



Rathmullan Cycleway

Natura Impact Statement



Date: 07th April 2022

For: Meath County Council

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1 Introduction

Flynn Furney Environmental Consultants have been commissioned by Meath County Council to produce a Natura Impact Statement (NIS) for the creation of a cycleway and walkway in Rathmullan Co. Meath. This will extend along the Rathmullan Road as it runs adjacent to the Louth Meath border for approximately 380m and will connect the existing River Boyne Ramparts and Greenway to the Riverbank Square housing estate, St, Olivers Community College and other areas around South Drogheda.

An AA screening was completed by the current authors on behalf of Meath County Council for the proposed development. This report concluded that the risk of Likely Significant Effect (LSE) upon the qualifying interests of the River Boyne And River Blackwater SAC, River Boyne And River Blackwater SPA, Boyne Estuary and Coast SAC and the Boyne Estuary SPA could not be definitively ruled out at screening stage. As such, a Natura Impact Statement is required.

This stage 2 Appropriate Assessment (AA) (Natura Impact Statement (NIS)) is used to determine whether the proposed development would adversely affect the integrity of these European sites. This involved the identification of potential LSE to habitats and or species which form the qualifying interests of these European sites. This report assesses the significance of potential LSE on their conservation status. Negative impacts on the integrity of these habitats or species will require the implementation of avoidance or mitigation measures to avoid progression to stages 3 and 4 Appropriate Assessment process as defined by the Planning and Development Acts 2000 to 2020.

1.1 Statement of authority

Flynn Furney Environmental Consultants have 20 plus years of experience in ecological surveying and management. We have a detailed knowledge on the principles and implementation of both Irish and European environmental legislation. We have 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.

Billy Flynn (BSc, MSc (Agr.), H.Dip, Dip Ind., MIBiol, MCIEEM, MIEnvSc. CEnv.) is an Ecologist and Chartered Environmental Scientist. A native of Co. Monaghan, he was educated in London, Madrid and Dublin. He was manager of the National Environmental Education Centre from 1999 until 2006 and assistant lecturer in ecology and biology at the Dublin Institute of Technology. He has over 20 years of experience in environmental science and engineering. He has been a Tidy Towns Adjudicator since 2007. He is the author of the Tidy Towns Guidelines for Wildlife, Habitats and Natural Amenities, Waterways and Biodiversity, and co-author of the Tidy Towns Adjudicator Guidelines and Heritage and Habitats in Your Locality. He is a Director of the Irish Wildlife Trust and a former Director of Voluntary Service International and the Irish Environmental Network. He has worked on the planning and design of nature trails, constructed wetlands and parkland biodiversity areas.

Ian Douglas (MSc, BSc, H Cert.Ag) is Associate Director for Flynn Furney Environmental Consultants. Ian is an Ecologist and Agri-environmental Consultant specialising in appropriate assessment, ecological impact assessment, soil science, GIS mapping and regenerative agriculture. Ian has worked on projects including large road developments, power infrastructure projects, planning and design of nature trails, constructed wetland creation and on farm habitat development.

1.2 Legislative Context and Overall Assessment Methodology

Article 6 of the Habitats Directive sets out provisions, which govern the conservation, and management of Natura 2000 sites. Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

“Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected 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 implication for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely

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affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”.

Where the competent authority cannot definitively rule out adversely affecting the integrity of the conservation objectives of the site or sites concerned, a Stage 2 Appropriate Assessment and preparation of a Natura Impact Statement is then required. The processes for this are set out under Articles 6(3) and 6(4) of the Habitats Directive and are commonly referred to as ‘Appropriate Assessments’ (which in fact refers to Stage 2 in the sequence under the Habitats Directive Article 6). This provision was transposed into Irish law by Part XAB of the Planning and Development Acts, 2000-2015. Section 177U (4) of the said Acts provides for screening for Appropriate Assessment as follows:

“The competent authority shall determine that an appropriate assessment of a proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.”

Where the competent authority deems that impacts could not be definitively ruled out, a Natura Impact Statement (NIS) is then required. Section 177T(1) and (2) provide for an NIS as “a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites” and specifies that it “shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites”.

The European Court of Justice has made a number of relevant rulings in relation to when an Appropriate Assessment is required and its purpose: “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

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individually or in combination with other plans or projects” and that the plan or project may only be authorised “where no reasonable scientific doubt remains as to the absence of such effects”.

A list of relevant rulings are provided below:

Table 1-1: Case law relevant to the AA Process for the proposed development

Case	Ruling
People Over Wind and Sweetman v Coillte Teoranta (C-323/17)	The ruling of the CJEU in this case requires that any conclusion of ‘no Likely Significant Effect’ on a European site must be made prior to any consideration of measures to avoid or reduce harm to the European site. The determination of Likely Significant Effects should not, in the opinion of the CJEU, constitute an attempt at detailed technical analyses. This should be conducted as part of the AA.
Waddenzee (C-127/02)	The ruling in this case clarified that AA must be conducted using best scientific knowledge, and that there must be no reasonable scientific doubt in the conclusions drawn. The Waddenzee ruling also provided clarity on the definition of ‘significant effect’, which would be any effect from a plan or project which is likely to undermine the conservation objectives of any European site.
Holohan and Others v An Bord Pleanála (C-461/17)	The conclusions of the Court in this case were that consideration must be given during AA to: <ul style="list-style-type: none"> ▪ effects on qualifying habitats and/or species of a SAC or SPA, even when occurring outside of the boundary of a European site, if these are relevant to the site meeting its conservation objectives; and, ▪ effects on non-qualifying habitats and/or species on which the qualifying habitats and/or species depend and which could result in adverse effects on the integrity of the European site.
T.C Briels and Others v Minister van Infrastructuur en Milieu (C-521/12)	The ruling of the CJEU in this case determined that compensatory measures cannot be used to support a conclusion of no adverse effect on site integrity.

