

NATURA IMPACT STATEMENT IN SUPPORT OF APPROPRIATE
ASSESSMENT
OF PROPOSED DEVELOPMENT AT BUVINDA HOUSE, DUBLIN RD,
NAVAN, CO MEATH – DECEMBER 2022



Prepared December 2022 by:



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EXECUTIVE SUMMARY

Meath Co. Council are proposing an extension to Meath County Council civic headquarters at Buvinda House, Dublin Road, Navan, Co Meath. The extension will include a Council Chamber and Councillors areas, additional office space to facilitate future increase in staff numbers, including meeting rooms and training room. The extension will be designed to optimise natural daylight and ventilation of the internal environment, creating a pleasant and healthy working environment. It will comprise a carbon sequestering mass timber structure with green roofs for water attenuation. A new courtyard garden will soften the image of the ensemble from the road and town beyond, whilst supporting biodiversity and offering bio-retention features to attenuate rainwater run-off.

The Buvinda House site is within/immediately adjacent to the River Boyne and River Blackwater Special Area of Conservation and proximate to the River Boyne and River Blackwater Special Protection Area. As such, the proposed extension requires Appropriate Assessment (Habitats Directive) screening in accordance with Article 6(3) of the EU Habitats Directive.

Following an examination, analysis, and evaluation of the relevant information, and applying the precautionary principle it was considered that there may be potential for significant adverse impact of the proposed extension on the Qualifying Interests, and the attainment of specific Conservation Objectives, either alone or in combination with other plans or projects on the Natura 2000 sites described herein. Screening having identified a significant potential negative impact(s) associated with the proposed development, Phase II Appropriate Assessment and the preparation of Natura Impact Statement were deemed to be required.

A Natura Impact Statement (NIS) was prepared and is presented herein.

It is concluded within the NIS that based on an examination, analysis, and evaluation of the relevant information, and applying the precautionary principle, it is the professional opinion of the author of this report that there will be no adverse impact on the integrity of any of relevant Natura 2000 sites, assuming the implementation of all mitigation/preventative measures as outlined.

1 Introduction

1.1 FERS Ltd. Company background

Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, holds a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) a Diploma in Environmental and Planning Law (King's Inn) and a M.Sc. in Geographical Information Systems and Remote Sensing (University of Ulster, Coleraine). Patrick has in excess of 20 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, senior ecologist with FERS holds a 1st class honours degree in Botany, and a Ph.D. in Botany. Emma has in excess of 15 years of experience in undertaking ecological surveys on an academic and professional basis. Ciarán Byrne, a senior ecologist with FERS holds a 1st class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC). Ciarán has in excess of 10 years in undertaking ecological surveys on both an academic and a professional basis.

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, various County Councils, the Heritage Council, Teagasc, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the Office of Public Works and Coillte in addition to numerous private individuals and companies. FERS Ltd. has prepared in excess of 300 Appropriate Assessment Screenings/Natura Impact Statements for a wide range of plans and projects.

1.2 The aim of this report

This report has been prepared in compliance with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) in support of the Appropriate Assessment of a proposed extension at Buvinda House, Dublin Road, Navan, Co Meath. This report provides the information required in order to establish whether or not the proposed development is likely to have a significant ecological impact on any Natura 2000 sites, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

This report has similarly been prepared with regard to relevant rulings by the Court of Justice of the European Union (CJEU), the High Court, and the Supreme Court including but not limited to:

- [2013] C-258/11 Peter Sweetman and Others v An Bord Pleanála. The CJEU ruled that 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 must be interpreted as meaning that a project not directly linked to it is not immediately necessary for the management of a site to prejudice the integrity of that site if it is likely to prevent the preservation of the constituent characteristics of the site concerned in relation to the presence of a natural priority habitat whose purpose is to maintain gave the reason for registering that site in the list of sites of Community importance within the meaning of that directive. For this verification, the precautionary principle must be applied;
- [2018] C – 164/17 Edel Grace and Peter Sweetman v An Bord Pleanála. The CJEU ruled that Article 6 of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, where it is intended to carry out a project on a site designated for the protection and conservation of certain species, of which the area suitable for providing for the needs of a protected species fluctuates over time, and the temporary or permanent effect of that project will be that some parts of the site will no longer be able to provide a suitable habitat for the species in question, the fact that the project includes measures to ensure that, after an appropriate assessment of the implications of the project has been carried out and throughout the lifetime of the project, the part of the site that is in fact likely to provide a suitable habitat will not be reduced and indeed may be enhanced may not be taken into account for the purpose of the assessment that must be carried out in accordance with Article 6(3) of the directive to ensure that the project in question will not adversely affect the integrity of the site concerned; that fact falls to be considered, if need be, under Article 6(4) of the directive;
- [2018] C-323/17 People Over Wind and Sweetman v Coillte Teoranta - The (CJEU) ruled that 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 must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or

project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site;

- [2018] C-461/17 Holohan v An Bord Pleanála – The CJEU ruled that:
 1. 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 must be interpreted as meaning that an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.
 2. Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site.
 3. Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the ‘appropriate assessment’ must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned.
 4. Article 5(1) and (3) of, and Annex IV to, Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, must be interpreted as meaning that the developer is obliged to supply information that expressly addresses the significant effects of its project on all species identified in the statement that is supplied pursuant to those provisions.
 5. Article 5(3)(d) of Directive 2011/92 must be interpreted as meaning that the developer must supply information in relation to the environmental impact of both the chosen option and of all the main alternatives studied by the developer, together with the reasons for his choice, taking into account at least the environmental effects, even if such an alternative was rejected at an early stage.
- [2018] IESC 31 Connelly v An Bord Pleanála – Appropriate Assessment must contain complete, precise, and definitive findings;
- [2019] IEHC 84 Kelly v An Bord Pleanála - The Irish High Court concluded that SUDS form part of the development and are not mitigation measures which a competent authority cannot consider at the screening for AA stage.

Furthermore, there have been a number of recent Judicial Reviews that are pertinent as regards this report (e.g. [2020] No. 238 J.R.).

1.3 An outline of the Appropriate Assessment process

The “Habitats Directive” (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A “Special Conservation Area” or SAC is a designation under the Habitats Directive.

The “Birds Directive” (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting, and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection. A “Special Protection Area” or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites.

The Habitats Directive sets out the protocol for the protection and management of SACs. The Directive sets out key elements of the system of protection including the requirement for Appropriate Assessment of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive respectively, state:

“...Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public...”

“...If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of over-riding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted...”

1.4 Methodology for Appropriate Assessment

A number of guidance documents on the appropriate assessment process have been consulted during the preparation of this NIS. These are:

- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000);
- 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 (Nov. 2001 – published 2002);
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG 2009, Revised February 2010);
- European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011); and
- Commission notice "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Brussels, 21.11.2018 C (2018) 7621 final.

The assessment requirements of Article 6 are generally dealt with in a stage-by-stage approach. The stages as outlined in “Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities” are:

1.4.1 Stage (1) Appropriate Assessment (Habitats Directive) Screening

This initial process identifies the likely impacts of a proposed project or plan upon a Natura 2000 site, either alone, or in combination with other projects or plans and considers whether these impacts are likely to be significant. A recent judgement in the ECJ (C323/17) that has large implications for appropriate assessment screening in Ireland has found that:

“...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 must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site...”

1.4.2 Stage (2) Preparation of Natura Impact Statement

The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its

conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

1.4.3 Stage (3) Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

1.4.4 Stage (4) Assessment where Adverse Impacts Remain

An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

At each stage, there is a determination as to whether a further stage in the Appropriate Assessment process is required. If, for example, the conclusions of the Screening stage indicate that there will be no significant impacts on the Natura 2000 site, there is no requirement to proceed further. Appropriate Assessment stages 1 and 2 deal with the main requirements for assessment under Article 6.3. Stage 3 may be part of Article 6(3) or a necessary precursor for Stage 4. This report is comprised of the ecological impact assessment and testing required under the provisions of Article 6(3) by means of the first stage of Appropriate Assessment, the screening process (as set out in the EU Guidance documents).

EU guidance states:

“...This stage examines the likely effects of a project or plan, either alone or in combination with other projects or plans, upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant...”

This report has been undertaken in accordance with the European Commission’s Guidance on Appropriate Assessment (European Commission, 2001) which comprises the following:

1. Description of the Plan.
2. Identification of Natura 2000 sites potentially affected by the Plan.
3. Identification and description of individual and cumulative impacts likely to result from the Plan.
4. Assessment of the significance of the impacts identified on the conservation objectives of the site(s).
5. Exclusion of sites where it can be objectively concluded that there will be no significant impacts on conservation objectives.

1.5 Consultations

1.5.1 NPWS

The primary body consulted with regard to matters involving Natura 2000 sites is the National Parks and Wildlife Service (NPWS). The role of the NPWS is:

- To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland.
- To implement the EU Habitats and Birds Directives.
- To designate and advise on the protection of Natural Heritage Areas (NHA) having particular regard to the need to consult with interested parties.
- To make the necessary arrangements for the implementation of National and EU legislation and policies and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage.
- To manage, maintain and develop State-owned National Parks and Nature Reserves.

Information pertaining to Natura 2000 sites within the Republic of Ireland is typically held by NPWS and is publicly accessible through their on-line database at www.npws.ie. Consultations carried out involved querying the NPWS database for information pertaining to Natura 2000 sites within 15 km of the proposed development.

1.5.2 NBDC Database

The National Biodiversity Database Centre database was queried for records of species of conservation concern present within the immediate vicinity of the proposed development.

1.5.3 Other relevant data-sources

Other relevant data-sources were queried, as necessary.

2 Screening

Following the guidelines set out by NPWS (2009), Appropriate Assessment Screening (Phase I Appropriate Assessment) is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive. According to the guidelines as laid by NPWS (2009), Appropriate Assessment Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- (1) Is the plan or project directly connected to or necessary for the management of the site?
- (2) Is the plan or project, alone or in combination with other such plans or projects likely to have significant negative effects on a Natura 2000 site(s) in view of the conservation objectives of that site(s)?

The proposed development does not comply with the first screening test (i.e., the proposed development is not directly connected to, or necessary for the management of any Natura 2000 site). The screening exercise will therefore inform the Appropriate Assessment process in determining whether the proposed development, alone or in combination with other plans and projects, has any potential to have significant effects on the Natura 2000 sites within the study area. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required stage, i.e., *“The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.”*

2.1 .Description of proposed development

The proposed project entails an extension to Meath County Council civic headquarters to include a Council Chamber and Councillors areas, additional office space to facilitate future increase in staff numbers, including meeting rooms and training room. The current proposal comprises a 3-storey (approx. floor area 3,220m²), located to the west of the existing building where parking is currently located, outside of the zone of archaeological interest.

The approximate location of the project area is indicated in Figure 1, Figure 2, Figure 3, Figure 4. An excerpt from Engineering drawing is presented in Figure 5.

