FLYNN FURNEY
ENVIRONMENTAL CONSULTANTS

Ecological Impact Assessment Report

Lough Bracken Enhancement Plan
Druncondrath Co. Meath

Document Details

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Contents

1 Introduction

Flynn Furney Environmental Consultants been engaged by Meath County Council (MCC) to prepare a Planning and Environmental Report for a Part 8 Planning Application for the Proposed Enhancement works at Lough Bracken, Drumconrath, Co. Meath.

MCC proposes to improve the function of Lough Bracken as a public amenity and provide recreational space for new amenity features while also improving, maintaining, and protecting the lake's water quality conditions (hereafter referred to as the "Proposed Development").

The site has been visited by Ecologists from Flynn Furney Environmental Consultants Ltd on numerous occasions stretching back to 2021 and up to the summer of 2024. Surveys were carried out to investigate whether any Annex I habitats (EU Habitats Directive), Annex II species (EU Habitats Directive), Annex I Bird Species (EU Birds Directive), 'stepping stones/Ecological Corridors' (as covered under Annex 10 of the EU Habitats Directive) or locally important habitats or species are likely to be impacted upon by the proposed development.

This assessment aimed to;

- Establish baseline ecological data for the proposed development site;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the proposed development on ecological features of value (biodiversity);
- Apply mitigation measures to avoid, reduce, remedy or compensate impacts; and
- Identify any residual impacts after mitigation and compensation.

1.1 Site Description

Currently, the site is partially developed for amenity use. It includes a dedicated access lane, tarmac surface and kerbed car park, angling stands and discrete sections of wooden walkways and stone paths. There are ten no. angling stands located along the lakeshore, of which 3 no. are formal and 7 no. are informal, consisting of cleared bank vegetation and constructed gabion walls at points along the shoreline. The three formal angling stands were previously installed by Inland Fisheries Ireland (IFI).

Existing access around the lake shoreline is primarily provided via undefined mud paths and tracks. A 1 km walking track loops the entire lake, and track conditions and surfaces vary significantly along its extent. Along one section, two trail options are via Coillte woodland path or along the lake edge. Some sections of the trail are informal or muddy and it is not a universal access loop.

Lough Bracken is currently used for recreational amenities and as a drinking water resource. An enclosed abstraction facility is located at the southern shore of the lake. It serves the Drumconrath Water Treatment Plant (WTP) which produces c. 600 m^3/day of water serving c. 1200 people on the Drumconrath public water supply (PWS). This water is supplied through a lake abstraction on two groundwater wells, which were constructed in 2001.

Lough Bracken water quality issues are from phosphate enrichment, eutrophication and water abstraction for the village of Drumconrath. The main pressures are likely coming from agricultural runoff, which is exacerbated by the poorly draining soils of the area. The issue of sedimentation from land drainage and bank erosion from livestock access have also been identified as issues.

There are no international, EU or nationally designated areas in the immediate vicinity of the Project. There is on Special Protection Area (SPA) located within 15 km of Lough Bracken, this is Stabannan-Braganstown SPA (Site: 004091).

The Killadden stream flows into and out of Lough Bracken and is a tributary of the River Dee. A land drain at the most northern tip of the lake is the point of entry and the water discharges via a land drain and stream, which flows in a south-easterly direction, eventually meeting the River Dee c. 1.5 km south-east of the lake.

Another stream (EPA Name: Druminshin) is located along the western boundary of the site (c. 0.27 km west of Lough Bracken) and flows adjacent to Coillte forest lands. This stream flows in a southerly direction eventually meeting the River Dee.

The western portion of the lake shore is surrounded by a small fringe of deciduous woodland vegetation that grades into conifer plantations ranging in age from 10 to 25 years. This area is commercial forestry; however, no commercial tree felling activity has taken place in recent years, and there is no intention of continuing it.

1.2 Development Description

1.2.1 Overview of the Proposed Development

Planning permission is being sought by MCC for the enhancement of an existing recreational area covering an area of approximately 26 ha (54 acres) and includes Lough Bracken, adjacent forestry land and the access road. The existing site facilities including angling stands, car park, boardwalk and signage, will be retained where appropriate.

The aim of the Proposed Development is to improve the function of the site as an amenity whilst also serving to improve, maintain and protect water quality conditions of the lake itself.

The Proposed Development will include the following:

- **Angling Stands** - To improve the usability and sustainability of Lough bracken for anglers, the total number and distribution of angling stands is to be increased to eight around the lake shoreline. An accessible angling stan is also proposed on the north-western shore of the lake.
- **Walking Tracks** - Walking tracks have been designed based on the multifaceted use of the lake circulation patterns which allow for the management of recreational users, anglers, families and people of all abilities. All walking track loops are to be clearly mapped at the car park showing site amenities along each route. Some forestry trees will be removed in some areas to facilitate woodland boardwalks and trails to be created, and this will also provide space and opportunities for micro sites and ecological enhancement works.
- **Bird Hides** - Bird hides are proposed along the lake's western shore approximately 300 m from the car park. This will be an all-access facility.
- **Fencing** - Treated posts and rail fences are to be constructed along the lake's southern and eastern shoreline. These will be placed at a contour at least 600 cm above the high-water level of the lake.
- **Picnic and Amenity Areas** - Adjacent to the existing car park, the area of unused amenity grassland is proposed as a picnic area with a toilet and changing room facility. Proposed is a universal access compost toilet. The toilet block could be fitted with a solar panel roof to provide hot water for hand washing and the block will be connected by boardwalk to the rest of the universal access areas. A series of interlinking picnic areas are to be created within the amenity area beside the car park.
- **Playground** - The current amenity grassland will also provide space for a universal access children's playground. Nature-based play structures will include slides, swings and a climbable castle structure.

- **Carpark, Cycling and Signage** - The car park is approximately 0.1 hectares of tarmac with kerbing surrounding the edges. The western edge of the car park is bounded by a small area of amenity grassland that appears to be unmanaged. This is fringed to the west by semi-mature and mature trees. The car park was seen to be in good condition overall. The surface is largely intact and suitable for use. It is proposed that a picnic / resting furniture is installed adjacent to the car park. The facilities should include a secure bicycle-parking rack. Signage is proposed to be installed to inform a range of visitors at Lough Bracken. A key component of the signage is environmental information. This should highlight the importance of clean water at Lough Bracken and the lake's significance for water supply.
- **Tree Planting** - Clearance of non-native commercial conifers around the car park and around the lake's eastern shoreline will provide opportunities for ecological enhancement, particularly tree planting.
- **Site Access -** improvement of existing site access and junction between the LT34042 access lane and local road L34040 (Nobber Road).