In addition, in a Judicial Review in Irish High Court in the case of Kelly v An Bord Pleanála & Anor, it was ruled that Sustainable Drainage Systems (SuDS) which form a part of the design of a development can be considered an integral part of the development and:

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- are not measures that are intended to avoid or reduce the harmful effects of a particular development on a European site;
- are not intended to have that effect as they are required to comply with other relevant policies and legislation, including the Water Framework Directive and associated water quality Directives and Regulations; and,
- are not required to be incorporated by reason of the potential effect of a development on a European site. The court concluded *“as a matter of fact and law, that SuDS are not mitigation measures which a competent authority is precluded from considering at the [AA] screening stage”*.

The European Court of Justice has also made a relevant ruling on what should be contained within an Appropriate Assessment: “[The Appropriate Assessment] cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned”.

1.2.1 Zones of Influence and Potential Impacts and Effects

The proposed development has the potential to result in a number of direct and indirect effects. These are set out in Table 2 which identifies the “zones of influence” for each effect (i.e. the area over which effects may occur).

Table 2: Potential Impacts, Effects and their Zone of Influence

Potential Impact and Effect	Description	Zone of Influence for possible impacts or effects
Land-take resulting in habitat loss or degradation.	The permanent loss or degradation of the habitat present in the footprint of the works site or within the footprint of the broad works area including temporary access routes and storage areas.	Land within the proposed footprint of works and access routes.
Changes in water quality and resulting	Reduction in the habitat quality, loss of habitats and direct or indirect	Changes in surface water quality, as a result of

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Potential Impact and Effect	Description	Zone of Influence for possible impacts or effects
in habitat loss or degradation. Or impacts to key species upon which water quality is a key indicator of conservation value.	impacts to species who rely upon good water quality as a result of surface water pollution (e.g. sedimentation or from other polluting materials like hydrocarbons)	construction works 50m upstream and 150m downstream of the proposed development site. Other indirect impacts to pray species may also leading to wider reaching impacts.
Noise and vibration resulting in disturbance.	Direct impacts on feature species reducing their ability to forage or breed.	Generally assessed within 500m of proposed works for birds and 150m for otter underground sites.
Human presence resulting in disturbance to highly sensitive bird species.	Indirect impacts on QI species due to reduced breeding success, or disruption to key resting, roosting or feeding sites within the European site	Generally assessed within 500m of the proposed development. As works are within close proximity of the River Boyne and River Blackwater SAC which is designated for Otter. Human presence is considered within 150m as with noise and vibration.

1.2.2 In-combination Effects

Where source-pathway-effect linkages are identified between the proposed works and European sites the potential for in-combination effects with other plans and projects is also examined. If required, the in-combination assessment would include plans and projects, whose implementation is 'reasonably foreseeable', including:

- Projects given consent but not yet started;

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- Projects that are subject to 'live' applications for consent (for which decisions remain outstanding);
- Projects that are subject to outstanding appeal procedures;
- Any known projects that are not subject to any consent;
- Ongoing projects subject to regulatory reviews, such as discharge consents or waste management licences;
- Policies and proposals that are not yet fully implemented in plans that are still in force; and
- Draft plans that are being brought forward by other public bodies. ned. If there are no identified pathways, there is no potential for the proposed works to have LSE, and also no potential for in-combination effects.

1.2.3 The Precautionary Principle

The Precautionary Principle has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis"*. Reasoned application of the 'Precautionary Principle' is fundamental to the Screening Stage (and AA).

The precautionary principle is referenced in Article 191 of the Treaty on the Functioning of the European Union (TFEU). It relates to an approach to risk management whereby if there is the possibility that a given policy or action might cause harm to the public or the environment and if there is still no scientific consensus on the issue, the policy or action in question should not be pursued.

The precautionary principle prevails where 'reasonable scientific doubt' cannot be ruled out. Known threats to QIs of relevant sites are analysed to avoid overlooking subtle or far-field effect pathways. The duration of potential effects is a key consideration, in particular because the European Court of Justice has recently ruled—albeit in specific reference to priority habitats—those effects to site integrity must be "lasting"

1.3 Guidance Documents

This report has been prepared with regard to the following guidance documents on Appropriate Assessment, where relevant:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision);
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10;
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General, 2001 and draft update April 2015). The guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive;
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (EC Environment Directorate-General, 2000); and
- Communication from the Commission on the precautionary principle. European Commission (2000).

The DoEHLG (2010) guidance states that European sites with the potential to be affected by a plan or project should be identified taking into consideration the potential for direct, indirect and/or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the plan or project area;
- All European sites within the likely 'zone of impact (influence)' of the plan or project; and
- Adopting the precautionary principle, all European sites for which there is doubt as to whether or not such sites might be significantly affected.

1.4 Project Description and Potential Associated Impacts

The study site is located in the townland Oldbridge Co. Meath which is on the boundary with Co. Louth. The study area comprises a roadway (Rathmullan road) bordered by ivy dominated scrubby woodland on both sides. The proposed cycleway will be constructed on the eastern side of the Rathmullan road. This roadway is surrounded by the Riverbank housing estate to the east and scrub and arable cropland to the west. The Rathmullan road falls steeply from the southern extent of the study area to its northern extent where the road meets the River Boyne. The Rathmullan road continues west along the banks of the River Boyne and passes under the Mary McAleese Boyne Valley Bridge. Between the road and the river is the Boyne Greenway. East along the Boyne at the northern extent of the study area is the Ramparts walkway and cycleway. This existing cycle infrastructure connects Old Bridge House to Drogheda town centre.