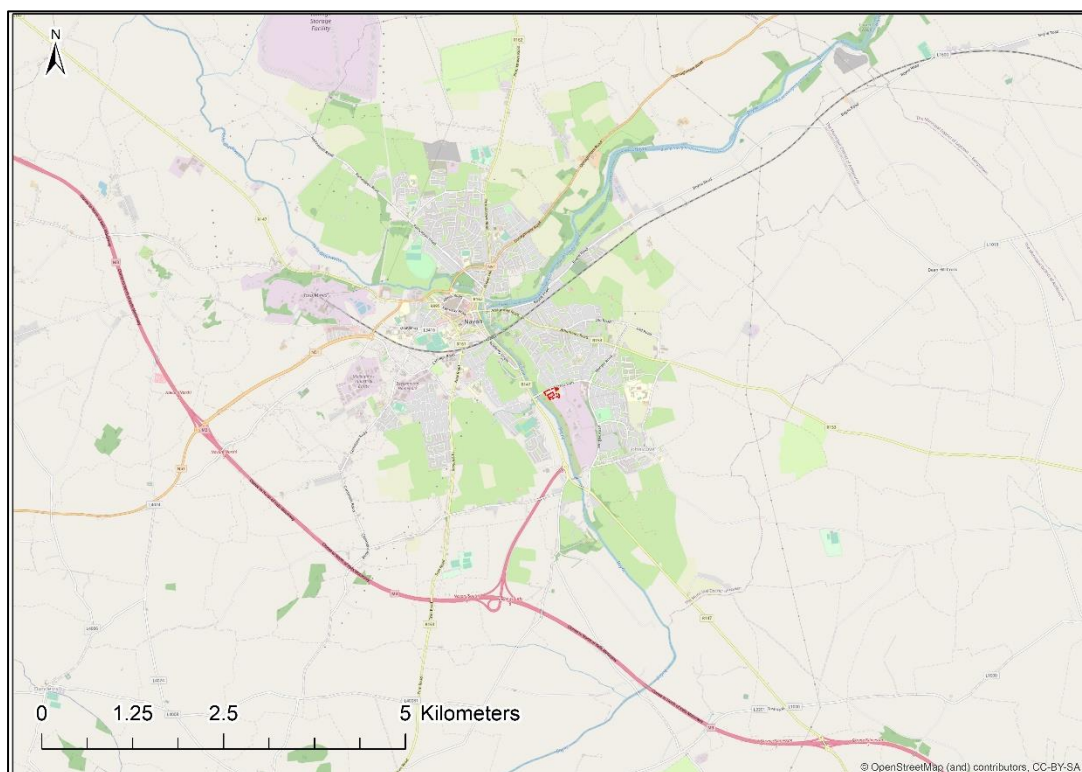


Figure 1: Approximate location of development site (1:50,000)

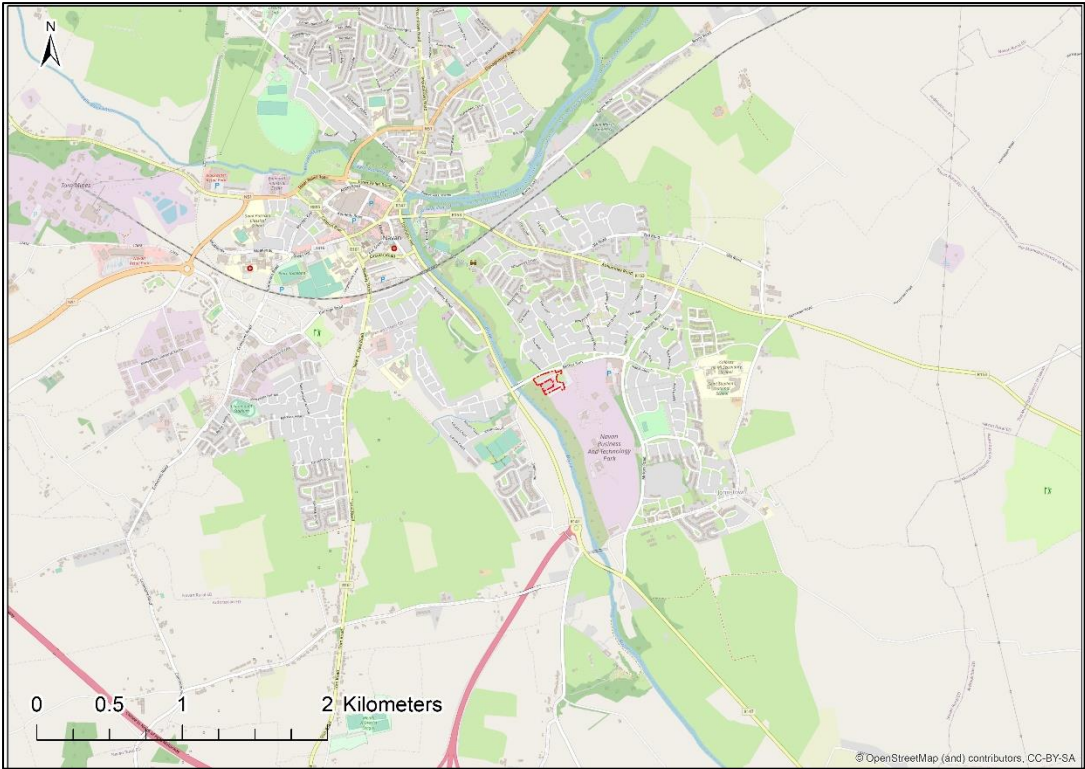


Figure 2: Approximate location of development site (1:25,000)

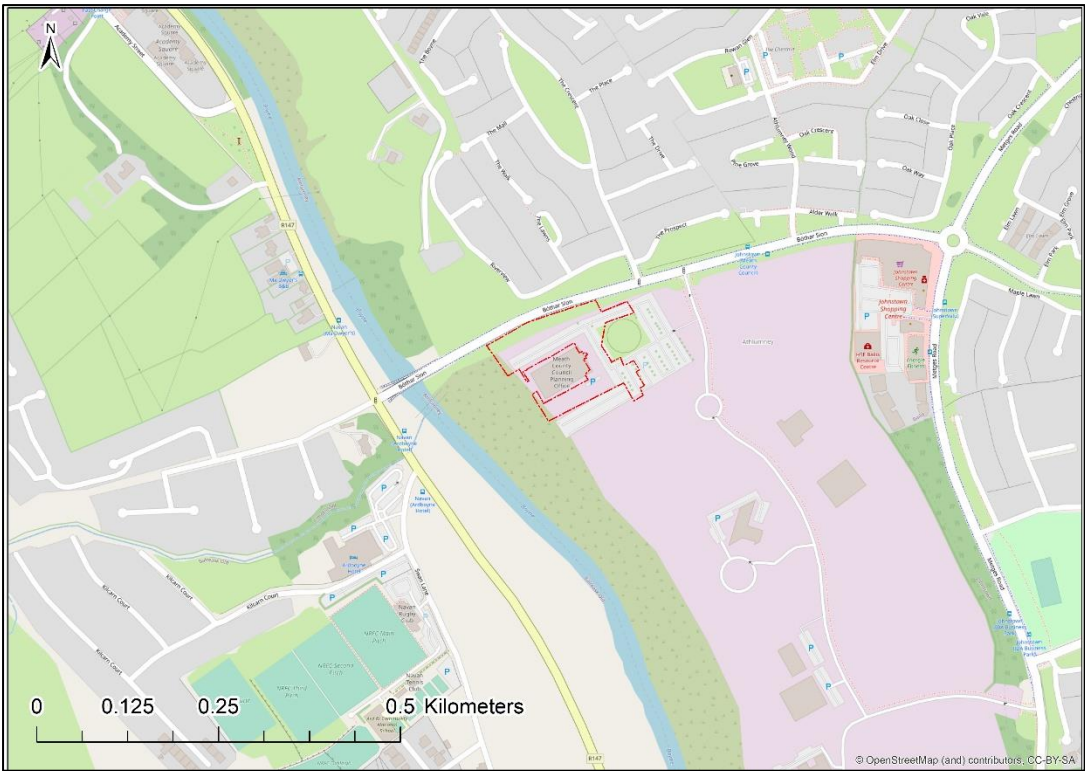


Figure 3: Approximate location of development site (1:5,000)



Figure 4: Approximate location of development site relative to *environs* (1:2,000)

2.2 Description of existing conditions on site

The site of the proposed extension and *environs* of Buvinda House was visited on a number of occasions during the period May – June 2020 and May – July 2022, within the optimal time frame for botanical visits. The approximate area in which the bulk of the proposed development (the extension) will be located is within the habitat type “BL3” – Built Land and Artificial Surfaces and comprises primarily carpark (see Figure 6 and Figure 7).



Figure 6: Aerial image indicating habitat occurring within primary location of proposed development



Figure 7: Habitat from ground level

Associated with the car park are numerous areas of amenity grassland (GA2) and planted screening (comprising numerous species such as *Buxus* sp and *Betula Carpinus*. There is an area of recently planted linear habitat comprising immature trees along the northern boundary of the site (see Figure 8) comprised of various species including *Fraxinus excelsior*, *Quercus robur*, *Viburnum opulum*, *Carpinus betula*, *Prunus avium*, *Ilex aquifolium*, *Corylus avellana* and *Alnus glutinosa*. This habitat will be removed. The Arborist report indicates that the trees/shrubs present are of limited value, with a B2 rating or lower.

In areas that have not been sprayed, there is some ground flora developing, including *Geranium robertianum*, *Lotus corniculatus*, *Veronica montana*, *Agrostis canina*, *Equisetum arvense*, *Cornus sanguineus*, *Trifolium pratense*, *Vicia cracca*, *Senecio officinalis*, *Fumaria muralis*, *Hedera helix* and *Epilobium ciliatum*. The moss layer, where present is dominated by *Brachythecium rutabulum*.



Figure 8: Aerial image indicating location of "screening" comprising young trees/shrubs

The western boundary of the site (towards the River Boyne) is comprised of a relatively steeply sloping area of grassland best described as GS2 "Dry meadow/grassy banks". The area is almost entirely dominated by the grass *Arrhenatherum elatius*. This habitat appears to have seeded with a seed mix as there are some unexpected species present such as Wild Carrot (*Daucus carota*), Salad Burnet (*Sanguisorba minor*), Birds' Foot Trefoil (*Lotus corniculatus*), Black Medic (*Medicago lupulina*) and Kidney Vetch (*Anthyllis vulneraria*). These species are typically associated with the grassland type GS1 (Dry Calcareous and Neutral grassland), a habitat which is managed through grazing and are not typical of GS2. GS2 is typically dominated by herbaceous species that grow tall or climb the stems of other

vegetation. As a result, these atypical herbaceous species are currently being outcompeted by the grasses present, primarily *Arrhenatherum elatius*, which is reaching a height of almost 2 m in places. Under the current management regime, these “out of place” species will disappear (between 2020 and 2022 the occurrence of these species is already vastly reduced). Some more typical species, which may have been present in the seed bank include species such as *Cirsium vulgare*, *Plantago lanceolata*, *Fumaria muralis*, *Rumex obtusifolius*, *Anthriscus sylvestris*, *Senecio vulgaris*, *Trifolium repens* in addition to grasses typical of GS2 such as *Dactylis glomerata*, *Holcus lanatus*, *Agrostis stolonifera* and around the edges of the habitat *Poa annua*.



Figure 9: Grassland habitat relative to river Boyne



Figure 10: Photograph of GS2 *Arrhenatherum elatius* - dominated grassland view 1



Figure 11: Photograph of GS2 *Arrhenatherum elatius* - dominated grassland view 2



Figure 12: *Sanguisorba minor* - a likley "seeded" component of the grassland (2020)



Figure 13: *Anthyllis vulneraria* and *Achillea millefolium*, likley "seeded" components of the grassland (2020)

The NBDC database was accessed on 28/09/22 to query records occurring within the 1 km square (N8866) in which the proposed development is located (see Figure 14). The species of conservation concern as recorded within this polygon are illustrated in Table 1.