Figure 1: Site layout plan Map 1

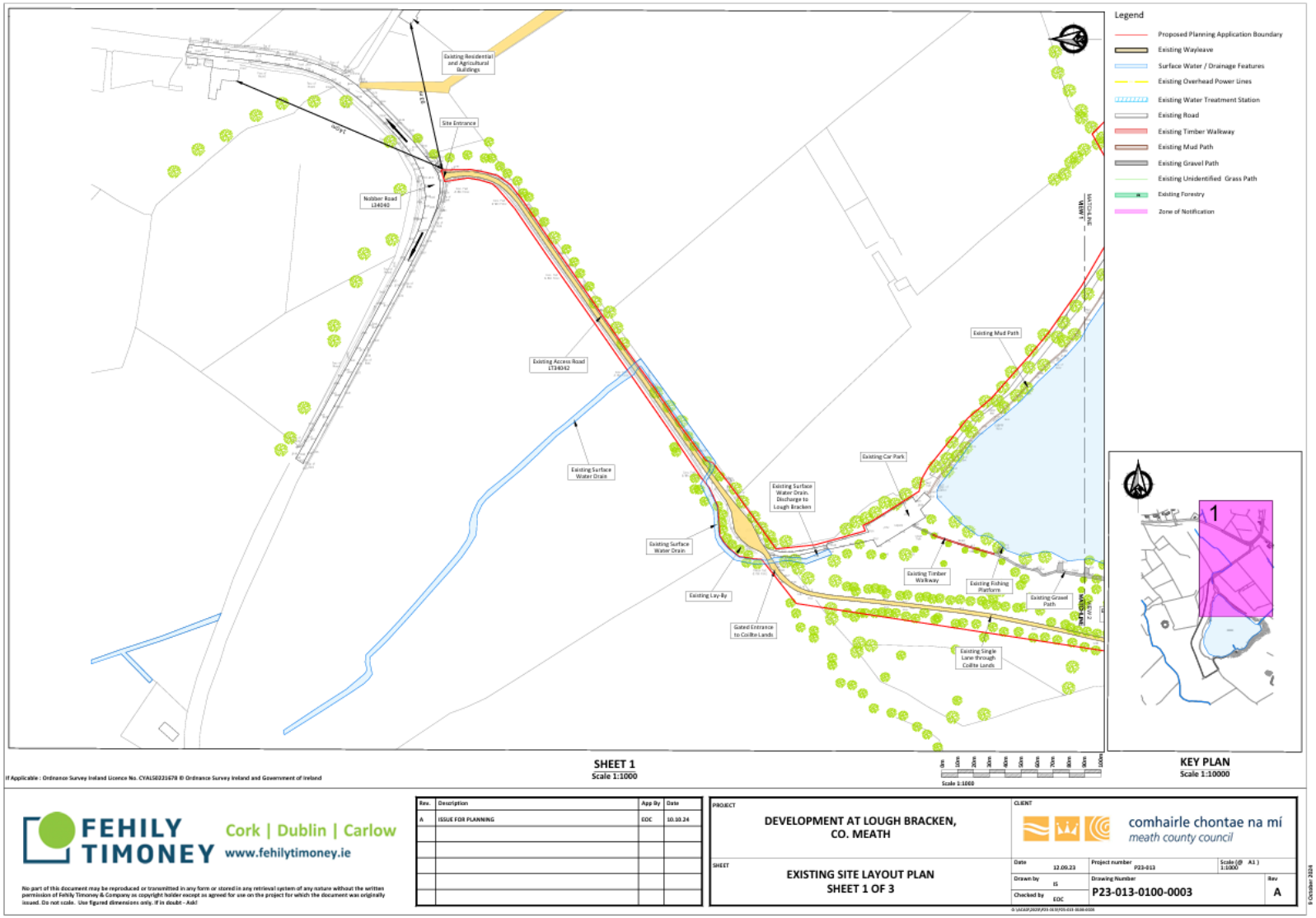


Figure 2: Site layout plan Map 2

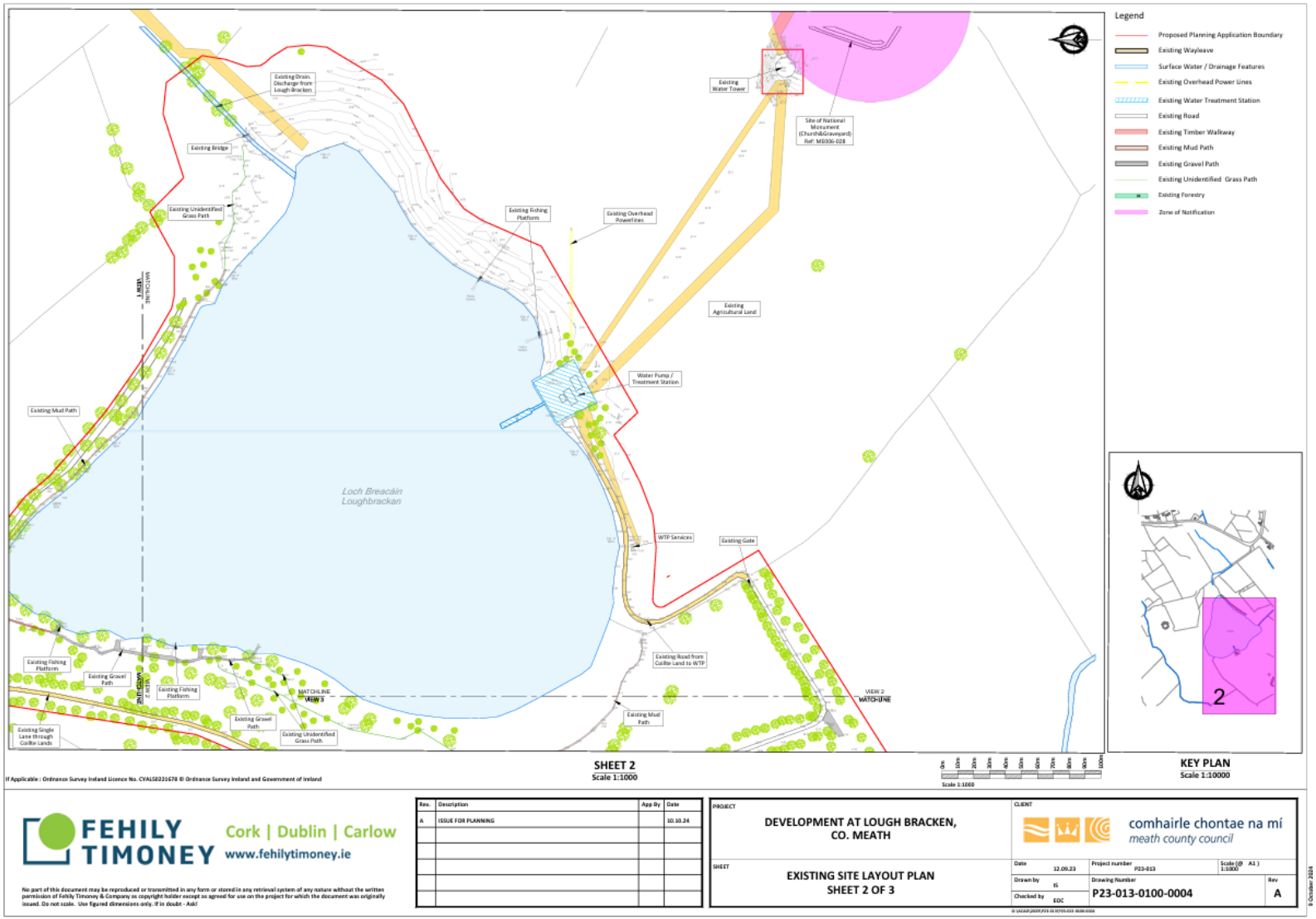
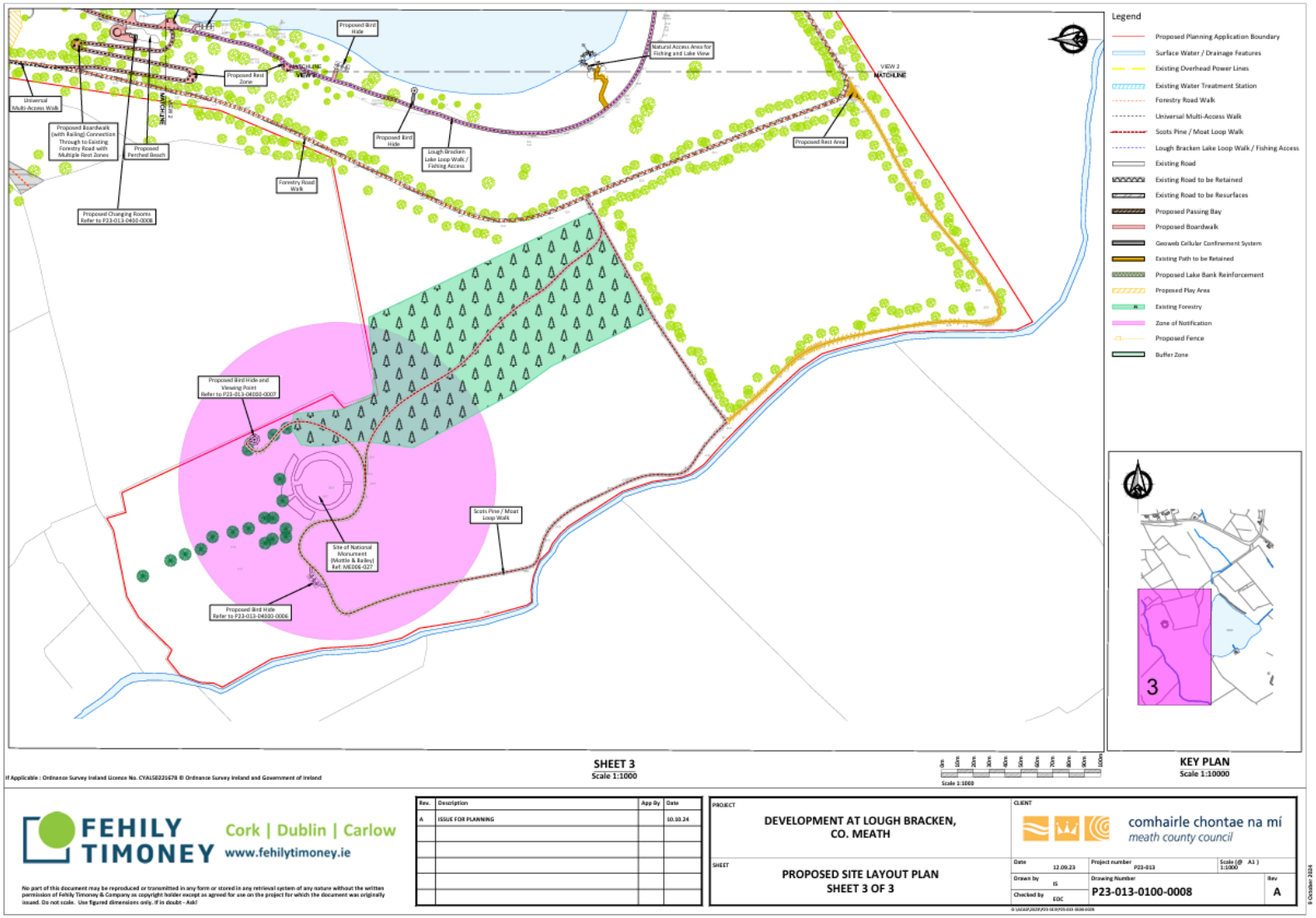


Figure 3: Site Layout Plan Map 3



2 Legislation and Planning Policy

2.1 European Council Directives

2.1.1 Council Directive on the conservation of Natural Habitats of Wild Fauna and Flora

2.1.1.1 92/43/EEC- The Habitats Directive

The main aim of the Directive is to promote the maintenance of biodiversity through the conservation of natural habitats and wild species listed on the Annexes of the Directive. Member States are required to take measures to maintain or restore, at favourable conservation status, biodiversity whilst taking account of economic, social, cultural requirements and regional and local characteristics.

It gives effect to site and species protection measures through establishment of the Natura 2000 network and designation of European Sites including Special Areas of Conservation (SAC) and Special Protected Areas (SPA). It also establishes a list of species (other than birds) whose habitats must be protected to secure their survival. These priority species and habitats are subject to a higher level of protection.

The Directive also requires appropriate assessment of any plan or project not directly connected with or necessary to the management of a European Site, but likely to have significant effects upon a European site, either individually or in combination with other plans or projects.

2.1.2 Council Directive on the Conservation of Wild Birds

2.1.2.1 2009/147/EC- The Birds Directive

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It makes provisions for the maintenance of the wild bird populations across their natural range; conserves the habitats for rare or vulnerable species listed in Annex I and of migratory species through the classification of SPAs and provides protection for all wild birds.

