxtail <i>Alopecurus geniculatus</i> are also present. Overall, the area was not overly species rich.</p>	
Old Stonework (Cottage)	BL1	<p>This designates an old stone cottage surrounded by a number of low stone walls. An old Sycamore (~160 years old) and Yew tree <i>Taxus bacatta</i> are located next to the cottage.</p>	



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Treeline	WL1	An old stone wall and treeline runs along the way, providing nice habitat for an abundance of ferns and moss. A treeline has grown from the bank and old stone wall and contains a mix of Hawthorn and Holly. Occasional Rowan and Crab apple <i>Malus sylvestris</i> also occur.
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## 4.2. Fauna

### 4.2.1. Amphibians & Lizards

Smooth Newt *Lissotriton vulgaris* and their breeding places are designated a Northern Ireland Priority Species, and are protected by law. The wetland habitat on site is highly suitable for frogs and newts and likely support populations that are of local importance (higher value). The common lizard is protected by national legislation, under which it is an offence to: Kill or injure a lizard. Specific surveys targeting the Common or Viviparous Lizard (*Zootoca vivipara* – formerly *Lacerta vivipara*) were not carried out. Suitable habitat areas for this species were recorded. Dry stone walls provide significant habitat for lizards and impacts may occur during their dismantling.

### 4.2.2. Birds

Hen Harrier Vantage Point surveys were carried out on the 6<sup>th</sup> of September 2023 by Lauren Woods and Ellen Irwin. The vantage points had been selected prior to the surveys during habitat assessments and the conditions were recorded for each vantage point before the surveys began. This included visibility, rain, wind and cloud conditions. The methodology that was used for the VP surveys was the Countryside Bird Survey (CBS) methodology. This methodology usually follows a transect but the methodology was adapted to use a vantage point instead. Each bird observation was recorded. The species of bird was recorded using the CBS bird species code list. The distance of each bird observed from the vantage point was recorded using Google Earth Pro, along with the direction of flight. Other bird species heard but not seen were also recorded. Each survey lasted two hours in total. Maps of the Vantage Point locations can be seen below. The BoCCI list is used to identify bird species that are at risk of extinction or that are in need of conservation action. The BoCCI 2020-2026 list is a joint publication by BirdWatch Ireland and RSPB Northern Ireland, and it is based on the latest data on bird populations and trends.



Figure 1: Vantage Point locations

**Results:**

The results of the survey are laid out in the table below:

Table 5: Vantage Point survey results

species Observed	Scientific Name	Description/ Activities	BOCCI Status	Sliabh Beagh SPA Codes	Location
Swallow	<i>Hirundo rustica</i>	Circled in all directions (approx. 3)	Amber		VP1
Chiffchaff	<i>Phylloscopus collybita</i>	Singing in willow trees	Green		VP1
House martin	<i>Delichon urbicum</i>	Singing in distance (not seen)	Amber		VP1
Wren	<i>Troglodytes troglodytes</i>	Calling from willow trees	Green		VP1
Chaffinch	<i>Fringilla coelebs</i>	Singing in willow trees	Green		VP1
Dunnock	<i>Prunella modularis</i>	Singing in willow trees	Green		VP1
Blue tit	<i>Cyanistes caeruleus</i>	Singing in willow trees	Green		VP1
Buzzard	<i>Buteo buteo</i>	Two buzzards circling high in the sky as they hunt from south to west of VP1 (approx. 2)	Green		VP1
Skylark	<i>Alauda arvensis</i>	Heard coming from among the heather	Amber		VP1
Wren	<i>Troglodytes troglodytes</i>	Calling from willow trees	Green		VP2
Meadow pipit	<i>Anthus pratensis</i>	Singing in the distance	Red		VP2
Chiffchaff	<i>Phylloscopus collybita</i>	Singing in willow trees	Green		VP2
Raven	<i>Corvus corax</i>	Flying above heath from west to east of VP2	Green		VP2
Swallow	<i>Hirundo rustica</i>	Circling above heath (approx. 6)	Amber		VP2
<b>Hen harrier</b>	<b><i>Circus cyaneus</i></b>	<b>Observed low flying/ hunting over heath from east to west of VP2</b>	<b>Amber</b>	<b>[A082]</b>	<b>VP2</b>
Raven	<i>Corvus corax</i>	Calling in the distance	Green		VP3
Wren	<i>Troglodytes troglodytes</i>	Heard singing in the conifer plantation	Green		VP3
Meadow pipit	<i>Anthus pratensis</i>	Observed in flight above young conifers west to east of VP3 facing NW	Red		VP3
Swallow	<i>Hirundo rustica</i>	Observed in flight above young conifers in all directions (approx. 11)	Amber		VP3
Wood pigeon	<i>Columba palumbus</i>	Observed flying from tree to tree in the conifer plantation	Green		VP3
Swallow	<i>Hirundo rustica</i>	Observed circling above young conifer plantation (approx. 7)	Amber		VP3
Long tailed tit	<i>Aegithalos caudatus</i>	Heard singing in distance	Green		VP3
Crossbill	<i>Loxia curvirostra</i>	Heard singing in distance	Green		VP3

Wren	<i>Troglodytes troglodytes</i>	Heard singing in distance	Green		VP3
Robin	<i>Erithacus rubecula</i>	Observed flying between willow trees	Green		VP3
Goldcrest	<i>Regulus regulus</i>	Heard singing in the distance	Amber		VP3
Siskin	<i>Carduelis spinus</i>	Heard singing in conifer plantation	Green		VP3
Dunnock	<i>Prunella modularis</i>	Heard singing in willow	Green		VP3
Blue Tit	<i>Cyanistes caeruleus</i>	Heard singing in willow	Green		VP3

A Hen Harrier was observed at Vantage Point 2. Its flight path can be seen below.



Figure 2: Flight path of observed Hen Harrier

## Discussion

Vantage point surveys carried out as part of this assessment can only give limited data. This is based on the fact that surveys were not carried out during the optimal period to determine Hen Harrier disturbance (breeding and nesting seasons), and only one survey per site was conducted. There are several reasons why one vantage point bird survey is not sufficient to say which birds visit a site:

1. Limited field of view: A vantage point bird survey can only cover a limited area. This means that it is possible that some birds will be present at the site but are not visible from the vantage point.
2. Bird movement: Birds are constantly moving, so it is possible that some birds will fly over or through the site without being seen from the vantage point.
3. Cryptic species: Some bird species are very good at camouflaging themselves, making them difficult to see. These species may be present at the site but might not be detected during a vantage point survey.
4. Observer error: Even experienced observers can miss birds. This is especially true in dense vegetation or in poor lighting conditions.

To get a more accurate picture of the bird species that visit a site, it is necessary to conduct multiple surveys from different vantage points and at different times of the day and year. This will help to increase the chances of detecting all of the bird species that are present at the site.

One Hen Harrier was observed at VP2. This vantage point overlooks optimum Hen Harrier habitat in Sliabh Beagh Bog (SAC, SPA, ASSI). The large heather mats across the upland blanket bog within the SAC is optimal habitat for Hen Harrier breeding and roosting.

Other habitats within the area were not deemed optimal for roosting and nesting locations.

### 3.3.3. Mammals

#### Favour Royal Link and Burke's Waterfall

No evidence of mammal species was found during surveying. The trees inside the conifer plantation are young and not suitable for dens. Disturbance to dens is not expected.

#### Fardross Glen Equestrian Loop (1,2,3)

Pine martens and Red squirrels are known to be abundant in the area. Evidence of Red squirrel and Pine martin in the area was noted. Disturbance to dens during the breeding season would have negative impacts on local populations.

#### Fardross Glen Equestrian Loop (4)

Pine martens and Red squirrels are known to be abundant in the area. Evidence of Red squirrel and Pine martin in the area was noted. Disturbance to dens during the breeding season would have negative impacts on local populations.

Otters in Northern Ireland are a European Protected Species, and are protected under The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended) (also known as the Habitat Regulations), which transposes the Habitats Directive. It is therefore an offence to deliberately capture, injure or kill an Otter. It is also an offence to deliberately disturb an Otter in any way, or to disturb, damage or destroy an Otter's breeding site or resting place, unless a licence has been obtained.

A holt is a hole in the ground which is used by an Otter for sleeping and resting. The most common type of holt is a hole leading to a cavity under the roots of a bankside tree. However, Otters are very versatile and can also form holts in log piles or cavities in rocky banks or caves. Most holts are situated on the riverbank, but some can be up to 100 m away. Female otters use natal dens which can be up to 1km from a waterbody, to give birth to cubs. Woodland and scrub are particularly important habitats for natal dens, as they provide protection from disturbance.

Evidence of Otters was noted along this route which is just under 35 metres from the river. No nesting holts were identified in the vicinity. However, an extensive search of the wider area for otter holts was not carried out.

### 3.3.4. Invertebrates

Lepidoptera: Marsh Fritillary:



Dedicated surveys for Marsh Fritillary across the study area were not carried out. However, their foodplant (Devil's-bit scabious) was noted in small patches in some areas. Other suitable habitat was associated with areas where stone material has been brought into the site for the construction of tracks and access roads.

Although some of the areas of suitable habitat are small and fragmented, the species is known to be present in the area. However, no major impact is predicted to the population given the scale of the development.

### Coleoptera and Hemiptera

*Potamonectes griseostriatus* and *Glaenocorisa propinqua* are two rare aquatic insects found in the highest lake of Slieve Beagh, Lough Sallagh, in Northern Ireland. They are found in acid oligotrophic lakes and pools, and is particularly sensitive to water quality.

Both species are rare and threatened, and they are listed as Northern Ireland Priority Species. They are threatened by a number of factors, including habitat loss and degradation, water pollution, and climate change.

Suitable habitat for these species (such as lakes and pools) was not identified in the development trail.

### 3.3.5 Bats

#### *Removal of Foraging and Roosting Habitats:*

Small sections of woodland habitat will be removed to facilitate the construction of the proposed routes and associated developments, namely patches of conifer and broadleaved woodland. It is anticipated that bat species will continue to forage in these areas following the removal of woodland vegetation. Similarly, the removal of vegetation along the remainder of the routes is not anticipated to significantly reduce available prey species for bats on account of the small loss of habitat. The construction of the development will not significantly affect foraging bats.

The removal of mature conifer trees which have the potential to host roosting bats may impact this species.

No artificial lighting is proposed as part of this development. Therefore, no impacts from lighting are predicted.

## 5. Review of Possible Impacts

### 5.1. Flora

No impacts to any protected or significant habitat or species of flora is predicted from the development of the trail. Routes will result in the removal of some sections of vegetation which can be considered moderately species rich. However, it is not anticipated to significantly impact species-rich habitat in the area. The loss of floral species will result in only a minor reduction in food source for pollinators, and in turn minor reduction of feeding ground for bats and birds.