The Sheephouse stream runs adjacent to and underneath the verge upon which this cycleway is proposed. This watercourse is mostly culverted for the extent of the study area but becomes an open drain for approximately 50m before discharging into the River Boyne at the north of the study area. This watercourse is also connected to a number of existing surface water drains that channel water from the Rathmullan roadway and neighbouring housing estates into the Sheephouse stream and eventually into the Boyne. This watercourse is of poor quality with obvious signs of pollution including rubbish and a foul odour.

The northern extent of the proposed development site sits within the River Boyne and River Blackwater SAC. The River Boyne and River Blackwater SPA begins 430m west and upstream of the proposed development site boundary at the Mary McAleese Bridge Boyne Valley Bridge.

The total length of the proposed cycleway and footpath is approximately 380m with a total width of between 2m and 3m for sealed surfaces. Works are likely to involve the removal of trees and other vegetation, the removal and stock piling of surface soil and over burden material, groundwork, pouring of concrete kerbs and spreading of bitumen.

2 Ecological Assessment

This NIS has been informed by a range of habitat, botanical and species-specific surveys carried out in February 2022. Table 2 details the dates, results, targeted survey type and the methodologies employed for each survey type.

Table 3: Ecological Assessments carried as part of this Assessment.

Ecological feature	Findings and reference
Habitats	<p>A map of site habitat can be seen in Appendix I.</p> <p>Heritage Council’s Best Practice Guidance (Smith et al. 2011). Habitats were classified according to the Heritage Council scheme (Fossitt, 2000).</p>
Otter	<p>There were no signs of otter along the shore adjacent to the development site or within the Sheephouse Stream.</p> <p>Bailey, M. & Rochford, J. (2006). Otter Survey of Ireland 2004/2005.</p>
Badger	<p>There were no signs of badger observed in the walkover of the site.</p> <p>Irish Wildlife Manuals No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.</p>
Bats	<p>Trees on this site are unlikely to provide bat roosting potential, but may however provide opportunities for foraging. A bat roost has been recorded within old farm buildings within 60m of the of the southern extent of the proposed development site as part of a separate planning application (Scott Cawley, 2019).</p> <p>Bat Conservation Trust’s (BCT) ‘Bat Surveys for Professional Ecologists: Good Practice Guidelines’ (Collins, 2016).</p>
Birds	<p>No King Fisher (<i>Alcedo atthis</i>) were recorded within or surrounding the proposed development site. The Sheephouse stream would not provide suitable King Fisher habitat. No other Annex I bird species were observed.</p> <p>No dedicated bird survey was carried out. Birds seen and heard during the survey were recorded.</p>

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	<p>TII (2009b). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Transport Infrastructure Ireland.</p>
<p>Freshwater Species</p>	<p>No detailed freshwater survey was not carried out. The Sheephouse stream would not provide suitable habitat for any fish or lamprey species given the degree of alteration and short duration of its extent prior to becoming culverted. The River Boyne at the sites northern extent is suitable for a number of annexed freshwater species including River Lamprey (<i>Lampetra fluviatilis</i>) and Salmon (<i>Salmo salar</i>).</p>

2.1 Qualify Interests of European Sites

In general all European site aim to maintain or restore favourable conservation status of the all quality intertest within European sites.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is 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.

Table 4: Qualify Interests of the River Boyne and River Blackwater SAC

Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
7230	Alkaline fens	Water abstractions from groundwater Reclamation from sea, estuary or marsh Diffuse ground water pollution from agricultural & forestry activities Abandonment of pastoral systems, lack of grazing	Not mapped across the whole SAC but mainly around Clonmellon over 20km from the proposed development site

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Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>)	Changes in land management Changes in site hydrology	400m upstream of the proposed development site
1099	<i>Lampetra fluviatilis</i> (River Lamprey)	Surface water dependant Highly sensitive to water quality impacts	Found throughout the Boyne river system
1106	<i>Salmo salar</i> (Salmon)	Surface water dependant Highly sensitive to water quality impacts	Found throughout the Boyne river system
1355	<i>Lutra lutra</i> (Otter)	Surface water dependant Highly sensitive to water quality impacts	Found throughout the Boyne river system

*As per the Natura 2000 Data Form

Table 5: Qualify Interests of the River Boyne and River Blackwater SPA

Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
A229	Kingfisher (<i>Alcedo atthis</i>)	Bank clearance works Impacts to water quality resulting in changes to pray species	Found throughout the Boyne river system

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*As per the Natura 2000 Data Form

Table 6: Qualify Interests of the Boyne Coast and Estuary SAC

Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
A229	Estuaries	Pollution to surface waters Abiotic changes (climate change) Other human intrusions and disturbances	4.6km from the proposed development
1210	Annual vegetation of drift lines	Outdoor sports, leisure and recreational activities Changes in water bodies conditions Roads, railroads and paths Other human intrusions and disturbances	9.8km from the proposed development
1310	Salicornia and other annuals colonising mud and sand	Changes in water bodies conditions Grazing by livestock Pollution to surface waters Abiotic changes (climate change)	5km from the proposed development
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Grazing by livestock Enclosure of salt meadows Abiotic changes (climate change)	4.6km from the proposed development
2110	Embryonic shifting dunes	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities	9.4km from the proposed development

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Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
		Changes in water bodies conditions	
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities Changes in water bodies conditions	9.6km from the proposed development
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities Changes in water bodies conditions	8.8km from the proposed development

Table 7: Qualify Interests of the Boyne Coast and Estuary SAC

Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
A048	Shelduck (<i>Tadorna tadorna</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Mostly found in the in the estuary downstream of Drogheda. Approximately 5km from the proposed development site

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Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
A130	Oystercatcher (Haematopus ostralegus)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	This species favours intertidal areas for foraging, which is available downstream in the estuary to the east of Drogheda approximately 5km from the proposed development site.
A140	Golden Plover (Pluvialis apricaria)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Mostly found in the estuary downstream of Drogheda. Approximately 5km from the proposed development site.
A141	Grey Plover (Pluvialis squatarola)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally a coastal species. Found approximately 9km downstream of the proposed development site.
A142	Lapwing (Vanellus vanellus)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally found within the intertidal areas along the estuary approximately 8km from the proposed development site.

