SCREENING REPORT & NATURA IMPACT STATEMENT

INFORMATION FOR STAGE 1 SCREENING &

STAGE 2 APPROPRIATE ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT

RATHMULLAN, CO. MEATH

Prepared for Trailford Ltd.

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1 Introduction

This report, which contains information required for the competent authority (in this instance An Bord Pleanála to undertake both Stage 1 Screening for Appropriate Assessment and Stage 2 Appropriate Assessment (AA) in respect of a proposed residential development (herein the 'proposed development') at lands located off Rathmullan Road, Co. Meath (herein the 'subject lands'), was prepared by Scott Cawley Ltd. on behalf of the applicant. The report provides information and appraises the potential for the proposed development to have significant effects, either individually or in combination with other plans or projects, on the integrity of any Natura 2000 sites (hereafter 'European sites'[1]). The information in this report forms part of, and should be read in conjunction with, the documentation accompanying the application for permission for the proposed development.

Article 6(3) of *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a European site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to AA of its implications for the site in view of the site's conservation objectives. For the purposes of the application for permission in respect of the proposed residential development, the requirements of Article 6(3) have been transposed into Irish law by Part XAB of the Planning and Development Act 2000, as inserted.

The possibility of there being a significant effect on a European site will generate the need for a Stage 2 AA to be carried out by the competent authority for the purposes of Article 6(3). Accordingly, a Stage 1 Screening for AA in respect of an application for consent for proposed development must be carried out by the competent authority (in this case, An Bord Pleanála) in order to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage 2 AA is required if it cannot be excluded, based on objective information, that a proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The Screening stage operates merely to determine whether a full AA must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

This document comprises information to enable An Bord Pleanála to perform both Stage 1 screening for Appropriate Assessment and Stage 2 full Appropriate Assessment if required. The information in relation to the Stage 1 Screening Stage is presented in Section 4 of this document which comprises the Screening Report. Whereas, information to enable the Board to perform its statutory function to

[1] Natura 2000 sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats. In Ireland these sites are designed as *European sites* – as defined under the Planning and Development Act s and/or Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

conduct a full Appropriate Assessment, if required, is presented in Sections 5, 6 and 7 (which sections comprise the NIS).

2 Methodology

2.1 Authors' Qualifications & Expertise

This Natura Impact Statement (NIS) has been prepared by Laura Higgins and has been reviewed by Colm Clarke and Aebhín Cawley of Scott Cawley.

Laura Higgins holds a first class honours degree in Zoology from Trinity College Dublin. Laura has a range of fieldwork experience in Ireland including habitat, invasive species and protected species surveys. She has surveyed a wide range of mammal, bird and invertebrate species in terrestrial and aquatic habitats in Ireland. Laura has a great interest in ecology and is continually improving her professional skills through training courses and volunteer work. Since joining Scott Cawley, her work has included the collection of ecological data, data analysis and preparing Appropriate Assessment reports and Ecological Impact Assessments for residential and infrastructural projects across the country.

Colm Clarke holds an honours degree in Natural Sciences and a Master's degree in Biodiversity and Conservation, both awarded by Trinity College Dublin. He is an Associate member of the CIEEM, and has professional experience working in Australia and New Zealand, as well as more recent experience in Ireland and the UK. Prior to joining Scott Cawley, Colm was involved in the completion of Ecological Impact Assessments of numerous renewable energy and quarrying projects. Since joining Scott Cawley, Colm has been project manager on ecological assessments that include EIA, EcIA and AA. These have included complex projects such as bridge repair works in European Sites, linear infrastructure projects, and the assessment of large outdoor music events. Colm is involved in several ongoing ecological clerk of works roles where he is required to liaise with specialists from other disciplines. His area of expertise is botanical surveying; however, he has a wide range of ecological experience including bat surveys, protected mammal surveys and survey for crayfish.

Aebhín Cawley is Director with Scott Cawley. She holds an honours degree in Zoology from Trinity College, Dublin and a postgraduate diploma in Physical Planning at Trinity. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Aebhin Cawley is an experienced ecological consultant with extensive experience in public and private sector projects including renewable energy, ports and other major infrastructural developments. Aebhín has been undertaking Ecological Impact and Appropriate Assessment work in Ireland since 2002 and regularly provides Appropriate Assessment training to local authorities and other public sector organisations. She authored guidelines on Appropriate Assessment for the EPA and delivered training on its application to its inspectorate.

2.2 Guidance

This Natura Impact Statement has been prepared having regard to the following guidance documents 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 NPW 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); hereafter referred to as the EC Article 6 Guidance Document. 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 Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, 2000 updated November 2018); hereafter referred to as MN2000.
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive.* Findings of an international workshop on Appropriate Assessment in Oxford, December 2009.
- *Communication from the Commission on the precautionary principle* (European Commission, 2000)
- *Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.* Opinion of the European Commission. (European Commission, 2007)

The information comprised in this report will assist the competent authority to conduct both the required Stage 1 Screening and Stage 2 Appropriate Assessments in respect of the proposed development and was based on a desk study as well as site visits carried out within the subject lands on 25th September 2018 and 26th March 2019. Information relied upon included the following information sources, which included maps, ecological and water quality data:

- Ordnance Survey Ireland mapping and aerial photography available from OSI online GeoHive mapping resource (Ordnance Survey Ireland, 2018);
- Data on protected species and European sites, available for download and interrogation from the National Parks and Wildlife Service maps and data page (NPWS, 2018);
- Data on waterbodies, available for download and interrogation from the Environmental Protection Agency web map service (EPA, 2018);
- Information on soils, geology and hydrogeology in the area available for download and interrogation from the Geological Survey Ireland online Spatial Resources service (GSI, 2018);
- The Environmental Impact Assessment Report (EIAR) prepared for the planning application for the proposed development

- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2013a & 2013b); and,
- Environmental Impact Statement chapter 7 Flora and Fauna. (Robertson & Associates, 2006). An Bord Pleanala, 20017 Planning reference: PL17 .224875 SA 60260
- Ecological Impact Assessment of adjacent development at Rathmullan Road. (Scott Cawley, 2007)
- Construction Environmental Management Plan (CEMP) prepared for the planning application for the proposed development (Waterman Moylan Consulting Engineers Ltd., 2019)

2.3 Stage 1 Screening Methodology

The above referenced guidance documents set out a staged process for carrying out the assessment required under the Habitats Directive, the first stage of which is referred to as screening. This screening stage identifies the likely significant impacts on a European site, if any, which would arise from a proposed development either alone or in combination with other plans and projects.

The possibility of there being a significant effect on a European site will generate the need for a Stage 2 AA to be carried out by the competent authority for the purposes of Article 6(3). In this instance, the competent authority is An Bord Pleanála. A screening for Appropriate Assessment of an application for consent for proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage 2 Appropriate Assessment 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. The first (Screening) stage for Appropriate Assessment operates merely to determine whether a (Stage 2) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

Screening for AA involves the following:

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites[2];
- Describing the details of the project/plan proposals and other plans or projects that may cumulatively affect any European sites;
- Describing the characteristics of relevant European sites; and
- Appraising likely significant effects of the proposed project on relevant European sites.

Section 4 of this report provides a summary of the information gathered for the AA screening and Sections 5, 6 and 7 of this report take forward the assessment into full AA.

[2] In this instance the proposed development is not directly connected with or necessary to the conservation management of any European sites.

2.4 Stage 2 AA Methodology

For Stage 2 AA, the potential for a proposed development, individually or in combination with other plans or projects, to adversely affect the integrity of European sites must be examined with respect to the specific conservation objectives of the relevant European sites. This Stage 2 AA also requires consideration of the specific mitigation measures that will be implemented to ensure an absence of adverse effects on the integrity of European sites. Stage 2 AA must provide a clear conclusion regarding the absence (considering the implementation of mitigation measures) of adverse effects on the integrity of European sites. In order to grant permission, the competent authority must conclude, having conducted the Stage 2 AA that the proposed development will not have an adverse effect on the integrity of any identified European sites.

For the avoidance of doubt, and as demonstrated by the conclusions of this report, it is not necessary in the case of this proposed development to progress to further stages of the assessment process *i.e.* the developer does not seek to rely upon the provisions of Article 6(4) of the Habitats Directive.

3 Overview of Proposed Development and its Receiving Environment

3.1 Location and Context of the Proposed Development to European Sites

The proposed development is located off the Rathmullan Road west of Drogheda, Co. Meath and centred on Irish Grid Reference O 06135 75054. The subject lands are a greenfield site and are comprised of several habitats. The subject lands are dominated by horticultural land with hedgerows, dry meadows and grassy verges and recolonising bare ground. No watercourses were identified within the subject lands, but the River Boyne is present directly to the north of the subject lands. To the west the site is bounded by the M1 motorway. Agricultural land is present south and south-east of the subject lands and an existing residential development occupy the lands adjacent to the north eastern part of the site. EPA maps show the Stragrennan stream running directly adjacent to the subject lands however it is culverted. There are no surface water drains onsite.