2.2 Irish Legislation

2.2.1 The European Communities

2.2.1.1 (Birds and Natural Habitats) (Amendment) Regulations 2015 S.I. No. 355 of 2015

The European Communities (Birds and Natural Habitats) (Amendment) Regulations provides that the following shall be construed together as one:

- Wildlife Act 1976
- Wildlife (Amendment) Acts of 2000, 2010 and 2012
- European Communities (Birds and Natural Habitats) (Restrictions of the Use of Poison Bait) Regulations 2010
- European Communities (Birds and Natural Habitats) Regulations 2011
- European Communities (Birds and Natural Habitats) (Amendment) Regulations of 2013, 2015
- Wildlife Amendment Bill 2016 (proposed legislation)

2.2.2 European communities (Birds and Natural Habitats)

2.2.2.1 Regulations 2011 to 2015

The Regulations give effect to requirements relating to the designation of protected sites under the Birds Directive and Habitats Directive. The Regulations provide for the protection and management of European Sites and place obligations on all public authorities to have regard to the requirements of the Habitats Directive beyond the realms of planning related consents issued under the Planning and Development Act 2000, as amended (the PDA). The Regulations also provide for the protection of species of European importance.

2.2.2.2 Wildlife Acts 1976 to 2012

The Acts provide for *inter alia* the protection of wildlife. The Acts prohibit the intentional killing, taking or injuring of certain wild birds or wild animals; or the intentional destruction, uprooting or picking of certain wild plants.

2.2.2.3 Wildlife Amendment Bill 2016

The purpose of the Bill is to provide for the implementation of a reconfiguration of the Raised Bog Natural

Heritage Area Network arising from (i) the proposals from the Review of Raised Bog Natural Heritage Area Network published in January 2014; (ii) an assessment of the effects on the environment of the proposals arising from the Review and, if required, any other screening for an assessment or as the case may be, assessment, including public consultation undertaken and (iii) observations or submissions received during the course of public consultation.

Taken as a whole, nature conservation legislation is of key importance in undertaking EcIA for proposed development as it shapes planning policy.

3 Methodologies

3.1 Desk Study

Prior to the main fieldwork contributing to this assessment, a desktop survey of available information sources was carried out. These included:

- The National Biodiversity Data Centre Online Database
- The OSI Geohive Database
- The NPWS Protected Species Database and Online Mapping
- The Environmental Protection Agency Database and;
- The EPA Water Quality in Ireland Report

Designated sites were identified using the current boundary shapefiles (SAC 2023, SPA 2023, NHA 2019/06, pNHA 2015), downloaded from the NPWS website. Other online mapping reviewed included Geohive maps, All Ireland Wetland Survey maps, aerial photography and EPA shapefile datasets. Habitat mapping reviewed included the Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and the Ancient and long-established Woodland (NPWS shapefiles). Desk research also included review of records available through the National Biodiversity Data Centre mapping system.

3.2 Zone of Influence

Following the guidance set out by the (NRA, 2009b), the proposed development has been evaluated based

on an identified zone of influence (ZoI) with regard to the potential impact pathways to ecological feature (habitats, flora and fauna). The ZoI for terrestrial habitats is limited to the footprint of the proposed development. Hydrological linkages between the proposed development and aquatic habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. Adopting a precautionary approach, the distance over which surface water discharges could have a significant impact on receiving watercourses is considered to extend downstream of the proposed development site to the Irish Sea. The ZoI for significant impacts to breeding birds is considered to extend no more than 100m from the proposed development to take account of disturbance during construction. The ZoI for mammals such as bats, badgers and otters may extend over larger distances due to the fact that they can commute and forage many kilometres from their breeding sites.

3.3 Field Surveys

Field work for this survey was carried out over several days in all seasons from 2021 to summer 2024. The primary aims of the field surveys were to:

- Identify habitat types within the study area
- Assess for the presence of protected species of flora and fauna
- Identify ecological and environmental constraints to the construction of this residential development
- Identify ecological sensitivities around and within the study area
- Identify any protected fauna species that may be present.

These surveys considered a broad survey area to ensure all other important features that could be impacted by the development due to connectivity to the proposed development site were considered. These included significant treelines and hedgerows, mammal paths, streams and other watercourses feeding and surrounding the application site. Gross habitat mapping was carried out and is presented in Appendix A. Surveys were carried out for mammals, birds, invertebrates, mature and veteran trees, habitats, bat roosting habitats and botanical features where considered necessary. The surveys and impact assessment have been carried out in accordance with the following guidelines:

- Habitat survey and mapping was carried out as per the guidelines given by Smith et al (2011).
- Habitats were classified according to Fossitt's Guide to Habitats in Ireland (Fossitt, 2000).
- Surveys for invertebrates were carried out National Road Scheme's Ecological Surveying Techniques for protected Flora and Fauna (NRA, 2008).
- Mammal survey methodology followed NRA (2008) and NRA (2005).
- Bat surveys methodology followed Collins (2016) and classification of bat roost potential followed Billington & Norman (1997) .

These surveys were all carried out by experienced competent ecologists of Flynn Furney Environmental Consultants during optimal time periods. No ecological survey constraints exist for this project.

3.3.1 Flora

Habitats on site were classified using A Guide to Habitats in Ireland (Fossitt, 2000) and mapped in accordance with the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith, O'Donoghue, O'Hora, & Delaney, 2011). The classification is a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. The classification is hierarchical and operates at three levels, using codes to differentiate habitats based on the plant species present. Species recorded in this report are given both their Latin and common names, following the nomenclature as given in the 'New flora of the British Isles' (Stace, 2010). Invasive species listed on Schedule 3 of the Birds and Natural Habitats Regulations 2011 (as amended) were also recorded during site visits and findings are discussed in this report.

3.3.2 Terrestrial Fauna

The site survey conducted included an assessment of the presence, or likely presence, of a range of rare or protected fauna species. Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources.

3.3.3 Bat Surveys

Bat surveys included a visual inspection during daylight hours of trees and hedgerows within the area, an assessment for roosting bats. Bat habitat suitability was assessed as per Collins' Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed.), which set out the need for bat surveys and the

methodology to assess habitats for bat suitability.

3.3.4 Avifauna

A bird survey was carried out in November 2023, and a breeding bird survey was carried out in July 2023. The bird surveys were based on the methodologies provided by (Gilbert et al., 1998, and Bibby et al. 2000). If birds were identified by sound and not observed, these species were marked as present, but no estimation of numbers was undertaken. Aquatic Environment

3.4 Statement of Authority of the Ecology Team

Flynn Furney Environmental Consultants has more than 20 years of experience in ecological surveying and management. The company has detailed knowledge of the principles and implementation of both Irish and European environmental legislation. FFEC has worked closely with statutory bodies including the National Parks and Wildlife Service and Waterways Ireland on habitat management and protection projects. Other expertise includes Ecological Impact Assessment, Habitat and Floral Surveys, Bird Surveying, Bat Surveying, Fish and Waterways surveys.

The surveying and reporting were carried out by **Ian Douglas ad Billy Flynn**

3.5 Ecological Impact Assessment Methodology

This ecological impact assessment has been prepared in accordance with relevant legislation and best practice guidance including:

- The Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, freshwater and Coastal 2nd Edition. CIEEM (2018).
- The EPA's Draft Advice Notes on Preparing Environmental Impact Statements (EPA, 2015a).
- The EPA's Draft Revised guidelines on Information to be Contained in Environmental Impact Statements (EPA, 2015b).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).

Ecological features (habitats and species) were evaluated for their conservation importance according to the National Roads Authority's scheme (NRA 2009). For habitats or species, significance of effects was assessed with reference to their conservation status, abundance and distribution. Description of significant effects follows guidance outlined in the EPA Draft Revised Guidelines on the Information to be Contained in EIS (EPA, 2015b). The term 'significant effect' as used in this report follows guidance (CIEEM, 2018) and is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. In the case of designated sites, a negative significant effect would be one that undermines the conservation objectives and targets for that site. The significance of impacts on habitats was determined with reference to the value of the feature being affected and the magnitude of the impact. Impacts are considered ecologically significant at a stated geographic scale or are considered not significant.

3.5.1 Introduction and Context

The impacts which may be expected from the development of the proposed recreational area are assessed below. These possible impacts have been assessed under the CIEEM (2018) and the National Roads Authority guidelines (NRA, 2006). Criteria for assessment of duration of impacts used (EPA 2002). These provide guidance on assessing impact significance upon features of sites proposed for works. Impact significance must be given in context of their respective ecological value of the site and features under study.

3.5.2 Assessing Ecological Value

The 'ecological value' of an area or feature is therefore defined with reference to geographical context. That is, whether it is of value locally, regionally, nationally or internationally. This is assessed by ecologists on reviewing survey outcomes. Key criteria are the presence of designated sites, the site or feature containing protected species or areas of high biodiversity. The criteria for ecological value are given in Table 3.1.

Table 3.1 Ecological Value Criteria

Ecological Value	Criteria
International	• European Sites' including Special Areas of Conservation (SAC) & Special Protection Areas (SPA).