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Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
A143	Knot (<i>Calidris canutus</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally a coastal species. Found approximately 9km downstream of the proposed development site.
A144	Sanderling (<i>Calidris alba</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally found along sandy shoreline habitat. Found approximately 9.5km downstream of the proposed development site.
A156	Black-tailed Godwit (<i>Limosa limosa</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally found within the intertidal areas along the estuary approximately 8km from the proposed development site.
A162	Redshank (<i>Tringa totanus</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally found within the intertidal areas along the estuary approximately 8km from the proposed development site.
A169	Turnstone (<i>Arenaria interpres</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas	Generally found along rocky shoreline habitat. Found approximately 9.5km

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Natura 2000 Code	Annex I Habitats/ Annex II Species	THREATS* Environmental Sensitivity & Main Pressures/Threats*	Distance from the Proposed Development Site to Annex I Habitat and Annex II Species
		Changes in water quality effecting food abundance	downstream of the proposed development site.
A195	Little Tern (Sterna albifrons)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	Generally a coastal species. Found approximately 9km downstream of the proposed development site.
A999	Wetland and Waterbirds	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effecting food abundance	The main wetland habitat that is of importance to waterbirds in the Boyne Estuary is located to the east of Drogheda and out along the estuary to the coast. Beginning approximately 4.6km from the proposed development site and extending to the coast.

3 Potential Impacts and Schedule of Mitigation

This section examines the Annex I habitats and Annex II species for which the European sites discussed in the previous section have been designated. It also considers whether impacts to any of these habitats or species are likely due to the proposed development.

3.1 Description of Potential Impacts and Effects

A description of potential impacts and associated effects from the proposed development are discussed below.

3.1.1 Direct Impacts and Effects

In the absence of mitigation, significant ecological effects may occur during the construction phase of this proposed development. Specifically, the ingress of suspended solids, organic materials and other pollutants to surface waters. This could have direct impacts on a number of Annex I habitats and Annex II species.

Potential short-term and long-term impacts of polluting materials such as fuels, oils and lubricants and hydraulic fluids, can result in substantial fish-kills. Accidental spillages or leaks of oil and other polluting liquids can have significant effects on fisheries. Additionally, their persistence within aquatic environments can reduce water quality and ecological value within the river system beyond the construction phase of the proposed development.

Impacts to water quality within the River Boyne may occur as a result of clearance and construction works. Works occur above and adjacent to the Sheephouse stream, which discharges into the River Boyne. As such a direct hydrological pathway exists between the proposed development site and the River Boyne and River Blackwater SAC and other European sites (including River Boyne and River Blackwater SPA, Boyne Coast and Estuary SAC, Boyne Estuary SPA and the River Boyne and River Blackwater SPA).

3.1.2 Indirect Impacts and Effects

Indirect impacts and associated effects may relate to changes to prey species due to impacts on water quality. Changes in turbidity and water quality can inhibit some invertebrate species upon which many fish species are dependent. This may then have subsequent impacts upon River

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Lamprey, Salmon and mammal species such as Otters. Possible impacts to prey abundance may also extend to water birds in the Boyne Estuary SPA leading to indirect impacts.

Potential positive impacts and effects might also occur as a result of the proposed development. The construction of formal surface water management infrastructure may decrease the volume of direct runoff from the Rathmullan road, compared to the runoff from drains currently in use on the existing roadway and from the drains that discharge into the Sheephouse stream. This may positively effect water quality and Annex II species for which water quality is a key indicator of good conservation statuses.

3.1.3 Cumulative Impacts and Effects

A desktop planning application search, using publicly available data from MyPlan.ie's National Planning Application and the planning online portals for both Meath and Kildare County Councils was reviewed to assess cumulative impacts.

Rathmullan Road Housing development (Planning application number: SH305552)

This development is within lands directly adjacent to the west of the proposed development site and consists of the following project elements:

- I. demolition of existing farm buildings/structures (1160sqm) on site;
- II. construction of 661 residential units
- III. 2 no. priority junctions
- IV. Construction of a strategic foul water pumping station and;
- V. All associated site works

The proposed development may lead to direct impacts to water quality as a result of polluting material lost from the site of works to the River Boyne during the developments construction phase in the absence of mitigation. If impact to water quality were to occur from both projects simultaneously cumulative impacts could exist.

3.2 Potential Impacts

Table 3-1 Potential impacts to the River Boyne and Blackwater SAC's Annex I habitats and Annex II species as a result of the proposed development

Qualifying Interest / Annex II Species	Environmental sensitivity/ main threat	Potential for Impact	Nature of Impact	Mitigation Required
Alkaline fens	<p>Water abstractions from groundwater</p> <p>Reclamation from sea, estuary or marsh</p> <p>Diffuse ground water pollution from agricultural & forestry activities</p> <p>Abandonment of pastoral systems, lack of grazing</p>	None	No alkaline fens found within the ZOI of the proposed development site	None
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>)	<p>Changes in land management</p> <p>Changes in site hydrology</p>	<p>None, given their location upstream of the proposed development.</p> <p>Potential impacts from the proposed development are not associated with the mains pressures or threats to this habitat type.</p>	Alluvial forests are found within 460m (upstream) of the proposed development site	None