#### 5.1.1. Invasive species

The use of construction equipment, machinery and wagons over the course of the project to resurface and construct footpaths and pavements, and to provide access through the sites, could result in the spread of invasive species present along route 1, near the River Blackwater. Himalayan balsam is listed as an Invasive Alien Species of Union Concern in European legislation, and cannot be sold, exchanged, cultivated or released into the environment. Under Article 19 of Invasive Alien Species Regulation

(1143/2014) Himalayan balsam has been identified as a Widely Spread Species in Northern Ireland and as such, management measures will be put in place to minimise its impacts. Current legislation states that this species must not be permitted to reproduce, be grown or cultivated; or released into the environment.

#### Pre-construction & During:

An invasive species management plan should be set in place to remove and treat all Himalayan balsam within at least a 3km radius of the site works.

Guidelines should be set out in the CEMP to ensure any residual balsam which may escape treatment is not spread during construction. This will involve the washing down of all machinery entering and leaving the site, and toolbox talks to ensure all on-site personnel are familiar with the species and its impacts.

- Best practice must also be implemented to prevent importation or any further invasive species during construction. To prevent the spread of invasive plant material on site, several biosecurity measures should be adopted.
- Any and all imported soil/rock/gravel will either be certified invasive-free, or the quarry of origin will be inspected for the presence of invasive species.
- Clean equipment “power wash” prior to moving onto and off from each route site – to prevent the import and export of plant materials & seeds.
- The ECoW is to be contacted with any questions on invasive species, environmental monitoring or any breaches to biosecurity.
- Any additional planting on site should be done in consultation with an ecologist to avoid unintentionally spreading IAS.

#### 5.1.2. Aquatic habitats

##### *The River Blackwater*

This watercourse contains valuable fisheries habitat and supports stocks of brown trout among other species. The WFD Ecological status of this waterbody is Good. Any potential spills arising during the construction phase of the proposed route, e.g. during construction of watercourse crossings, could affect water quality in the downstream environment. However, it is likely to be short in duration (e.g. limited to a short period immediately after the pollution event), and minor in scale. Nonetheless, any effects of pollution would be significant at a local to county level, in light of the importance of the watercourses downstream of the proposed route.

#### During Construction:

The following measures will be adhered to in order to prevent pollutants and other deleterious materials entering the aquatic environment:

- Process waters, machine washings etc. will not be directly discharged to surface waters.
- In-stream works (e.g. construction of river crossings) will be undertaken between 1st July and 30th September inclusive so as to minimise any potential effects of works on migrating / breeding salmonids.
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits.

- Provision of measures to prevent the release of sediment during the construction work will be installed prior to the commencement of site clearance. Protective measures may include but are not limited to the use of silt fences and sedimentation mats.
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces will be enacted to prevent sediment washing into the receiving water environment.
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence.
- If pouring of cementitious materials is required for the works adjacent to the watercourses, this will be carried out in dry weather only.
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal.
- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses.

### 5.1.3. Broadleaf Woodland

The use of heavy machinery during the construction of the route has the potential to impact the area of Mixed Broadleaf woodland and may result in the removal of some trees.

#### Construction measures:

The working corridor in the woodland areas will be as small as possible, with activity concentrated on the existing path networks where possible. The working corridor will be demarcated in advance of all other works.

To avoid potential disturbance and degradation of habitats identified along the route, the following measures will be applied:

- All working areas will be demarcated prior to the commencement of proposed works to ensure works are confined to this area and do not sprawl into surrounding habitats;
- Fencing will be erected around hedgerows and trees to be retained to protect against accidental damage;
- No storage or dumping of materials will be carried out outside the working area unless otherwise specified in this document; and
- Where possible, following the completion of works, habitats within the working area will be reinstated to conditions which existed prior to the commencement of works.

## 5.2. Fauna

### 5.2.1. Bats

#### *Removal of Foraging and Roosting Habitats*

Small sections of woodland habitat will be removed to facilitate the construction of the proposed routes and associated developments, namely patches of conifer and broadleaved woodland. It is anticipated that bat species will continue to forage in this area following the removal of woodland vegetation. Similarly, the removal of vegetation along the remainder of the route is not anticipated to significantly reduce available prey species for bats on account of the small loss of habitat. The construction of the development will not significantly affect foraging bats.

The removal of mature conifer trees which have the potential to host roosting bats may impact this species.

No artificial lighting is proposed as part of this development. Therefore, no impacts from lighting are predicted.

#### Pre-construction:

Tree surgery will be undertaken between September and mid-November, coinciding with the season when bats are unlikely to either be in torpor or raising young, and therefore at least risk of disturbance. Trees to be removed will be appraised for the presence of cavities or for mature trees (i.e. bat habitat suitability). If cavities are identified, they will be checked / assessed by a suitably qualified, experienced, and licensed ecologist for the presence of bats or signs of bats (emergence surveys may be required). If bats or signs of bats are identified, works on the relevant tree will cease, the NIEA must be contacted and given time to advise on whether or how it should be carried out. A licence to carry out such work may sometimes be necessary.

#### Other Mammals

Pine marten and Red squirrel are known to utilise Conifer plantations in the absence of sufficient stretches of broadleaf woodland. While no evidence of either species was found during surveying, they are known to be present in the forest. Disturbance to dens during the breeding season would have negative impacts on local populations.

Otters in Northern Ireland are a European Protected Species, and are protected under The Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 (as amended) (also known as the Habitat Regulations), which transposes the Habitats Directive. It is therefore an offence to deliberately capture, injure or kill an Otter. It is also an offence to deliberately disturb an Otter in any way, or to disturb, damage or destroy an Otter's breeding site or resting place, unless a licence has been obtained.

A holt is a hole in the ground which is used by an Otter for sleeping and resting. The most common type of holt is a hole leading to a cavity under the roots of a bankside tree. However, Otters are very versatile and can also form holts in log piles or cavities in rocky banks or caves. Most holts are situated on the riverbank, but some can be up to 100m away. Female otters use natal dens which can be up to 1km from a waterbody, to give birth to cubs. Woodland and scrub are particularly important habitats for natal dens, as they provide protection from disturbance.

Evidence of Otters was noted along the Fardross Glen Equestrian Route. No nesting holts were identified in the vicinity however, and an extensive search was not carried out. Otters can make holts and form natal dens at any time of the year.

#### Pre-construction:

An Otter holt and natal den survey should be carried out prior to construction (within 3 months) to determine the presence or absence of holts.

- An Otter holt or couch\* requires a 30m protection zone
- A natal den requires a 150m protection zone.

\* A feature, roughly circular or oval in shape, about a metre in diameter, normally of grass, which is formed by an Otter resting up in the same grassy place over time.

### Construction measures:

#### **Pine Marten**

Pine martens like woodland, preferably large-scale deciduous woodland, but they will also live in small pockets of deciduous woodland and are sometimes found in commercially managed coniferous plantations. Pine martens give birth to kits in March and April, which stay with the mother until August-September. During the period March to September, disturbance to trees (which could hold natal dens) should be avoided.

#### **Red Squirrels**

The breeding season for Red squirrels usually begins in January or February. After a gestation period of five to six weeks, the female gives birth. The young are born blind and naked, and are not fully weaned until approximately seven to ten weeks after birth. During the period February to August, disturbance to trees (which could hold natal dens) should be avoided.

### Birds

#### *Nesting season*

In the absence of any mitigation measures, there is potential for disturbance and/or mortality of bird species arising from the removal of vegetation, including bramble, trees and shrubs, to facilitate access to and construction of the proposed development. Tree and shrub nesting species could be impacted, affecting breeding population. Such effects are relevant for the entire proposed routes. The effects of vegetation clearance, in the absence of mitigation and if it coincided with the breeding bird season, would be significant given the legal protections afforded to all birds and their nests. The scale of significance would likely be at a local level: the sum total of nesting habitat that will be removed will likely host only a portion of the total breeding bird fauna along the proposed route. The duration of effects from disturbance would likely be short-term, e.g., confined to one or two breeding seasons coinciding with the construction of the proposed route.

### Construction measures:

Rank vegetation (e.g., hedgerows, treelines, tall grass, dense bramble, nettles etc) along the proposed route will be removed outside of the breeding bird season (e.g., between 1st September and 28th/29th February, inclusive). In exceptional circumstances, trees identified for removal or tree surgery, may need to be worked on within the breeding bird season. In such a scenario, the area of the proposed works will be checked in advance by a suitably qualified and experienced ecologist for nesting birds. Where the presence of nesting birds cannot be ruled out, tree surgery will be postponed until the appropriate window when nesting has finished and when tree surgery is of low risk to roosting bats.

### Ground nesting birds

The Hen Harrier *Circus cyaneus* is a territorial ground-nesting bird of prey that typically breeds in open upland bog and heather moorland, and their associated habitat. There is a worrying decline in Hen Harrier numbers in Northern Ireland, with a fall of 22% since 2010. Under the EU Birds Directive all member states are required to take measures to ensure the survival of Hen Harriers at favourable conservation status. Mitigation measures to protect Hen Harrier have been laid out in a separate HRA report.

Fardross Arc Route: The large heather mats across upland blanket bog within the SAC are optimal habitat for ground nesting birds. Hen Harrier was also identified in this area during vantage point



surveys. No surveys were carried out during the nesting season. No breeding or roosting surveys have been carried out to date.

### **Construction:**

There is also the possibility of disturbance to foraging Hen Harrier and other birds along route 14. There is some natural visual screening along the section provided by shrubs and woodland, however the provision of additional landscaped screening comprising of an earth bank and hedging is proposed to ensure visual disturbance from route users is minimised. In the interim (until hedging is suitably established), to provide adequate screening, a brushwood-type fencing will supplement. Bird watching hides could be constructed in some areas which would prevent significant disturbance but also give visitors the ability to watch Hen Harriers and Curlews and to look out over the blanket bog.



*Figure 3: Bird hides allow recreational users to view birds without disturbance.*

These measures set out above will also help prevent disturbance to other ground nesting birds such as Golden Plover, Skylark & Red Grouse.

### **Merlin**

Merlin, which is known as a ground-nesting bird, has been shown in recent studies to predominantly nest in trees with a strong preference for conifer plantations, in response to long-term degradation of moorland habitats and increased forest cover (Hardey *et al.* 2009, Lusby *et al.* 2017). In Ireland, afforestation has progressed at one of the fastest rates in the world (Forest Service 2013). Tree nesting is now the dominant nesting choice in Ireland. Moors and heathland are strongly selected as land-uses adjacent to nest sites. Most nests have been found to be located within 10 m of the forest edge, and in forests aged between 31 and 40 years. Merlin show positive selection for moors and heathland, peat bogs and natural grasslands within breeding territories.