The closest European Sites are located within the River Boyne. The River Boyne and Blackwater SAC (002299) is located directly adjacent to the subject lands while the River Boyne and Blackwater SPA is located *c.* 100m upstream of the subject lands.

The River Boyne and Blackwater SAC (002299) has been designated for the following Annex I habitats and Annex II species:

- Alkaline fens [7230]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

None of these habitats or species occur within the subject lands. While there is an area of woodland located along the northern part of the subject lands, analysis of 20m x 20m relevés undertaken within this habitat against definitions of EU annex I habitats (European Commission, 2013; NPWS, 2013) determined that the woodland does not correspond to [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*), due to the absence of typical species

for the habitat. Notwithstanding the fact that the lands do not host any Qualifying interest habitat or species of any European sites, in the absence of mitigation, surface or foul water may run off into the River Boyne and have adverse impacts on the habitats and species for which this SAC has been designated. (NPWS, 2018)

The River Boyne and Blackwater SPA (004080) has been designated for Kingfisher (*Alcedo atthis*) [A229]. There is no suitable habitat for this species present within the subject lands. However, in the absence of mitigation, surface or foul water may run off into the River Boyne and have adverse impacts on this species. The European Sites within the Boyne Estuary are located downstream of the subject lands and have the potential to be affected by the proposed development.

The Boyne Coast and Estuary SAC (001957) is located *c.* 5.7km from the subject lands and has been designated for the following habitats:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

None of these habitats occur within the subject lands and are located approximately 5.7km downstream of the subject lands. However, in the absence of mitigation, surface or foul water may run off into the River Boyne and have adverse impacts on the habitats and species for which this SAC has been designated. The Boyne Estuary SPA (004080) is located *c.* 4.4km from the subject lands and has been designated for a range of wetland bird species. None of these bird species are known to utilise any of the habitats present in the subject lands and none of these species (or signs of them) were noted within the subject lands during field surveys undertaken in September 2018 or March 2019. However, in the absence of mitigation, surface or foul water may run off into the River Boyne and have adverse impacts on these species.

3.2 Description of the Proposed Development

Full details of the proposed development are provided in the applicant's planning documentation. In brief, the proposed development will involve:

- The demolition of two sets of existing farm buildings within the subject lands;
- The widening of Rathmullan road;
- The construction of 661 housing units including detached, semi-detached and terraced houses as well as apartment buildings; and,
- The construction of 1 no. retail unit, 1 no. café and a creche.

4 Provision of Information for Screening

4.1 Zone of Influence of the Proposed Development

There is no set recommended distance from a proposed development for which European sites are considered as being relevant for AA. Available guidance (NPWS, 2010) recommends that '*the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*'.

For significant effects to arise, there must be a potential impact enabled by having a '*source*' (*e.g.* construction works at a proposed development site), a '*receptor*' (*e.g.* a European site or its qualifying interests), and a pathway between the source and the receptor (*e.g.* a watercourse connecting a proposed development site to a European site). The identification of a pathway does not automatically mean that significant effects will arise, however, the absence of a pathway means that a significant effect is not possible. The likelihood for significant effects will depend upon the characteristics of the source (*e.g.* nature of construction works), the characteristics of the pathway (*e.g.* nature of the watercourse receiving run-off from construction) and the characteristics of the receptor (*e.g.* the sensitivities of the European site and its qualifying interests or special conservation interests).

In this instance the zone of influence of the proposed development is considered to extend to European sites within the Boyne River catchment, *i.e.* in the same catchment as the proposed development. This is because the subject lands are located directly adjacent to the River Boyne. A pollution event within the subject lands has the potential to contaminate the European Sites within the River Boyne catchment downstream of the subject lands.

This zone of influence encompasses the following European sites, both of which are connected to the proposed development via the surface water and foul water networks, and which are within the potential zone of airborne emissions:

- River Boyne and Blackwater SAC (002299)- the SAC boundary overlaps with the northern boundary of the subject lands and is designated for a range of Annex I habitats, Annex II fish and otter;
- The River Boyne and Blackwater SPA (004080)- *c.*100m north-west of the subject lands and designated for kingfisher;
- The Boyne Coast and Estuary SAC (001957)- *c.* 5.7km east and designated for a range of Annex I habitats;
- The Boyne Estuary SPA (004080) is located c. 4.4km east and designated for a range of wetland bird species.

It is often considered appropriate to examine all European sites within 15km as a starting point. In this instance, no European sites outside of the Boyne River and Estuary are considered to be within the zone of influence of the proposed development due to the following reasons:

- It is acknowledged that the subject lands are hydrologically linked to European sites in the Irish Sea with marine and coastal qualifying interests via the surface and foul water networks. Nonetheless, there is no possibility of significant effects on any European sites outside of the Boyne Estuary in light of the large marine water buffer that separates the surface and foul

water outfalls from any other European sites, and in light of the existence of foul water infrastructure to adequately treat foul waters prior to discharge to the receiving environment;

- There are no potential source-pathway-receptor links between the subject lands and European sites designated for terrestrial habitats. This is because the lands do not contain any habitats which appear on Annex I of the Habitats Directive therefore, there is no possibility that the lands act as an *ex situ* site for any of these habitats; and,
- There are no potential source-pathway receptor links between the subject lands and European sites that are designated for wetland and marine bird species outside of the Boyne River and Estuary. This is because the lands do not contain records of any of these species, none of these species were noted within the lands during field surveys undertaken in September 2018 or March 2019. The lands are not considered to be important inland sites for any of these species considering the dominant habitat types within – horticultural land, hedgerows, rough grassland and buildings.

4.2 Potential Impacts

4.2.1 Surface Waters

In the absence of mitigation, the possibility of significant effects cannot be ruled out with regards to the European sites within the Boyne River and Estuary. This is because:

- The subject lands are directly adjacent to the River Boyne which discharge into the Boyne Estuary downstream;
- During the construction phase of the proposed development, there is potential for sediments and pollutants such as oils and other hydrocarbons to be mobilised to the surface water network; and,
- In light of the proximity of the proposed development to downstream European sites, it is not outside of the realms of possibility that pollutants reach the river and estuary and potentially affect qualifying interests within. Such a scenario would be most likely if works were to coincide with a period of heavy rainfall such as during a storm event.

4.2.2 Foul Waters

The operation stage of this development will involve the generation of foul waters. Full details about the treatment of foul effluent are outlined in the Water chapter of the EIAR. In summary, foul effluent will be directed via a new pumping station in the north eastern corner of the site to the Drogheda Wastewater Treatment Plant (Drogheda WWTP) via the existing public sewer network. The Drogheda WWTP is required meet environmental legislative requirements as set out in EPA license it operates under. A letter of consent has been obtained from Irish Water agreeing to the proposed measures as detailed in the Water chapter.

4.2.3 Atmospheric Emissions

The possibility of significant effects on European sites arising from airborne emissions has been ruled out based on the results of Chapter 9, the Air Quality chapter of this EIAR. No perceptible impacts to air quality and climate are expected during the operation phase of the development. A dust management plan has been prepared to control dust produced as a result of the construction phase of the development.

Figure 3: European sites within 15km of the proposed development.