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Lampetra fluviatilis (River Lamprey)	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality due to the proposed works	Moderate negative impacts of short-term temporary duration. Potential changes to surface water quality (and turbidity) due to the proposed works Indirect impacts through impacts to prey species.	Yes
Salmo salar (Salmon)	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality due to the proposed works	Moderate negative impacts of short-term temporary duration. Potential changes to surface water quality (and turbidity) due to the proposed works Indirect impacts through impacts to prey species.	Yes
Lutra lutra (Otter)	Surface water dependant Highly sensitive to water quality impacts	Potential changes to surface water quality due to the proposed works	Moderate negative impacts of short-term temporary duration. Potential changes to surface water quality	Yes

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			(and turbidity) due to the proposed works Indirect impacts through impacts to prey species.	
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Table 3-2 Potential impacts to the River Boyne and Blackwater SPA's Annexed bird species as a result of the proposed development

Qualifying Interest / Annex II Species	Environmental sensitivity/ main threat	Potential for Impact	Nature of Impact	Mitigation Required
Kingfisher (Alcedo atthis)	Bank clearance works Impacts to water quality resulting in changes to pray species	Yes	Moderate negative impacts of short-term temporary duration. Potential changes to surface water quality (and turbidity) due to the proposed works Indirect impacts through impacts to prey species.	Yes

Table 3-3 Potential impacts to the Boyne Coast and Estuary SAC Annex I habitats as a result of the proposed development

Qualifying Interest / Annex II Species	Environmental sensitivity/ main threat	Potential for Impact	Nature of Impact	Mitigation Required
Estuaries	Pollution to surface waters Abiotic changes (climate change)	Yes	Minor negative impacts of short-term temporary duration.	Yes

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	<p>Other human intrusions and disturbances</p>		<p>Potential changes to surface water quality including siltification and pollution as a result of losses of these pollutants to the Sheephouse stream. Although this habitat does not occur at the site of the proposed works there is potential for downstream habitat to be affected by water quality impacts. Extremely unlikely given the distance from the proposed works area to this habitat area and the scale of the proposed development.</p>	
<p>Annual vegetation of drift lines</p>	<p>Outdoor sports, leisure and recreational activities Changes in water bodies conditions Roads, railroads and paths Other human intrusions and disturbances</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration. Potential changes to surface water quality including siltification and pollution as a result of losses of these pollutants to the Sheephouse stream. Although this habitat does not occur at the site of the proposed works there is potential for downstream habitat to be affected by water quality impacts. Extremely unlikely given the distance from the proposed works area to this habitat area and</p>	<p>Yes</p>

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			the scale of the proposed development.	
Salicornia and other annuals colonising mud and sand	<p>Changes in water bodies conditions</p> <p>Grazing by livestock</p> <p>Pollution to surface waters</p> <p>Abiotic changes (climate change)</p>	Yes	<p>Minor negative impacts of short-term temporary duration.</p> <p>Potential changes to surface water quality including siltification and pollution as a result of losses of these pollutants to the Sheephouse stream. Although this habitat does not occur at the site of the proposed works there is potential for downstream habitat to be affected by water quality impacts. Extremely unlikely given the distance from the proposed works area to this habitat area and the scale of the proposed development.</p>	Yes
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	<p>Grazing by livestock</p> <p>Enclosure of salt meadows</p> <p>Abiotic changes (climate change)</p>	Yes	<p>Minor negative impacts of short-term temporary duration.</p> <p>Potential changes to surface water quality including siltification and pollution as a result of losses of these pollutants to the Sheephouse stream. Although this habitat does not occur at the site of the proposed works there is potential for downstream habitat to be affected by water</p>	Yes

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			quality impacts. Extremely unlikely given the distance from the proposed works area to this habitat area and the scale of the proposed development.	
Embryonic shifting dunes	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities Changes in water bodies conditions	None	Given the distance between the proposed development and the location of this habitat type, the nature of this habitat and its main pressures and threats and the nature of the proposed development; no LSE are predicted.	No
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities Changes in water bodies conditions	None	Given the distance between the proposed development and the location of this habitat type, the nature of this habitat and its main pressures and threats and the nature of the proposed development; no LSE are predicted.	No

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Fixed coastal dunes with herbaceous vegetation (grey dunes)	Other human intrusions and disturbances Changes in water bodies conditions Outdoor sports, leisure and recreational activities Changes in water bodies conditions	None	Given the distance between the proposed development and the location of this habitat type, the nature of this habitat and its main pressures and threats and the nature of the proposed development; no LSE are predicted.	No
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Table 3-4 Potential Impacts to Boyne Estuary SPA Annexed bird species as a result of the proposed development

Qualifying Interest / Annex II Species	Environmental sensitivity/ main threat	Potential for Impact	Nature of Impact	Mitigation Required
Shelduck (<i>Tadorna tadorna</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. Shelduck is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	Yes

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<p>Oystercatcher (<i>Haematopus ostralegus</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration.</p> <p>Oystercatcher is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species.</p> <p>Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.</p>	<p>Yes</p>
<p>Golden Plover (<i>Pluvialis apricaria</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration.</p> <p>Golden Plover is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species.</p> <p>Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.</p>	<p>Yes</p>
<p>Grey Plover (<i>Pluvialis squatarola</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration.</p> <p>Grey Plover is not considered likely to occur often within the ZOI of the proposed</p>	<p>Yes</p>

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	Changes in water quality effect food abundance		development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	
Lapwing (<i>Vanellus vanellus</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. Lapwing is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	Yes
Knot (<i>Calidris canutus</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. Knot is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	Yes

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<p>Sanderling (<i>Calidris alba</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration. Sanderling is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.</p>	<p>Yes</p>
<p>Black-tailed Godwit (<i>Limosa limosa</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration. Black-tailed Godwit is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.</p>	<p>Yes</p>
<p>Redshank (<i>Tringa totanus</i>)</p>	<p>Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas</p>	<p>Yes</p>	<p>Minor negative impacts of short-term temporary duration. Redshank is not considered likely to occur often within the ZOI of the proposed</p>	<p>Yes</p>