	• Sites that satisfy the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. Sites containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the • national level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. Ramsar Sites • World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Sites hosting significant species populations under the Bonn Convention • Sites hosting significant populations under the Berne Convention
National	• Areas of Special Scientific Interest (ASSI) or Natural Heritage Area (NHA). National Nature Reserves (NNR). • Marine Nature Reserves (MNR). • Area of Outstanding Natural Beauty (AONB). • Refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). • Undesignated sites fulfilling the criteria for designation as an ASSI; NNR; MNR; and/or refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). • Resident or regularly occurring populations (important at the national level) of the following: • Species protected under Wildlife (Northern Ireland) Order 1985 or

	Wildlife Act 1976, as amended); and/or • Species listed on the relevant Red Data list. • Sites containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
Regional	• Sites of Local Nature Conservation Importance (SLNCI). Areas subject to a Tree Preservation Order. • Resident or regularly occurring populations (assessed to be important at the Regional level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife (Northern Ireland) Order 1985 (as amended); and/or • Species listed on the relevant Red Data list. • Sites containing areas of the habitat types listed in Annex I of the Habitats Directive that do not satisfy the criteria for valuation as of International or National importance. • Regionally important populations of species or viable areas of semi-natural • habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this have been prepared. • Sites containing semi-natural habitat types with high biodiversity in a regional context and a high degree of naturalness, or populations of species that are uncommon within the region. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local	• Locally important populations of priority species or habitats or features of natural heritage importance identified in the Local BAP, if

	this has been prepared; Resident or regularly occurring populations (assessed to be important at the Local level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife (Northern Ireland) Order 1985 (as amended); and/or • Species listed on the relevant Red Data list containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value; • Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

Ecological Impact Assessment must also consider the significance of effects that may be expected arising from a proposed development. CIEEM guidelines (2018) define a significant effect as:

"an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'... or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide- ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local".

It also states that:

"an effect that is sufficiently important to require assessment and reporting so that the decision maker is

adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring".

3.5.3 Assessing Significance of Effects

The criteria for assessment of significance of effects is given in the following table. It should be noted that significant effects may also include beneficial effects.

Table 3.2 Criteria for Assessing Significance of Effects

Impact Significance		Criteria
Significant Negative Effect	**Major Adverse**	• Loss of, permanent damage to or adverse impact on any part of a site of international or national importance; • Loss of a substantial part or key feature of a site of regional importance; • Loss of favourable conservation status (FCS) of a legally protected species; • Loss of or moderate damage to a population of nationally rare or • scarce species.
	Moderate Adverse	• Temporary disturbance to a site of international or national importance, but no permanent damage; • Loss of or permanent damage to any part of a site of regional importance; • Loss of a key feature of local importance; • A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; • Reduction in the amount of habitat available for a nationally rare • or scarce species, or species that are notable at a regional or

		county level.
No Significant Effect	**Minor Adverse**	• Temporary disturbance to a site of regional value, but no permanent damage; • Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; • A minor impact on legally protected species but no significant habitat loss or reduction in FCS; • A minor impact on populations of nationally rare or scarce • species or species that are notable at a regional or county level.
	Negligible	• No impacts on sites of international, national or county importance; • Temporary disturbance or damage to a small part of a feature of local importance; • Loss of or damage to land of negligible nature conservation value; • No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity. • Beneficial and adverse impacts balance such that resulting • impact has no overall affect upon feature.
	Minor Beneficial	• A small but clear and measurable gain in general wildlife interest, • e.g. small-scale new habitats of wildlife value created where • none existed before or where the new habitats exceeds in area that habitats lost.
Significant Positive	**Moderate Beneficial**	• Larger new scale habitats (e.g. net gains over 1 ha in area) • created leading to significant measurable gains in relation to the objectives of biodiversity action plans.

Effect	**Major Beneficial**	• Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats • Directive or Annex I of the Birds Directive.

3.5.4 Impact Duration and Likelihood

The duration of impact must also be considered when assessing overall ecological impacts. Criteria for assessment of duration of impacts used (EPA 2002), the following terms when quantifying duration:

Table 3.3 Impact Duration and Timescales

Impact Duration	Timescale
Temporary	Up to 1 year
Short-term	1-7 years
Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years

The likelihood of impacts should also be defined. Assessment of likelihood of impact followed CIEEM guidelines. The assessed likelihood are as follows:

Table 3.4 Likelihood and Probability of Impacts

Likelihood	Probability
Almost Certain	Probability estimated at greater than 95%
Probable or Likely	Probability estimated between 50% and 95%
Unlikely	Probability estimated between 5% and 50%
Extremely Unlikely	Probability estimated at less than 5%
Almost Certain	Probability estimated at greater than 95%

3.6 Key Ecological Receptors

In accordance with National Roads Authority guidelines (2009), impact assessment is only undertaken of 'key ecological receptors' (KERS). KERS are within the zone of influence of the project and are "both of sufficient value to be material in decision making and likely to be affected significantly". To qualify as KERS, features must be of local ecological importance (higher value) or higher.

Features falling below this threshold are not assessed. Impacts are described as being either significant or not significant. Broadly, significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2018).

4 Results

4.1 Designated Areas

The proximity of the proposed development area to European sites, and Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites, is of importance when identifying potentially likely significant effects. Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several meters (e.g. in the case of whorl snails Vertigo spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have ZoIs within close proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. Hydrological linkages between the proposed development and European sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. A reasonable worst-case ZoI for water pollution from the proposed development is considered to be the ground and surface water, wherein the proposed works are to be located. The likely effects of the proposed development on European sites has been appraised using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed development that has the potential

to impact on an European site, its qualifying features and its conservation objectives;

- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor;
- A 'receptor' is defined as the Special Conservation Interests of Special Protection Areas (SPA) or Qualifying Interests (QI) of Special Areas of Conservation (SAC) for which Conservation Objectives have been set for the European sites being screened.
- A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potentially links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report

4.1.1 European Sites

SACs are sites of international importance due to the presence of Annex I habitats and/or Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Bird Directive (2009/147/EC), regularly occurring populations of migratory species and areas of international importance for migratory birds. The European sites correspond to those that were subject to Screening for Appropriate Assessment (presented under separate cover). The assessment considered the European sites within the ZoI of the proposed development and/or with hydrological connectivity to the proposed development sites, and concluded that there is no likelihood of effects as a result of the proposed development, either alone or in combination with other plans and projects, if the correct mitigation measures are enacted.

4.1.2 Nationally Designated Sites

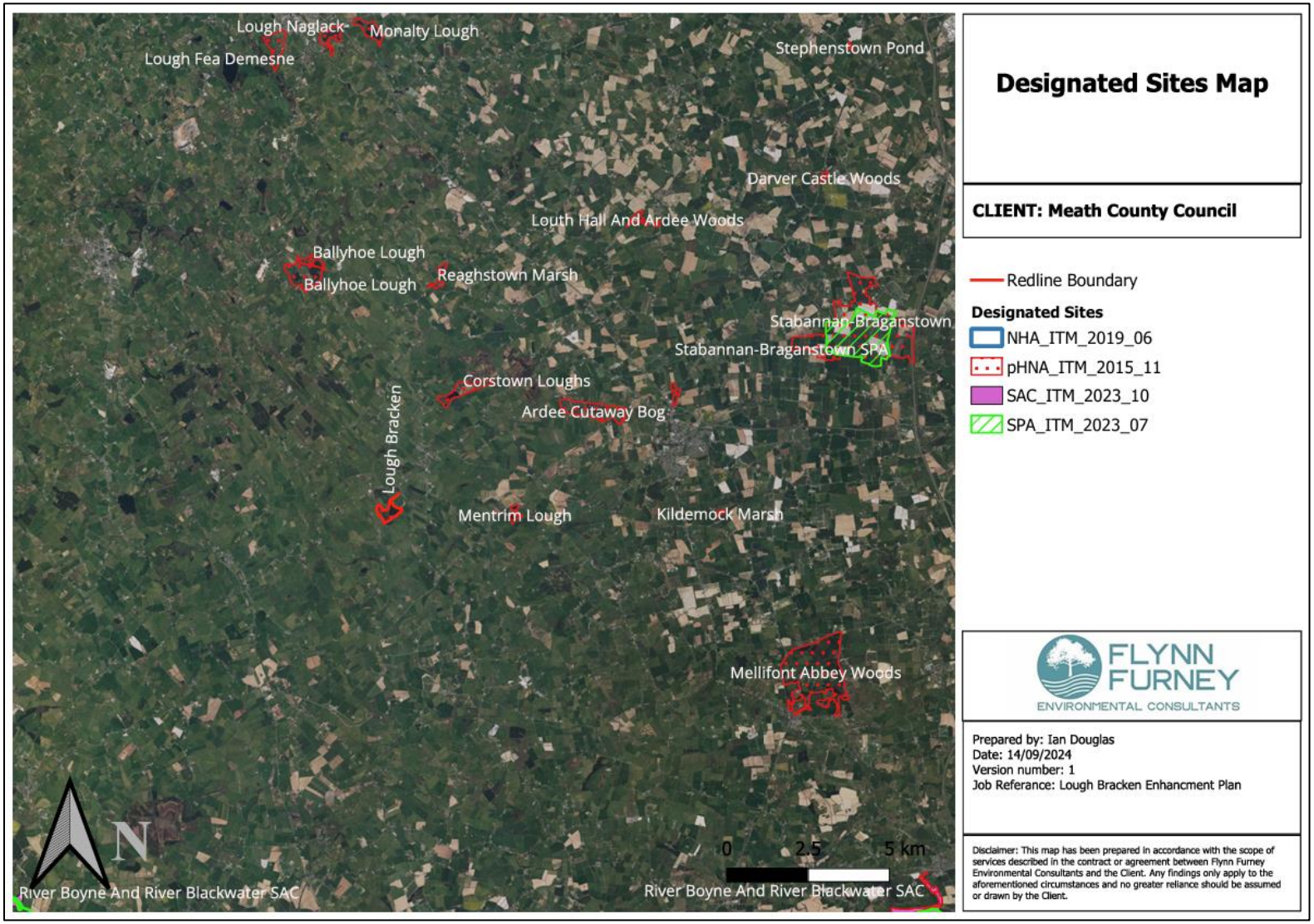
Natural Heritage Areas (NHAs) are sites deemed to be of national ecological importance and are afforded protection under the Wildlife (Amendment) Act 2000. Many NHA boundaries overlap with European sites. The proposed NHAs (pNHAs) have not been statutorily proposed or designated under the Wildlife Act (as amended). However they are afforded some protection under planning legislation and objectives are included in the current County Development Plan specifically aimed at protecting pNHAs or providing complimentary protective measures that enhance the network of pNHAs.