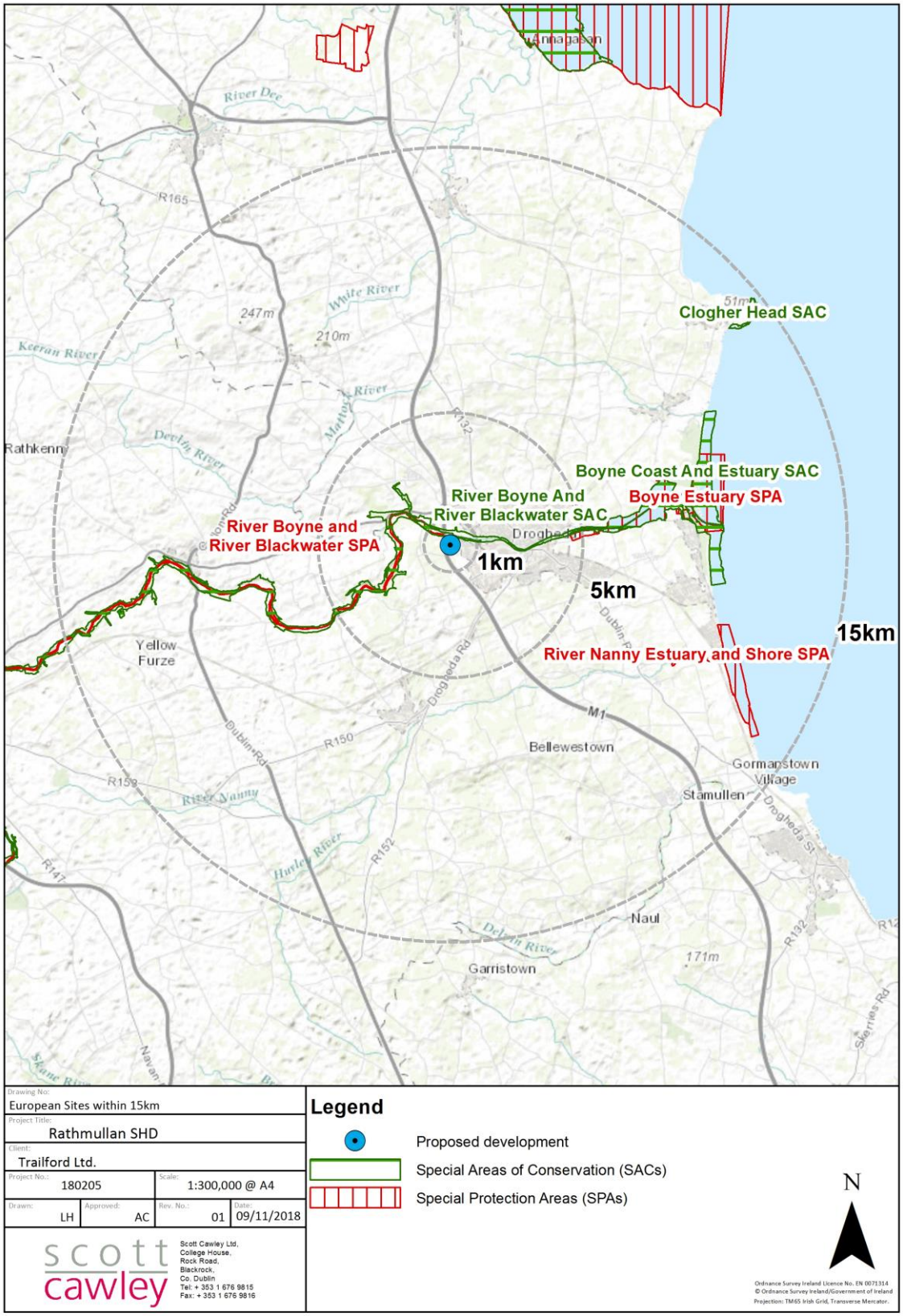
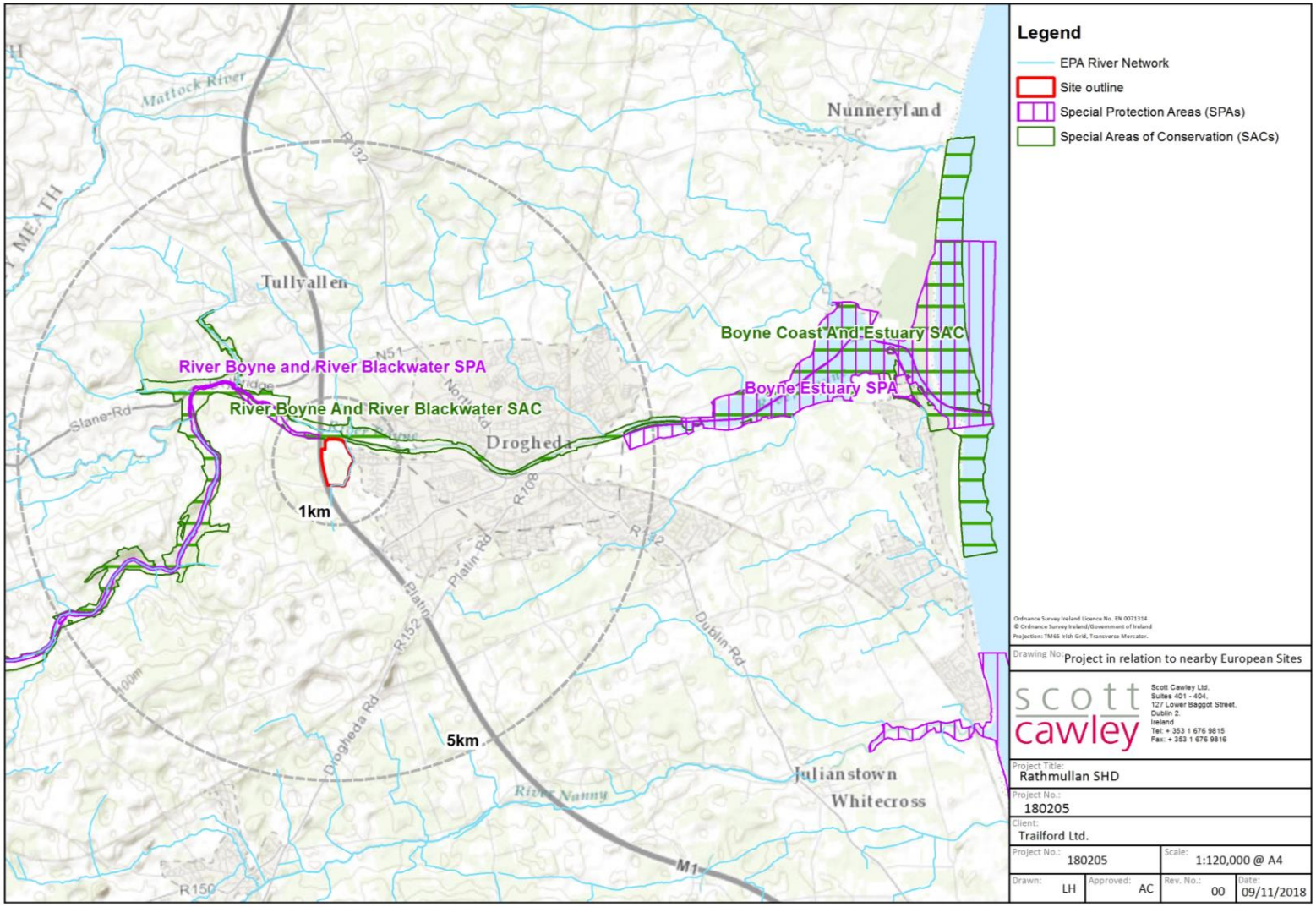


Figure 4: The subject lands in relation to European sites within the potential zone of influence of the project.



4.3 Conclusions on Information Provided for Screening Assessment

Information to enable An Bord Pleanála to perform its statutory function to carry out a screening for AA has been presented within this section of the report.

Following an examination, analysis and evaluation of the relevant information including, in particular, the nature of the proposed development and the likelihood of significant effects on European sites, and again applying the precautionary principle, it is the professional opinion of the authors that it is not possible to exclude, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a likely significant effect on the following four European sites:

- River Boyne and Blackwater SAC (002299);
- The River Boyne and Blackwater SPA (004080);
- The Boyne Coast and Estuary SAC (001957); and,
- The Boyne Estuary SPA (004080).

In the case of the four European sites listed above for which the possibility of significant effects cannot be excluded, the only likely significant risks to those European sites (in the absence of mitigation) arises from potential construction-related discharges to surface waters from the proposed development and the potential for these effects to reach downstream European sites. It was concluded, therefore, that likely significant effects on these four European sites may require mitigation to avoid adverse impacts on the integrity of the European sites concerned. Therefore, this application has been accompanied by a Natura Impact Statement on the basis that the competent authority may wish to carry out a Stage 2: full Appropriate Assessment.

However, the authors of this report acknowledge it is for An Bord Pleanála as competent authority, to carry out a screening for appropriate assessment and to reach one of the following determinations:

(a) Stage 2 AA of the 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;

(b) Stage 2 AA of the proposed development is not required if it can 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.

5 Provision of Information for Appropriate Assessment

The potential for significant effects arising from the proposed development on the integrity of River Boyne and Blackwater SAC (002299), The River Boyne and Blackwater SPA (004080), The Boyne Coast and Estuary SAC (001957) and The Boyne Estuary SPA (004080) considering their conservation objectives is examined in this section.

