

3 METHODOLOGY

3.1 Statement of Authority

This report has been undertaken by an RPS Ecologist and reviewed by an RPS Technical Director of the Environment Division.

3.2 Appropriate Assessment Guidance and Legislation

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this assessment has had regard to the following guidance and legislation:

Guidance

- DoEHLG (2009, rev. 2010) *Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government;
- EC (2000) *Communication from the Commission on the Precautionary Principle*. Office for Official Publications of the European Communities, Luxembourg;
- EC (2001) *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC*. Office for Official Publications of the European Communities, Brussels;
- EC (2002) *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Office for Official Publications of the European Communities, Luxembourg;
- EC (2006) *Nature and biodiversity cases: Ruling of the European Court of Justice*;
- EC (2007) *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission*;
- EC (2013) *Interpretation manual of European Union Habitats – EUR28*. European Commission, DG Environment, Nature ENV B.3.;
- EC (2014) *Article 6 of the Habitats Directive: Rulings of the European Court of Justice*;
- EC (2019) *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. European Communities, Luxembourg;
- EC (2020) *Commission Notice 7730 'Guidance document on wind energy developments and EU nature legislation'*, Office for Official Publications of the European Communities, Luxembourg;
- EC (2021a) (Amended) *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, Office for Official Publications of the European Communities, Luxembourg. European Commission;
- EC (2021b) (Amended) *Commission notice 'Guidance document on the strict protection of animal species of Community interest under the Habitats Directive'*. Brussels, 21.10.2021, C (2021) 7301 final. European Commission;
- NPWS (2013) *Ireland's Summary Report for the period 2008 – 2012 under Article 12 of the Birds Directive*. National Parks and Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland;
- NPWS (2019a) *The Status of EU Protected Habitats and Species in Ireland*. Volume 1: Summary Overview. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill;

- NPWS (2019b) *The Status of EU Protected Habitats and Species in Ireland*. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill;
- NPWS (2019c) *The Status of EU Protected Habitats and Species in Ireland*. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill; and
- OPR (2021) *Practice Note PN01: Appropriate Assessment Screening for Development Management*. Office of the Planning Regulator, Dublin 7, Ireland.

Legislation

- European Communities (Birds and Natural Habitats) Regulations 2011 S.I No 477/2011 as amended;
- Planning and Development Act 2000, as amended;
- Planning and Development Regulations 2001, as amended;
- Birds Directive - Directive (2009/147/EC) of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; and
- Habitats Directive - Council Directive (92/43/EEC) of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

3.3 Relevant European Sites

3.3.1 Identifying Relevant European Sites

The identification of relevant European sites to be included in this report was based on the screening exercise completed in the Stage 1 AA screening which follows the identification of European sites within or adjacent to the proposed development; and the identification of the Zone of Influence (Zol) using the Source-Pathway-Receptor model (S-P-R).

3.3.2 Establishing a Zone of Influence

The Zone of Influence (Zol) is defined as described in the AA Screening. The Zol is defined as follows:

Projects have the potential to impact on European Sites beyond the footprint of the project itself. National guidance (DoEHLG, 2009) states that screening for Appropriate Assessment should be carried out for any European Site within the likely 'Zone of Influence' of a plan or project. For projects, the guidance recommends that the Zol must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in combination effects.

In order to establish the Zol of the proposed development, nationally available data on protected habitats and species was mapped using Geographic Information Systems (GIS). This data was interrogated for source-pathway-receptor connectivity. The source (potential impacts from the proposed development), pathways (hydrological, physical or ecological connectivity) and receptors (QIs and special conservation interests (SCIs) of the European sites) were identified using GIS software, and through examination of aerial photography. Any European Sites identified to have a viable source-pathway-receptor link to the proposed development were then examined further to determine the potential for significant effects.