### **Construction:**

Tree surgery or felling within conifer forestry shall not take place between the 1st March to 31st August.

### **Amphibians and Reptiles**

There is some suitable amphibian spawning habitat within the project footprint such as small pools and ditches. In the most simplistic terms, every drain or pool within the affected corridor width of the proposed route may be considered as an actual or potential breeding site for frogs/newts.

The Common Lizard and Common or Smooth Newt are specially protected species in Northern Ireland.

Generally, newts are more likely to be found in ponds (non-linear) than ditches (linear). The loss of habitat is small and will not affect the conservation condition of Smooth Newt at any geographical scale, and therefore the effects of this habitat loss are not likely to be significant.

Habitats are optimal for Common Lizard, but the scale of vegetation loss will not have significant impacts on these species. There may be some benefits as Lizards can often be seen using boardwalks as basking sites. The stone wall along route 2 is the best quality lizard habitat. Dry stone walls provide significant habitat for lizards and impacts may occur during their dismantling.

#### Pre-construction:

Stone walls (or other potential hibernacula sites) which may be impacted will be removed by hand during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards.

## 6. Opportunities for Ecological Enhancement

### Himalayan Balsam along the River Blackwater

While it is recommended that a 3km stretch of Himalayan balsam is treated as part of the project, this stretch could be extended to improve biodiversity in the area. There are many benefits to removing invasive Himalayan balsam along a river in Northern Ireland, including:

- Improved native biodiversity: Himalayan balsam outcompetes native plants for space, light, and nutrients, leading to a decline in plant diversity. Removing Himalayan balsam can help to restore native plant communities, which provide food and shelter for a wide range of wildlife.
- Reduced risk of erosion: Himalayan balsam has shallow roots, which do not bind soil as effectively as native plants. This can lead to increased erosion, particularly during winter floods. Removing Himalayan balsam can help to stabilise riverbanks and reduce the risk of erosion.
- Improved water quality: Himalayan balsam can reduce water quality by increasing sediment levels and shading out aquatic plants. Removing Himalayan balsam can help to improve water quality and create a more suitable habitat for fish and other aquatic life.
- Enhanced recreational value: Himalayan balsam can form dense stands that block access to riverbanks and make them less attractive for recreation. Removing Himalayan balsam can open up riverbanks and make them more accessible for people to enjoy.

In addition to these benefits, removing Himalayan balsam can also help to protect the unique biodiversity of Northern Ireland's rivers. Many of Northern Ireland's rivers are designated as Special Areas of Conservation (SACs) or Areas of Special Scientific Interest (ASSIs) due to their important wildlife and habitats. Himalayan balsam is a major threat to these designated sites, so removing it can help to protect these important areas for future generations.

### Preventing Erosion on the River Blackwater

The banks along the River Blackwater are eroding, causing them to collapse into the water. This has been compounded by the presence of Himalayan balsam which is the dominant plant species on the banks. This dies back in autumn, leaving the riverbanks devoid of vegetation and prone to excessive levels of erosion, especially during spates (that is, sudden floods in a river). This erosion significantly increases the level of silt getting into the river. Enforcing banks through a bioengineering approach provides a multitude of benefits for water quality and biodiversity. Brush matting is a technique used to protect riverbanks that are vulnerable to scouring when a river is in spate. Live willow rods are laid on the bank with their butts dug into a trench. The live willow rods are anchored to the bank with rods and

pegs. This has the effect of creating a barrier of willow, protecting the riverbank. Protection of the bank is further enhanced when the willow rods take root, binding the soil with their fibrous root system. New growth above ground will also protect the bank by absorbing the energy of fast-moving water.



Figure 1: Bioengineering in Delphi to rehabilitate an eroding riverbank. (Rivus.ie).

## Bat Boxes in Favour Royal Forest

Bat Boxes are artificial roosts erected to encourage bats to roost in areas where few roosts are present. Bat boxes can be made from various materials from untreated timber to woodcrete (combination of sawdust and concrete). Each bat species requires different spaces to roost in. Therefore, bat boxes come in various shapes and sizes. The microclimate within a bat box is a very important factor. In general, bats prefer warm spaces in the summer for rearing young and cooler spaces in the winter for hibernation. The bat box should be draught-proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone.

The exterior nest box should be placed facing out onto open land, at least 4 meters off the ground, facing away from prevailing weather conditions (i.e. not south-west) and with clear flight lines to the nest box. Similar to the interior nest box, it should be situated in an area that is free from disturbance (e.g. a lot of human activity, machinery or sporadic loud noises). Bat boxes should be located as high as possible (at least 4m off the ground) in a sunny but well-sheltered area. Woodcrete boxes should be used outdoors as they last longer. An ecologist will advise and oversee the installation of nest boxes.

## Pine Marten and Red Squirrel boxes

There is scope to add both Pine Martin and Red squirrel boxes within the study area. These species favour above-ground arboreal den sites to rest and breed in. Sheltered, elevated den sites are particularly crucial for meeting the needs of breeding females of both species and a scarcity of suitable sites may be a critical constraint upon Pine marten populations. Pine marten boxes have been found to be particularly effective (Cruise et al., 2016). The den boxes can be implemented as a habitat enhancement and conservation tool, particularly in commercial forests.

## Restoration of Upland Blanket Bog

There is an opportunity for habitat restoration to upland blanket bog within the area designated as recently felled woodland along the Fardross Glen forestry routes. This requires not only the removal of timber products but also the removal or disposal of brash. This is so that preferred vegetation communities of favoured plant species can develop in appropriate conditions suitable for their

establishment. See Best Practice for removal: Webster & Duncan (2003) Brash Management on Habitat Restoration Sites.

Extensive drainage and fertiliser application have allowed Lodgepole pine and Sitka spruce to develop on this peat site. On unplanted areas and open rides some of the character of the former bog remains, which suggests that rehabilitation may be possible. Blocking drainage will help restore bog hydrology. A high water table is the key to restoring bogs and actions such as blocking the drains to raise the water table are likely to be necessary. Drains may need to be blocked by damming to reduce their effect on water levels in the peat. Blocking drains on peat sites is an accepted and common means of locally raising water tables. Dams can also help prevent or reduce erosion in ditches, particularly where they are large and/or deep. They also create areas of open water for colonisation by vegetation and invertebrates. Blocking drains has a marked effect on water levels within and immediately adjacent to the ditch. Circumstantial evidence also points to improvements in the overall wetness of a bog over a large area once major and minor drains are blocked.

### Biodiversity Signage

An important aspect of biodiversity conservation is raising awareness of biodiversity, the benefits associated with it, and actions taken to manage biodiversity and increased resilience to climate change and other threats. This information can be integrated into biodiversity signage and support biodiversity conservation. Signs which describe the different flora and fauna present on site and their benefits for biodiversity (e.g. information on birds including the bird watching code of ethics, details on the Hen Harrier) could be erected at various points along the walk to encourage an engagement with nature.

### Replacing Conifers in Favour Royal Forest with Native Trees

A larger strip of conifers should be removed along the routes within the conifer plantation in Favour Royal and replaced with a 10-15 metre strip of broadleaf woodland. Planting native trees as buffers along forestry roads has a number of benefits, including:

- Improved wildlife habitat: Native trees can provide food and shelter for a variety of wildlife species. This can help to improve biodiversity and create a more resilient ecosystem.
- Enhanced aesthetics: Native trees can create a more attractive and inviting landscape along the routes. This can encourage people to recreate in the area and can also help to support local businesses.

## 7. Conclusion

The Potential Development will introduce a number of changes across the habitats mentioned in this report and the species which rely on them. Minor impacts will occur on the surrounding ecology, the most notable of which will be increased disturbance due to increased footfall and human activity in the area. This increased footfall can be minimised to an extent through the usage of information signs and screening.

Mitigation measures, including mitigation measures through design, have been outlined in this report, which are intended to avoid, remove, and reduce significant effects on key ecological receptors (KERs) along the proposed routes. Following the implementation of these measures, residual effects remain for habitat loss with regard to KER habitats. Displacement of birds from the introduction of operational stage disturbance and displacement of birds during construction, loss of roosting habitat for Hen Harrier, and disturbance of during operation of the routes, have all been considered.

Measures have been included and set out in this report to mitigate against significant impacts to species known (or assumed to) occur within the development footprint. Additionally, measures which could improve the overall conservation of the site have also been laid out. It can therefore be concluded that although some residual effects will arise from the proposed route, the cumulative effects of mitigation, compensation and enhancement will have a neutral or positive overall effect on biodiversity.



## 8. References

- Bat Conservation Trust. (2016). *Bat Surveys – Good Practice Guidelines (3rd Edition)*. London: Bat Conservation Trust.
- Balotari-Chiebao, F., Brommer, J.E., Niinimäki, T. & Laaksonen, T. 2016. Proximity to wind-power plants reduces the breeding success of the white-tailed eagle. *Anim. Conserv.* 19: 265–272
- Bötsch, Y., Tablado, Z. & Jenni, L. 2017. Experimental evidence of human recreational disturbance effects on bird-territory establishment. *Philos. Trans. R. Soc. Lond. B. Biol. Sci.* 284: 20170846.
- CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Caravaggi, A., Irwin, S., Lusby, J., Ruddock, M., Mee, A., Nagle, T., O'Toole, L., O'Neill, S. and O'Halloran, J. (2020) 'Anthropogenic pressures within the breeding range of the Hen Harrier *Circus cyaneus* in Ireland', *Bird Study*, 66(4), pp. 461-470. doi: 10.1080/00063657.2020.1725420
- Clarke, R. and Watson, D. (1990). The Hen Harrier Winter Roost Survey in Britain and Ireland. *Bird Study* 37, 84-100.
- Croose, E., Birks J.D.S. & Martin J. (2016). Den boxes as a tool for pine marten *Martes martes* conservation and population monitoring in a commercial forest in Scotland. *Conservation Evidence* 13, 57-61
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester. <https://cieem.net/wp-content/uploads/2019/02/Combined-EcIA-guidelines-2018-compressed.pdf>
- Climate Central (accessed 2022). *Surging Seas - Coastal Risk Screening Tool: Ice Sheet Contributions to Sea Level Rise*: [https://coastal.climatecentral.org/map/8/100.6166/13.2746/?theme=sea\\_level\\_rise&map\\_type=ice\\_sheet&basemap=roadmap&contiguous=true&elevation\\_model=best\\_available&ice\\_loss\\_level=1.0&ice\\_sheet=antarctic&refresh=true&water\\_unit=m](https://coastal.climatecentral.org/map/8/100.6166/13.2746/?theme=sea_level_rise&map_type=ice_sheet&basemap=roadmap&contiguous=true&elevation_model=best_available&ice_loss_level=1.0&ice_sheet=antarctic&refresh=true&water_unit=m)
- Dunhallow Life (2015). The IRD Duhallow LIFE Project. Action C10 LIFE09 NAT/IE/000220 BLACKWATER SAMOK.
- Environmental Protection Agency, *Appropriate Assessment Tool*: <https://gis.epa.ie/EPAMaps/AAGeoTool>
- Finney, S.K., Pearce-Higgins, J.W. & Yalden, D.W. 2005. The effect of recreational disturbance on an upland breeding bird, the golden plover *Pluvialis apricaria*. *Biol. Conserv.* 390 121: 53–63
- Geological Survey of Ireland (accessed 2022) *Maps and Data*: <https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx>
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. 2009. *Raptors: a field guide for surveys and monitoring*. Stationery Office, Edinburgh.
- JNCC (2010) *Handbook for Phase 1 Habitat Survey*. Joint Nature Conservation Committee, Peterborough, UK.
- Larson, C.L., Reed, S.E., Merenlander, A.M. & Crooks, K.R. 2016. Effects of recreation on animals revealed as widespread through a global systematic review. *PLOS ONE* 11(12), p. 423 e0167259.