5.1 Summary of European Sites Relevant to the Stage 2 Appropriate Assessment

5.1.1 River Boyne and Blackwater SAC (002299)

Condition of site and management

The *Natura 2000 Standard Data Form* (NPWS, 2017a) lists the SAC as being an important example of alluvial woodland of the *Salicetum albo-fragilis* type which has developed on three alluvium islands. Alkaline fen vegetation is well represented at Lough Shesk. This SAC is one of the most important in eastern Ireland for salmon *Salmo salar* and has extensive spawning grounds within the river. The SAC also supports an important population of river lamprey *Lampetra fluviatilis* although the distribution and abundance of this species is not well known. Otter *Lutra lutra* is also widespread throughout the river. Threats to the site include increased habitation, pollution, discharge, recreational use the removal of hedges, copses or scrub.

5.1.2 The River Boyne and Blackwater SPA (004080)

Condition of site and management

The Natura 2000 Standard Data Form (NPWS, 2017b) states that the SPA is of national importance for kingfisher *Alcedo atthis*. Threats and pressures identified as having highest impact on the European sites include urbanisation, roads and motorways, and dispersed habitation. The conservation objectives for the River Boyne and River Blackwater SPA (004232) are generic. Information on the distribution of kingfisher within the River Boyne catchment in Cummins *et al.* (2010) states that the river contains 0.12 kingfisher per km, and has a nest density of 0.11 per km. A total of 20-22 territories were estimated to occur within the catchment based on these surveys, and the densities of birds and nesting territories are amongst the highest in the country.

5.1.3 The Boyne Coast and Estuary SAC (001957)

Condition of site and management

The Natura 2000 Standard Data Form (NPWS, 2017c) lists the SAC as being an important example of eight coastal habitats: estuaries, mudflats and sandflats not covered by seawater at low tide, annual vegetation of drift lines, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), embryonic shifting dunes, shifting dunes along the shoreline with Ammophila arenaria (white dunes) and fixed coastal dunes with herbaceous vegetation (grey dunes).

5.1.4 The Boyne Estuary SPA (004080)

Condition of site and management

The Natura 2000 Standard Data Form (NPWS, 2017d) states that it is one of the most important sites for wintering waterfowl on the east coast. It has a total of 10 species with populations of national importance - of particular note is that it supports 7.0% of the national total of red knot *Calidris canutus* and 4.0% of the total for golden plover *Pluvialis apricaria*. Other species which have populations of national importance include shelduck *Tadorna tadorna*, oystercatcher *Haematopus ostralegus*, lapwing *Vanellus vanellus*, black-tailed godwit *Limosa limosa*, redshank *Tringa totanus* and turnstone *Arenaria interpres*. The site provides both feeding and roosting areas for the birds. Little tern *Sterna albifrons* breeds here.

5.1.5 Qualifying Interests potentially exposed to risk

All Annex I habitats within The River Boyne catchment that are potentially at risk from silt-laden surface water discharges, contaminated water discharges or an accidental pollution incident during construction works associated with the proposed development, if they were of a sufficient magnitude and duration are as follows:

- [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- [1130] Estuaries
- [1140] Mudflats and sandflats not covered by seawater at low tide
- [1210] Annual vegetation of drift lines
- [1310] *Salicornia* and other annuals colonising mud and sand
- [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

The remaining qualifying interests, [2110] Embryonic shifting dunes, [2120] shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) and [2130] fixed dunes with herbaceous vegetation (grey dunes), are not considered to be potentially exposed to risk in light of their location above the high-tide mark. Alkaline fens [7230] are present upstream of the proposed development. This means that there is no potential source-pathway-receptor link connecting these habitats to the proposed development.

The bird species for which The River Boyne and Blackwater SPA and The Boyne Estuary SPA have been designated are closely linked with aquatic habitats within the river and estuary for feeding and roosting.

Therefore, they could potentially be vulnerable to the potential effects of contaminated surface water discharges or an accidental pollution incident during construction works associated with the proposed development, if they were of a sufficient magnitude and duration to affect water quality in the River Boyne and affect feeding resources for birds.

5.2 Conservation Objectives

The Habitats Directive and Part XAB of the Planning and Development Act 2000 requires the focus of the AA at this second stage to be on the integrity of European sites *"in light of their conservation objectives."* Site specific conservation objectives (SSCOs) for the qualifying interests and special conservation interests of the European Sites in question that are considered potentially exposed to risk from the proposed development are summarised in Table 1, overleaf. The attributes and targets for the conservation objective are included and the potential for significant effects on these attributes and targets is considered within Table 1.

Table 1: Site specific conservation objectives, attributes and targets, and potential effects arising from the proposed development.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
River Boyne and River Blackwater SAC (002299)				
[1099] River Lamprey *Lampetra fluviatilis* – <u>Maintain or restore the favourable conservation condition.</u> According to the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013), this species is of 'favourable' conservation status in Ireland.				
Distribution	% of river accessible	Access to all water courses down to first order streams.	There is no site-specific information on the conservation objectives for the River Boyne and River Blackwater SAC (002299). The conservation objectives outlined in this table are derived from conservation objectives for other European sites.	No Works are not taking place within any aquatic habitats within the SAC therefore there will be no impacts on access to watercourses
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present.		Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could influence the quality, extent and availability of any juvenile habitat present downstream of the proposed development which in turn could affect the population structure and density of the juvenile lamprey population. Additionally, an accidental pollution event during construction and/or operation, of a sufficient magnitude, could impact lamprey spawning habitat downstream through silt smothering sand/gravel beds. Such impacts could affect the extent and distribution of spawning grounds.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m².		Yes An accidental pollution event could affect the density of juvenile lamprey in sediments in the Boyne immediately downstream of the proposed development.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds.		Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could influence the extent and distribution of spawning habitat present downstream
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive.		Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could influence the quality, extent and availability of any juvenile habitat present downstream of the proposed development which in turn could affect the population structure and density of the juvenile lamprey population. Additionally, an accidental pollution event during construction and/or operation, of a sufficient magnitude, could impact lamprey spawning habitat downstream through silt smothering sand/gravel beds. Such impacts could affect the extent and distribution of spawning grounds.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
[1106] Atlantic Salmon *Salmo salar* <u>Maintain or restore the favourable conservation condition.</u> According to the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013), this species is of 'inadequate' conservation status in Ireland.				
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary.	There is no site-specific information on the conservation objectives for the River Boyne and River Blackwater SAC (002299). The conservation objectives outlined in this table are derived from conservation objectives for other European sites.	No Works are not taking place within any aquatic habitats within the SAC therefore there will be no impacts on river accessibility from estuary.
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded.		Yes An accidental pollution event during construction and/or operation of a sufficient magnitude could impact fish through silt smothering spawning grounds or affecting respiration, chemical contaminants physically damaging fish or causing mortality as a result of toxins. Such impacts could result in a reduction in fish numbers, at least temporarily, with an increased risk of a population level effect if a pollution event were to occur in conjunction with fish migrating upstream from the sea to spawning grounds. Impacts could also result in a reduction in salmon fry abundance downstream, at least temporarily.
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value.		Yes An accidental pollution event during construction and/or operation of a sufficient magnitude could impact fish through silt smothering spawning grounds or affecting respiration, chemical contaminants physically

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
				damaging fish or causing mortality as a result of toxins. Such impacts could result in a reduction in fish numbers, at least temporarily, with an increased risk of a population level effect if a pollution event were to occur in conjunction with fish migrating upstream from the sea to spawning grounds. Impacts could also result in a reduction in salmon fry abundance downstream, at least temporarily.
Out-migrating smolt abundance	Number	No significant decline.		Yes An accidental pollution event during construction and/or operation of a sufficient magnitude could impact fish through silt smothering spawning grounds or affecting respiration, chemical contaminants physically damaging fish or causing mortality as a result of toxins. Such impacts could result in a reduction in fish numbers, at least temporarily, with an increased risk of a population level effect if a pollution event were to occur in conjunction with fish migrating upstream from the sea to spawning grounds. Impacts could also result in a reduction in salmon out-migrating smolt, at least temporarily.
Number and	Number and	No decline in number and		Yes

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
distribution of redds	occurrence	distribution of spawning redds due to anthropogenic causes.		Increased silt loading could affect the distribution and abundance of redds downstream from the proposed development.
Water quality	EPA Q Value	At least Q4 at all sites sampled by EPA.		Yes An accidental pollution event during construction and/or operation of a sufficient magnitude could affect water quality within the Boyne Estuary.
[1355] Otter *Lutra lutra* – Maintain or restore the favourable conservation condition. According to the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013), this species is of 'favourable' conservation status in Ireland.				
Distribution	Percentage positive survey sites	No significant decline.	There is no site-specific information on the conservation objectives for the River Boyne and River Blackwater SAC (002299). The conservation objectives outlined in this table are derived from conservation objectives for other European sites.	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the water quality of this QI species' habitat and forage species and therefore impact the distribution of the species.
Extent of terrestrial habitat	Hectares	No significant decline.		No Works are not taking place within any areas of suitable habitat for this species - there is no suitable habitat (terrestrial, marine or freshwater) for otter, and no couching sites or holts were identified within the lands or adjacent areas during surveys to inform this report. Therefore, there will be no impact on the extent of terrestrial, marine or freshwater
Extent of marine habitat	Hectares	No significant decline.		
Extent of freshwater (river) habitat	Kilometres	No significant decline.		
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline.		