The likely effects of the proposed development on any European site from has been assessed using a S-P-R model, where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features and its conservation objectives;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor; and
- A 'receptor' is defined as the SCI of SPAs or Qualifying Interests (QI) of SACs for which conservation objectives have been set for the European sites being screened.

A S-P-R model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The S-P-R model was used to identify a list of European sites, and their QIs/SCIs, with potential links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report.

3.3.3 Adverse Effect on Integrity

The European Commission's 2018 Notice (EC, 2019) advises that the purpose of the appropriate assessment is to assess the implications of the plan or project in respect of the site's COs, either individually or in combination with other plans or projects. The conclusions should enable the competent authorities to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus of the appropriate assessment is therefore specifically on the species and/or the habitats for which the European site is designated.

EC (2019) also emphasises the importance of using the best scientific knowledge when carrying out the appropriate assessment in order to enable the competent authorities to conclude with certainty that there will be no adverse effects on the integrity of the site. This guidance notes that it is at the time of adoption of the decision authorising implementation of the project that there must be no reasonable scientific doubt remaining as to the absence of adverse effects on the integrity of the site in question.

The judgement of the Court of Justice of the European Union (CJEU) confirmed in its ruling in Case C-258/11 that 'Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal'. EC (2019) advises that the logic of such an interpretation would also be relevant to non-priority habitat types and to habitats of species.

As regards the meaning of 'integrity', this clearly relates to ecological integrity. This can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation.

EC (2019) notes that if the competent authority considers the mitigation measures are sufficient to avoid the adverse effects on site integrity identified in the appropriate assessment, they will become an integral part of the specification of the final plan or project or may be listed as a condition for project approval.

EC (2020) advises that it is for the competent authorities, in the light of the conclusions made in the appropriate assessment on the implications of a plan or project for the European site concerned, to approve the plan or project. This decision can only be taken after they have made certain that the plan or project will not adversely affect the integrity of the site. That is the case where no reasonable scientific doubt remains as to the absence of such effects.

EC (2020) also reaffirms that the authorisation criterion laid down in the second sentence of Article 6(3) of the Habitats Directive integrates the precautionary principle and makes it possible effectively to prevent the protected sites from suffering adverse effects on their integrity as the result of the plans or projects. A less stringent authorisation criterion could not as effectively ensure the fulfilment of the objective of site protection intended under that provision. The onus is therefore on demonstrating the absence of adverse effects rather than their presence, reflecting the precautionary principle. It follows that the appropriate assessment must be sufficiently detailed and reasoned to demonstrate the absence of adverse effects, in light of the best scientific knowledge in the field.

3.3.4 Consideration of *ex-situ* Effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 ('Brian Holohan and Others v An Bord Pleanála') that determined *inter alia* that Article 6(3) of Directive 92/43/EEC 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 development 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 COs of the site.

In that regard, consideration has been given in this Stage 2 appraisal to inform appropriate assessment to implications for habitats and species located both inside and outside of the European sites considered in the screening appraisal with reference to those sites' COs where effects upon those habitats and/or species are liable to affect the COs of the sites concerned.

3.3.5 In-combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in EC (2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

EC (2020) notes that cumulative environmental effects can be defined as effects on the environment caused by the combined action of past, current and future activities. Although the effects of one development may not be significant, the combined effects of several developments together can be significant.

EC (2020) also notes that the 'in combination' provision applies to plans or projects that are completed, approved but uncompleted, or proposed. In addition to the effects of the plans or projects that are the main subject of the assessment, it may be appropriate to consider the effects of already completed plans and projects. Although already completed plans and projects are themselves excluded from the assessment requirements of Article 6(3), it is still important to take them into consideration when assessing the effects of the current plan or project in order to determine whether there are any potential cumulative effects arising from the current project development in combination with other completed plans and projects. The effects of completed plans and projects would typically form part of the site's baseline conditions at this stage. Plans and projects that have been approved in the past but have not yet been implemented or completed should be included in the in-combination provision. As regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the 'in combination' provision to plans that have been proposed, (i.e. for which an application for approval or consent has been submitted) (EC, 2020).