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	Changes in water quality effect food abundance		development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	
Turnstone (<i>Arenaria interpres</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. Turnstone is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	Yes
Little Tern (<i>Sterna albifrons</i>)	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. Little Tern is not considered likely to occur often within the ZOI of the proposed development site due to the lack of optimal habitat for this species. Possible water quality impacts may affect the quality of the habitat that supports this species and the availability of its food source.	Yes

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Wetland and Waterbirds	Changes to habitat integrity including water quality Human disturbance within feed and nesting habitat areas Changes in water quality effect food abundance	Yes	Minor negative impacts of short-term temporary duration. There is potential for the designated Wetland and Waterbird area, just over 4km downstream of the proposed development site to be affected by water quality impacts from the proposed works during the construction phase. These related to changes in surface water quality through pollution lost to the Sheephouse stream which is hydrologically connected to the wetland area via the River Boyne.	Yes
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3.3 Mitigation

A review of the elements of the proposed works indicates that there is a potential for LSE to qualifying interests and special qualifying interests of the River Boyne and River Blackwater SAC and other European sites including River Boyne and River Blackwater SPA, Boyne Coast and Estuary SAC, Boyne Estuary SPA and the River Boyne and River Blackwater SPA. LSE may occur if appropriate mitigation measures are not undertaken. Mitigation measures are designed to ensure compliance with the Habitats Directive Article 6 requirements given in section 1.2. Mitigation measures are generally aimed at addressing possible risks to water quality from the construction phase of the proposed development. These have been prepared with regard to the following guidance documents:

- IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, Dublin;
- CIRIA Guidelines Control of water pollution from construction sites –Guide to Good Practice (C532); and

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- Control of water pollution from linear construction projects. Technical Guidance (C648)

Table 3-5 Recommended Mitigation Measures

Potential Impact	Affected Habitat /Species	Recommended Mitigation
Potential short-term moderate adverse impacts to water quality within the ZOI of the proposed development within the River Boyne as a result of water quality impacts due to clearance and the construction phase of the proposed development.	River Boyne and River Blackwater SAC River Lamprey (<i>Lampetra fluviatilis</i>) Salmon (<i>Salmo salar</i>) Otter (<i>Lutra lutra</i>)	<p style="text-align: center;">Construction Phase Mitigation</p> <p>Construction Environmental Management Plan Co-ordinator (CEMPC) should be appointed to oversee and implement measures detailed below.</p> <p>A designated Ecological Clerk of Works (ECoW) should be appointed to oversee the clearance phase and the construction phase of the proposed development. ECoW should be on site daily during clearance works and weekly during construction works</p> <p>Silt fencing should be installed downstream of the works area within the Sheephouse stream for the duration of the clearance and construction works.</p> <p>All stationary plant must be placed on drip trays to prevent leaking oils reaching the Sheephouse stream and the River Boyne</p> <p>No storage of equipment should take place within 5 meters of the Sheephouse stream or the River Boyne.</p> <p>A silt buster should be kept on site to capture any silty runoff that may enter the Sheephouse stream during works.</p> <p>If instream works are required a site meeting to discuss works method should be organised between IFI, Meath County Council and the projects designated Ecologist.</p> <p>Signage should be erected that clearly states that works are occurring adjacent to an ecologically sensitive area.</p>
	River Boyne and River Blackwater SPA <i>Kingfisher (Alcedo atthis)</i>	
	Boyne Coast and Estuary SAC Estuaries	

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Potential Impact	Affected Habitat /Species	Recommended Mitigation
<p>Potential short-term minor adverse impacts to water quality within habitats between 4 and 10km downstream of the proposed development as a result of water quality impacts due to clearance and the construction phase of the proposed development.</p>	<p>Annual vegetation of drift lines Salicornia and other annuals colonising mud and sand Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p>	<p>All clearance works should take place during dry weather. No bare soils should be left exposed over night to ensure no silts, soils or organic material is lost to either the Sheephouse stream or the River Boyne.</p> <p>No stockpiling of excavated material should take place anywhere on the site given the steeply sloping nature of the site and the sites proximity to the River Boyne. All excavated material should be removed from site immediately</p> <p>Any diesel or fuel oils stored on site must be bunded to 110% of the capacity of the storage tank. Design and installation of fuel tanks must be in accordance with best practice guidelines BPGCS005, oil storage guidelines.</p> <p>Drip trays and spill kits must be kept available on site.</p> <p>No washings or waste materials of any kind can be directed into the nearby drains or into the river (including concrete washout from any concrete deliveries).</p> <p>Machinery on site must have pollution control kits on hand in the event of an emergency</p> <p>No refuelling should occur on site. This should be carried out at least 30m from the site boundary.</p> <p>Any fuel to be stored on site should be stored in a safe area where the likelihood of damage to the fuel container by moving vehicles is minimised. Fuel, if being stored, should be stored in a double-bunded, undamaged, fit-for-purpose storage unit, specifically designed for fuel storage.</p> <p>All site staff should be briefed regarding the environmental sensitivity of the site, including the importance of the European designated site. A Toolbox talk should be held to inform site staff of best practice required in these areas.</p> <p>All excavation equipment should be in good working order and checked daily for any hydraulic leaks/oil leaks. It should not be used unless in good working order.</p>
	<p>Boyne Estuary SPA</p> <p>Shelduck (<i>Tadorna tadorna</i>) Oystercatcher (<i>Haematopus ostralegus</i>) Golden Plover (<i>Pluvialis apricaria</i>) Grey Plover (<i>Pluvialis squatarola</i>) Lapwing (<i>Vanellus vanellus</i>) Knot (<i>Calidris canutus</i>)</p>	