Lusby J, Corkery I, McGuinness S, Fernández-Bellón D, Toal L, Norriss D, Breen D, O'Donoghue A, Clarke D, Irwin S (2017) Breeding ecology and habitat selection of Merlin *Falco columbarius* in forested landscapes. *Bird Stud* 64:445–454

National Roads Authority (2009) Ecological Surveying Techniques for Protected flora and fauna during the Planning of National Road Schemes. NRA (now Transport Infrastructure Ireland), Dublin.

NPWS (National Parks and Wildlife Service) (2015). Hen Harrier Conservation and the Forestry Sector in Ireland. Date 31/03/2015 Version 3.2.

NPWS (2017) Conservation Objectives: Buckronee-Brittias Dunes and Fen SAC 000729. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

O'Donoghue, B. G. (2010). The Ecology and Conservation of Hen Harriers (*Circus cyaneus*) in Ireland. PhD Thesis submitted to University College Cork.

Ruhlen, T.D., Abbott, S., Stenzel, L.E. & Page, G.W. 2003. Evidence that human disturbance reduces Snowy Plover chick survival. *J. Field Ornithol.* 74: 300–304

Scannell, M J P and Synott, D M, 1987, Census Catalogue of the Flora of Ireland. Stationary Office, Dublin.

Steven, R., Pickering, C. & Castley, J.G. 2011. A review of the impacts of nature based recreation on birds. *J. Env. Manage.* 92: 2287–2294.

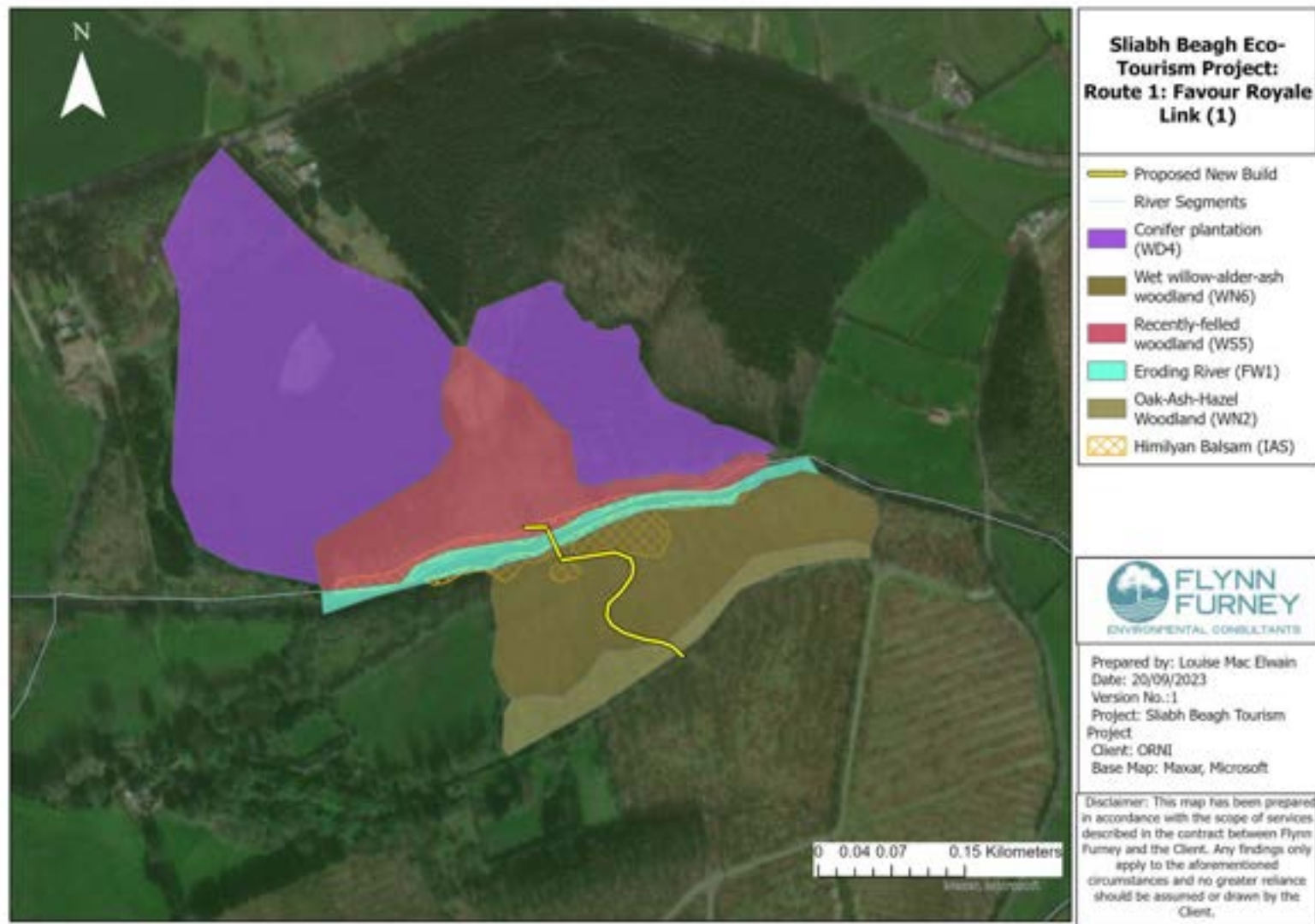
Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E., 2011. Best practice guidance for habitat survey and mapping. The Heritage Council: Ireland.

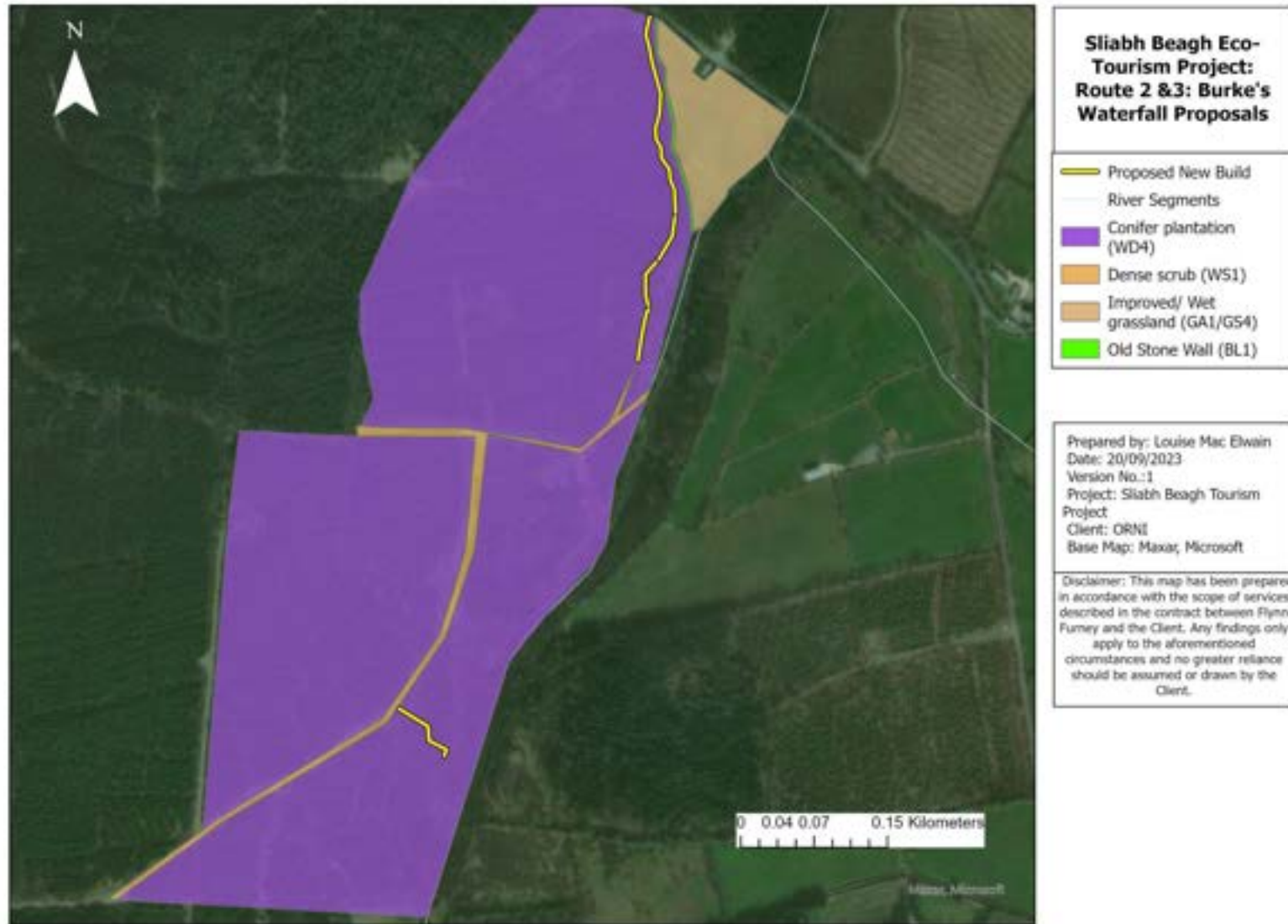
White, C.M. & Thurow, T.L. 1985. Reproduction of Ferruginous Hawks exposed to controlled disturbance. *Condor* 87: 14–22

Wilson, M.W., Irwin, S., Norriss, D.W., Newton, S.F., Collins, K., Kelly, T.C. & O'Halloran, J. (2009). The importance of pre-thicket conifer plantations for nesting Hen Harriers *Circus cyaneus* in Ireland. *Ibis* 151: 332-343.