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
Couching sites and holts	Number	No significant decline.		habitat, or couching sites and holts.
Fish biomass available	Kilograms	No significant decline.		Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the water quality within the SAC which in turn would impact fish biomass availability.
Barriers to connectivity	Number	No significant increase.		No The proposed development does not include any works within the European site, or any works which could contribute to the imposition of barriers to connectivity within the European site.
[7230] Alkaline Fens – <u>Maintain or restore the favourable conservation condition.</u> According to the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013), this habitat is of 'bad' conservation status in Ireland.				
Habitat area	Hectares	Area stable or increasing, subject to natural processes.	There is no site-specific information on the conservation objectives for the River Boyne and River Blackwater SAC (002299). The conservation objectives outlined in this table are derived from conservation objectives for other European sites.	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat area of alkaline fens. This habitat is located upstream of the proposed development.
Habitat distribution	Occurrence	No decline, subject to natural processes.		No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution of alkaline fens. This habitat is located upstream of the proposed

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
				development.
Hydrological regime	Flow rates, metres	Appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat.		No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution of alkaline fens. This habitat is located upstream of the proposed development and there is no possibility of construction affecting the hydrological regime of Alkaline fens within this SAC.
Peat formation	Flood duration	Active peat formation, where appropriate.		No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution of alkaline fens. This habitat is located upstream of the proposed development and there is no possibility of construction affecting flood regimes and peat formation within alkaline fens in the European site.
Water quality: nutrients	Water chemistry measures	Appropriate water quality to support the natural structure and functioning of the habitat.		No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution of alkaline fens. This habitat is located upstream of the proposed development therefore surface and foul water discharges do not have the potential to affect water quality within the River Boyne and its

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
				catchment.
Vegetation composition: typical species	Presence	Maintain vegetation cover of typical species including brown mosses and vascular plants.		No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution of alkaline fens. This habitat is located upstream of the proposed development. and there is no possibility of construction run-off affecting the vegetation composition within the European site.
Vegetation composition: trees and shrubs	Percentage	Cover of scattered native trees and shrubs less than 10%.		No Tree and shrub cover are dependent on grazing regimes and other management measures which are outside of the scope of the proposed development. As this habitat is located upstream of the subject lands, there is no possibility of surface water discharges or airborne emissions contributing to increase tree and shrub cover within alkaline fens in the European site.
Physical structure: disturbed bare ground	Percentage	Cover of disturbed bare ground less than 10%. Where tufa is present, disturbed bare ground less than 1%.		No Cover of disturbed bare ground is dependent on stocking rates or disturbance from undertaking works within the habitat. Considering the location of the proposed development away from the European site, there is no possibility of affecting this attribute.
Physical structure:	Percentage	Areas showing signs of drainage as		No

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
drainage		a result of drainage ditches or heavy trampling less than 10%.		Drainage structure is dependent on trampling, stocking or direct construction of channels within the qualifying interest habitat. As the proposed development is not within the European site, there is no possibility of affecting this attribute.
[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) - <u>Maintain or restore the favourable conservation condition.</u> According to the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013), this habitat is of 'bad' conservation status in Ireland.				
Habitat area	Hectares	Area stable or increasing, subject to natural processes.	There is no site-specific information on the conservation objectives for the River Boyne and River Blackwater SAC (002299). The conservation objectives outlined in this table are derived from conservation objectives for other European sites.	Yes As this habitat is periodically inundated by the annual rise of river levels (NPWS, 2013a), an accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the water quality of this habitat, impacting the vegetation within the habitat, and therefore impacting habitat area, habitat distribution, woodland size and woodland structure.
Habitat distribution	Occurrence	No decline.		
Woodland size	Hectares	Area stable or increasing.		
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer.		
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types.		
Woodland structure: natural regeneration	Seedlings: sapling: pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.		
Hydrological regime: flooding	Metres	Appropriate hydrological regime necessary for maintenance of		No Surface waters generated from the proposed

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
depth/height of water table		alluvial vegetation.		development site entering the River Boyne and River Blackwater SAC will not be of a sufficient volume to affect the flooding depth/height of water table.
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least $30m^3$/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).		No Works are not taking place within the woodland habitat and therefore there will be no impacts on the amount or categories of dead wood present.
Woodland structure: veteran trees	Number per hectare	No decline		Yes As this habitat is periodically inundated by the annual rise of river levels (NPWS, 2013a), an accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the water quality of this habitat and therefore impact vegetation composition and woodland structure.
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%.		
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix spp*) and, locally, oak (*Quercus robur*) and ash (*Fraxinus excelsior*).		
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control.		No Works are not taking place within or adjacent to this habitat type and therefore there will be no direct impacts. No non-native invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
				Habitats) Regulations, 2011, are present within the proposed development site and therefore, there is no risk of introduction to the European site.
Boyne Coast and Estuary SAC (001957)				
Estuaries [1130] (Maintain or restore the favourable conservation condition)				
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Habitat area was estimated as 403ha using OSi data and the defined Transitional Water Body area under the Water Framework Directive	No Works are not taking place within estuarine habitat therefore there will be no impact on natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Subtidal fine sand dominated by polychaetes community.	Habitat structure was elucidated from intertidal and subtidal surveys undertaken in 2010 (ASU, 2011; EcoServe, 2011)	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the sensitive aquatic species associated with this habitat and therefore impact community distribution.
Mudflats and sandflats not covered by water at low tide [1140] (Maintain or restore the favourable conservation condition)				
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Habitat area was estimated using OSi data as 403ha	No Works are not taking place within the intertidal zone therefore there will be no impact on natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine	Habitat structure was elucidated from an intertidal survey undertaken in 2010 (ASU, 2011). See marine supporting document for	Yes An accidental pollution event during construction and/or operation, of a sufficient

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
		mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Fine sand dominated by bi-valves community complex.	further details	magnitude, could potentially negatively affect the sensitive aquatic species associated with this habitat and therefore impact community distribution.
[1310] *Salicornia* and other annuals colonising mud and sand – Maintain or restore the favourable conservation condition				
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	Based on data from Saltmarsh Monitoring Project (McCorry and Ryle, 2009). Habitat mapped at two sub-sites surveyed, giving a total estimated area of 4.05ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the sensitive aquatic flora species associated with this habitat and therefore impact habitat area and distribution
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	Based on data from McCorry and Ryle (2009). Salicornia is an annual species, so its distribution can vary significantly from year to year. At Baltray, saltmarsh is expanding in infilled intertidal zone. Large area of Mornington saltmarsh was reclaimed in the past. See coastal habitats supporting document for further details	
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore, natural circulation of sediments and organic matter, without any physical obstructions.	Based on data from McCorry and Ryle (2009). Sediment supply is particularly important for this pioneer saltmarsh community, as the distribution of this habitat depends on accretion rates. Sediment supply to saltmarshes at Baltray and Mornington is likely to be affected by the construction of navigation walls and dredging of the main	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on natural processes.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
			channel. See coastal habitats supporting document for further details	
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession.	Based on data from McCorry and Ryle (2009). Creeks deliver sediment throughout saltmarsh system. At Baltray and Mornington the structure is modified by drainage channels. See coastal habitats supporting document for further details	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.	This pioneer saltmarsh community requires regular tidal inundation. See coastal habitats supporting document for further details	
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	Based on data from McCorry and Ryle (2009). At Baltray and Mornington there are zonations within the saltmarsh habitats as well as transitions to adjacent sand dune systems. See coastal habitats supporting document for further details	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the sensitive aquatic species associated with this habitat and therefore impact vegetation structure and composition.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward.	Based on data from McCorry and Ryle (2009). At Baltray and Mornington grazing is absent and sward height is variable. See coastal habitats supporting document for further details	
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated.	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details	
Vegetation	Percentage	Maintain the presence of species-	Based on data from McCorry & Ryle (2009).	