Table 4.1 Internationally designated sites within 15km of the proposed development

Site Name and Designation	Approximate Distance from the Site	Possible connectivity between this and the proposed development site
Stabannan-Braganstown SPA	12.1km	None
Ballyhoe Lough pNHA	6.9km	None
Reaghstown Marsh	6.8km	None
Corstown Loughs	3.8km	None
Ardee Cutawy Bog	6.5km	None
Louth Hall and Ardee Woods	11.9km	None
Mentrim Lough	4.2km	None
Kildemock Marsh	10.5km	None

The project has already been screened for AA by the Fehily Timoney and Company (2024). The AA Screening report concluded that the proposed development individually/in combination with other plans and projects (either directly or indirectly) is not likely to have any significant effects on European designated site. Therefore, progression to Stage 2 Appropriate Assessment is not required.

Figure 4: Designated sites Map



5 Survey Results

5.1 Overview of Habitats and Habitats Classification

A broad scale habitat map can be seen in figure 1. The following habitats were recorded around the lake and its fringes. This assessment also gives an indication of habitat quality and if this is likely to impact upon water.

5.1.1 Limestone/marl lakes

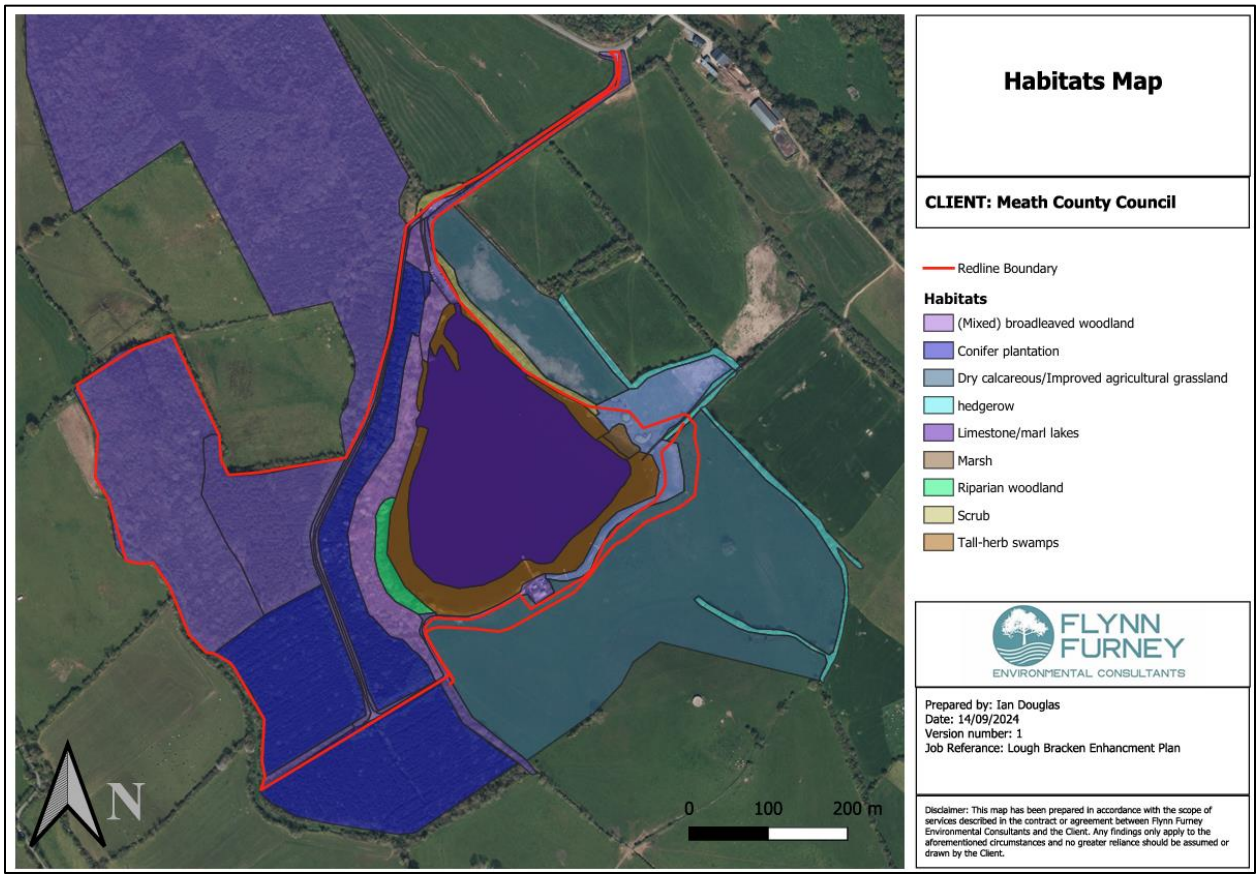
Lough Bracken is considered a marl lake as it is base-rich and poor to moderately rich in nutrients (oligotrophic to mesotrophic). Its waters are naturally clear and the lake sediment usually has a high proportion of marl, a white clayey precipitate of calcium carbonate. Stoneworts (*Chara spp*.) are often abundant in Marl lakes but none were recorded during this survey. Disturbance leading to reduced water quality is likely impacting Lough Brackens ability to display natural characteristics of a Marl Lake The lake is fringed by a number of other aquatic habitats. These discussed below.

5.1.2 Reed Fringe

Much of the lake is surrounded by a reed fringe composed of stands of herbaceous vegetation that is dominated by reeds and other large grasses and sedges. Most of the lake fringe was dominated by Common Reed (*Phragmites australis*) with occasional Reed Canary-grass (*Phalaris arundinacea*). Smaller and lower-growing herb species included Yellow Iris (*Iris pseudacorus*) and Water Horsetail (*Equisetum fluviatile*). A detailed assessment of the reed fringe is presented in section 3.3.

Much of the reed bed habitat surrounding the lake has become highly degraded as a result of cattle having access to the water's edge. This has meant the capacity of the reed fringe to complete these functions has been diminished.

Figure 1: Habitats Map



5.1.3 Marsh

A small marsh area was recorded where a minor water course flows out of the lough. This area is likely seasonally waterlogged depending on water levels within the lake or subject to infiltration from the surrounding landscape. This marsh was dominated by Reeds (*Juncus Spp.*), small sedges (*Carex Spp*), Yellow Iris (*Iris pseudacorus*) and Water Forget-me-nots (*Myosotis scorpioides*).

5.1.4 Wet grassland

Wet grassland is a transitional habitat, in this instance acting as a buffer between improved grassland and the reed fringe. Species included Reeds (*Juncus Spp.*), small sedges (*Carex Spp*), Water Forget-me-nots (*Myosotis scorpioides*). Grasses included Yorkshire-fog (*Holcus lanatus*) and Creeping Bent (*Agrostis stolonifera*). Herb species included Creeping Buttercup (*Ranunculus repens*), Marsh Thistle (*Cirsium*

palustre), Silverweed (*Potentilla anserina*), Meadowsweet (*Filipendula ulmaria*) and Water Mint (*Mentha aquatica*). This habitat area was found as a thin band running along the southernmost edge of the lake with a larger area of wet grassland at the lake's south eastern corner. This habitat was also heavily poached by cattle.

Figure 5: Poaching and degradation of the reed fringe

5.1.5 Hedgerows and Scrub

Much of the eastern extent of the lough was surrounded by dense hedgerows and scrub but this was mostly removed during the winter of 2020/21. If the remainder is left and managed, this area will become scrub again, but sadly this may take a number of years to recover. This transitional habitat type develops on steeply sloping banks that fall down towards the water's edge. The canopy layer consisted mainly of Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Ash (*Fraxinus excelsior*), Willow (*Salix*

Spp), Yews (*Taxus baccata*) and Bramble (*Rubus fruticosus agg.*) with Gorse (*Ulex europaeus*), Holly (*Ilex aquifolium*), Honeysuckle (*Lonicera periclymenum*), Hedge Bindweed (*Calystegia sepium*), and Bush Vetch (*Vicia sepium*) also common. The understory contained Willow Herb (*Chamaenerion angustifolium*), Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), Herb-Robert (*Geranium robertianum*) and Nettle (*Urtica dioica*).

5.1.6 Grassy Verge

A small area of amenity grassland or grassy verge was recorded beside the car park. This area is strimmed occasionally by locals but is otherwise unmanaged. This was dominated by grasses like Yorkshire-fog (*Holcus lanatus*), Smooth Meadow-grass (*Poa pratensis*) and Cock's-foot grass (*Dactylis glomerata*). The dominant annual flowers included Hogweed (*Heracleum sphondylium),* Dandelion (*Taraxacum spp*.) Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Wood Dock (*Rumex sanguineus*) and Fat hen (*Chenopodium album*). The area has also been planted with trees including Beech (*Fagus sylvatica*), Horse Chestnut (*Aesculus hippocastanum*) and Oak (*Quercus petraea*).

5.1.6.1 Conifer Plantation

Much of the western edge of the lake is dominated by conifer plantations composed mostly of Sitka Spruce (*Picea sitchensis*). Around the edges of the plantation broadleaved trees are present including Birches (*Betula spp.*), Hazel (*Corylus avellana*), Willows (*Salix spp.*), Oak (*Quercus spp*) and Ash (*Fraxinus excelsior*), Elder (*Sambucus nigra*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) were also noted. The understory was limited due to a lack of light penetration with Ivy (*Hedera helix*) and Bracken (*Pteridium aquilinum*) occasionally. A plantation of Scots Pine (*Pinus sylvestris*) was recorded west of the pump station access road. This is an excellent semi-natural habitat area with mature Scots pine up to 20 metres high and a highly developed understory including Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*), Elder (*Sambucus nigra*) and Hawthorn (*Crataegus monogyna*).