This mirrors the advice contained in EC (2019) which advises that other plans or projects which are completed, approved but uncompleted, or proposed should be considered. EC (2019) specifically advises that '*as regards other proposed plans or projects (i.e. other projects not proposed by the Applicant), on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced*'.

The ability for impacts arising from the Proposed Development to overlap with those from other projects, plans and activities to result in adverse effects are considered. This means that, in most examples, an overlap of the physical extents of the impacts arising from the two (or more) projects, plans or activities must be established for an in-combination effect to arise. For example, for a cumulative sedimentation effect to be established between the Proposed Development and another project, it must be established that the extent of sediment release from both projects has the potential to overlap and may affect a receptor at the same location.

Exceptions to this exist for certain mobile receptors that may move between, and be subject to, two or more separate physical extents of impact from two or more projects. For example, species such as otter may be affected by water quality impacts from the project, as well as those from other projects where the extent of another area affecting water quality does not directly overlap with that of the project. Where relevant, mitigation is proposed as necessary to prevent adverse in-combination effects from occurring.

3.4 Ecological Data

3.4.1 Desk Study

This assessment was informed by a desktop study, which assessed the potential for all Qualifying Interests (QIs; i.e. non-bird species and habitats) and Special Conservation Interests (SCIs; i.e. bird species and their habitats) of European sites to occur, given their ecological requirements identified by Balmer *et al.* (2013) for SCIs, and the National Parks and Wildlife Service (NPWS) for QIs (NPWS, 2019a 2019b; 2019c).

SCI Birds and mobile QI species can travel many kilometres from their core areas, and desktop surveys assessed the potential presence of such species beyond the European sites for which they are QIs/SCIs. Desktop studies had particular regard for the following sources:

- Environmental Protection Agency (EPA) online interactive mapping tools (<https://gis.epa.ie/EPAMaps>) and (<https://www.catchments.ie/maps/>) for water quality data including surface and ground water quality status, and river catchment boundaries (EPA, 2022a);
- Lists for all European sites in Ireland of SCIs and QIs, obtained from <https://www.npws.ie/protected-sites>;
- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a), and associated digital shapefiles obtained from the NPWS Research Branch;
- Information on ranges of mobile SCI bird populations from Bird Atlas 2007–11 (Balmer *et al.*, 2013), excluding birds of prey whose ranges were determined with reference to Hardey *et al.* (2013);
- Mapping of European site boundaries and Conservation Objectives for relevant sites in County Dublin and beyond, as relevant, available online (NPWS, 2022);
- Distribution records for mobile populations of European sites held online by the National Biodiversity Data Centre (NBDC) (NBDC, 2022);
- Details of QIs/SCIs of European sites within the Fingal Biodiversity Action Plan 2010-2015 (FCC, 2010), and the Draft Fingal Biodiversity Action Plan 2018 – 2023 (FCC, 2022);
- Data including surface and ground water quality status, and river catchment boundaries available from the online database of the EPA (EPA, 2022a);
- National and regional surveys of semi-natural habitats, including grasslands (O'Neill *et al.*, 2013), saltmarsh (McCorry and Ryle, 2009; Devaney and Perrin, 2015), and woodland (Perrin *et al.*, 2008);
- Boundaries for catchments with confirmed or potential freshwater pearl mussel (FWPM) *Margaritifera margaritifera* populations (NBDC, 2022);
- Information obtained from DAU through consultation (see **Section 3.5**);
- Environmental Impact Statement (EIS) for MEHL Integrated Waste Management Facility at Hollywood Great, Nag's Head, Naul, Co Dublin (Arup, 2010);
- Draft Baseline Ecology Report Murphy's Quarry, Naul (Doherty Environmental, 2019);
- Peregrine falcon survey report (R&D Avian Ecology, 2010); and
- Planning reports for the proposed development, including the Environmental Impact Assessment Report (EIAR) (RPS, 2020).