Scientific Name	Common Name	Date of last record
<i>Lissotriton vulgaris</i>	Smooth Newt	31/12/1970
<i>Hirundo rustica</i>	Barn Swallow	24/04/2010
<i>Alcedo atthis</i>	Common Kingfisher	02/10/2020
<i>Apus apus</i>	Common Swift	21/05/2010
<i>Riparia riparia</i>	Sand Martin	24/04/2010
<i>Fallopia japonica</i>	Japanese Knotweed	15/10/2009
<i>Myotis daubentonii</i>	Daubenton's Bat	14/08/2013
<i>Sorex minutus</i>	Eurasian Pygmy Shrew	30/11/2014
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	29/11/2015
<i>Nyctalus leisleri</i>	Lesser Noctule	10/08/2007
<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	22/08/2007
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	22/08/2007

Numerous other species of conservation concern are also known to occur within this area including Otter (*Lutra lutra*).

2.4 Identification of Natura 2000 sites potentially impacted upon by the development

It is general practice, when screening a plan or project for compliance with the Habitats Directive, to identify all Natura 2000 sites within the functional area of the plan/project itself and within 15 km of the boundaries of the area the plan/project applies to (with an appropriate “Zone of Influence” identified from any Source-Pathway-Receptor linkages). This approach is currently recommended in the Department of the Environmental, Heritage and Local Government’s document Guidance for Planning Authorities and as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process. The maintenance of habitats and species within individual Natura 2000 sites at favourable conservation condition contributes to the overall maintenance of favourable conservation status of those habitats and species at a national level. It is therefore necessary to identify any potential impacts of the proposed development on the conservation status of Natura 2000 sites. The National Parks and Wildlife Service deem that the favourable conservation status of a habitat is achieved when:

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

The National Parks and Wildlife Service deem that the favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself.
- The natural range of the species is neither being reduced, or likely to be reduced in the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

There is one area designated as a special area of conservation (SAC) and one area designated as a Special Protection Area within 15 km of the proposed development site (see Table 2, Figure 15 and Figure 16).

Table 2: Natura 2000 sites within 15km of the proposed development

SITE CODE	DESIGNATION	SITE NAME
002299	SAC	RIVER BOYNE AND RIVER BLACKWATER
004232	SPA	RIVER BOYNE AND RIVER BLACKWATER

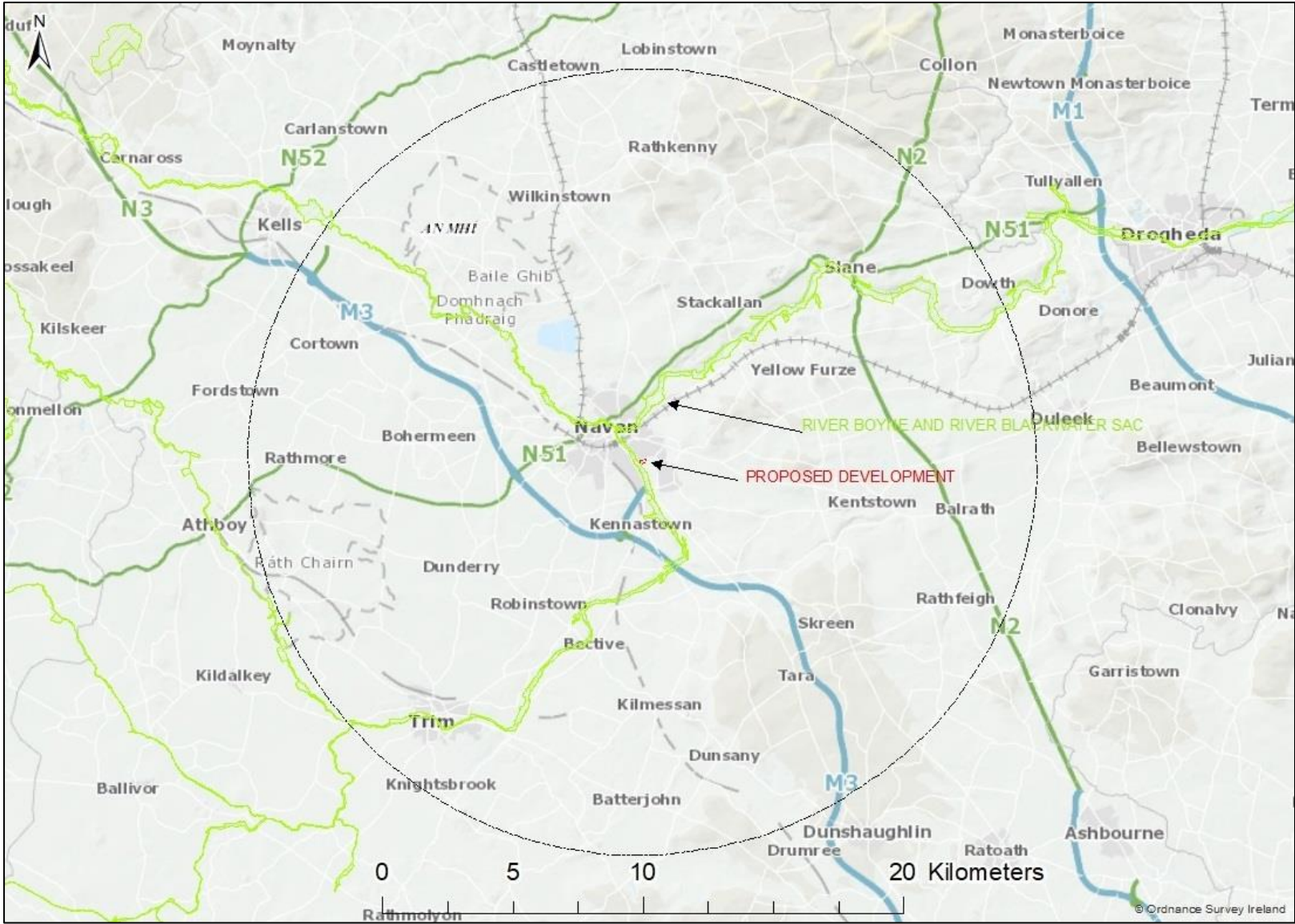


Figure 15: Location of SACs within 15 km of proposed development

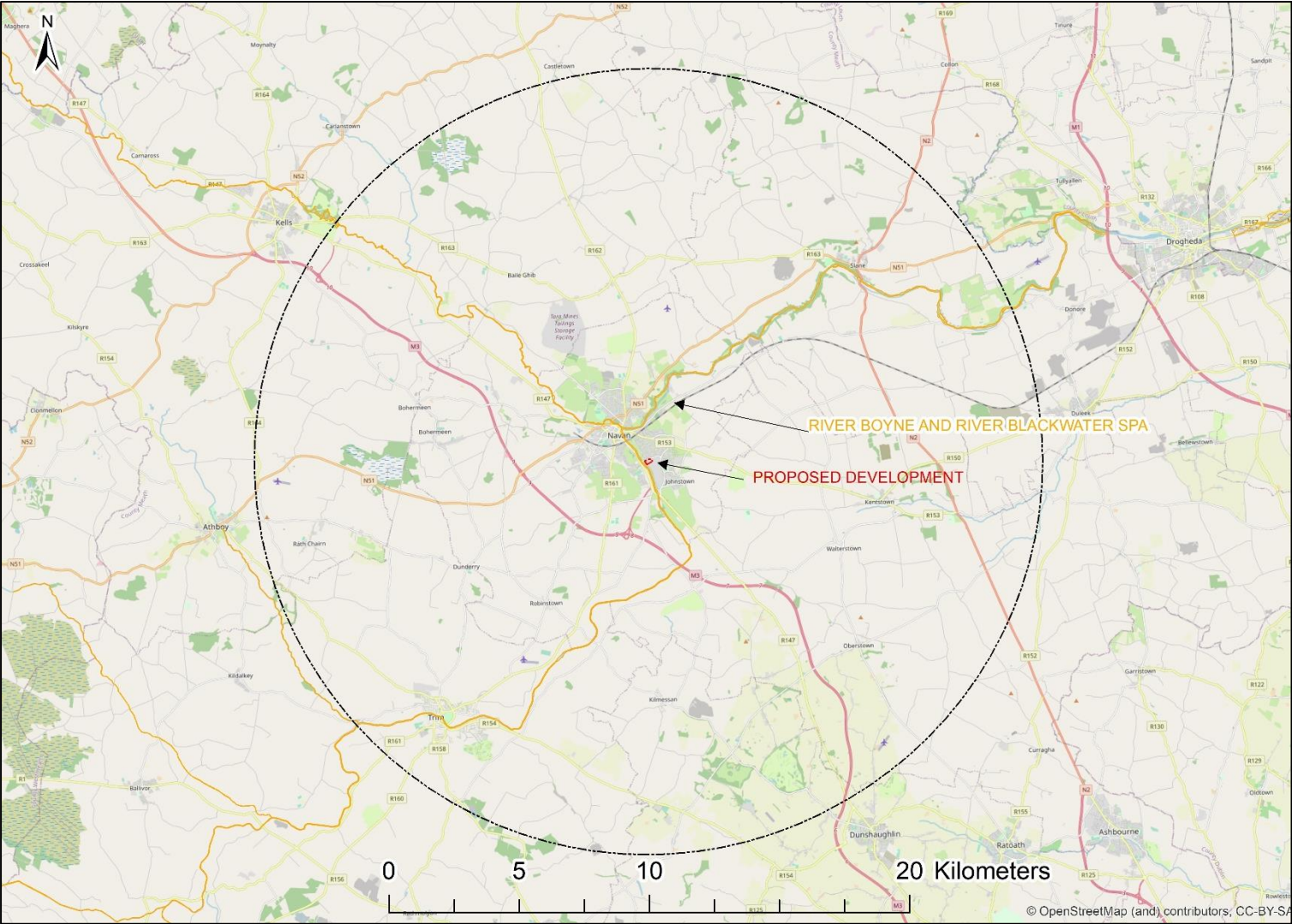


Figure 16: Location of SPAs within 15 km of proposed development

2.5 Summary of Natura 2000 sites potentially impacted upon by the proposed development

There are two Natura 2000 sites within 15 km of the proposed development. The River Boyne is within 100m of the proposed development. The river Boyne is the primary component of the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA. A summary of the qualifying interests, availability of detailed conservation objectives, general conservation objectives and the approximate distance between the proposed development and the Natura 2000 site is presented in Table 3.

Table 3: Summary of Natura 2000 sites within 15000 km

SITE CODE	SITE NAME	QUALIFYING INTEREST(S)	DETAILED CONSERVATION OBJECTIVES DOCUMENT	CONSERVATION OBJECTIVES (GENERIC)	PROPOSED DEVELOPMENT WITHIN 100 M
002299	RIVER BOYNE AND RIVER BLACKWATER SAC	[7230] Alkaline Fens; [91EO] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) – PRIORITY; [1099] <i>Lampetra fluviatilis</i> ; [1106] <i>Salmo salar</i> ; and [1355] <i>Lutra lutra</i>	YES	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	YES
004232	RIVER BOYNE AND RIVER BLACKWATER SPA	[A220] <i>Alcedo atthis</i>	NO	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	YES

2.6 Identification and evaluation of likely significant effect

2.6.1 Description of source-pathway-receptor linkages and identification of “Zone of Influence”

The basis for identifying potential impacts/significance thereof and defining the zone of influence is the “Source-Pathway-Receptor” (S-P-R) model. This model underpins all water-protection schemes in Ireland, as well as the EU Water Framework Directive on which both surface water and groundwater regulations are based. When examining S-P-R relationships in regard to impacts on Natura 2000 sites, the main questions to be considered are:

- 1) Source characterisation – Identification of potential source(s) of the impact(s);
- 2) Pathways analysis – Identification of means through which potential impacts could take place, for example is there a hydrogeological or hydrological link that can deliver a pollutant source to a nearby receptor; and
- 3) Receptor identification – identification of Natura 2000 sites/qualifying interests potentially affected.