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
composition: typical species and sub-communities	cover	poor communities listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009).	See coastal habitats supporting document for further details	
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%.	Based on data from McCorry & Ryle (2009). Spartina is well established at this site. Swards of *Spartina* are widespread at Baltray and there has been significant expansion of *Spartina* at Mornington since 2000. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to the expansion of common cordgrass.
[1330] Atlantic salt meadows *(Glauco-Puccinellietalia maritimae* – (Maintain or restore the favourable conservation condition)				
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 17.67ha, Mornington- 8.76ha. See map 6	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the sensitive aquatic flora species associated with this habitat and therefore impact habitat area and distribution.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	No decline or change in habitat distribution, subject to natural processes. See map 6 for known distribution	
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions.	Maintain natural circulation of sediments and organic matter, without any physical obstructions	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on natural processes.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession.	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.	Maintain natural tidal regime	

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect the sensitive aquatic species associated with this habitat and therefore impact vegetation structure and composition.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward.	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated.	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009).	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%.	No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1%	No Works are not taking place within or adjacent to this habitat type and therefore there is no risk of affecting common cordgrass abundance or distribution in the European site.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
[1410] Mediterranean salt meadows (*Juncetalia maritimi*) – The status of this qualifying interest is under review.				
[2110] Embryonic shifting dunes – <u>Maintain or restore the favourable conservation condition</u>				
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	Based on data from the Coastal Monitoring Project (Ryle et al., 2009). Habitat is very difficult to measure in view of its dynamic nature and was recorded at both sub-sites, giving a total estimated area of 3.18ha. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat area.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	Based on data from Ryle *et al*. (2009). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution.
Physical structure: functionality sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions.	Based on data from Ryle *et al.* (2009). Dunes are naturally dynamic systems that require continuous supply and circulation of sand. The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on natural processes.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural	Based on data from Ryle *et al*. (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine	No The proposed development does not include any works within the European site, or any

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
		processes including erosion and succession.	saltmarshes. See coastal habitats supporting document for further details	works which could contribute to changes in vegetation zonation.
Vegetation composition: plant health of foredune grasses	Percentage cover	More than 95% of sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle *6*. (2009). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation composition.
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*).	Based on data from Ryle *et al*. (2009). See coastal habitats supporting document for further details	
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover.	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (Hippophae rhamnoides) should be absent or effectively controlled. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat type and therefore there is no risk of affecting sea buckthorn abundance or distribution in the European site.
[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) – <u>Maintain or restore the favourable conservation condition</u>				
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	Habitat was mapped during the Coastal Monitoring Project (Ryle et al. 2009). Habitat was recorded at both sub-sites, giving a total estimated area of 4.97ha. Habitat is very difficult to measure in view of its dynamic nature. See coastal habitats supporting	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat area.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
			document for further details	
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	Based on data from Ryle et al. (2009). Shifting dunes were recorded at both Baltray and Mornington sub-sites. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat distribution.
Physical structure: functionality sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions.	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram (*Ammophila arenaria*) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on natural processes.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	Based on data from Gaynor (2008) and Ryle *et al.* (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine saltmarshes. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation zonation.
Vegetation composition: plant health of dune	Percentage cover	95% of marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) should be	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
grasses		healthy (i.e. green plant parts above ground and flowering heads present).		works which could contribute to changes in vegetation composition.
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (*Ammophila arenaria*) and/or lymegrass (*Leymus arenarius*).	Based on data from Ryle *et al.* (2009). See coastal habitats supporting document for further details	
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover.	Based on data from Ryle *et al.* (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. Ragwort (*Senecio jacobaea*) was recorded from Mobile dunes at both Baltray and Mornington. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat type and therefore there is no risk of affecting sea buckthorn abundance or distribution in the European site.
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) – <u>Maintain or restore the favourable conservation condition</u>				
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession.	Based on data from the Coastal Monitoring Project (Ryle *et al*., 2009). Habitat was recorded at both sub-sites, giving a total estimated area of 46.87ha. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to a reduction in habitat area.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural	Based on data from the Coastal Monitoring Project (Ryle *et al*., 2009). Fixed dunes	No The proposed development does not include

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
		processes.	recorded at both Baltray and Mornington. See coastal habitats supporting document for further details	any works within the European site, or any works which could contribute to a reduction in habitat distribution.
Physical structure: functionality sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	Based on data from the Coastal Monitoring Project (Ryle *et al*., 2009). The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on natural processes.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	Based on data from Ryle *et al*. (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine saltmarshes. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation zonation.
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes.	Based on data from Gaynor (2008) and Ryle *et al.* (2009). The estimated area of bare sand at Mornington currently accounts for greater than 10% of the fixed dune habitat. See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site and therefore it is not considered likely that the proposed development will result in changes to area of bare ground in sand dune habitats.
Vegetation structure: sward height	Centimetres	Maintain structural variation in the sward.	Based on data from Gaynor (2008) and Ryle *et al*. (2009). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation structure.

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Ryle et al. (2009).	Based on data from Gaynor (2008) and Ryle et al. (2009). The locally rare species viper's bugloss (Echium vulgare) was recorded in the fixed dunes at Baltray. Mornington is the most northerly known site in Ireland for wild clary (Salvia verbenaca). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation composition.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover.	Based on data from Ryle *et al.* (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. At both Baltray and Mornington, creeping thistle (*Cirsium arvense*), ragwort (*Senecio jacobaea*) and common nettle (*Urtica dioica*) were recorded in fixed dunes. See coastal habitats supporting document for further details	No Works are not taking place within or adjacent to this habitat type and therefore there is no risk of affecting negative indicator species abundance or distribution in the European site.
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control.	Based on data from Ryle *et al.* (2009). See coastal habitats supporting document for further details	No The proposed development does not include any works within the European site, or any works which could contribute to changes in vegetation composition.
River Boyne and River Blackwater SPA (004232)				

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
[A229] Kingfisher *Alcedo atthis* – <u>Maintain or restore the favourable conservation condition</u>				
Population trend	Percentage change	Long term population trend stable or increasing	There are no site-specific conservation objectives for the River Boyne and River Blackwater SPA (004232). There is therefore no information publicly available on the long-term population trend or the distribution of kingfisher along the Boyne River.	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect aquatic habitats in the SPA. A reduction in water quality could affect factors that support the breeding population, such as prey abundance/biomass. Such impacts could potentially affect nest occupation and productivity which in turn could affect the number and range of areas used by kingfisher and the population numbers in the SPA.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by the special conservation interest species, other than that occurring from natural patterns of variation		
Boyne Estuary SPA (004080)				
<u>To maintain the favourable conservation condition of:</u> [A048] Shelduck *Tadorna tadorna* [A130] Oystercatcher *Haematopus ostralegus* [A140] Golden Plover *Pluvialis apricaria* [A141] Grey Plover *Pluvialis squatarola* [A142] Lapwing *Vanellus vanellus* [A143] Knot *Calidris canutus* [A144] Sanderling *Calidris alba*				

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
[A156] Black-tailed Godwit *Limosa limosa* **[A162] Redshank *Tringa totanus*** **[A169] Turnstone *Arenaria interpres***				
Population trend	Percentage change	Long term population trend stable or increasing	Long-term[3] population trends by species (from part 4 of NPWS (2013e): • [A048] Shelduck *Tadorna tadorna* – Increase of 39% (**favourable condition**) • [A130] Oystercatcher *Haematopus ostralegus* – Increase of 7.7% (**favourable condition**) • [A140] Golden Plover *Pluvialis apricaria* – Increase of 35.7% (**favourable condition**) • [A141] Grey Plover *Pluvialis squatarola* – Increase of 64% (**favourable condition**) • [A142] Lapwing *Vanellus vanellus* – Decrease of 45.9% (**unfavourable condition**) • [A143] Knot *Calidris canutus* – Increase of 80.1% (**favourable condition**) • [A144] Sanderling *Calidris alba* – Increase of 366.8% (**favourable condition**) • [A156] Black-tailed Godwit *Limosa limosa* – Increase of 21% (**favourable condition**) • [A162] Redshank *Tringa totanus* -	Yes An accidental pollution event during construction and/or operation, of a sufficient magnitude, could potentially negatively affect aquatic habitats in the SPA. A reduction in water quality could affect factors that support breeding populations, such as prey abundance/biomass. Such impacts could potentially affect nest occupation and productivity which in turn could affect the number and range of areas used by these conservation interest species and the population numbers in the SPA.