Figure 3: Stand of Scots Pine

5.1.7 Riparian Woodland

Riparian woodlands are wet woodlands on rivers or lakes subject to frequent flooding, or where water levels fluctuate. Excellent riparian woodland was recorded around the lough's south western shoreline. This is dominated by stands of Willows including Grey Willow (*Salix cinerea*) and occasional Alders (*Alnus glutinosa*). The field layer is characterised by broadleaved herbs such as Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Hemlock Water-dropwort (*Oenanthe crocata*) and Hedge Bindweed (*Calystegia sepium*). Stands of Reed Canary-grass (*Phalaris arundinacea*) were identified around the fringes of this woodland. Dead vegetation and dead wood were common throughout this area. This area is one of the most ecologically significant

portions of the lakeshore habitat and should be protected.

5.1.8 Mixed broadleaved Woodland

This habitat type occurs mainly in a thin band along the lake's western shoreline between areas of reed fringe and riparian woodland to the east and conifer plantation further to the west. Other small pockets of this habitat type are found around the site entrance and near the car park. These woodlands were over 75% covered in broadleaved trees with the remainder composed of conifers from the adjacent plantations. Beech (Fagus sylvatica) was a common within the southern portion of this habitat type along with Willows (*Salix Spp.),* Alder (*Alnus glutinosa*), Downy Birch (*Betula pubescens*), Sycamore (*Acer pseudoplatanus*), Elder (*Sambucus nigra*), Ash (*Fraxinus excelsior*) and occasionally Hazel (*Corylus avellanacrab*). The ground layer within this habitat type was variable and often contained large numbers of sapling Elder (*Sambucus nigra*) and Sycamore (*Acer pseudoplatanus*). Bramble (*Rubus fruticosus agg.)* was dominant or abundant in most areas along Wood Speedwell (*Veronica montana*), Ivy (*Hedera helix*), Herb-Robert (*Geranium robertianum*), Wood Sorrel (*Oxalis acetosella*) and Bracken (*Pteridium aquilinum*). In clearings or closer to the water's edge Rosebay Willowherb (*Epilobium angustifolium*) and Nettle (*Urtica dioica*) were recorded. Along the woodland path Early Dog-violet (*Viola reichenbachiana*), Enchanter's-nightshade (*Circaea lutetiana*) and Wood Avens (*Geum urbanum*) were recorded.

5.1.9 Dry calcareous and neutral grassland/Improved Grassland

Grasslands around the lake's southern shoreline rise steeply away from the lake to a high of approximately 40 metres above the waters level. This grassland does not look to have been improved through reseeding or fertiliser in recent years on sloping areas. Were the field is flatter, slurry or fertiliser looks to have been applied. Grass species included Perennial Rye-grass (*Lolium Spp*), Meadow Foxtail (*Alopecurus pratensis*), Timothy (*Phleum pratense*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail (*Cynosurus cristatus*) and Yorkshire-fog (*Holcus lanatus*). Due to grazing pressure herbs were limited, but included Clovers (*Trifolium spp.*), Yarrow (*Achillea millefolium*), Common Selfheal (*Prunella vulgaris*), Docks (*Rumex spp.*) and Creeping Buttercup (*Ranunculus repens*).

5.1.10 Reed Fringe Assessment

An assessment of the vegetation assemblages of the lake reed fringe was undertaken on 17th June 2021. The purpose of this was to assess:

- the species makeup of the reed fringe
- the extent of the fringe
- any damage or other pressures on this habitat type
-

Four locations were chosen for a detailed survey. These were chosen in order to provide a representative sample of the main shoreline vegetation communities. Areas that were devoid of plants (e.g. at angling pegs or where the lake is otherwise accessed) were not sampled. The location of sample sites is shown in Figure 4.

Figure 6: Reed fringe and Macroinvertebrate sample sites

Site 1. This site has a substantial fringe made up almost entirely of Black Bog Rush (*Schoenus nigricans*). The fringe extends for around 3.5m. There is a single Willow (*Salix cinerea*) of around 2m in height. There is also a fringe of Water Lily (*Nuphar lutea*) at the furthest extent of the Rush. The ground flora here is rather poor with Water Mint (*Mentha aquatica*) being among the few vascular plants here and the only one that is water dependent.

Site 2. A very substantial fringe of vegetation occurs at this point. A total fringe extent of 15m was recorded here. Here, Soft Rush (*Juncus effusus*) occurs on tussocks that have been formed through the action of cattle poaching. This extends over an area of greater than 2.2m. Silverweed (*Potentilla anserina*) also occurs here. 1m out from the track Silverweed is occasional, giving way to occasional Water Horsetail (*Equisetum fluviatile*) and then an area of bare ground. Moving toward the lake, Brooklime (*Veronica beccabunga*) is abundant and Water Mint frequent. Common Reed (*Phragmites australis*) is initially dominant on the wetted area for around 3m. It becomes frequent along with Black Bog Rush, which then becomes dominant in the deeper water with Common Reed being occasional.

Site 3. A shallower but more diverse reed fringe was recorded at this point where again there was evidence of poaching (more significant than at Site 2). The extent of the reed fringe here was around 9m. On the edge of the liminal zone ruderal plants were abundant. These were Docks (*Rumex spp.*), Perennial Rye-grass (*Lolium Spp*), Creeping Buttercup (*Ranunculus repens*) and Hairy Bitter-cress (*Cardamine hirsuta*). Plants of somewhat wetter areas here were Watercress (*Nasturtium officinale*) and Cuckoo Flower (Cardamine pratensis). 1m from the bank, diversity was greatest with Branched Bur-reed (*Sparganium erectum*), Water Mint and Watercress, all occasional. There was also Water Horsetail, Marsh cinquefoil (*Comarum palustre*) and Water Dock (*Rumex hydrolapathum*). For approximately 2m toward deeper water, Yellow Flag Iris (*Iris pseudacorus*) was dominant. Finally, a fringe of 5m in extent was dominated by Black Bog Rush with a fringe of Yellow Water Lily at its edge.

Site 4. This site is located on the southwestern shore of the lake with a substantial fringe of Willow defining the shore area. Including the substantial fringe of Yellow Water Lily, the total extent of the fringe here is 23m. Soft ground at the edge of the wetted area has Alder (*Alnus glutinosa*) with frequent Meadowsweet (*Filipendula ulmaria*) and Hairy Bitter-cress, with Iris being rare. For an extent of 4m, Reed Canary Grass

(*Phalaris arundinacea*) and Water Mint are frequent with Hedge Bindweed and Meadowsweet occasional. For 2m, Reed Canary Grass is abundant with Iris occurring occasionally, along with Water Mint. The final 5m of the main fringe is made up of rather dense Willow with Reed Canary Grass, Water Horsetail and a pondweed (*Potamogoton spp*.). Finally, Yellow Water Lily extends for a further 10m from the fringe.

The reed fringe at site 1 was smallest in extent and also the least floristically diverse. This would likely be a function of the amount of available substrate here. Evidence of cattle poaching was seen at both Sites 2 and 3, the latter being more severe. Despite this, plant diversity was greatest here. This would be related to the gentle slope and suitable substrate available. There was no evidence of poaching at Site 4 with livestock being prevented from entering this area. There was some evidence of anthropogenic disturbance at site 4 (discarded materials), likely from angling activity. However, this was not very significant. The reed fringe generally shows good structure on much of the lakeshore. The suitability of the substrate would indicate that if the grazing/poaching pressure is removed, regeneration of this habitat type in the affected areas would be readily achieved.

5.2 Fauna

5.2.1 Mammals

The survey area was surveyed by direct search (during daylight hours) for signs of mammalian activity which included prints, tracks, hairs, droppings, odour, digging and evidence of feeding. Places of refuge, rest and other activity such as Badger (*Meles meles*) setts were sought. Any tangible signs were recorded. Mammals which were recorded on the NBDC Mammals of Ireland 2016-2025 Database within 1km of the site included West European Hedgehog *Erinaceus europaeus* and European Otter *Lutra lutra,* however there were no recordings within the site. No mammal refugia (e.g. setts of Badger *Meles meles* or Otter holts) were found within the survey area. No impacts to any protected mammal species is therefore deemed likely to occur.

5.2.2 Birds

Birds recorded during field surveys were typical species recorded in the countryside and around loughs in Ireland and included a range of passerine species. Serval red listed, migratory and wading species were

also recorded and are listed in table 2 below.

Table 2: Target species recorded

Common Name	BOCCI	Notes
Black-headed gull	Amber	Recorded occasionally on the site in low numbers
Herring gull	Amber	
Great Crested Grebe	Green	A resident population of less than 5 nests annually on the Lough
Mallard	Green	Recorded regularly on the site. No nesting was noted but likely to be occurring
Grey heron	Green	Recorded occasionally on the site in low numbers
Cormorant	Amber	
Mute Swan	Green	Recorded on the Lough during all visits
Moorhen	Green	Resident population of less than 10 nests annually on the Lough
Grey Wagtail	Red	Noted on 2 occasions
Snipe	Amber	Noted in areas of reed fringe and wet grassland on all visits.

5.2.3 Bats

All bat species in Ireland are legally protected under multiple international and national laws, including the Bonn Convention (1992), the Bern Convention (1982), the EU Habitats Directive (92/43/EC), which was transposed into Irish law by S.I. No. 94 of 1997, and the Wildlife Acts of 1976 and 2000. The Lesser Horseshoe Bat is listed under Annex II of the Habitats Directive, granting it special protection, while all other Irish bat species fall under Annex IV, which provides general protection. Daubenton's Bat (Myotis

daubentonii) was recorded within 2 km of the site in 2009, according to the National Bat Database of Ireland (NBDC).

Bat surveys included daylight visual inspections of trees within the area, assessing their suitability for roosting. The hedgerows and trees around the site were found to offer low-quality roosting bat habitat, as they lack sufficient space, shelter, and protection to support large numbers of bats regularly. None of the trees surveyed showed obvious signs of bat roosts, such as holes, cracks, or cavities, nor were there large dead trees covered in mature ivy, which are often used by bats.