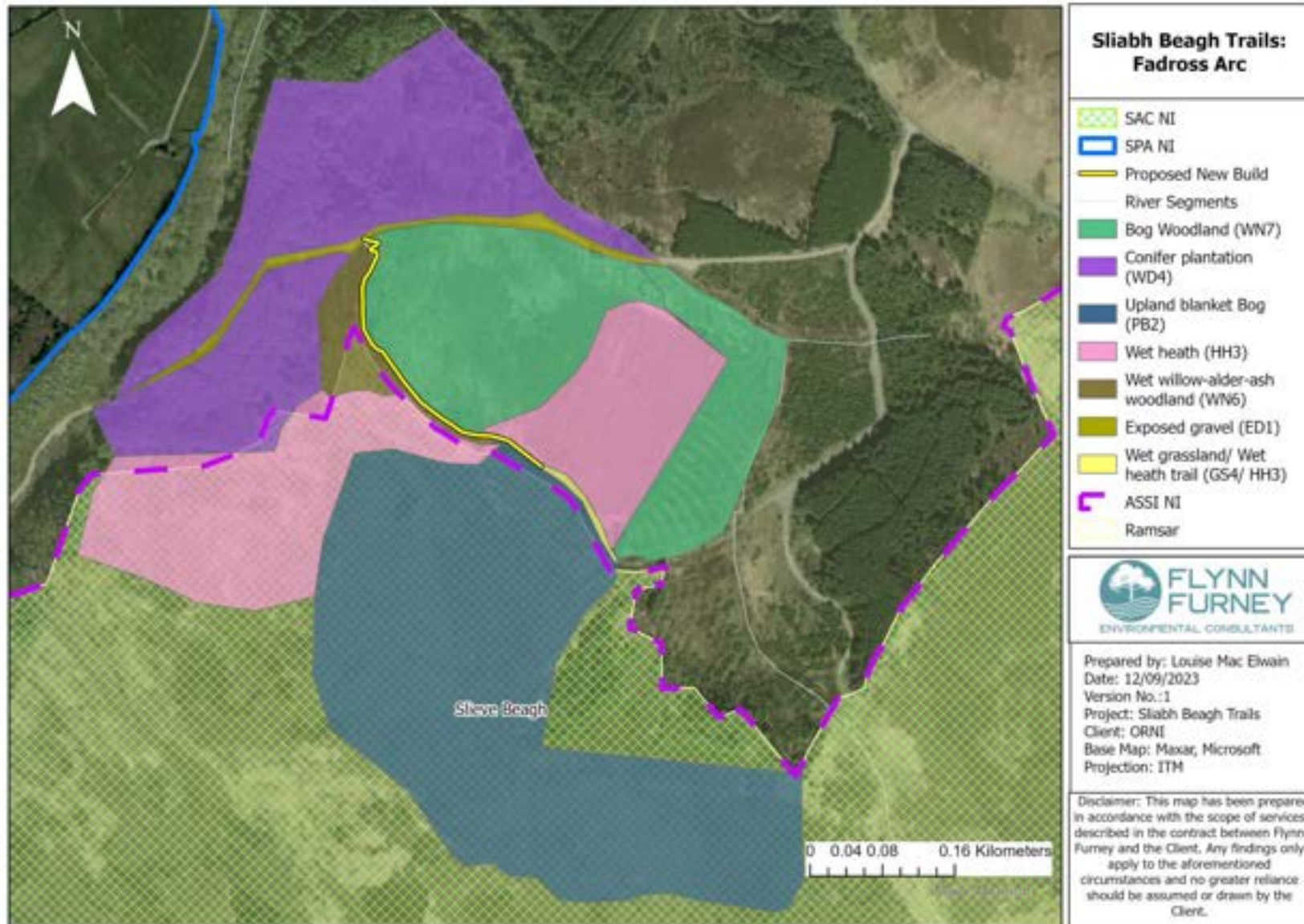
Wilson, M. W., O'Donoghue, B., O'Mahony, B., Cullen, C., O'Donoghue, T., Oliver, G., Ryan, B., Troake, P., Irwin, S., Kelly, T. C., Rotella, J. J. and O'Halloran, J. (2012), Mismatches between breeding success and habitat preferences in Hen Harriers *Circus cyaneus* breeding in forested landscapes. *Ibis*, 154: 578–589.