The proposed development is immediately adjacent to the River Boyne and River Blackwater SAC, and is within 100m of the River Boyne, the primary constituent of the River Boyne and River Blackwater SAC/SPA, a very sensitive ecological receptor. The primary source of any negative impacts will be associated with impacts on surface/ground water.

Therefore, the key questions to be considered are:

- 1) Is there any source(s) of impact(s) on water quality associated with the proposed development?
- 2) Is there any source(s) of impact(s) through disturbance/habitat removal?
- 3) Is there a pathway present between the source of impact and a Natura 2000 site; and
- 4) What are the Natura 2000 sites/qualifying interests potentially impacted upon?

2.6.2 Sources of potential impacts

Given the nature and location of the proposed development, sources of potential impacts are:

- Impacts associated with contamination of surface and/or ground water during construction and/or operation;
- Impacts associated with importation of propagules of any plant species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011; and
- Disturbance impacts during construction and/or operations on Kingfisher and/or Otter.

2.6.2.1 Impacts associated with contamination of surface and/or ground water during construction

There is a potential for any works in such close proximity to a sensitive ecological receptor to result in negative impacts owing to, for example:

- Sediment release;
- Nutrient release;
- Accidental contamination associated with leaks of hydraulic fluid, diesel, petrol, etc; or
- Introduction of propagules of Alien Invasive Plant Species, in particular any listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011.

Any impacts on water quality could have direct and/or secondary impacts on several of the QI's of the River Boyne and River Blackwater SAC/SPA.

2.6.2.2 Impacts associated with contamination of surface and/or ground water during operation

The proposed development will entail an increase in the use of facilities, etc. in addition to changes in the drainage of the site. A detailed drainage plan has been drawn up, and the new extension will be serviced by existing public foul sewage.

2.6.2.3 Impacts associated with Alien Invasive Plant Species

The human introduction of alien plant species into ecosystems (intentionally or unintentionally) is historically a common-place occurrence. The vast majority of these alien plant species, when introduced into a foreign ecosystem for which they are not adapted, will die without specific care. In a small number of cases, however, these plants can come to dominate the ecosystem into which they have been introduced and become "Invasive." These Alien Invasive species can have a plethora of impacts from impacting on sedimentation and stream management to impacts on native biodiversity.

2.6.2.4 Impacts associated with disturbance

There will be a potential for disturbance of Otter (QI for River Boyne and River Blackwater SAC) and Kingfisher (QI for River Boyne and River Blackwater SPA) during the proposed works owing to increased noise and human presence. While the habitat present within the proposed application area is not suitable for nesting/foraging Kingfisher or Otter holts, the area immediately adjacent certainly is utilised for foraging by both.

2.6.3 Presence of pathway and receptor

The proposed application site is immediately adjacent to the River Boyne and River Blackwater SAC and is within 100m of the River Boyne, a primary component of two sensitive Natura 2000 sites. The qualifying interests of these sites are directly or indirectly dependent on water quality. Adhering to the Precautionary Principal, these sites (River Boyne and River Blackwater SAC/ River Boyne and River Blackwater SPA) are the primary receptors of concern.

2.6.4 Natura 2000 site(s) with potential to be impacted upon and Zone of Influence

Adhering to the Precautionary Principal, there is potential for negative impacts associated with the proposed development on two Natura 2000 sites:

- River Boyne and River Blackwater SAC; and
- River Boyne and River Blackwater SPA.

The “Zone of Influence” must include these Natura 2000 sites.

2.6.5 Sources of potential Direct, Indirect or Secondary Impacts

2.6.5.1 Direct Impacts

No habitat for which any Natura 2000 site are designated will be lost through land-take, etc. The overlapping of the proposed development footprint and the SAC envelope is almost certainly owing to a mapping error caused by the different mapping systems utilised for the SAC (6" mapping) and modern OSI (1:5,000 vector mapping). There is, therefore, no direct impact associated with the proposed development foreseen.

2.6.5.2 Indirect Impacts

The proposed development is within 100m of the River Boyne, a sensitive ecological receptor that is one of the primary components of the River Boyne and River Blackwater SAC/SPA. The qualifying interests of these sites are directly or indirectly dependent on water quality. There is potential for indirect impacts associated with construction and/or operation of the proposed development through an impact on water quality.

There is potential for disturbance impacts, in particular on Otter and/or Kingfisher during construction and/or operational phases owing to increased artificial light/noise/human presence etc.

2.6.5.3 Secondary Impacts

Major secondary impacts are unlikely owing to the nature and scale of the proposed development. There is potential for secondary impacts, however, if there are major indirect impacts. For example, if there is a production of sediment during operations that enters the river, this may impact on, for example, Lamprey ammocoetes.

In terms of climate change, all construction activities have the potential to impact on climate change.

A summary of the potential for primary impacts upon Natura 2000 sites within the zone of influence of the proposed development is summarized in Table 4. The potential for impacts upon the Natura 2000 sites identified in the event of negative impacts is summarized in Table 5. The potential impacts on the qualifying interests of identified Natura 2000 sites is summarized in Table 6.

Table 4: Summary of the potential for impacts upon Natura 2000 sites.

Site Name	Direct Impacts	Indirect/ Secondary Impacts	Resource requirements (water abstraction etc.)	Emissions (to land, water or air)	Excavation requirements	Duration of construction, operation and decommissioning
River Boyne and River Blackwater SAC	None foreseen	Potential	None foreseen	Potential	Potential	Potential
River Boyne and River Blackwater SPA	None foreseen	Potential	None foreseen	Potential	Potential	Potential

Table 5: Summary of the potential for changes to Natura 2000 sites.

Site Name	Reduction of habitat area	Disturbance to key species	Habitat/species fragmentation	Reduction in species density	Changes in Key Indicators of Conservation Value	Climate change
River Boyne and River Blackwater SAC	Potential (associated with any changes in water quality/hydrology)	Potential	Potential	Potential	Potential	Potential
River Boyne and River Blackwater SPA	Potential (associated with any changes in water quality/hydrology)	Potential	Potential	Potential	Potential	Potential

Table 6: Summary of potential impacts on Qualifying Interests of Natura 2000 sites identified as at risk of impact

Site name	Qualifying Interest	Potential Impact
River Boyne and River Blackwater SAC	[7230]	No impact foreseen
	[91E0]	No impact foreseen
	[1099]	Potential impacts associated with changes in water quality, potential secondary impacts
	[1106]	Potential impacts associated with changes in water quality, potential secondary impacts
	[1355]	Potential impacts associated with changes in water quality, potential disturbance impacts, potential secondary impacts
River Boyne and River Blackwater SPA	A229	Potential indirect and/or secondary impacts associated with disturbance and/or impacts on prey items

2.6.6 Potential cumulative impacts in association with other plans

Article 6(3) of the Habitats Directive requires an assessment of a plan/project to consider other plans/projects that might, in combination with the proposed plan/project, have the potential to adversely impact upon Natura 2000 sites.

Table 7: Potential cumulative impacts.

Plan	Purpose	Cumulative impact
EU Water framework Directive	Maintain and enhance water quality within the EU	None predicted
EU Freshwater Fish Directive	Protect freshwater bodies within the EU suitable for sustaining fish populations	None predicted
EU Groundwater Directive	Maintain and enhance the quality of groundwater within the EU	None predicted
EU Floods Directive	The Floods Directive applies to river basins and coastal areas at risk of flooding	None predicted
Nitrates Directive	Reducing water pollution within the EU	None predicted
Urban Waste-water treatment Directive	Protecting the environment from adverse impacts of waste-water discharge	None predicted
Sewage Sludge Directive	Regulate the use of sewage sludge	None predicted
The IPPC Directive	To achieve a high level of environmental protection	None predicted
National Development Plan	To promote more balanced spatial and economic development	None predicted
National Spatial Strategy	To achieve a better balance of social, economic and physical development across Ireland	None predicted
Eastern Catchment Flood Risk Assessment and Management Study	To meet the requirements of the Floods Directive	None predicted
Meath Co. Development Plans	Sustainable development of Co. Meath	None predicted
Future phases of flood defence repairs	Repairing flood defences	None predicted
Local Area Development Plans	Various	None predicted
Quarrying activities, water abstraction, discharge, etc	Various	Potential in-combination impacts on water quality
Current and future planning permissions –	There do not appear to be any pending or granted planning permissions in the immediate vicinity	None predicted
Meath Co. Council Part 8's	Various	An Appropriate Assessment Screening exercise of any Part 8 would be undertaken
Land spreading of organic waste by farmers in the locality	Fertilising land, disposing of organic waste	Potential in-combination impacts on water quality
Forestry operations proximate to the Rivers Boyne or Blackwater	Afforestation, management of forestry, felling, etc	An appropriate assessment of any such operations will be required

The primary source of any cumulative impacts concerns impacts on ground and/or surface water quality.

A review of the National Planning Application Database (27/09/22) indicates that there are no pending planning permissions associated with the application site (Figure 17). Of note, a query of the EIA Portal

(27/09/22) indicates that there are no projects requiring EIAR within the vicinity of the proposed application site as regards cumulative impacts (see Figure 18).