Following Collins (2023), an assessment of roosting and foraging suitability was conducted. The areas directly affected by the works were noted to have negligible roosting potential. Overall, the site was assessed to have low to moderate roosting potential but high foraging potential. While roosting habitat was limited, commuting and foraging habitat on the site of works were considered low, with moderate foraging opportunities across the site.

5.2.4 Protected Invertebrates

The Marsh Fritillary butterfly (*Euphydryis aurinia)* is Ireland's only Habitats Directive Annex II insect species. In Ireland, the species relies solely on Devil's-Bit Scabious as its larval food plant.

No stands of Devil's-Bit Scabious were recorded within or the proposed development site. No larval webs can therefore occur on site.

5.2.5 Invasive Species

The European Union (EU) adopted Regulation (EU) No 1143/2014 on September 29, 2014, to address the introduction and spread of invasive alien species (IAS). This legally binding regulation for all EU member states was enacted on January 1, 2015. It establishes a framework to prevent, minimise, and mitigate the negative impacts of both intentional and unintentional IAS introduction and spread. These impacts encompass biodiversity loss, degradation of associated ecosystem services, and potential harm to human health and the economy.

In line with this regulation, Ireland launched its third National Biodiversity Action Plan (NBAP) in October

2017, covering the 2017-2021 period. This plan builds upon the previous NBAPs and outlines 119 targeted actions under seven strategic objectives. The goal is to achieve Ireland's national "Vision for Biodiversity" through collaborative efforts across government, civil society, and private sectors.

The European Communities (Birds and Natural Habitats) Regulations 2011 contain important new provisions to address the problem of invasive species. A black list of unwanted species is set out in the Regulations. It will be an offence without a licence to release or allow to disperse or escape, to breed, propagate, import, transport, sell or advertise such species. Two regulations that deal specifically with these scheduled lists of species are:

Regulation 49: Prohibition on introduction and dispersal of certain species

Regulation 50: Prohibition on dealing in and keeping certain species (however, regulation 50 is not yet in effect).

A search of records for invasive non-native species on the National Biodiversity Data Centre[1] was carried out as part of this project and none were recorded within 2km of the Lough. No third schedule invasive species were noted within the site of works.

5.3 Impact Assessment of the Proposed Development

The potential impacts on the habitats and species within and surrounding the proposed development site is provided below.

5.3.1 Impact Assessment: Habitats

The potential impacts on the habitats identified within and surrounding the proposed development site are provided in the table below.

Table 5.3 Impact Assessment: Habitats

Impact Assessment: Habitats				
Ecological Feature	**Evaluation**	**Nature of Impact**	**Significance**	**Duration & Likelihood**
Habitats within the Proposed Development Site				
Conifer Plantation Woodland	Low local (Sitka Spruce) High Local (Scots Pine)	Removal of some trees and track creation through an area of existing conifer plantation which is composed of Scots Pine	Negligible*	Permanent/ Almost certain
Hedgerows/Scrub/grassy verge	High Local	Minor clearance of scrub and hedgerow to allow track widening to occur	Minor adverse	Permanent/Likely
Marl Lakes/Water quality	Regional	Potential impacts to water quality during construction works	Minor adverse	Temporary/Likely

* Habitat is likely to benefit from the opening up of the canopy allowing greater light into the floor of the woodland

5.3.2 Impact Assessment: Fauna

The potential impacts on the fauna within and surrounding the proposed development site is provided in the table below.

Table 5.4 Impact Assessment: Fauna

Impact Assessment: Fauna			
Species/Group	**Nature of Impact**	**Significance**	**Duration & Likelihood**
Protected	None found to occur within the site of	Negligible	-

Mammals	works		
Birds	Disturbance to nesting habitat during works. Increased anthropogenic disturbance locally. Given the abundance of habitat locally, no adverse impacts are predicted.	Negligible	Permanent/ Likely
Fish	Possible impacts to water quality during works. Overall, works will be a net benefit to the lough and its fish populations.	Minor adverse – Construction works Minor beneficial – Operational phase	
Bats	Possible impacts to foraging and commuting habitat Impacts of lighting in a previously unlit area	Minor adverse	Permanent/ unlikely
Amphibians	No impacts predicted	N/A	N/A
Protected Invertebrates	No impacts predicted	N/A	N/A

5.3.3 Cumulative and In-combination Impacts

Meath County Council's online planning portal was searched for planning applications within this area. Planning permission has been granted in the area for numerous other developments, mostly residential developments and agricultural developments local to Lough Bracken. No cumulative or in combination impacts were predicted in conjunction with the proposed development.

6 Discussion of Impact Assessment

During the construction phase, there is the potential for the release of sediment and surface water run-off to land and waterbodies due to the nature of the construction works and the close proximity to the

lake. Water will not be abstracted from rivers/lakes or streams during construction. Water will not be pumped directly into Lough Bracken, rivers/streams, or surface water drains.

Due to the magnitude of the construction works proposed and their temporary nature, there will be no impacts on any surface or ground waterbodies. In addition, minor excavation works will be carried out on-site, which significantly limits the potential for the generation of silt-laden surface water affecting downstream water body receptors.

During operations, the Proposed Development will include an increase in the number of fishing stands at the lake, reducing the risk of erosion and wear at the banks and increasing water safety. The works include installing fencing south of the lake to prevent livestock from adjacent farmland from accessing the lake shore and potentially contaminating the water supply. The bathing areas will adhere to Water Safety Ireland guidelines.

6.1 Impacts on Habitats

Impacts upon habitat types within the proposed development footprint are considered Minor Adverse or of lesser significance, given the conservation value, scale, and likelihood of the impacts predicted from the construction and operation of the proposed development. Negligible ecological impacts of a permanent duration are predicted for woodland and scrub habitats. Additionally, areas of conifer plantation are likely to benefit from increased light penetration as a result of the works. Impacts of *minor adverse* significance are also predicted to affect water quality with the lough during work.

The overall impact and significance of the proposed development upon these habitats (taken as a whole) can, therefore, be considered to be *minor adverse* or lower. Measures to mitigate any impacts as defined here are given in the following section.

6.2 Impacts on Fauna

The impacts on fauna within the proposed development footprint are assessed as Minor Adverse or of lesser significance, largely due to the absence of sensitive terrestrial species encountered during the surveys. Although no clear signs of mammal activity were observed within the site, the presence of

mammal trails along field margins suggests minimal disturbance. Potential impacts on bird species are also considered Minor Adverse or less significant, primarily due to the loss of some feeding and foraging areas. Additionally, disturbance may be caused by the increased human presence expected during the operational phase of the development.

For bats, the proposed development could result in minor adverse impacts during the construction phase, particularly if works occur during the summer months. However, no significant impacts are anticipated if works are scheduled during the winter. During the operational phase, appropriate lighting mitigation measures and enhancements to the site for roosting, as outlined in the next section, are expected to minimise impacts on bats. Improper lighting can severely affect bat roosting, foraging, and commuting behaviours, as many bat species rely on dark corridors like rivers and hedgerows for safe passage and foraging. Well-lit areas can disrupt their home ranges and deter them from accessing feeding grounds. Excessive lighting around roosting sites can disorient bats and, in some cases, lead to roost abandonment.

Short-term disturbance impacts during groundworks along the Lough shore may also occur but are expected to be Minor Adverse or less due to the limited scale of the works. Potential impacts on water quality during construction are similarly predicted to be minor in terms of fisheries populations, given the scale of the works and the size of the receiving water body. On balance, the development is expected to lead to improvements in water quality, resulting in net beneficial effects for all aquatic species within the Lough.

7 Impact Mitigation

Mitigation is prescribed in accordance with the EPA draft guidance on EIAR (EPA, 2017), which requires mitigation by avoidance as a first approach. Where this is not feasible, measures to prevent impacts from giving rise to adverse effects should be adopted (e.g., design of bunded storage for chemicals). Where impacts cannot be avoided, e.g., noise generation, mitigation by reduction of effects is required to limit the exposure of the receptor to an acceptable level (often achieved by interrupting the pathway between the source and receptor). The primary parties responsible for the implementation of these measures include the applicant and the construction team (site manager, the project environmental manager and

site operatives).

Mitigation measures to address the potential impacts of the proposed development on habitats and fauna within and surrounding the proposed development (as required) are provided below. The proposed development has been designed to mitigate the threats to the ecological environment through the inclusion of:

- Timber angling stands to mitigation erosion to lake banks from footfall.
- Timber boardwalks along the lake edge will mitigate footfall-induced erosion of flora and allow natural regeneration of the lake banks.
- Fencing to separate livestock from the lake.
- A 10 m buffer zone between agricultural lands used for grazing upslope of the lake to mitigate nutrient runoff.
- Signage and facilities such as picnic areas, playgrounds, and walkways to encourage public use of the facility and mitigate anti-social behaviour.
- Replacement of conifer trees with deciduous trees on a gradual basis to mitigate acidic run off from conifer pine needles.
- Bird hides to encourage bird watching and positive engagement on biodiversity protection.

7.1 Construction phase - Construction Environmental Management Plan (CEMP)

A CEMP should be developed for the Proposed Development. The CEMP outlines the approach that will be adopted for environmental management throughout the project works at the site. The primary aim is to reduce and avoid any adverse effects from construction stages on the environment, with particular regard to water quality and protected species within the Lough and surrounding lands.