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Potential Impact	Affected Habitat /Species	Recommended Mitigation
	<p>Sanderling (<i>Calidris alba</i>) Black-tailed Godwit (<i>Limosa limosa</i>) Redshank (<i>Tringa totanus</i>) Turnstone (<i>Arenaria interpres</i>) Little Tern (<i>Sterna albifrons</i>) Wetland and Waterbirds</p>	<p>Any area of exposed soil left after the works are completed should be reseeded with an appropriate seed mixture at the end of the project.</p> <p style="text-align: center;">Operational Phase Mitigation</p> <p>Operational impacts associated with the proposed development are limited. Where possible new hard stands of concrete and bitumen should have drains that discharge into storm water infrastructure and not the Sheephouse stream. Lighting should be appropriately located and should be considerate of bats given that this area is currently a dark area and a known bat roost has been recorded to the west of the proposed development site (Scott Cawley, 2019).</p> <p style="text-align: center;">Cumulative Impacts</p> <p>Cumulative Impacts have been identified as a result of the site proximity to the Rathmullan Road 661 unit housing development. If the mitigation measures outlined for the construction phase of the proposed development are implemented, this would effectivity remove any risk of cumulative impacts in conjunction with the Rathmullan Road housing development.</p>

3.4 Residual Effects

An overview of the potential for LSE and the mitigation measures proposed for possibly affected European sites are presented in Tables 3.1 – 3.5. Taking account of the relative ease of implementation of these mitigation measures and the limited scale of the proposed development there can be a high level of confidence in their efficacy and success. It is considered that there is no potential for residual adverse effects on these Annex I habitats, Annex II species or the overall habitat quality and integrity of the River Boyne and River Blackwater SAC or other connected European sites including River Boyne and River Blackwater SPA, Boyne Coast and Estuary SAC, Boyne Estuary SPA and the River Boyne and River Blackwater SPA as result of the proposed development.

3.5 Conclusion

This NIS and the preceding Appropriate Assessment Screening Assessment have considered the potential for significant effects arising from the proposed development that would have the potential to adversely affect the River Boyne and River Blackwater SAC and other European sites within the Boyne River System; with regard to the sites qualifying interests and conservation objectives.

The potential for direct, indirect and cumulative impacts affecting the above mentioned designated sites and their qualifying interests have therefore been assessed in this NIS. The appraisal undertaken in this NIS has been informed by project-specific site surveys and specialist reporting with reference to the ecological communities and habitats potentially affected by the proposed development, in order to provide a scientific basis for evaluations.

Measures for impact reduction have been incorporated into the project proposal, including avoidance and mitigation measures proposed in the NIS for the reduction of impacts to the qualifying interests and conservation objectives of these European sites.

With the implementation of these measures the proposed development would not result in direct, indirect or cumulative impacts which would have the potential to adversely affect the qualifying interests of these European sites with regard to the range, population densities or the site-specific conservation objectives of the habitats and species for which these sites are designated.

4 References and Guidance Documents

European Commission DE, 2001. Assessment of plans and projects significantly affecting Natura 2000 sites.

Department of the Environment, Heritage & Local Government (2009) Appropriate Assessment of Plans and Project in Ireland – Guidance for Planning Authorities

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EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

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JNCC (2007) *Handbook for Phase 1 Habitat Survey*. Joint Nature Conservation Committee, Peterborough, UK.

Lyons, M.D. & Kelly, D.L. (2013) Conservation status assessment for petrifying springs. Unpublished report to NPWS.