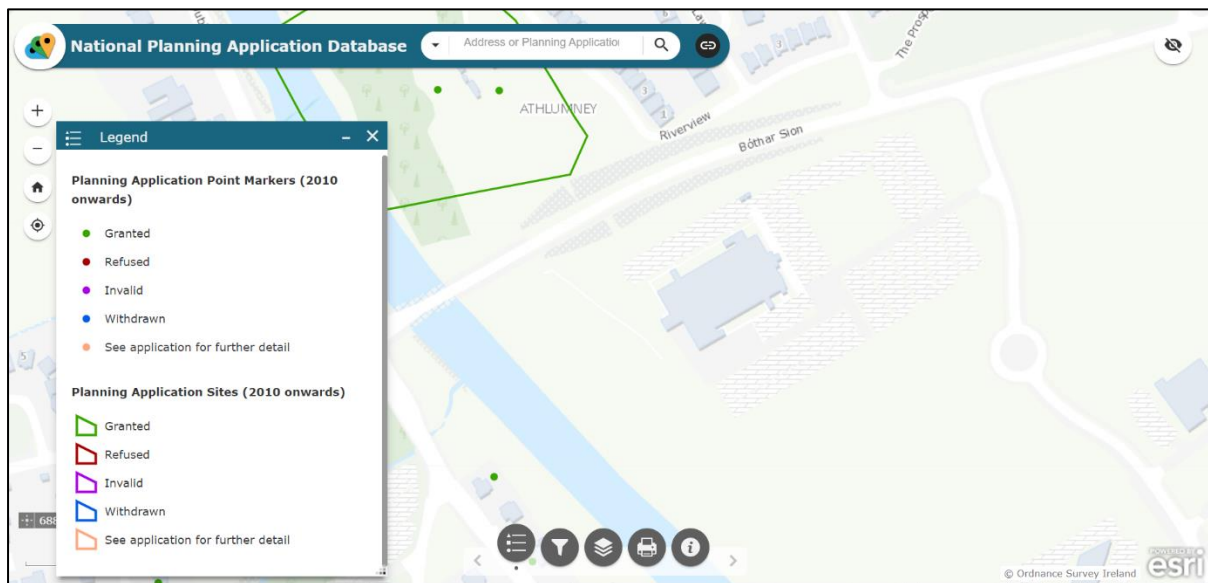


Figure 17: Screenshot from NPAD

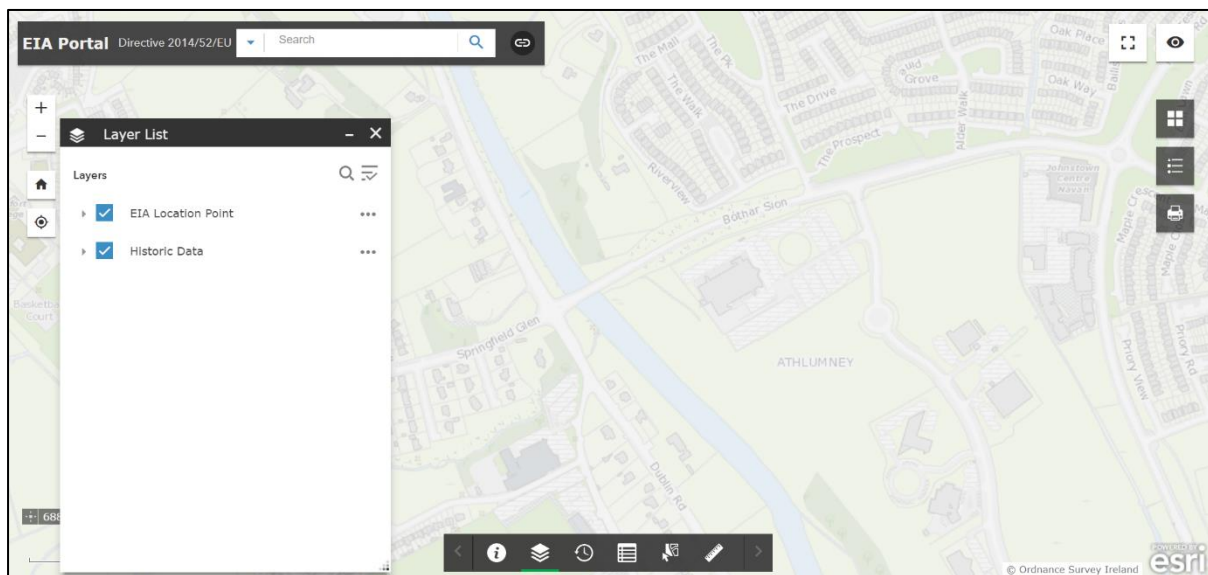


Figure 18: Excerpt from EIA portal indicating no projects requiring EIA in the vicinity of the proposed development

2.6.7 “Do nothing” scenario

Any potential negative impacts associated with the proposed development would be avoided.

2.6.8 Gauging of Impacts on Natura 2000 sites – Integrity of site checklist

The potential impacts of the proposed development on Natura 2000 sites are gauged using a checklist, which aids in determining the potential of development to have a significant negative impact on any Natura 2000 site. This checklist consists of a number of pertinent questions as set out in Table 8.

Table 8: Potential of the proposed development to impact on Natura 2000 sites in the absence of suitable mitigation/preventative measures

Does the Plan have the potential to:	Yes/No
Cause delays in progress towards achieving the conservation objectives of the Natura 2000 site?	YES
Interrupt progress toward achieving the conservation objectives of the Natura 2000 site?	YES
Disrupt those factors helping to maintain the favourable conditions at the Natura 2000 site?	YES
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the Natura 2000 site?	YES
Cause changes to the vital defining aspects (e.g., nutrient balance) that determine how the Natura 2000 site functions as a habitat or ecosystem?	YES
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the Natura 2000 site?	YES
Interfere with predicted or expected natural changes to the Natura 2000 site (such as water dynamics or chemical composition)?	YES
Reduce the area of key habitats within the Natura 2000 site?	YES
Reduce the population of key species of the Natura 2000 site?	YES
Alter the balance between key species of the Natura 2000 site?	YES
Reduce the biodiversity of the Natura 2000 site?	YES
Result in disturbance that could affect population size or density or the balance between key species within the Natura 2000 site?	YES
Result in fragmentation?	YES
Result in the loss or reduction of key features of Natura 2000 sites?	YES

2.7 Conclusions of screening

According to the guidance published by the NPWS (DoEHLG, 2009), Screening for Appropriate Assessment can either identify that a Natura Impact Statement (NIS) is not required where:

- (1) A project/proposal is directly related to the management of the site; or
- (2) There is no potential for significant impacts affecting the Natura 2000 network

Where the screening process identifies that significant impacts are certain, likely or uncertain the project must either proceed to Stage II Appropriate Assessment or be rejected.

The potential impacts that will arise from the proposed development have been examined in the context of a number of factors that could potentially impact upon the integrity of the Natura 2000 network. On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the development:

- (1) Is not directly connected with or necessary to the management of a Natura 2000 site and
- (2) May have significant impacts on one or more Natura 2000 sites.

Following an examination, analysis and evaluation of the relevant information and the potential for significant effects on the conservation objectives of Natura 2000 sites, and applying the Precautionary Principle, it is not possible to exclude (on the basis of objective information and in the absence of specific prescribed precautionary/mitigation measures) that the proposed development, individually or in combination with other plans or projects, will have the potential to have significant negative impacts on the following Natura 2000 sites:

- River Boyne and River Blackwater SAC; and
- River Boyne and River Blackwater SPA.

Screening having identified potential impacts of the proposed development upon these Natura 2000 sites and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required, i.e., *“The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.”*

3 Appropriate Assessment

The potential for significant negative impacts of the proposed development on the ecological integrity of the following sites, in light of the conservation objectives of those sites, is examined in this section, namely:

- River Boyne and River Blackwater SAC; and
- River Boyne and River Blackwater SPA.

3.1 Stage 2 Appropriate Assessment background

Screening having identified potential impacts Stage 2 Appropriate Assessment is carried out to determine if the plan/project will have any significant negative impacts on the integrity of the Natura 2000 site(s) identified as being at risk. For the purposes of Appropriate Assessment, a significant effect is any effect that may affect the Conservation Objectives of the Qualifying Interest for which a site was designated but excluding inconsequential effects. If the effect is not relevant to the conservation objective, then it cannot be a significant effect for the purposes of Appropriate Assessment. A likely significant effect, for the purpose of Appropriate Assessment must be:

- (a) Significant;
- (b) Relevant to the conservation objective for that site; and
- (c) The possibility of effects cannot be reasonably excluded.

This stage of the Appropriate Assessment process includes:

- 1) Impact Prediction - the potential impact of the proposed development on the ecological integrity of Natura 2000 sites in terms of the conservation objectives of those sites is assessed; and
- 2) Mitigation Measures – mitigation/preventative measures are identified (either in place or to be implemented) in relation to any significant negative impacts associated with the proposed development on the Natura 2000 sites as described herein.

This stage of the Appropriate Assessment process involves the identification of potentially affected sites, the identification of the qualifying interests of those sites, and an assessment of the significance of impacts on the conservation objectives of those sites. Any negative impacts on the integrity of structure, function or conservation objectives of these sites will require the implementation of avoidance or mitigation measures to avoid progression to Stages 3 and 4 of the Appropriate Assessment process.

3.2 Summary of Natura 2000 sites relevant to the Stage Two Appropriate Assessment

There are two Natura 2000 sites within 15 km of the proposed development. The Buvinda House site is within/adjacent to the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. Given the location, nature and scale of the proposed development, any potential impacts are likely to be limited to the immediate vicinity, within a distance of no more than 1000 m.

It is the goal of NPWS to draw up conservation plans for all areas designated for nature conservation, and that these plans will, among other things, set clear objectives for the conservation of the features of interest within a site. Where a detailed Conservation Objectives Document is not available, NPWS have provided a site synopsis, generic Conservation Objectives and a Natura 2000 data form from which information is sourced.

In this section, the Natura 2000 sites potentially impacted upon by the proposed development are described according to:

- 1) General description of the site;
- 2) Qualifying Interests (QI) of the site;
- 3) Threats, pressures and activities with negative impacts on the site;
- 4) Conservation Objectives of the site; and
- 5) Conservation status of the site.

The codes utilized within the Natura 2000 forms are available from

http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

3.2.1 River Boyne and River Blackwater SAC (Site synopsis version date 06/01/2014, Natura 2000 form update 09/19, Conservation Objectives Version 1)

3.2.1.1 General Description

This site comprises most of the freshwater element of the River Boyne from upriver of the Boyne Aqueduct at Drogheda, the Blackwater River as far as Lough Ramor and the principal Boyne tributaries, notably the Deel, Stoneyford and Tremblestown Rivers. This system drains a considerable area of Cos. Meath and Westmeath and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. The rivers flow through a landscape dominated by intensive agriculture, mostly of improved grassland but also cereals. Much of the river channels were subject to arterial drainage schemes in the past. Natural

floodplains now exist along only limited stretches of river, though often there is a fringe of reed swamp, freshwater marsh, wet grassland or deciduous wet woodland. Along some parts, notably between Drogheda and Slane, are stands of tall, mature mixed woodland. Substantial areas of improved grassland and arable land are included in site for water quality reasons. There are many medium to large sized towns adjacent to but not within the site.

The main channel of the Boyne contains a good 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, where there is a very fine example of habitat succession from open water to raised bog. The Boyne and its tributaries is one of Ireland's premier game fisheries and offers a wide range of angling, from fishing for spring salmon and grilse to sea trout fishing and extensive brown trout fishing. The site is one of the most important in eastern Ireland for *Salmo salar* and has very extensive spawning grounds. The site also has an important population of *Lampetra fluviatilis*, though the distribution or abundance of this species is not well known. *Lutra lutra* is widespread throughout the site. Some of the grassland areas along the Boyne and Blackwater are used by a nationally important winter flock of *Cygnus cygnus*. Several Red Data Book plants occur within the site, with *Pyrola rotundifolia*, *Poa palustris* and *Juncus compressus*. Also occurring are a number of Red Data Book animals, notably *Meles meles*, *Martes martes* and *Rana temporaria*. The River Boyne is a designated Salmonid Water under the EU Freshwater Fish Directive.

3.2.1.2 Qualifying Interests

The qualifying interests for this site are indicated in Table 9

Table 9

Qualifying Interests	
* indicates a priority habitat under the Habitats Directive	
002299	River Boyne and River Blackwater SAC
1099	River Lamprey <i>Lampetra fluviatilis</i>
1106	Salmon <i>Salmo salar</i>
1355	Otter <i>Lutra lutra</i>
7230	Alkaline fens
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*

3.2.1.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites and are illustrated in Table 10.