[3] Long-term population trend referenced relates to a 14-year period between 1995/96 and 2009/10 for bird populations in Malahide Estuary SPA (004025) as per NPWS (2013e)

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
			Decrease of 1% (**Intermediate (unfavourable) condition**) • [A169] Turnstone *Arenaria interpres* – Decrease of 31.6% (**unfavourable condition**)	
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by the special conservation interest species, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 season are summarised as follows based on NPWS (2013y): • [A048] Shelduck *Tadorna tadorna* – Foraging sites tend to be concentrated in the outer estuary at the Beacon, while roosting is throughout the Boyne Estuary. • [A130] Oystercatcher *Haematopus ostralegus* – Foraging occurs on intertidal areas in the estuary and the Shore at Baltray and Lady's Finger. Roosting is concentrated along the Boyne Channel. • [A140] Golden Plover *Pluvialis apricaria* – Relatively little foraging appears to occur within the European site proper, although roosting is concentrated in the outer Boyne Estuary at Mornington East, the Beacon and Braghan. • [A141] Grey Plover *Pluvialis squatarola* – Some low-level foraging scattered throughout the European site. Roosting concentrated on intertidal sands in the Baltray.	

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
			• [A142] Lapwing *Vanellus vanellus* – Foraging concentrated on the inner Boyne Estuary between ARP and Mornington East. Roosting is between Mornington West and Braghan. • [A143] Knot *Calidris canutus* – Foraging and roosting are concentrated on intertidal sediments in the outer Boyne Estuary at Baltray and Lady's Finger. • [A144] Sanderling *Calidris alba* – Foraging largely concentrated at Baltray. • [A156] Black-tailed Godwit *Limosa limosa* – Foraging is concentrated in the inner estuary between Arp and Mornington East/Quinsborough East. Roosting is concentrated in Braghan and Port to Beaulieu House. • [A162] Redshank *Tringa totanus* – Foraging and roosting occurs within the inner estuary between Arp and The Beacon/Braghan. • [A169] Turnstone *Arenaria interpres* – Foraging is concentrated in the outer estuary at Braghan, the Beacon, Baltray and Lady's Finger	
[A195] Little Tern *Sterna albifrons* – <u>To maintain the favourable conservation condition.</u>				
Breeding population abundance:	Number	No significant decline	Measure based on standard tern survey methods (see Walsh *et al*., 1995). Mitchell *et*	No The breeding population of little terns in the

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
apparently occupied nests (AONs)			*al*. (2004) provides summary population information for Louth. The Seabird Monitoring Programme (SMP) also provides background data (JNCC, 2013). In 2010, 43 breeding pairs were recorded at this colony (Reilly, 2010).	Boyne Estuary SPA (004080) is considered to be chiefly influenced by the availability of nesting habitat, and levels of disturbance from humans, based on information provided in *Boyne Estuary Special Protection Area Conservation Objectives Supporting Document* (NPWS, 2012). There is not considered to be any potential for the proposed development to influence the breeding population (abundance).
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh *et al*., 1995). For 2010, an estimated productivity rate of 2.2 fledged birds per breeding pair was reported (Reilly, 2010)	No The number of fledged young per breeding pair is considered to be linked to levels of disturbance from humans, and prey availability in adjacent waters, and will not be significantly influenced by any potential impacts arising from the proposed development.
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	Little tern nest in well-camouflaged shallow scrapes on sand and shingle beaches, spits or inshore islets (Mitchell *et al*., 2004). For a description of the area used by the colony in 2010, see Reilly (2010)	No As the proposed development does not include any works within the European site, and as the distribution of breeding colonies depends on the presence of suitable nesting locations, there is no potential for significant impacts on distribution of breeding colonies.
Prey biomass available	Kilogrammes	No significant decline	Key prey items: Mainly small, often juvenile, fish; invertebrates, especially crustaceans and insects. Key habitats: Very shallow water, advancing or receding tidelines, brackish	No It is not anticipated that prey availability will be significantly impacted by discharges (surface water, foul water or airborne) from

Attribute	Measure	Target	Notes	Potential Effects Arising from Proposal
			lagoons and saltmarsh creeks, sand-banks close to the coast. Foraging range: Max 11km, mean max 6.94km, mean 4.14km (BirdLife International Seabird Database (Birdlife International, 2013))	the proposed development. This is because any discharges reaching the marine environment will be diluted and absorbed to levels will not be noticeable.
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Seabird species can make extensive use of the marine waters adjacent to their breeding colonies. Foraging range: Max 11km, mean max 6.94km, mean 4.14km (BirdLife International Seabird Database (Birdlife International, 2013)	No The proposed development does not include any works within the European site, or any works which could contribute to the imposition of barriers to connectivity within the European site.
Disturbance at the breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding little tern population	Little tern nest in well-camouflaged shallow scrapes on sand and shingle beaches, spits or inshore islets (Mitchell *et al*., 2004)	No The proposed development does not include any works within the European site, or any works which could contribute to noise or visual disturbance of birds at their breeding site.
[A999] Wetlands – maintain the favourable conservation condition				
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 594 hectares, other than that occurring from natural patterns of variation	The wetland habitat area was estimated as 594ha using OSI data and relevant orthophotographs.	No The proposed development does not include any works within the European site. It will not alter the rate of sediment deposition or erosion within the European site, and therefore there is no potential for it to influence wetland habitat area.

6 Appraisal of Potential Impacts on European sites

6.1 Accidental pollution incident during construction

There are four European sites with a direct hydrological connection with the proposed development- River Boyne and River Blackwater SAC (002299), Boyne Coast and Estuary SAC (001957), River Boyne and River Blackwater SPA (004232) and Boyne Estuary SPA (004080).

It is anticipated that the proposed development will involve several construction phases when it is expected that topsoil and subsoil will be exposed to rainfall, and when there is a risk of accidental leakage of oils and other contaminants from construction equipment. An appropriate range of mitigation measures will be provided, outlined in full in the CEMP but in brief, these include:

- A series of cut off trenches throughout the site which follow existing contours, fitted with check dams and/or straw bales and a final settlement pond;
- A suitably qualified person will inspect this system during construction works to ensure it is functioning properly and that excessive silt does not reach the River Boyne;
- All refuelling will take place within a dedicated construction compound which will be located at a distance from the slope to the river; and,
- The use of drip trays, bunding and emergency response measures for spills.

While it is acknowledged that water quality within the Boyne transitional waterbody downstream of the lands is of only '*moderate*' status, significant adverse effects are not predicted for the habitats and species for which European sites in the Boyne river and estuary are designated considering their conservation objectives due to the following:

- The proposed development does not include any works within the European sites that could contribute a to reduction in special interest habitats or damage habitats that are important for the special conservation interest species;
- Although there is potential for construction-related pollutants and sediments to be mobilised, this will be limited to storm events during the construction phase of the proposed development. The mitigation measures outlined in the water chapter detail how pollutants and sediments will be prevented from entering the River Boyne; and,
- Any potential effects on water quality within the receiving environment would likely be of short duration only.

6.2 Mitigation Measures to Ensure an Absence of Adverse Effects on the Integrity of European Sites

The full range of mitigation measures to be incorporated into the proposed development are outlined in the CEMP and in Table 2 below. Upon review of these mitigation measures, it is the professional opinion of the authors and design team that the mitigation measures, when implemented, will ensure that no adverse effects on European sites will arise from the construction or operational stages of the proposed development.

Table 2: Schedule of Ecological Mitigation as outlined in the CEMP.

No.	Impact Identified with Biodiversity Chapter of EIAR and/or Natura Impact Statement	Mitigation	Result of Mitigation
1	All construction phase impacts	Employment of Environmental Specialist to monitor works	Undertakes pre-construction checks for protected species, reviews method statement of contractor to ensure that it incorporates all aspects of CEMP. Provides tool box talks and other training, and ensures understanding by all involved of all mitigation measures. Assesses effectiveness of mitigation, checks weather forecast and site conditions where trigger levels are required, checks for adequacy of infiltration where water is being pumped, undertakes weekly water-quality monitoring.
2	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Designated parking at least 50m from any watercourse.	Ensures no soil disturbance or hydrocarbons leak near aquatic zone
3	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	The site compound will be located at least 50m from any watercourse. All potentially polluting materials will be contained within bunds with a capacity of 110% of their contents.	Prevents pollution of the aquatic zone from toxic pollutants
4	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Fuels, oils, greases and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or at a location at least 50m from any stream. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided the Contractor for review by the Employer's Representative.	Prevents contamination of aquatic zone by toxic pollutants