Appendix A: Habitat Maps

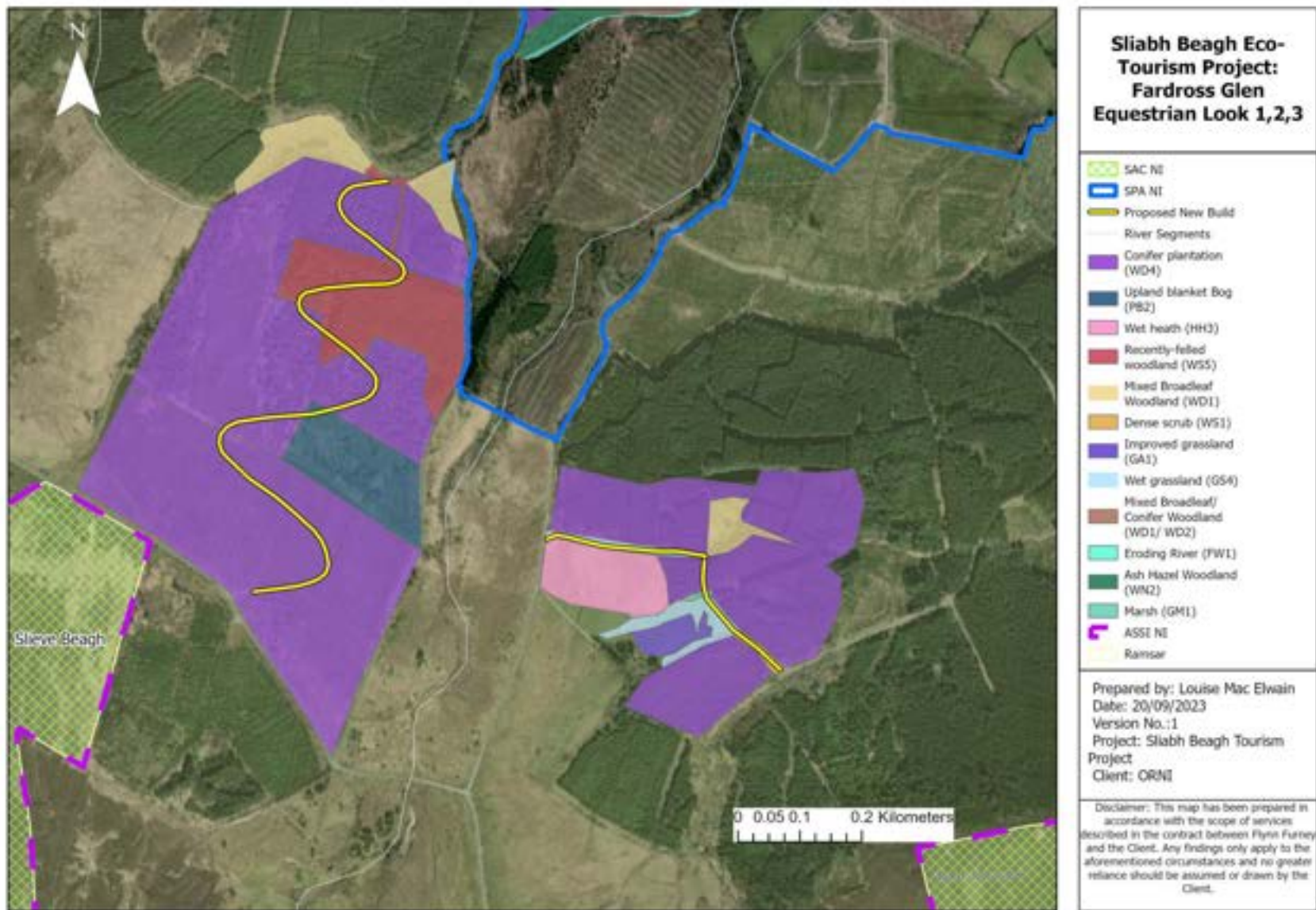


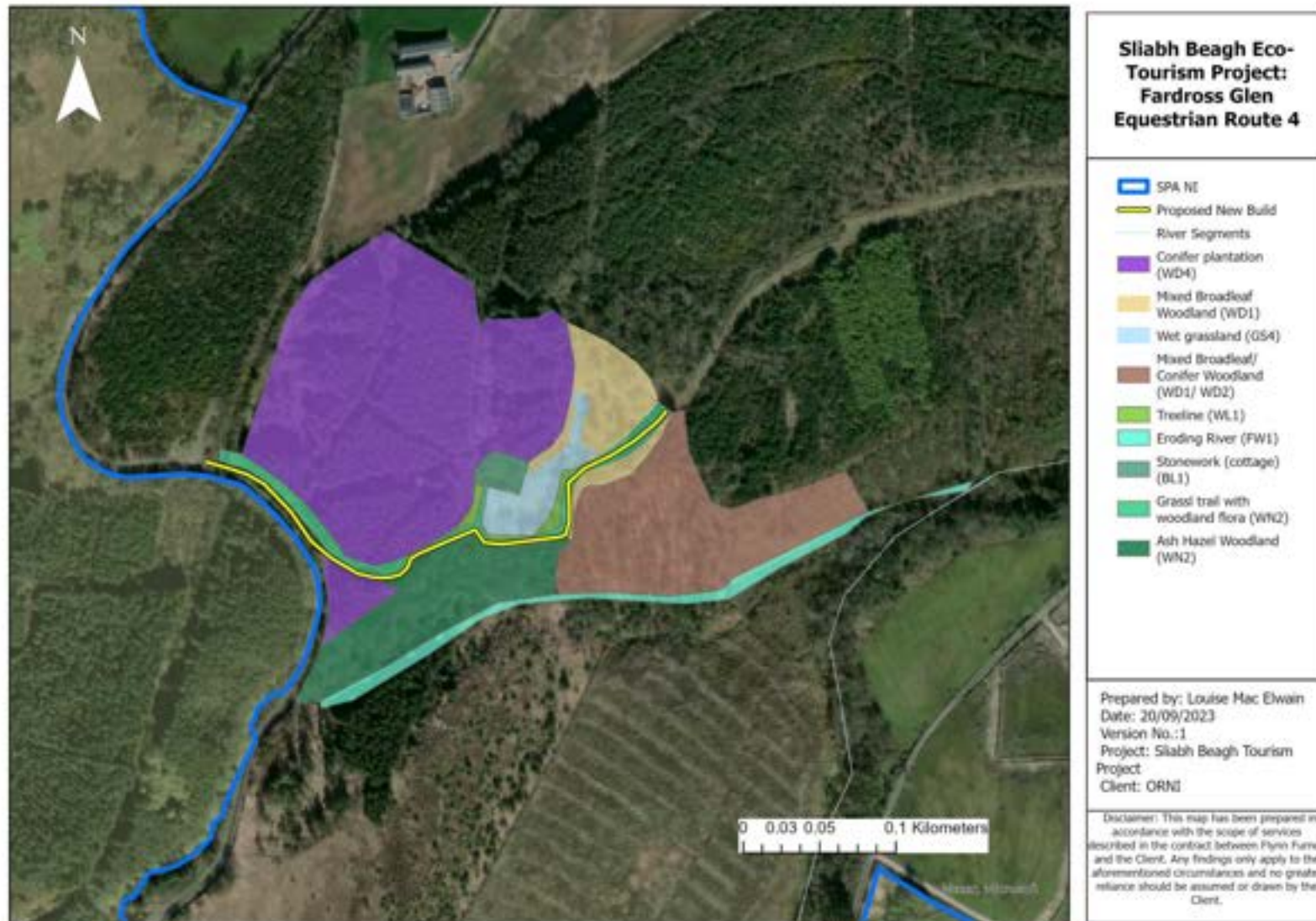












## APPENDIX 3 - Potential LMP 'Multiply' Initiatives

MULTIPLY INITIATIVE	DETAILS OF DELIVERY
<p><b>Maths for speakers of other languages</b> – for non English speakers, this award would provide a qualification or place individuals on pathway to improving numeracy and language skills.</p>	<p>Procurement required – delivery most likely via community-based organisations who already work with the migrant community.</p>
<p><b>Engaging Mature Learners - Making It Count</b> – Target specifically over 40's, who have some of the lowest numeracy skills in Northern Ireland, with pastoral and additional support structures to complete informal training or to gain a numeracy related qualification.</p>	<p>Procurement required for accredited courses. Remaining delivery by Numeracy Champions</p> <p>Formal qualifications such as ICT, Excel, Book-keeping Soft skills via workshops such as pension advice, budgeting, nutrition, grant advice for farming community</p>
<p><b>Counting on you - Industry Upskilling</b> – Numeracy classes in the workplace with additional support to gain a qualification or informal recognition of numeracy learning.</p>	<p>Procurement required for accredited courses. Remaining delivery by Numeracy Champions</p> <p>Primarily accredited courses to assist in upskilling/reskilling workforce particularly in IT skills – e.g. excel, advanced excel, SEO and digital marketing; and finance skills – e.g. Finance for non finance managers, Bookkeeping, Payroll, Provision of Level 1 or Level 2 numeracy where needed Workshops re workplace pensions, HMRC reporting requirements, accessing funding</p>
<p><b>Supporting previous offenders and those in prison system</b> – Numeracy programme designed to support those in the prison system or former offenders, complementing and expanding on existing schemes.</p>	<p>N/A – Project by NIACRO covers all previous offenders within the Mid Ulster area under SPF funding. Any further activity would be duplication.</p>
<p><b>Numeracy Boot Camps</b> – Short term numeracy learning through real life issues (nutrition, household finances, sport, pensions etc). Short courses, informal recognition, sign posting to formal qualifications.</p>	<p>Procurement required for Gamified Learning. Remaining delivery by Numeracy Champions</p> <p>Numeracy based Gamified Learning Project Soft skills workshops such as cookery, nutrition and meal planning; budgeting and household finances; energy detective; sport related numeracy</p>
<p><b>Bring your grown up</b> – Numeracy programme through community and educational settings for children and parents to learn numeracy together.</p>	<p>Delivery by Numeracy Champion</p> <p>Soft skills programmes such as Homework Helper, Early Years play and coding and gaming</p>
<p><b>Multiply officers</b> – to promote and engage with community groups and employers to</p>	<p>Recruitment of a multiply officer to deliver, co-ordinate and monitor all elements of the</p>

<p>take advantage of existing and new numeracy provision.</p>	<p>multiply programme and engage with community groups across the district to maximise impact</p>
<p><b>Numeracy champions</b> – Appoint, train and support numeracy champions across the community and voluntary sector, to lead on multiply schemes, managed through local government.</p>	<p>Procurement of 2 Numeracy Champions who can deliver various projects within the Multiply programme. Targeted at retired/semi-retired teachers, council workers, bank workers who could deliver on an hourly rate basis</p>
<p><b>Develop free numeracy materials</b> - The Northern Ireland Universities are working with BBCNI to develop and promote a range of free numeracy provision, which would be tied in with the broad multiply offer. Additional material, and e-learning, developed through other schemes would be made available, and be sustainable post March 2025.</p>	<p>N/A – to be delivered by NI Universities.</p>





# CONSULTATION ON APPROACH TO 10X TECHNOLOGIES AND CLUSTERS





## Foreword

The Department for Economy's 10X Economic Vision is unashamedly ambitious, aiming to support the development of a more innovative, sustainable and inclusive economy. Advancement of this vision comes at a time of significant economic challenge, acting as a focal point for Departmental activity as we work to realise the potential of the NI economy.



The consultation I am launching today sets out in more detail the 10X ambitions around focus and scale, providing greater detail on our plans for priority sectors of the economy as part of our Technologies and Clusters work. We hope to support activity within priority sectors by focusing our efforts on promising technologies and Unique Selling Points within each, and using this focus to drive benefits at scale for the wider economy. Through this, we seek to target activity to stimulate innovative, sustainable and inclusive economic growth, providing benefits for all of society.

To do this we require a partnership approach involving Government, business and academia, as well as wider civic society. As such, I am grateful for the level of input we have received to date for all our 10X activities. I welcome this collaborative spirit and I am keen to see this develop as we move forwards with our 10X agenda.

Finally, I am grateful to all respondents for their time and input into this current consultation, which will be used to develop and further refine our approach to Technologies and Clusters focused work. I look forward to hearing your views over the coming weeks.

A handwritten signature in black ink, appearing to read 'Mike Brennan', written in a cursive style.

**MIKE BRENNAN**  
**Permanent Secretary**  
**14th September 2023**

## Introduction

The 10X Economy Vision published in May 2021 highlighted the Department’s goal to focus on technologies and Unique Selling Points (USPs) within priority / high potential sectors. These are areas where Northern Ireland (NI) has established strengths, in research and/or industrial capability, and the potential to be globally competitive; if not already. This activity will reinforce our ongoing commitments to focusing on NI’s specialisms through the major investments of the City and Growth Deals (CGD) programme.

Technologies and USPs (including their application within and adoption across these sectors), the potential for scale impacts across the wider NI economy, and the development of clusters are all key components of the virtuous cycle of activity that we aim to build in NI. We see this focus being instrumental to drive forward progress towards a more innovative, inclusive and sustainable NI economy.

As such, the Department for the Economy (DfE) has established a 10X Technologies and Clusters workstream, with seven priority sectors identified within this:

- Agri-Tech
- Life and Health Sciences
- Advanced Manufacturing, Materials and Engineering
- Fintech / Financial Services
- Software
- Screen Industries
- Low Carbon (including Green Hydrogen)

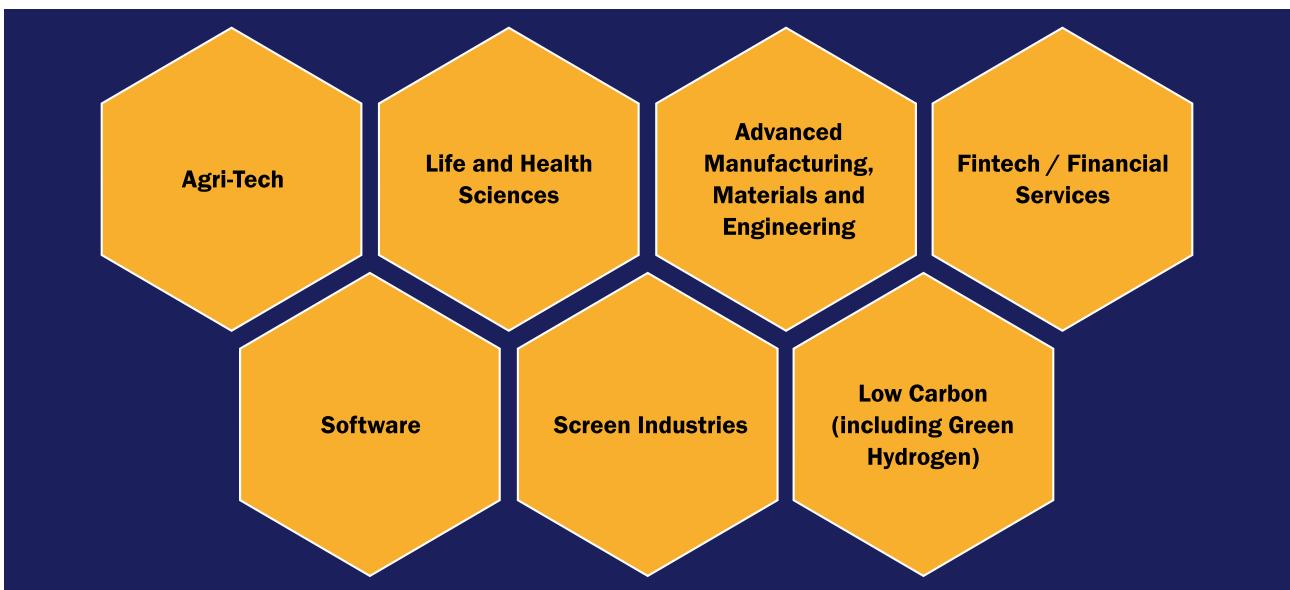


Figure 1: The seven identified priority sectors

Priority Sector	Description
<b>Agri-Tech</b>	The application of innovation and technologies to build competitive advantage and transition to Net Zero across the Agri-Food supply chain, including the farming and food processing sectors. Agri-Tech companies provide solutions (products and services) across sub-sectors including advanced materials and supply chain; agri-engineering; food processing; information and communications technology (ICT); life sciences; nutrition and animal feeds; and innovation in food and drink processing.
<b>Life and Health Sciences</b>	Life and Health Sciences covers a range of specialisms relating to the study of biological life, processes and the treatment of illness and disease. It has applicability to healthcare solutions, healthy living and the environment, including elements such as bio-technology, pharmaceuticals, precision medicine, medical technology, connected and digital health and healthcare solutions.
<b>Advanced Manufacturing, Materials and Engineering</b>	Advanced Manufacturing (as defined by the Matrix Panel) is “a family of activities that a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or b) make use of cutting-edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. This involves both new ways to manufacture existing products, and especially the manufacture of new products emerging from new advanced technologies.”
<b>Fintech / Financial Services</b>	Services and technological solutions to the international financial services industry including banks, insurance companies, and asset management companies.
<b>Software</b>	The NI software sector includes software-intensive businesses, which are primarily developing software functionality, products and services for use by external or internal customers; with the wider NI ecosystem also including the people in software-related occupations in other industries.
<b>Screen Industries</b>	The NI Screen Industry consists of 3 primary sectors, Film, Television and Interactive. These can be further divided into 6 sub-sectors, Large-scale Production, Animation, Television Drama, Factual/Entertainment Television and Gaming. These sectors are supported by continued innovation in new screen technology and skills development that provide wider opportunities to the labour market.
<b>Low Carbon (including Green Hydrogen)</b>	The NI Energy Strategy sets out the pathway to Net Zero carbon and affordable energy by 2050. This includes a substantial opportunity to reduce carbon emissions and grow the green economy through hydrogen production, carbon capture, blending of the gas network, and world leading research and development.