7.2 CEMP Objectives

The objectives of the CEMP are, therefore to:

- Act as a continuous link and reference document for environmental issues between the design, construction, testing and commissioning stages of the Project;
- Demonstrate how construction activities and supporting design shall properly integrate the requirements of environmental legislation, planning consent conditions, policy, good practice, and those of the environmental regulatory authorities and third parties;
- Record environmental risks and identify how they will be managed during the construction period;
- Record the objectives, commitments and mitigation measures to be implemented together with the programme of works and date of achievement;
- Identify key staff structures and responsibilities associated with the delivery of the Project and environmental control and communication and training requirements as necessary;
- Describe the Contractor's proposals for ensuring that the requirements of the environmental design are achieved, or are in the process of being achieved, during the Contract Period;
- Act as a vehicle for transferring key environmental information at handover to the body responsible for the operational management of the Proposed Development site. This shall include details of the asset, short and long-term management requirements, and any monitoring or other environmental commitments (where required) and
- Provide a review, monitoring and audit mechanism to determine the effectiveness of and compliance with environmental control measures and how any necessary corrective action shall take place (where required).

7.3 Protection of Water Quality

At a minimum, all pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site'(C741), 'Guidelines on Protection of Fisheries During Construction Works In and Adjacent to Waters' (IFI 2016), 'Control of water pollution from linear construction projects. Technical guidance' (C648), and under the supervision of an Environmental Clerk of Works (EnCoW) who shall be appointed by the Contractor.

The work area shall be clearly marked on site. No work will be permitted outside of these areas. Access

and storage of equipment and materials are also clearly delineated and provided off-site where possible.

To reduce the risk of runoff, work will be scheduled for dry conditions, which are preferable during summer months. In the event of adverse weather events, work will be halted, and construction works will not be undertaken before, during or immediately after significant rainfall events.

The principal likely pollution sources are contaminated site runoff, including silty water arising from the exposed ground created by the movement of machinery and work associated with the construction of the new track around the Lough and the installation of the angling stands, accidental leaks/spills of oil/fuels from machinery or storage areas, and runoff from areas where concrete pours are taking place. Mitigation measures to avoid/prevent contaminated runoff and pollution from the site are prescribed below.

7.3.1 General Site Environmental Management During Construction

- All site personnel will be briefed by the Ecological Clerk of Works prior to the commencement of the project
- Signage that clearly states that works are occurring adjacent to an ecologically sensitive area should be erected.
- Portaloos and/or containerised toilets and welfare units used to provide facilities for site personnel. All will be located off-site within the designated welfare area. A licenced waste disposal contractor will remove all associated waste from the site.
- The site will be kept clean and tidy during the duration of the construction phase of this development.

7.3.2 Site Clearance and Site Preparation

- Initial site clearance, including the removal of vegetation around the lakeshore, will take place under ecological supervision and will only occur once EcOW has confirmed via a site survey that no constraints to clearance are found.
- Removal of vegetation on site to enable works will take place outside the bird nesting season. Ideally, this will occur either early in September or late in February to avail of the most suitable ground conditions. Cut vegetation will be removed from the site immediately after cutting;
- Silt fencing will be installed as required and as detailed by the project EcOW during construction. It will be installed where required to meet the following specifications.

- The silt fences will have the following design features: – the geotextile fabric must be entrenched at least 100mm into the ground with the ends upturned inward towards the works; – the fence posts will have a maximum spacing of 2m to prevent sag on the fence; and – the geotextile fabric will be anchored to the fence posts as opposed to wrapped.
- The site management will carry out daily inspections of silt fences to assess the effectiveness of the measures, carry out maintenance, and determine if there has been any damage/breach to the control measures. The silt fences will also be inspected immediately following heavy rainfall or strong winds (equating to a yellow weather warning). Where repair is necessary, this will be carried out immediately and may require the replacement of any damaged/degraded material.
- Accumulated silt will be removed regularly from the base of silt fences and will be removed off-site. Silt will not be permitted to build up such that it exceeds 10cm in height.
- Silt fences must remain in place until the disturbed areas within the sites have been reinstated and revegetated.

7.3.3 Concrete Control Procedure

Concrete will be used to foundation several site features, including bird hides and changing areas. The following control measures will be implemented to prevent pollution from concrete during construction.

- Any concrete used for the works will be brought to the site by a concrete truck. On-site concrete batching and mixing activities will be limited and will only take place in designated areas.
- Batch loads of concrete will be delivered on an as-needed basis to the designated hardstand area at the site's existing car park.
- Concrete mix trucks, pumps, and equipment must be washed off-site and only within a designated area at least 30m away from the Lough or any drain leading to the Lough.
- Any concrete works will be scheduled during dry weather conditions to reduce the risk of runoff.

7.3.4 Management of Potentially Polluting Materials

- Bulk chemicals may not be stored within 20m of the Lough. Temporary oil and fuel storage tanks may be kept in suitable containers in the material storage area and stored on appropriately bunded spill pallets as required.

- Any fuel and oil stored on-site shall be stored on bunded spill pallets approved under BS EN 1992-3:2006. The bunds will be impermeable and capable of retaining a volume equal to or greater than 1.1 times (>110%) the capacity of the containers stored on them. In the event of a spillage, excess oil or fuel will be collected in the bund.
- Where possible, vehicles will be refuelled, and hydraulic oils or lubricants will be added off-site.
- Spill protection equipment such as oil booms, oil soakage pads, socks, and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling.
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil will be removed from the site and disposed of in accordance with all relevant waste management legislation.
- Drip trays will be utilised on-site for all pumps and other stationary equipment, including piling equipment. Spill kits will also be available at these locations for the duration of the contract. Any used spill kits will be disposed of using a hazardous waste disposal contractor and in accordance with all relevant EU and Irish waste management legislation;
- All hazardous substances on-site shall be controlled within an enclosed storage compound off site that locked when not in use to prevent theft and vandalism;
- Spillages will be recorded and advised to the project manager, who will inform local authorities if they deem it significant;
- Taps, nozzles or valves fitted with a lock system and;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills.

7.4 Mitigation Measures: Habitats

The following measures are proposed for the protection and management of habitat on site during the construction and operational phase of the proposed development. The works site will be kept to the minimum allowable area around the wooded area of the Lough shoreline. This will differ from works within the conifer woodland around the lough shore, where the removal of conifers should be encouraged to allow more natural vegetation and native tree species to be developed and planted. The area of

the reed fringe will not require any mitigation efforts. The installation of fencing around the site boundary, particularly where cattle have access to the Lough shore, will allow the recovery of the Lough shore in the proceeding years.

7.5 Mitigation Measures: Fauna

As stated above, adverse effects are expected that will negatively impact fisheries within the Lough. Water quality protection procedures should be sufficient to ensure their protection during works.

Given the transient nature of terrestrial mammals, preconstruction surveys for mammals, particularly Red squirrels and Badgers, should be carried out before works begin on site.

No adverse effects upon bird populations are expected. Disturbance is limited to minor amounts of noise during construction works, which are not expected to exceed those associated with background agricultural disturbance levels.

As stated, the site is noted as having suitability for bat foraging but limited suitability for bat roosting. No excessive lighting is proposed beyond what is currently in place on the site. Lighting included in the development should adhere to best practise guidelines:Any permanent lights should be designed with the following specifications. Measures are adapted from (ILP). (2023) and Mitigation should include the following adapted from these guidelines:

- Lighting at the site is to be kept to the minimum required.
- LED luminaires should be used due to the fact that they are highly directional, have lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins should be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

Possible bat roosting habitat was limited within and surrounding the subject site. The installation of bat

boxes will help to enhance the site for bats and should be carried out as part of best practice.

- 6x Flat Bat Colony Box 3FF should also be fixed to some of the larger trees around the site and Lough in sheltered areas.
- Installation of No.16 Schwegler Universal Bat Boxes (1FFH) clustered in groups of 2 or 3.

7.6 Residual Impacts after Mitigation

Residual impacts after mitigation are:

- Permanent loss of area of grassland, conifer woodland and scrub. These habitats are of low local significance.
- Permanent loss of some feeding and foraging areas for birds and bats will also result. However, these habitat areas are widely represented in the immediate area surrounding the area proposed for development.

Following implementing the mitigation measures set out in Sections 8.1 and 8.2, the significance of any residual impacts may be described as *negligible*.

8 Conclusion

Ecological surveys were carried out within and surrounding the proposed development site in over numerous visits between 2021 and 2024. Surveys included mammals, invertebrates, birds, bats, habitats, and invasive species. An extensive desktop survey was carried out using available data from suitable sources, including online databases (e.g., National Parks and Wildlife Service and National Biodiversity Data Centre).

No habitats listed in Annex I of the Habitats Directive were noted. No habitats of higher than *High Local* ecological value were found with the proposed development site.

While the habtiats of Lough Bracken are the key ecological receptor, no impacts are predicted as a result of the proposed development site. This is due to the implementation of avoidance and mitigation

measures, as detailed in the report.

No protected mammal species were found to occur within or surrounding the proposed development area. It is unlikely that any protected mammal species will be impacted upon as a result of the construction and operation of this residential development. Pre-construction surveys for mammals will be required.

A survey of bat habitat within and surrounding the study area found no potential bat roost habitat areas within the works. A number of measures have been described to mitigate any impacts on commuting and foraging bat populations during the construction and operation of this residential development.

Mitigation measures have been drawn up to address any potential impacts on local bird populations. These include limiting works areas, protecting woody vegetation during the bird nesting season, and creating/enhancing ecological corridors (hedgerows) on site.

Finally, it will be a condition of the contract between proponent and the Main Contractor that the Project Construction Management Plan (CMP) prepared for the project (and provided as part of the application under separate cover) will be implemented by the contractor and overseen by the project proponent.

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Appendix A: Pictures

Figure no.	Description	Image
1	Lough Bracken and quality mixed woodland habitat along the lough shoreline	

2	Recent angling stand created in the last year	
3	Existing trackway along the Lough shoreline	

4	Area of water lily and a Great Crested Grebe nest	
5	Poaching and destruction of the sites reed fringe caused by cattle	

5	Conifer woodland with a health deciduous understory on the hill leading to the Moat