Table 10: Threats, pressures and activities with impacts on the site

Negative Impacts				Positive Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]	Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
M	G02.10		i	M	A03		i
H	H01		i	H	J02.05.02		i
L	D01.05		i				
M	A07		i				
M	A08		i				
M	A05.02		o				
L	G01		i				
H	J02.15		i				
M	A01		i				
M	A10.01		i				
M	C01.01		i				
L	G05.06		i				
L	G05		i				
M	A10.01		i				
M	E05		i				
M	E01.04		i				
M	J02.11		i				
M	J02.10		i				
M	D01.02		i				
M	E03.02		i				
H	E03.04		i				
M	J02		i				
H	E02		i				
H	I01		i				
M	B01.02		i				

Rank: H = high, M = medium, L = low
 Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
 T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
 i = inside, o = outside, b = both

3.2.1.4 Conservation Objectives of the site

A detailed Conservation Objectives document for this site has been prepared and is available at:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002299.pdf

The Conservation Objectives for this site are outlined in Table 11, Table 12, Table 13, Table 14 and Table 15.

Table 11

Conservation Objectives for : River Boyne and River Blackwater SAC [002299]			
7230 Alkaline fens			
To maintain the favourable conservation condition of Alkaline fens in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Alkaline fen has not been mapped in detail for River Boyne and River Blackwater SAC and thus the exact total current area of the qualifying habitat in the SAC is currently unknown. The main areas of alkaline fen in the SAC are documented to occur in the vicinity of Lough Shesk, Freekan Lough, Newtown Lough in the upper reaches of the Stonyford River. At Lough Shesk, the habitat is particularly well-represented and there is a good example of succession from open water to fen-type habitat (NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for habitat area above
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). See also Bobbink and Hettelingh (2011). Increased nutrients can lead to changes in plant and invertebrate species through competition and subsequent structural changes to micro-habitat. These nutrients favour growth of grasses rather than forbs and mosses and leads to a higher and denser sward
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time
Ecosystem function: hydrology - groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply levels	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels
Ecosystem function: hydrology - surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should be also relatively calcium-rich
Vegetation composition: community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of alkaline fen vegetation communities present in the SAC is currently unknown. Information on the vegetation communities associated with alkaline fens is provided by O'Neill et al. (in prep.). See also the Irish Vegetation Classification (Perrin, 2018; www.biodiversityireland.ie/projects/ivc-classification-explorer)

Continued overleaf....

Vegetation composition: typical brown mosses	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical brown moss species	For lists of typical bryophyte species, including high quality indicator species, see O'Neill et al. (in prep.). Species recorded at Lough Shesk and Newtown Lough include: <i>Calliergon giganteum</i> , <i>Scorpidium scorpioides</i> , <i>Campylium stellatum</i> , <i>Bryum pseudotriquetrum</i> , <i>Fissidens adianthoides</i> , <i>Scorpidium scorpioides</i> , <i>Calliergonella cuspidata</i> and <i>Ctenidium molluscum</i> (NPWS internal files)
Vegetation composition: typical vascular plants	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical vascular plant species	For lists of typical vascular plant species for the different vegetation communities, including high quality indicators, see O'Neill et al. (in prep.). Typical species recorded in the habitat in the SAC include black bog-rush (<i>Schoenus nigricans</i>), dioecious sedge (<i>C. dioica</i>) and common butterwort (<i>Pinguicula vulgaris</i>) (NPWS internal files)
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable activities such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may include <i>Anthoxanthum odoratum</i> , <i>Epilobium hirsutum</i> , <i>Holcus lanatus</i> , <i>Juncus effusus</i> , <i>Phragmites australis</i> and <i>Ranunculus repens</i> . See O'Neill et al. (in prep.)
Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%	Attribute and target based on O'Neill et al. (in prep.). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Attribute and target based on O'Neill et al. (in prep.). Scrub and trees will tend to invade if fen conditions become drier
Vegetation composition: algal cover	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of algae less than 2%	Attribute and target based on O'Neill et al. (in prep.). Algal cover is indicative of nutrient enrichment from multiple sources (McBride et al., 2011)
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	Attribute and target based on O'Neill et al. (in prep.). While grazing may be appropriate in this habitat, excessive grazing can reduce the ability of plant species to regenerate reproductively and maintain species diversity, especially if flowering shoots are cropped during the growing season
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%	Attribute and target based on O'Neill et al. (in prep.). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for peatlands
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%	Attribute and target based on O'Neill et al. (in prep.)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). The Near Threatened species (Wyse Jackson et al., 2016) round-leaved wintergreen (<i>Pyrola rotundifolia</i>) has been recorded in the habitat around Newtown Lough in the SAC (NPWS internal files)
Transitional areas between fen and adjacent habitats	Hectares; distribution	Maintain adequate transitional areas to support/protect the alkaline fen ecosystem and the services it provides	In many cases, fens transition to other wetland habitats. It is important that the transitional areas between fens and other habitats are maintained in as natural condition as possible in order to protect the functioning of the fen

Table 12

Conservation Objectives for : River Boyne and River Blackwater SAC [002299]			
91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*			
To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)* in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes. See map 3 for surveyed woodland areas	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)* is present within River Boyne and River Blackwater SAC. As part of the National Survey of Native Woodlands (NSNW), the sub-sites Grove Island (NSNW site code 688) and Yellow Island (752) were surveyed by Perrin et al. (2008). Yellow Island (code 752) was also included in national monitoring surveys (O'Neill and Barron, 2013; Daly et al., in prep.). Map 3 shows the minimum area of alluvial forests within the SAC, which is estimated to be 16.7ha (Perrin et al., 2008; Daly et al., in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. The surveyed woodland locations are shown on map 3	Distribution based on Perrin et al. (2008) and Daly et al. (in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	The target areas for individual woodlands aim to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). In some cases, topographical constraints may restrict expansion
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	The target aims for a diverse structure with a canopy containing mature trees, shrub layer with semi-mature trees and shrubs, and well-developed field layer (herbs, graminoids and dwarf shrubs) and ground layer (bryophytes). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	The Boyne River Islands are an example of gallery forests of willows (<i>Salicion albae</i>), which occur alongside river channels and on river islands, where tree roots are almost continuously submerged (Daly et al., in prep.). Grove Island (NSNW site code 688) and Yellow Island (752) were assigned by Perrin et al. (2008) to the <i>Salix triandra</i> – <i>Urtica dioica</i> vegetation type (2h) of the <i>Fraxinus excelsior</i> – <i>Hedera helix</i> group. This corresponds to the <i>Salix fragilis</i> – <i>Calystegia sepium</i> sub-community (WL3Di) of the Irish Vegetation Classification (Perrin, 2016; www.biodiversityireland.ie/projects/ivc-classification-explorer)
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)

Continued overleaf...

Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	Periodic flooding is essential to maintain alluvial woodlands along river and lake floodplains, but not for woodland around springs/seepage areas. Much of the river channel within the SAC was subject to arterial drainage schemes. Natural flood-plains now exist along only limited stretches of river (NPWS internal files)
Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood of at least 20cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Woodland structure: veteran trees	Number per hectare	No decline	Veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence; population size	No decline in distribution and, in the case of red listed and other rare or localised species, population size	Includes ancient or long-established woodlands (see Perrin and Daly, 2010), archaeological and geological features as well as red listed and other rare or localised species
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent	There are five indicators of overgrazing within 91E0*: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, severe recent bark stripping, and trampling (Daly et al., in prep.)
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.) (Daly et al., in prep.; O'Neill and Barron, 2013)
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present	A variety of typical native species should be present, depending on woodland type. The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.). Positive indicator species for 91E0* are listed in Daly et al. (in prep.) and O'Neill and Barron (2013)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	Negative indicator species (i.e. any non-native species, including herbaceous species) should be absent or under control. The canopy at Grove Island (NSNW site code 688) and Yellow Island (752) is dominated by a range of <i>Salix</i> spp. (<i>S. cinerea</i> , <i>S. triandra</i> , <i>S. fragilis</i> , <i>S. viminalis</i>) (Perrin et al., 2008). Although the latter two are not native to Ireland, an exception is made for these species where they occur within gallery woodland (Daly et al., in prep.). Perrin et al. (2008) recorded some sycamore (<i>Acer pseudoplatanus</i>) in the canopy at Grove Island (NSNW site code 688). Daly et al. (in prep.) found that the recent arrival of the invasive non-native herb Himalayan balsam (<i>Impatiens glandulifera</i>) at Yellow Island (752) has caused significant negative impacts to the alluvial forest habitat
Vegetation composition: problematic native species	Percentage	Cover of common nettle (<i>Urtica dioica</i>) less than 75%	Common nettle (<i>Urtica dioica</i>) is a positive indicator species for 91E0* but, in some cases, it may become excessively dominant. Increased light and nutrient enrichment are factors which favour proliferation of common nettle (Daly et al., in prep.)

Table 13

Conservation Objectives for : River Boyne and River Blackwater SAC [002299]			
1099 River Lamprey <i>Lampetra fluviatilis</i>			
To restore the favourable conservation condition of River Lamprey (<i>Lampetra fluviatilis</i>) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage of river accessible	Restore access to all water courses down to first order streams	Artificial barriers can block or impede the passage of upstream migrating lamprey, thereby restricting access to spawning areas (Gargan et al., 2011; Rooney et al., 2015). There are a number of weirs along the lower sections of the Boyne main channel, the most substantial of these are located at Slane and downstream of Navan at Blackcastle. Efforts to trap adult river lamprey were undertaken at four locations throughout the catchment during November 2014 to April 2015. This was augmented in April 2015 by an extensive fyke-netting survey (n=26 sites). No adult river lamprey were encountered, with the only record to date being a dead individual from the River Boyne at Slane in late March 2015 (Gallagher et al., 2016). On the Boyne main channel, there is ideal spawning habitat both upstream and downstream of the weir at Blackcastle but spawning has not been observed at these locations to date.
Distribution of larvae	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey	It is not possible to distinguish between larval brook and river lamprey in the field and they are therefore considered together in assessing conservation status. A survey of the Boyne catchment in 2015 recorded n=583 <i>Lampetra</i> spp. larvae from n=102 sites (Gallagher et al., 2016). As stated, the weirs in the lower main stem are a significant impediment to river lamprey passage and, for this reason, these larvae are considered to be mainly, if not all, brook lamprey. To achieve favourable condition <i>Lampetra</i> spp. should, as a minimum, be present in not less than 50% of all sampling sites surveyed with suitable habitat present within the natural range (JNCC, 2015). <i>Lampetra</i> spp. larvae were recorded from 72% of sites indicating a pass for this target. Distribution remained similar to a 2005 survey (O'Connor, 2006) although larvae continued to be absent from the Boycetown and Skane Rivers, as well as the upper reaches of the Kells Blackwater system.
Population structure of larvae	Number of age/size classes	At least three age/size classes of larval brook/river lamprey present	The target of at least three age/size classes is based on guidance from JNCC (2015). Larvae typically range from 10-150mm in length and this corresponds to up to six age classes. A broad range of size classes (12-153mm), including young-of-year larvae, was recorded from the 2015 Boyne catchment-wide survey indicating a pass for this target. However, given the issue of artificial barriers on the River Boyne, it is likely that this value pertains to brook lamprey, as previously stated.
Larval lamprey density in fine sediment	Larval lamprey/m ²	Mean density of brook/river larval lamprey in sites with suitable habitat more than 5/m ²	A target mean density of more than 5/m ² larvae in sites with suitable habitat is required to achieve favourable condition (JNCC, 2015). In the Boyne survey a mean density of 6/m ² <i>Lampetra</i> spp. larvae (n=583) was obtained. A number of tributaries did not achieve a pass for this target, including the Athboy/Tremblestown, Boycetown, Deel, Skane and Stonyford Rivers. Again, the overall mean density value is most likely indicative of the status of brook lamprey in the Boyne catchment.
Extent and distribution of spawning nursery habitat	m ² and occurrence	No decline in extent and distribution of spawning and nursery beds	This target is based on spawning and nursery bed mapping during targeted larval lamprey monitoring surveys. River lamprey spawn in clean gravels in flowing water where they excavate shallow nests. While coarse substrate is required for spawning, the close proximity of nursery areas comprising mainly sand/silt are necessary for the development of larvae. The 2015 Boyne survey recorded adequate spawning and nursery habitat availability within the catchment (Gallagher et al., 2016). However, the sequence of weirs in the lower main channel of the Boyne represents a significant impediment to upstream passage. In addition, this lower section of river is in a degraded hydromorphological state with impounding and, therefore, poor habitat availability for spawning.