Table 1: Brief description of each priority sector

In October 2022, the 10X Performance Management Framework consultation<sup>1</sup> provided some detail on how the concept of technologies and priority sectors / clusters links to wider 10X objectives, and asked a number of questions around the suitability of proposed outcome metrics.

Following this, the Technologies and Clusters workstream has focused on qualifying and quantifying the specific strengths of each priority sector, identifying key technologies and USPs for focused activity and the potential policy levers the Department could utilise to grow and scale these areas.

This consultation sets out the approach for three key areas:

- Identification and prioritisation of technologies and USPs where NI can be globally competitive, the growth of which can drive benefits at scale across the economy;
- An indication of the policy actions DfE and partners may use to drive the growth, uptake and scaling of these technologies and USPs; and
- How these technologies and USPs could be integrated into a future Sub-Regional Economic Plan.

We are seeking your views on the above areas to help inform and develop our current work.

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<sup>1</sup> [10X Performance Management Framework | Department for the Economy \(economy-ni.gov.uk\)](#)

## Priority NI Technologies and Unique Selling Points

Our approach to Technologies and Clusters focused work is based on the assertion that competitiveness starts with focus. Focusing on technologies and USPs where NI has a globally competitive edge and high growth potential, or the ability to secure this, will enable us to capitalise on opportunities presented by local and global trends; positioning NI at the forefront of development in these areas.

It is hoped that, when aligned with wider economic development policies, encouraging focused technological adoption and scaling up activity in these areas will diffuse success across the economy, thus widening societal benefit. The Sub-Regional Economic Plan (to be published in spring 2024) will set out targets for DfE and Invest NI to connect businesses at all levels to new ideas and technologies, while the City and Growth Deals will establish and enhance the necessary infrastructure with over £600m being invested in innovation and digital projects. The Place10X workstream will harness the USPs of Technologies and Clusters to establish sustainable, inclusive, and innovative local economic ecosystems.

Within each of the seven priority sectors, teams have undertaken work to identify and shortlist the key technologies and USPs that have the potential to meet 10X objectives. These are areas in which NI has, or has the potential to develop, research excellence, industry capability or the potential for widespread technology adoption.

The below table details the current shortlisted technologies and USPs for each priority sector. It should be noted that we will also be progressing activity to prioritise technologies which are enabling and crosscutting (i.e. have applicability within and across different priority sectors), including:

- Artificial intelligence
- Data capture / analytics
- Software applications
- Robotics/automation

Furthermore, it is also important to note that the wider 10X Vision places an emphasis on developing areas of future competitive advantage. As such, the technologies and USPs listed are not definitive and may be subject to future amendment to reflect the rapidly changing technological landscape in NI. The subsequent development of sector action plans will clearly articulate which technologies and USPs represent research excellence, industry capability or areas for potential adoption, and how activities will be targeted to that effect.



Priority Sector	Technology/USP
<b>Agri-Tech</b>	<ul style="list-style-type: none"> <li>• Food safety, quality control, data and traceability</li> <li>• Food nutrition, product development and processing</li> <li>• Animal, crop and feedstock science / technology / genetic solutions</li> <li>• Environmental/sustainability</li> <li>• Innovative farm machinery</li> </ul>
<b>Life and Health Sciences</b>	<ul style="list-style-type: none"> <li>• Diagnostics including biomarkers</li> <li>• Precision medicine, genomics and bioinformatics</li> <li>• Med-tech, digital and connected health with supporting software</li> <li>• Clinical trials and associated activity</li> <li>• Pharmaceuticals manufacturing and drug discovery/development</li> </ul>
<b>Advanced Manufacturing, Materials and Engineering</b>	<ul style="list-style-type: none"> <li>• Nano technology and photonics</li> <li>• Aerospace</li> <li>• Materials processing and handling</li> <li>• Precision engineering</li> <li>• Off-site construction</li> </ul>
<b>Fintech / Financial Services</b> <b>Software</b>	<ul style="list-style-type: none"> <li>• Cybersecurity</li> <li>• Artificial intelligence</li> <li>• Data science and engineering</li> <li>• Cloud</li> </ul>
<b>Screen Industries</b>	<ul style="list-style-type: none"> <li>• Crew skillset</li> <li>• Studio facilities (Belfast Harbour and Titanic)</li> <li>• Studio Ulster</li> <li>• Virtual production</li> <li>• Game development facilities</li> <li>• Editing suites</li> <li>• Animation studios</li> </ul>
<b>Low Carbon (including Green Hydrogen)</b>	<ul style="list-style-type: none"> <li>• Green hydrogen economy including funding, production and storage</li> <li>• Carbon capture and usage</li> <li>• Sustainable aviation fuels</li> <li>• Advanced efuels</li> <li>• Research and development in alternative methods of hydrogen production, cryogenics, storage specialisms and green supply chains</li> <li>• Hydrogen blending</li> </ul>

Table 2: Current shortlisted technologies and USPs for each priority sector

## Key policy levers to drive growth, adoption and diffusion of priority areas

This section highlights the key themes of activity and policy levers which, based on our research and continued engagement with stakeholders, have been identified as important in supporting the development, adoption and scaling up of key technologies and USPs within and across all priority sectors.

In addition to considering activity to support the environment for the development, uptake and scale of technologies in a general sense, we recognise that each sector has its own characteristics and may require bespoke action. Therefore, DfE will use the information gathered through this consultation to develop specific action plans for the seven priority sectors in 2024. These will, in setting out outcome goals, seek to demonstrate how specific actions can drive technology and sector outcomes in support of the 10X aims of delivering a more innovative, inclusive and sustainable NI economy.

Note the purpose of this section and the table below is not to present detailed actions, but to give a sense of the actions DfE will consider to achieve our aims around technology and USPs in the priority sectors, which we will refine based on the response to this consultation and further stakeholder engagement.

It is important to note when reviewing the table below that DfE, within its remit, does not hold all of the potential policy levers needed to drive a step change in the environment for technology in NI. Partnership, including with industry, academia, civil society, across NI Departments, with local councils, UK Government and international partners, will be vital to drive the outcomes we are seeking, and we are already investing considerable effort in improving collaboration between key players in this area.

Policy Lever / Theme of Activity	Potential Focus of Work
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Undergraduates, postgraduate, PhD and apprenticeships in STEM fields: work with industry and higher/further education institutes to ensure that opportunities are focused on current deficits and technology growth areas.</li> <li>• Wraparound skills: ensure educational offerings available that focus on business, leadership/management/ productivity, innovation and entrepreneurship skills.</li> <li>• Inclusivity: work in partnership with existing schemes to address imbalances in employment numbers related to areas of deprivation, gender and disability.</li> <li>• Upskilling: work with industry and third level education institutes to ensure skills gaps are addressed in the existing workforce, where possible.</li> <li>• Alignment between skills requirements for Technologies and Clusters with City Deal priorities – ensuring these also support and deliver on skills needs for companies.</li> </ul>
<b>Innovation Supports</b>	<ul style="list-style-type: none"> <li>• Work to ensure a clear commercialisation pathway through engagement across the sectors, offering information, advice and other necessary supports to startups and to innovation and R&amp;D active businesses.</li> <li>• Investigate the potential for developing sectoral incubators/ accelerators for startups and spinouts.</li> <li>• Work to improve uptake of competitive funding streams.</li> <li>• Encouraging adoption and development of technologies within industry and along supply chains to increase productivity.</li> </ul>
<b>Regulatory Environment</b>	<ul style="list-style-type: none"> <li>• Establish working groups to engage with UK government departments, highlighting regulatory issues impacting NI businesses, particularly with respect to the Windsor Framework.</li> <li>• Work to provide greater regulatory certainty and clarity for businesses.</li> <li>• Identify strategic regulatory opportunities for technology development in NI.</li> </ul>

Policy Lever / Theme of Activity	Potential Focus of Work
<b>Foreign Direct Investment (FDI)</b>	<ul style="list-style-type: none"> <li>• Better utilise FDI as a strategic tool to build and enhance NI’s capability and capacity in our priority 10X sectors/clusters, through spill-over benefits.</li> <li>• Develop and promote strategic FDI propositions, aligned with strategies for priority sectors, to highlight the benefits to international investors of conducting business in NI.</li> </ul>
<b>Export Promotion</b>	<ul style="list-style-type: none"> <li>• Support the further internationalisation of our priority sectors / clusters through targeted export promotion activity, exposing our indigenous firms in these sectors to new ideas and a larger customer base.</li> <li>• Identify target international export markets for each of our priority sectors.</li> <li>• Identify market access barriers experienced by businesses in our priority sectors, and work with UK Government to address them through Free Trade Agreements and other means.</li> </ul>
<b>Sector Ecosystem / Connectivity</b>	<ul style="list-style-type: none"> <li>• Encourage and support collaboration between industry, academia, government and the public sector.</li> <li>• Align policies and interventions to support key technologies and USPs, and signpost businesses to existing support mechanisms within each priority sector.</li> <li>• Work to increase applications and number of successful bids to alternative funding schemes (e.g. wider UK government initiatives).</li> <li>• Support digitalisation by businesses.</li> </ul>

Table 3: Likely policy levers and associated activity that may be used to support adoption and diffusion of priority areas

## Sub-Regional Unique Selling Points

A further potential building block around the work on priority sectors is to consider the benefits in having a sub-regional dimension, aligning key 10X activities of the Department with the 10X related USPs and assets of a particular geographical area.

Taking the Mid Ulster region as an example, advanced manufacturing and Agri-Tech has a dominant presence. There may therefore be benefit in aligning key 10X activities to enhance and support the assets of this geographical region.

It should be noted that such an approach would not be exclusionary, nor necessarily based on pre-existing geographical areas such as local councils, but instead aims to encourage alignment and coherence with the wider 10X strategy of focusing on developing areas of existing strength across NI.

This may help avoid duplication of effort across sub-regions, or a situation where activity is focused in only a few key geographical areas when it has the capability to operate wider. This would also align with other elements of sub-regional policy, including City Deal investments.