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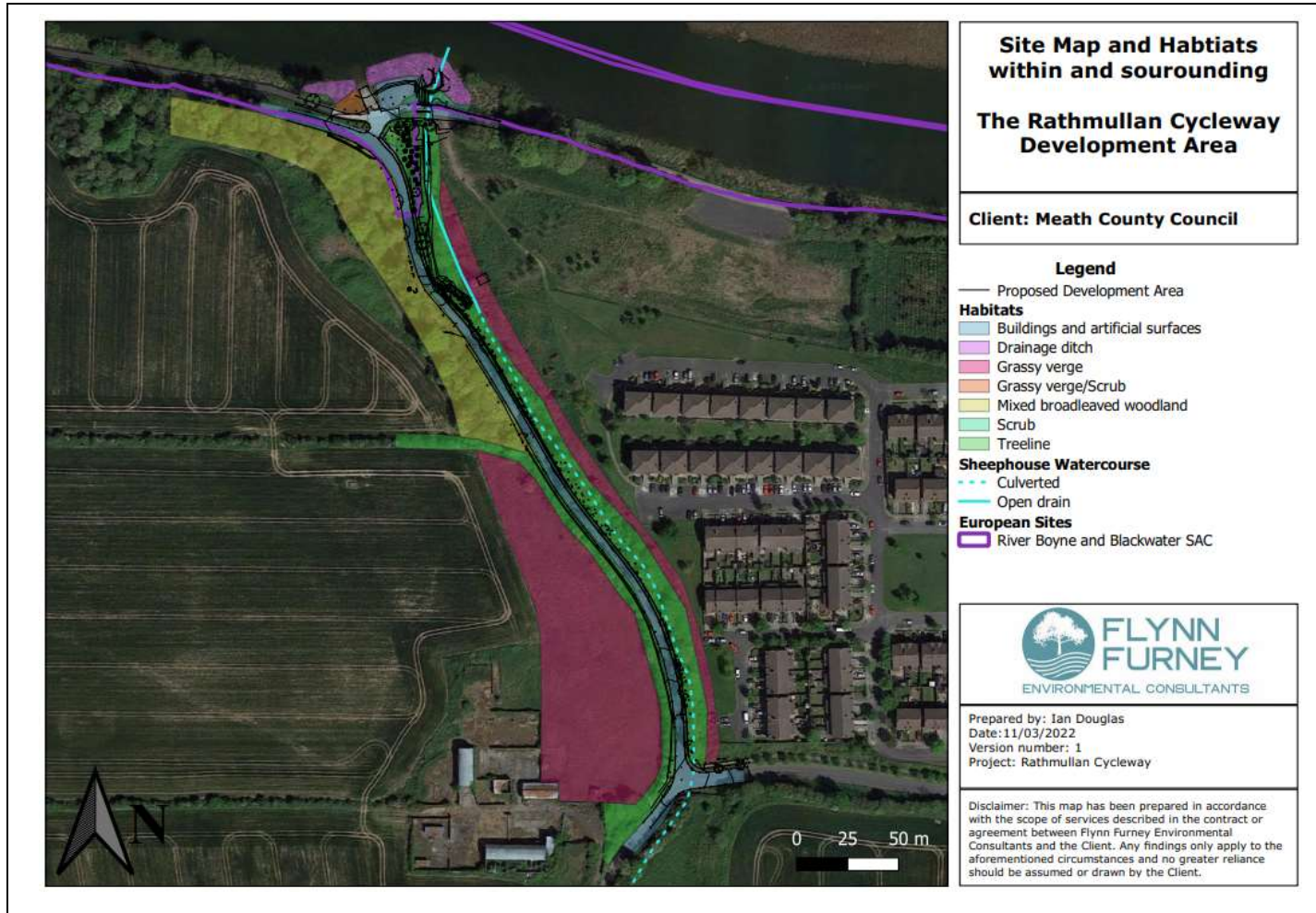
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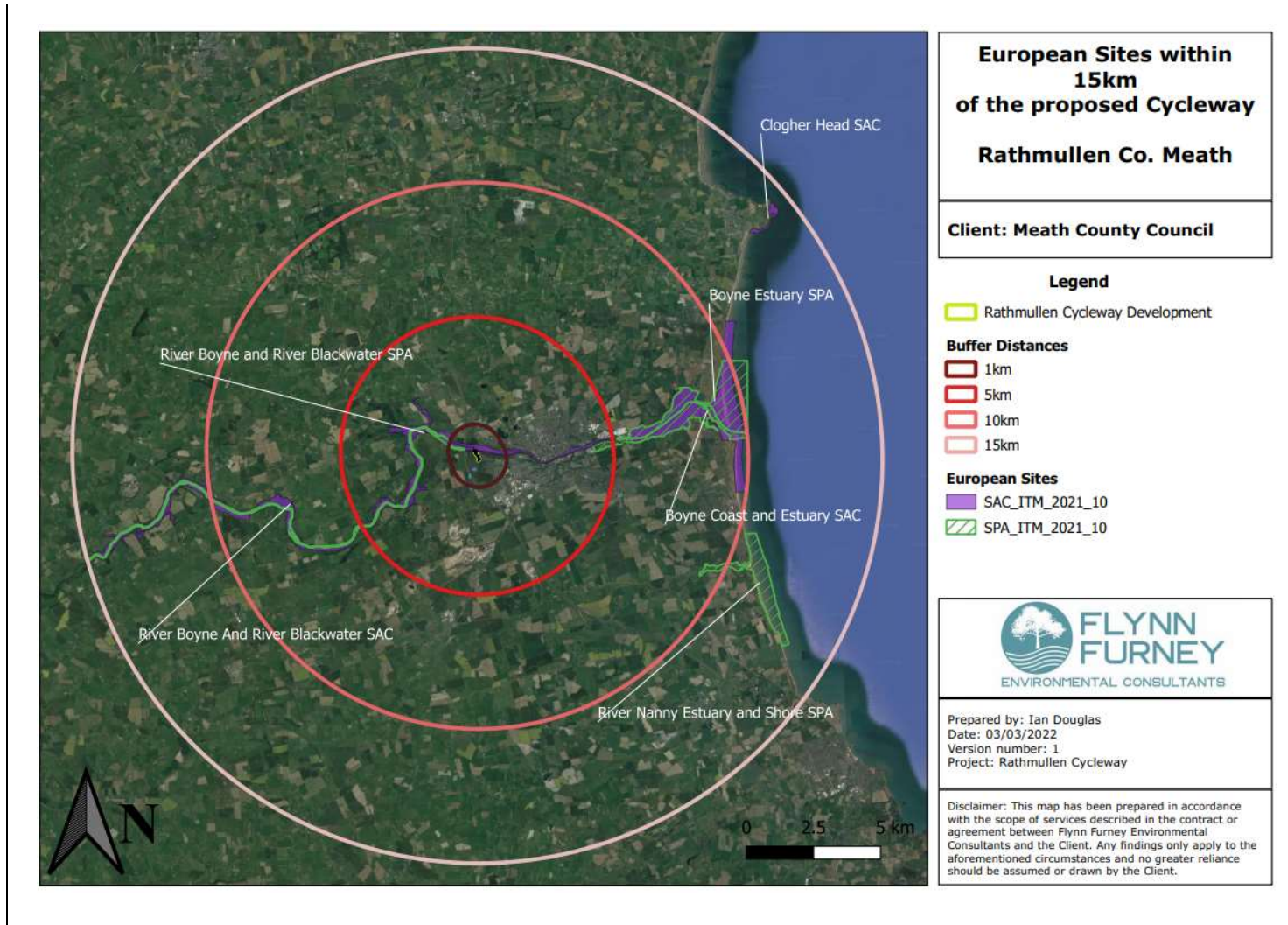
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Appendix 1: Maps





Appendix 2: Appropriate Assessment Screening Report