Table 14

Conservation Objectives for : River Boyne and River Blackwater SAC [002299]			
1106	Salmon <i>Salmo salar</i>		
To restore the favourable conservation condition of Atlantic Salmon (<i>Salmo salar</i>) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmon's upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. There are multiple barriers to fish migration in the Boyne system
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Technical Expert Group on Salmon's (TEGOS) annual model output of CL attainment levels. See Gargan et al. (2021) for further details. Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The Boyne is significantly below its CL
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	Target is threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (<i>Lepeophtheirus salmonis</i>)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels. There is restricted habitat for salmon in the Boyne and habitat rehabilitation programmes have been undertaken in sections of the catchment
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

Table 15

Conservation Objectives for : River Boyne and River Blackwater SAC [002299]			
1355	Otter <i>Lutra lutra</i>		
To maintain the favourable conservation condition of Otter (<i>Lutra lutra</i>) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 447.6ha along river banks/ lake shoreline/around ponds	No field survey. Areas mapped to include 10m terrestrial buffer, identified as critical for otters (NPWS, 2007), along rivers and around water bodies
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 263.3km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 31.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m, e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

3.2.1.5 Baseline Conservation Status of the site

A synopsis of the conservation status of this site is provided in Table 16 and Table 17.

Table 16: Habitat types present on site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
7230			23.21		M	B	C	B	B
91E0			23.21		M	B	B	B	B

Table 17: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A038	Cygnus cygnus			w	50	200	i		G	C	B	C	B
F	1099	Lampetra fluviatilis			r				P	DD	C	B	C	B
M	1355	Lutra lutra			p				P	DD	C	A	C	A
F	1106	Salmo salar			r				C	DD	C	B	C	B

3.2.2 The River Boyne and River Blackwater SPA (Site synopsis version date 25/11/10, Natura 2000 form update 10/2020, Conservation Objectives (generic) Version 9.0.

3.2.2.1 General Description

The River Boyne and River Blackwater SPA is a long linear site that comprises stretches of the River Boyne and several of its tributaries: most of the site is in Co Meath but it extends also into Counties Cavan, Louth and Westmeath. It includes the following river sections: The River Boyne from the M1 motorway bridge, west of Drogheda, to the junction with the Royal Canal, west of Longwood, Co Meath; the River Blackwater from its junction with the River Boyne in Navan to the junction with Lough Ramor in Co Cavan; the Tremblestown River (and Athboy River) from the junction with the River Boyne

at Kilnagross Bridge to the bridge in Athboy, Co Meath; the Stoneyford River from its junction with the River Boyne to Stonestone Bridge in Co. Westmeath; the River Deel from its junction with the River Boyne to Cummer Bridge, Co. Westmeath. The site includes the river channel and marginal vegetation. The River Boyne and River Blackwater SPA supports nationally important numbers of *Alcedo atthis*. Other species which occur within the site include *Cygnus olor*, *Anas crecca*, *Anas platyrhynchos*, *Phalacrocorax carbo*, *Ardea cinerea*, *Gallinula chloropus*, *Gallinago gallinago* and *Riparia riparia*.

3.2.2.2 Qualifying Interests

The Qualifying Interest (QI) of the River Boyne and River Blackwater SPA is

- Kingfisher, *Alcedo atthis*

3.2.2.3 Threats, pressures and activities with negative impacts on the site

Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form for the sites and are illustrated in Table 18.

Table 18: Threats, pressures and activities with impacts on the site

Negative Impacts				Positive Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]	Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
M	J02		i	L	X		i
H	E01		o				
H	D01.02		i				
H	D01.02		o				
H	E01.03		o				

Rank: H = high, M = medium, L = low
 Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
 i = inside, o = outside, b = both

3.2.2.4 Conservation Objectives

The primary conservation objective (generic) of this site is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

- Kingfisher (*Alcedo atthis*)

There is currently no detailed conservation objectives document prepared referring specifically to Kingfisher as a Qualifying Interest. It is, therefore, not possible to infer Conservation Objectives for

this Qualifying Interest. The primary conservation objective must be to maintain the ecological integrity of the habitat utilised by the Kingfisher.

3.2.2.5 Baseline Conservation Status

A synopsis of the conservation status of this site is provided in Table 19.

Table 19: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			r	19	19	p		G	C	B	C	B
B	A052	Anas crecca			w	166	166	i		G	C	B	C	C
B	A053	Anas platyrhynchos			w	219	219	i		G	C	B	C	C
B	A028	Ardea cinerea			w	44	44	i		G	C	B	C	C
B	A017	Phalacrocorax carbo			w	36	36	i		G	C	B	C	C

3.3 Summary of Conservation Status of Natura 2000 sites potentially exposed to significant negative impacts

The focus of the Appropriate Assessment process at the second stage must be on the integrity of European sites “in light of their conservation objectives.”

A summary of the current conservation status of the qualifying interests (Nationally as indicated in the NPWS document “Status of EU Protected Habitats and Species in Ireland (2019)”, and site specific as recorded in the individual Natura 2000 form) and conditions underpinning site integrity is presented in Table 20.

Table 20: Summary of Conservation Status of Qualifying Interests and conditions underpinning site integrity

SITE NAME/CODE	QUALIFYING INTERESTS HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (2019)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
RIVER BOYNE AND RIVER BLACKWATER SAC	[7230]	RANGE	FAVOURABLE	REPRESENTATIVITY	B	<ul style="list-style-type: none">• WATER QUALITY• APPROPRIATE AGRICULTURAL AND SILVICULTURAL PRACTICES• SURFACE AND GROUND WATER QUALITY• APPROPRIATE LEVELS OF DISTURBANCE• WATER LEVELS• AIR QUALITY
		AREA	INADEQUATE (U2)	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	BAD (U2)	CONSERVATION	B	
		FUTURE PROSPECTS	BAD (U2)	GLOBAL	B	
		OVERALL STATUS	BAD (U2)			
		OVERALL TREND	DETERIORATING			
	91E0 (PRIORITY HABITAT)	RANGE	FAVOURABLE (FV)	REPRESENTATIVITY	B	
		AREA	BAD (U2)	RELATIVE SURFACE	B	
		STRUCTURES AND FUNCTIONS	INADEQUATE (U1)	CONSERVATION	B	
		FUTURE PROSPECTS	BAD (U2)	GLOBAL	B	
		OVERALL STATUS	BAD (U2)			
		OVERALL TREND	DETERIORATING			
	[1099]	RANGE	UNKNOWN (XX)	REPRESENTATIVITY	C	
		POPULATION	UNKNOWN (XX)	RELATIVE SURFACE	B	
		HABITAT	FAVOURABLE (FV)	CONSERVATION	C	
		FUTURE PROSPECTS	UNKNOWN (XX)	GLOBAL	B	
		OVERALL STATUS	UNKNOWN (XX)			
		OVERALL TREND	UNKNOWN (XX)			
	[1106]	RANGE	FAVOURABLE (FV)	REPRESENTATIVITY	C	
		POPULATION	INADEQUATE (U1)	RELATIVE SURFACE	B	
		HABITAT	FAVOURABLE (FV)	CONSERVATION	C	
		FUTURE PROSPECTS	INADEQUATE (U1)	GLOBAL	B	
		OVERALL STATUS	INADEQUATE (U1)			
		OVERALL TREND	STABLE			
	[1355]	RANGE	FAVOURABLE (FV)	REPRESENTATIVITY	C	

SITE NAME/CODE	QUALIFYING INTERESTS HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (2019)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
		POPULATION	FAVOURABLE (FV)	RELATIVE SURFACE	A	
		HABITAT	FAVOURABLE (FV)	CONSERVATION	C	
		FUTURE PROSPECTS	FAVOURABLE (FV)	GLOBAL	A	
		OVERALL STATUS	FAVOURABLE (FV)			
		OVERALL TREND	IMPROVING			
RIVER BOYNE AND RIVER BLACKWATER SPA	[A229]	N/A	N/A	POPULATION	C	<ul style="list-style-type: none">• WATER QUALITY• APPROPRIATE AGRICULTURAL AND SILVICULTURAL PRACTICES• SURFACE AND GROUND WATER QUALITY• APPROPRIATE LEVELS OF DISTURBANCE• WATER LEVELS• AIR QUALITY
		N/A	N/A	CONSERVATION	B	
		N/A	N/A	ISOLATION	C	
		N/A	N/A	GLOBAL	B	

3.4 Impact Prediction

3.4.1 Identified Pathways

As identified in Section 2, the proposed development is immediately adjacent to the River Boyne and River Blackwater SAC and is within 100m of the River Boyne, the primary constituent of two Natura 2000 sites (the River Boyne and River Blackwater SAC/SPA). There is potential for the proposed development to have indirect and/or secondary impacts on these sites.

3.4.2 Potential Impacts on Qualifying Interests of sites

The Qualifying Interests (habitat/species), Primary Location of Qualifying Interests, Sensitivities of Qualifying Interests and Potential Impacts affecting Qualifying Interests is indicated in Table 21. The location of the Primary Locations of two Qualifying Interest habitats (both within the River Boyne and River Blackwater SAC – [7230] and [91E0]) are indicated in Figure 19 and Figure 20.