A Sub-Regional Economic Plan is currently being developed to consider what this approach will look like. This work stream will be co-produced by DfE and Invest NI, building on research gathered in the Place10X Call for Evidence that closed in July 2023.

Consideration will be given as to what these sub-regions should look like, including cross-border dimensions, with a place-based lens used to ensure that local strengths are harnessed. Alignment of local and central government objectives with business, academia and third sector expertise will be vital. However, it is also important that areas are challenged as well as supported, to ensure that global impact is not diluted and instead maximised.



## Responding to the Consultation

We would ask that you respond to the consultation using the online survey which can be accessed at the [Consultation on Approach to 10X Technologies and Clusters page on the nidirect website](#).

If you are unable to respond using the online consultation facility, you can email your response using the response template provided at the [DfE consultation page](#) to the following email address: [dfc-10Xt&c-consultation@economy-ni.gov.uk](mailto:dfc-10Xt&c-consultation@economy-ni.gov.uk)

Before you submit a response, please read the Privacy Notice published alongside the consultation documents on the [DfE consultation page](#), which shows how we will use personal information as part of the processing of responses.

If you require documents to be provided in an alternative format, please contact the 10X Technologies and Clusters Consultation team by email: [dfc-10Xt&c-consultation@economy-ni.gov.uk](mailto:dfc-10Xt&c-consultation@economy-ni.gov.uk)

Responses to this consultation are invited until 11.59pm on **Friday 24th November 2023**.

## Next Steps

We will analyse the responses to this consultation and a summary Departmental response will be drafted and published.

Responses will help to develop and refine our current approach to 10X Technologies and Clusters related work, along with continued engagement with internal and external stakeholders.

Our next major milestone is the publication of finalised sector action plans in 2024, followed by delivery of these plans across 2024 and 2025.

**DRAFT**

**APPENDIX 4B**

23 November 2023



Mr Matthew Carson  
Department for the Economy  
10X Technologies and Clusters Workstream  
39-49 Adelaide Street  
Belfast  
BT2 8FD

Email: [dfc-10Xt&c-consultation@economy-ni.gov.uk](mailto:dfc-10Xt&c-consultation@economy-ni.gov.uk)

Dear Mr Carson,

**Ref: Consultation on Approach to 10X Technologies and Clusters**

Mid Ulster District Council welcomes the opportunity to provide comment upon the Department's plans to develop a 10X Technologies and Clusters approach in areas including: Agri-Tech, Life & Health Sciences and Advanced Manufacturing, Materials & Engineering, Fintech /Financial Services, Software, Screen Industries, Low Carbon (including Green Hydrogen).

Mid Ulster District Council fully supports the ambition proposed by the 10X Technologies and Clusters Consultation and looks forward to engaging with the Department for the Economy and Invest NI to progress the interventions and sub-regional opportunities arising from this work support our local key sectors and USPs. Councils must be instrumental in the planning and development of any future 'place-based approach' due to their pivotal role in their local economies and their unique insight into the specific issues and challenges faced by their communities.

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## **MID ULSTER'S KEY SECTORAL STRENGTHS & CLUSTERS**

The Mid Ulster District Council area represents a multicultural population of more than 150,000<sup>1</sup> across 1,714 km<sup>2</sup> (14% of the NI land mass) and is the fastest growing new Council area in Northern Ireland (its population is expected to grow to 165,000 by 2030). The area is within a 30-minute reach of Belfast (Dublin - 2 hours) and shares a land border with Republic of Ireland providing access to 450,000 people within a 50km radius.

Mid Ulster is recognised as one of the most entrepreneurial and enterprising regions in Northern Ireland. Its economy is private sector driven, boasting the largest business base outside the Belfast Metropolitan area with 9,430 VAT registered businesses. Over the last 5 years Mid Ulster had the fastest pace of employee job creation of any council area in NI growing at 13% (6,680 new jobs) compared to a total NI growth rate of 7%.

The region has higher productivity per head of population compared to the Northern Ireland average and a GVA<sup>2</sup> of £3.97bn (producing 8.1% of NI's economic output).

The Council area has strengths in key sectors (some of which are also in the seven noted in the Consultation) including Manufacturing & Engineering; Food and Agri Food; Construction; Retail, IT and Hospitality. Our businesses are the most export-intensive, accounting for 12% of NI's exports. Mid Ulster businesses embrace innovation, and the region has the largest uptake of Invest NI's Innovation Accreditation Awards outside of the Belfast region.

Mid Ulster has an international reputation for manufacturing excellence, hosting several of NI's leading advanced manufacturers, leading it to be recognised as the centre of manufacturing and engineering in Northern Ireland, where it accounts for 29% of the local economy (approx. 17,066 jobs), compared to 11% in NI. The sector

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<sup>1</sup> Census Statistics 2021

<sup>2</sup> Office for National Statistics 2021

is estimated to deliver c£1.67bn GVA contribution to the local economy and over £710m in local wages, directly and indirectly. This world class cluster is of profound importance to the area's economy – especially in key specialisms such as the manufacture of mining and quarrying machinery, production of general and special purpose machinery etc., which have linkages and supply chain associations with the construction and food and agri-food sectors. For instance, the area boasts a world-class High Growth Cluster that manufactures more than 40% of the world's mobile crushing and screening equipment.

## **COUNCIL RESPONSE TO CONSULTATION**

The Council hopes that the use of the approach outlined in the Consultation ensures that the needs are met of specific sectors to thrive across NI, including within Mid Ulster District Council area. As such, the Council is supportive of the proposed approach for three key areas of the proposed 10X Technologies and Clusters as identified below and overleaf:

1. Identification and prioritisation of technologies and USPs where NI can be globally competitive, the growth of which can drive benefits at scale across the economy;
2. An indication of the policy actions DfE and partners may use to drive the growth, uptake and scaling of these technologies and USPs; and
3. How these technologies and USPs could be integrated into a future Sub-Regional Economic Plan.

Overall Mid Ulster District Council supports the aim of establishing clear and consistent support arrangements for the sectors identified in the consultation documentation. Specifically, the Council has also provided details relation to the following aspects of the consultation:

- USPs that are not listed within the consultation document
- Additional policies or activities that should be included
- Benefits for Economic growth and help meet 10X established objectives
- Technologies and USPs that would be particularly suited to a sub-regional approach



## **USPs that are not listed within the consultation document**

In terms of the Agri-Tech sector, it is assumed that technologies to support the exploration of more efficient solutions for product storage *and* transportation are included under that of 'product development and processing', and/or 'environmental/sustainability'. This will be critical support to the sector to drive the reduction of waste and become more resource efficient and work towards net zero targets, in addition to the 10X requirements.

## **Additional policies or activities that should be included**

The Council welcomes the ambition noted in the Consultation document for the forthcoming 'Sub-Regional Economic Plan', that the Department for the Economy and Invest NI *will connect businesses at all levels to new ideas and technologies* and with inclusivity as one of the guiding principles in delivery. While a focussed approach has been identified as a priority to drive the 10X Technologies and Clusters work, it is essential that future interventions to drive competitiveness incorporate measures to proactively engage with those businesses that require capacity building and financial support to enable them to take advantage of these opportunities.

We acknowledge that the wider 10X Vision places an emphasis on developing areas of future competitive advantage to drive NI's ability to compete globally. However, where at all possible, activities should be designed and progressed which offer creative solutions to supporting businesses, particularly micro and small, to stimulate broader engagement in innovation and adoption of new technologies. This could involve the development of facilitated clusters /networks (as referenced in the document), where businesses can engage with others to explore the competitive advantages offered by new technologies and potentially avail of opportunities to form supply chains.

Net zero targets present significant future economic challenges for businesses of all sectors and sizes and supporting their engagement with new technologies will be critical in helping them identify and adopt potential solutions.

## **Benefits for economic growth and help meet 10X established objectives**

The Council fully supports the 10X Vision for NI to be competitive globally, and the need to drive benefits at scale. Delivery at regional level facilitates the dissemination of best practice, development of skills and cutting-edge technologies and may also identify the identification of potential supply chains and clustering which, in turn, could optimise benefits at scale and drive engagement on a global scale.

Aligned to this there would be scope for the development of a sub-regional focus on specific technologies and USPs within the context of a broader and holistic regional approach to ensure key learning is diffused across the region, optimising the economic impact. For example, the infrastructure of the City/Growth Deals will play a key enabling role in driving innovation and the adoption of new technologies to target sectors at a more sub-regional and local Council level.

In recent years Mid Ulster District Council has engaged with Invest NI's Collaborative Growth initiative to develop sub-regional clusters for two key Mid Ulster sectors – funding was secured to develop the award-winning MEGA Cluster (**M**anufacturing and **E**ngineering **G**rowth **A**dvancement') and Council is working with industry leaders from the Mid Ulster Construction sector to develop a similar cluster with support from Invest NI. Also as noted earlier, the area is home to a world-class High Growth Cluster that manufactures more than 40% of the world's mobile crushing and screening equipment.

The potential for a sub-regional dimension should also be further explored with the relevant key stakeholders, including drawing on the expertise of the local College Network, local sectoral bodies and Innovation Centres. We fully concur with the reference in the Consultation document; *'Taking the Mid Ulster region as an example, Advanced Manufacturing and Agri-Tech has a dominant present. There may be benefit in aligning key 10X activities to enhance and support the assets of this geographic region'*. It is vitally important that a place approach is adopted in aligning key 10X activities to enhance and support the existing assets and strengths of a region such as Mid Ulster. This approach would avoid duplication of effort and resources across sub-regions and ensure 'local' strengths are harnessed and maximised as part of a sustainable and innovative local economic ecosystem.

Council would also assert that such an approach should be a key plank of the sub-regional Economic Plan which is currently being developed by DfE and Invest NI.

**Technologies and USPs do you think would be particularly suited to a sub-regional approach**

The identification of technologies and USPs suited to a sub-regional dimension should be undertaken following the data gathered from this Consultation process. This should draw, as a minimum representation from key local and sub-regional stakeholders representing business, academia, the third sector and Local Government (including City/Growth Deal partnerships).

The Council would also like to take this opportunity to highlight the wealth of knowledge, experience, and expertise already in the Mid Ulster area. In addition, the Council request that this is kept central to and is reflected in the 10X Technologies and Clusters overall concept and the final implemented approach. The Council would also request that Mid Ulster is at the forefront of the emerging sub regional economic plan and future development of sector action plans.

Finally, the Council look forward to receiving the outworkings of this consultation and to engaging in any relevant partnership working to ensure that these proposals directly stimulate inclusive economic growth and productivity, that will have a positive impact across the District.

Yours sincerely

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Councillor Dominic Molloy

Chairperson, Mid Ulster District Council