5	Water quality impacts Reduction in habitat quality	Silt barrier devices will be installed between the works area and any watercourses to prevent any construction related sediments from entering the existing ditches and watercourses.	Ensures no movement of soil or contaminated water from the construction site to the River Boyne
6	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Pouring of concrete will not be permitted within 50m of any watercourse during inclement weather	Prevents pollution of the aquatic zone by toxic pollutants
7	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off site
8	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water	Prevents contamination of aquatic zone by petrochemicals
9	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse	Prevents contamination of aquatic zone by petrochemicals
10	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	All silt fencing remains actively managed and regularly checked until the construction works are completed The responsibility, reporting and management of silt fencing during the period after the construction has been completed will be clearly stated in the contract documents	Prevents contamination of aquatic zone by suspended solids from bare soil
11	Unforeseen discovery of bats	Tree inspection surveys will be undertaken by a licenced bat worker to assess whether the trees marked for felling have any suitability to support roosting bats. If the trees are confirmed to have potential roosting features, these trees must be inspected at height for roosting bats the day prior to felling works. Once surveyor is	Compliance with legislation protecting bats Avoidance of impacts on roosting bats

		satisfied that bats are not present within potential roosting features, the tree will be felled. If bats are encountered during any works at the site the relevant works will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site.	
12	Nesting birds	All tall woody and herbaceous vegetation in worked areas should be removed outside of the breeding bird season (1st March to 31st August, inclusive) to avoid the destruction of nests or disturbance of breeding birds If this is not possible, trees will be inspected by a qualified ecologist immediately prior to removal. If it is found that breeding birds are present, felling works must be suspended immediately and cannot recommence until chicks have fledged and the nest has been abandoned.	Compliance with legislation protecting birds
13	Woodland and hedgerows	All hedgerows and immature woodland marked for retention will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (National Roads Authority, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees); Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It	Avoidance of impacts on KER habitats

		will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals) Soil will not be placed within the Root Protection Area of trees or within 5m of hedgerows; The woodland will not be lit during the construction or operational phases of the development; and, The construction compound will be located a minimum of 50m from watercourses.	

6.3 Potential Effects of the Project In-Combination with other Plans and Projects

This section of the report presents the assessment carried out to examine whether any other plans or projects have the potential to act in-combination with the proposed development to adversely affect the integrity of the four European sites within its ZoI: the River Boyne and River Blackwater SAC, the River Boyne and River Blackwater SPA, the Boyne Coast and Estuary SAC and the Boyne Estuary SPA.

All other European sites fall beyond the ZoI of the proposed development. Therefore, there is no potential for any other plans or projects to act in combination with the proposed development to adversely affect the integrity of any other European sites.

The only potential impact pathway connecting the proposed development to these European sites is the existing surface water network which drains to the River Boyne. Any national, regional or local land use plans, or any existing or proposed projects, within the River Boyne and River Blackwater catchments have the potential to affect the receiving ecological environment (particularly the aquatic environment) and have the potential to act in-combination with the proposed development to affect the European sites within the Boyne river and estuary.

As discussed above, with the mitigation measures fully implemented none of the potential impacts associated with the proposed development will result in any perceptible residual effect on the receiving environment. Therefore, there will not be any residual impacts associated with the proposed development that will affect the conservation objectives supporting the conservation condition of the qualifying interests and the special conservation interests of the European sites located in the Boyne river and Estuary, and the proposed development will not adversely affect the integrity of those European site.

As the proposed development itself will not have any perceptible effects on any European sites, there is no potential for any other plan or project to adversely affect the integrity of the River Boyne and Blackwater SAC, River Boyne and Blackwater SPA, Boyne Coast and Estuary SAC and Boyne Coast SPA in-combination with the proposed development.

7 Conclusions on the Stage 2 Appropriate Assessment Process

In order for AA to comply with the requirements of Article 6(3) the Habitats Directive and Part XAB of the Planning and Development Act 2000, a Stage 2 AA undertaken by the competent authority must include an examination, analysis, evaluation, findings, conclusions and a final determination. The information in this report will, along with all other submissions and observations received, enable Fingal County Council to perform its statutory function in this regard is presented within this NIS.

Following an examination, analysis and evaluation of the relevant information including, in particular, the nature of the proposed development and the relationship between the subject lands and the relevant European sites and, applying the precautionary principle, it is the professional opinion of the authors of this report that there will be no adverse impact on the integrity of the four relevant European sites.

In the case of the four relevant European sites, the only potentially significant risks to those European sites (in the absence of mitigation) arise from potential construction-related surface water discharges. However, with the full implementation of the mitigation measures outlined in this NIS these risks will be avoided. Consequently, there will be no risk of adverse effects on qualifying interest/special conservation interest habitats or species, nor the attainment of specific conservation objectives, either alone or in-combination with other plans or projects, for the relevant European sites. As a result, the constitutive characteristics of the four European sites concerned that are connected to the qualifying interests for which the sites have been designated will not be adversely affected.

The Stage 1 Screening appraisal contained in this report considered the potential for significant impacts arising from the proposed development on European sites within the potential zone of influence of the project. In this case the distance of 15km exceeds the potential zone of influence of the proposed works and any likelihood of significant effects in relation to European Sites beyond 15km can be ruled out. Following screening, the only European sites for which potential significant impacts have been identified are River Boyne and Blackwater SAC (002299), River Boyne and Blackwater SPA (004232), Boyne Coast and Estuary SAC (001957) and Boyne Estuary SPA (004080). Impacts which were considered to have the potential to affect these European sites related to the potential construction-related surface water discharges from the proposed development and the potential for these effects to reach downstream European sites. Potential cumulative impacts were also considered.

A range of precautionary measures have been incorporated into the project design, and other mitigation measures have been developed and proposed, with the purpose of avoiding or minimising impacts on the qualifying interests and conservation objectives of the relevant European sites. The efficacy of these measures was also considered and no issues in respect of their effective implementation were identified.

In conclusion, in the light of the best scientific knowledge, it is concluded that no reasonable scientific doubt remains as to the absence of adverse effects from the proposed development on any European site.

8 References

BirdLife International (2013) *BirdLife International Seabird Ecology and Foraging Range Database.* Available online at http://seabird.wikispaces.com

Council of the European Communities (1992) *Council Directive of 21 May 1992 on The Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC).* O. J. L 206/35, 22 July 1992.

DoEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, Rev Feb 2010).

European Commission (EC) (2000). *Communication from the Commission on the precautionary principle*

European Commission (EC) (updated draft April 2015). *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, updated draft April 2015); hereinafter referred to as "MN2000"

European Commission (EC) (2001). *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,);

European Commission (EC) (2007). *Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.* Opinion of the European Commission.

European Parliament and European Council (2009). *Directive 2009/147/EC of 30th November 2009 on the Conservation of Wild Birds (2009/147/EC).* O.J. L20/7, 26th January 2010

Hendry K. & Cragg-Hine D. (2003) *Ecology of the Atlantic Salmon. Conserving Natura 2000 Rivers Ecology Series No. 7.* English Nature, Peterborough.

JNCC (2013). *Seabird Monitoring Programme (SMP) Database.* Available online at http://jncc.defra.gov.uk/smp/Default.aspx

IFI (2016). *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*. Inland Fisheries Ireland.

Maitland PS (2003). *Ecology of the River, Brook and Sea Lamprey*. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

McCorry, M.& Ryle, T. (2009). *Saltmarsh Monitoring Project 2007-2008 Volume 1.* National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland, 2009.

Mitchell, I., Newton, S. F., Ratcliffe, N., and E. Dunn, T. E. (Eds.). 2004. *Seabird Populations of Britain and Ireland: results of the Seabird 2000 census (1998-2002).* Published by T and A.D. Poyser, London.

NPWS (2010). Circular NPW 1/10 & PSSP 2/10 *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, March 2010).

NPWS (2013a). *The Status of EU Protected Habitats and Species in Ireland*. Species Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2013b). *The Status of EU Protected Habitats and Species in Ireland*. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2017a). *Natura 2000 Standard Data Form: River Boyne and River Blackwater SAC IE0002299*. First compiled in June 2003 and updated in September 2017.

NPWS (2017b). *Natura 2000 Standard Data Form: River Boyne and River Blackwater SPA IE0004232*. First compiled in November 2010 and updated in September 2017.

NPWS (2017c). *Natura 2000 Standard Data Form: Boyne Coast and Estuary SAC IE0001957*. First compiled in December 1999 and updated in September 2017.

NPWS (2017d). *Natura 2000 Standard Data Form: Boyne Estuary SPA IE0004080*. First compiled in April 2004 and updated in September 2017.

NPWS (2018). Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

Reilly, M. (2013). *2010 report for the little tern conservation project at Baltray Co. Louth*. Unpublished report by Louth Nature Trust.

Ryle, T., Murray, A., Connolly, K. & Swann, M. (2009). *Coastal Monitoring Project*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland, 2009.

Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W., & Tasker, M.L. (1995). *Seabird monitoring handbook for Britain and Ireland.* Published by JNCC / RSPB / ITE / Seabird Group, Peterborough.

Waterman Moylan Consulting Engineers Ltd. (2019). *Construction Environmental Management Plan, Proposed Residential Development at Rathmullan Drogheda, Co. Meath.*