Table 21: Summary of potential impacts on Qualifying Interests of relevant Natura 2000 sites

SITE NAME/CODE	QUALIFYING INTERESTS	PRIMARY LOCATION	SENSITIVITIES	POTENTIAL IMPACTS (INCLUDING THOSE ASSOCIATED WITH CLIMATE CHANGE)
RIVER BOYNE AND RIVER BLACKWATER SAC	ALKALINE FENS [7230]	LOUGH SHESK, FREEHAN LOUGH AND NEWTOWN LOUGH - APPROXIMATELY 30 KM (UPSTREAM) FROM OPERATIONS (SEE MAP A)	<ul style="list-style-type: none"> DISRUPTION TO AND/OR ACIDIFICATION OF WATER FEEDING FEN 	<ul style="list-style-type: none"> NONE FORESEEN
	ALLUVIAL FORESTS WITH ALNUS GLUTINOSA AND FRAXINUS EXCELSIOR [91E0] (PRIORITY HABITAT)	BOYNE ISLANDS, 2.5 KM WEST OF DROGHEDA, APPROXIMATELY 22 KM (DOWNSTREAM) FROM OPERATIONS (SEE MAP B)	<ul style="list-style-type: none"> CHANGES IN HYDROLOGICAL REGIME ALIEN INVASIVE PLANT SPECIES 	<ul style="list-style-type: none"> NONE FORESEEN
	RIVER LAMPREY [1099]	THROUGHOUT	<ul style="list-style-type: none"> CHANGES IN HYDROLOGICAL REGIME CHANGES IN WATER QUALITY ALIEN INVASIVE PLANT SPECIES 	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER AND/OR SILT CHANGES IN DEPOSITION OF SILT IN HABITAT IMPACTS ON FEEDING AMMOCOETES THROUGH SILTATION AND/OR BIOACCUMULATION
	ATLANTIC SALMON [1106]	THROUGHOUT	<ul style="list-style-type: none"> CHANGES IN HYDROLOGICAL REGIME CHANGES IN WATER QUALITY ALIEN INVASIVE PLANT SPECIES 	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER BIOACCUMULATION OF CONTAMINANTS
	OTTER [1355]	THROUGHOUT	<ul style="list-style-type: none"> CHANGES IN HYDROLOGICAL REGIME CHANGES IN WATER QUALITY ALIEN INVASIVE PLANT SPECIES DISTURBANCE 	<ul style="list-style-type: none"> CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES BIOACCUMULATION OF CONTAMINANTS

SITE NAME/CODE	QUALIFYING INTERESTS	PRIMARY LOCATION	SENSITIVITIES	POTENTIAL IMPACTS (INCLUDING THOSE ASSOCIATED WITH CLIMATE CHANGE)
River Boyne and River Blackwater SPA				
	KINGFISHER [A229]	THROUGHOUT	<ul style="list-style-type: none"> • CHANGES IN HYDROLOGICAL REGIME • CHANGES IN WATER QUALITY • ALIEN INVASIVE PLANT SPECIES • DISTURBANCE 	<ul style="list-style-type: none"> • CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES • BIOACCUMULATION OF CONTAMINANTS

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Figure 20: Map illustrating location of Boyne Islands, on which [91E0], a priority habitat occurs

3.4.3 Sources of Potential Impacts associated with proposed development

The sources of potential indirect and secondary impacts related to the proposed development are identified in Section 2. The sources of impacts are primarily associated with:

- 1) Potential impacts on surface/ground water quality during construction and/or operation;
- 2) Potential impacts associated with importation of Alien Invasive Plant Species; and
- 3) Potential for disturbance impacts during operations on species such as Otter and Kingfisher.

A summary of potential impacts on Qualifying Interests of relevant Natura 2000 sites and the sources of potential impacts are provided in Table 22.

Table 22: Summary of potential impacts on Qualifying Interests of relevant Natura 2000 sites and the sources of potential impacts

SITE NAME/CODE	QUALIFYING INTERESTS	POTENTIAL IMPACTS	SOURCE(S) OF IMPACT(S)
RIVER BOYNE AND RIVER BLACKWATER SAC	ALKALINE FENS [7230]	<ul style="list-style-type: none"> NONE FORESEES 	<ul style="list-style-type: none"> NONE FORESEEN
	ALLUVIAL FORESTS WITH ALNUS GLUTINOSA AND FRAXINUS EXCELSIOR 91E0 (PRIORITY HABITAT)	<ul style="list-style-type: none"> NONE FORESEES 	NONE FORESEEN
	RIVER LAMPREY [1099]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER AND/OR SILT CHANGES IN DEPOSITION OF SILT IN HABITAT IMPACTS ON FEEDING AMMOCOETES THROUGH SILTATION AND/OR BIOACCUMULATION CHANGES IN HYDROLOGICAL REGIME 	<ul style="list-style-type: none"> CONTAMINATION OF SURFACE WATER DURING CONSTRUCTION CONTAMINATION OF GROUND WATER DURING OPERATIONS ALIEN INVASIVE PLANT SPECIES
	ATLANTIC SALMON [1106]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER BIOACCUMULATION OF CONTAMINANTS CHANGES IN HYDROLOGICAL REGIME 	<ul style="list-style-type: none"> CONTAMINATION OF SURFACE WATER DURING CONSTRUCTION CONTAMINATION OF GROUND WATER DURING OPERATIONS ALIEN INVASIVE PLANT SPECIES
	OTTER [1355]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES BIOACCUMULATION OF CONTAMINANTS INCREASED DISTURBANCE IMPACTING HABITAT USAGE CHANGES IN HYDROLOGICAL REGIME 	<ul style="list-style-type: none"> CONTAMINATION OF SURFACE WATER DURING CONSTRUCTION CONTAMINATION OF GROUND WATER DURING OPERATIONS ALIEN INVASIVE PLANT SPECIES DISTURBANCE
RIVER BOYNE AND RIVER BLACKWATER SPA			
	KINGFISHER [A229]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES BIOACCUMULATION OF CONTAMINANTS CHANGES IN HYDROLOGICAL REGIME 	<ul style="list-style-type: none"> CONTAMINATION OF SURFACE WATER DURING CONSTRUCTION CONTAMINATION OF GROUND WATER DURING OPERATIONS ALIEN INVASIVE PLANT SPECIES DISTURBANCE

3.5 Mitigation Measures – avoiding potential impacts

3.5.1 Impacts on water quality

The primary source of potential negative impacts on the conservation objectives of both the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA regards the potential for impacts on the water quality of the River Boyne. The primary mitigation measures to be implemented, therefore will involve the protection of water quality. During all works, protection of water quality is paramount. An Engineering Planning report and Construction Environmental Management Plan have been prepared by Punch Consulting Engineers, which comprehensively assess and mitigate against any negative impacts on water quality addressing Stormwater, SuDS and foul water issues.

The following generic mitigation measures must be implemented to avoid/prevent any negative impacts on water quality:

The Contractor shall undertake all proposed works in such a manner as to avoid degradation of water quality either by pollution, contamination or by causing turbidity due to disturbance of silt or spoil from operations.

The following measures should be implemented such as to further minimise any potential impacts of proposed works:

Measures to be taken should include the following:

- Undertaker's plant, equipment etc. must be free of any mechanical defects, and be well maintained so as to prevent soil or fuel leaks into the river;
- Undertaker's plant, equipment etc. must arrive on site free of propagules of any plant species listed on Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011;
- All works will be undertaken in accordance with the following best practice guidelines for working alongside watercourses:
 - CIRIA Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (2001).
 - Eastern Regional Fisheries Board Guidance Notes 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (Eastern Regional Fisheries Board, 2006);

- NRA Guidelines (2006) NRA Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

The proposed extension will be serviced by the Navan Agglomeration (D0059-01). The most recent available online Annual Environmental Report¹ for this treatment plant indicates that the overall compliance level of the final effluent with the Emission Limit Values is “Compliant”. In addition, the report states “...*The discharge from the wastewater treatment plant does not have an observable impact on the water quality...The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status...*”.

The Organic Capacity (P.E.) remaining (as of 2020) is 12,478 and this capacity will not be exceeded by 2023.

3.5.2 Impacts associated with Alien Invasive Species

There was no species observed within the entirety of the Buvinda House site that is listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended. The proposed development will entail the excavation of and importation of significant amounts of material into the site. There is potential for the importation of propagules of Alien Invasive Plant Species to site. The CEMP as prepared by Punch Consulting Engineers has taken into account the spread/introduction of such species.

3.5.3 Impacts associated with disturbance

The primary species of concern are Kingfisher and Otter. Kingfisher are not likely to be disturbed by works owing to the distance from the river. There is potential for disturbance owing to any lighting. This can be mitigated against by directional lighting. There is potential for impacts on foraging Otter owing to any lighting associated with construction and/or operation. This can be mitigated against through the undertaking of construction works outside of peak Otter foraging times (dawn and dusk) and directional lighting.

Although not related to any Qualifying Interests, there is a potential for disturbance impacts on numerous species of bat using the River Boyne and associated habitats through associated lighting. If there are plans for any future lighting that would impact on the riparian corridor, a detailed Bat Conservation and Management Plan should be drawn up and implemented to ensure that there are

¹ https://www.water.ie/docs/aers/2020/d0059-01_2020_aer.pdf

no negative impacts on the local bat population as regards foraging/commuting bats. It must be noted, however, that there will be minimal changes to external lighting associated with the proposed development.

The significance of potential impacts on the conservation objectives of qualifying interests following the implementation of mitigation measures is outlined in Table 23.

Table 23: Significance of potential impacts following implementation of mitigation measures

SITE NAME/CODE	QUALIFYING INTERESTS	POTENTIAL IMPACTS	SIGNIFICANCE OF IMPACTS ON QI FOLLOWING IMPLEMENTATION OF MITIGATION MEASURES
RIVER BOYNE AND RIVER BLACKWATER SAC	ALKALINE FENS [7230]	<ul style="list-style-type: none"> NO IMPACTS FORESEEN 	NOT SIGNIFICANT
	ALLUVIAL FORESTS WITH ALNUS GLUTINOSA AND FRAXINUS EXCELSIOR [91E0] (PRIORITY HABITAT)	<ul style="list-style-type: none"> NO IMPACTS FORESEEN 	NOT SIGNIFICANT
	RIVER LAMPREY [1099]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER AND/OR SILT CHANGES IN DEPOSITION OF SILT IN HABITAT IMPACTS ON FEEDING AMMOCOETES THROUGH SILTATION AND/OR BIOACCUMULATION 	NOT SIGNIFICANT
	ATLANTIC SALMON [1106]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL AND/OR NUTRIENT STATUS OF WATER BIOACCUMULATION OF CONTAMINANTS 	NOT SIGNIFICANT
RIVER BOYNE AND RIVER BLACKWATER SPA	OTTER [1355]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES BIOACCUMULATION OF CONTAMINANTS 	NOT SIGNIFICANT
	KINGFISHER [A229]	<ul style="list-style-type: none"> CHANGE IN CHEMICAL/NUTRIENT STATUS COULD IMPACT ON PREY SPECIES BIOACCUMULATION OF CONTAMINANTS 	NOT SIGNIFICANT

4 Conclusions

In order for AA to comply with the criteria set out in the Habitats Directive and the Planning and Development Act 2000, an AA undertaken by the Competent Authority must include an examination, analysis, evaluation, findings, conclusions and a final determination.

Following the identification of a potential impact(s) upon one or more Natura 2000 sites through an Appropriate Assessment Screening exercise, a Stage 2 Appropriate Assessment of the proposed development has been carried out in accordance with the requirements of Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC). The information to enable the Competent Authority to perform its statutory function in this regard is presented within this NIS.

Following an examination, analysis and evaluation of the relevant information, and applying the precautionary principle, it is the professional opinion of the authors of this report that there will be no adverse impacts (including cumulative and/or residual) on the integrity of any of relevant Natura 2000 sites, assuming the implementation of all mitigation/preventative measures as outlined. Consequently, there will be no risk of adverse effects on Qualifying Interest habitats or species, nor the attainment of specific conservation objectives, either alone or in-combination with other plans or projects, for the relevant Natura 2000 sites. The ecological integrity of the Natura 2000 sites concerned (connected with qualifying interests for which the sites have been designated) will not be significantly impacted.

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www.meath.ie – official website of Meath County Council.

www.npws.ie – website of the National Parks and Wildlife Service, source of information for data regarding Natura 2000 sites and Article 17 Conservation Assessments.

www.europa.eu – official website of the European Union, source of information on EU Directives.