3.4.2 Field Study

This NIS was informed by a series of habitat and protected species surveys of the proposed development site in 2022 by RPS ecologists. The surveys assessed the potential for all QIs/SCIs of

European sites and scheduled³ invasive species to occur, given their ecological requirements identified by Balmer *et al.* (2013) for birds, and the NPWS for all other species/habitats (NPWS, 2019b; 2019c).

The surveys included checks of suitable habitats for all highly mobile QI/SCI species potentially occurring. For instance, the Ballough Stream was checked for the presence of potential common kingfisher *Alcedo atthis* nest sites, and potential breeding or resting sites of otter *Lutra lutra*. Numerous non-breeding SCI bird species travel many kilometres from their core areas, and surveys also assessed potential presence of roosting or feeding sites of such species. Species survey guidance had regard for sources including the National Roads Authority (NRA, 2009). The potential of any buildings, vegetation, or features within the Zone of Influence (Zol) of the proposed development to offer nesting or roosting habitat to SCI bird populations, such as peregrine falcon, was determined.

3.5 Consultation

The following organisations with specific remit for ecological protection were consulted in relation to this assessment as part of the wider consultation exercise:

- Department of Environment Climate and Communications;
- Fingal County Council (Roads, Drainage, Environment Depts);
- Department of Housing, Local Government and Heritage (Development Applications Unit (DAU));
- Environmental Protection Agency;
- BirdWatch Ireland;
- An Taisce;
- World Wildlife Fund;
- Bat Conservation Ireland;
- Irish Environmental Network;
- National Biodiversity Data Centre;
- Inland Fisheries Ireland (IFI); and
- Geological Survey Ireland (GSI).

Consultation undertaken for the proposed development is summarised in **Table 3-1**, with only the latter two organisations having provided a consultation, and the consultation responses received are included in **Appendix B**.

Table 3-1 Summary of Consultation Responses Relevant to Appropriate Assessment

Response Received	Key Issues Identified in Response
Inland Fisheries Ireland (IFI)	
The EIAR should address the potentially highly polluting nature of the wastewaters generated at this facility, given the Ballough / Corduff system is salmonid and supports a significant local population of both resident Brown trout and migratory Sea trout (both <i>Salmo trutta</i>). The EIAR should highlight the need for implementation of comprehensive leachate and surface water management measures in order to safeguard the ecological integrity of local surface and ground waters.	Leachate and surface water management measures are assessed in detail Chapter 5 of Volume II of the EIAR.

³ Invasive species scheduled to the EC (Birds and Natural Habitats) Regulations 2011-2015 ('the Regulations'). Under the Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place any species scheduled to the Regulations without a licence.

Response Received	Key Issues Identified in Response
Any final discharge options must be fully compliant with national and international regulations which include the Water Framework Directive (2000), European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.	Noted and addressed in Chapter 5 of Volume II of the EIAR.
Accumulative effects from the development and other planned development in the catchment should be examined/discussed.	Noted and addressed in Chapter 17 of Volume II of the EIAR.
An Invasive Species and Biosecurity Plan should be included to treat and manage identified invasive species onsite.	Noted and addressed in Section 6.3 of this NIS and more specifically in Appendix E Existing Management Plan for the safe disposal of Japanese Knotweed
Best practice should be implemented at all times in relation to any activities that may impact on surface water. Any discharges to surface streams present on the site must not impact negatively on the salmonid status of the system. Comprehensive surface water management measures must be implemented at the construction and operational stage to prevent any pollution entering local waterways.	Noted. Surface water management measures are assessed in detail Chapter 5 of Volume II of the EIAR.
The storage and removal / disposal of excavated material must be considered and planned such that risk of pollution from these activities is minimised.	Noted. Storage and removal / disposal of excavated material is assessed in Chapter 5 and in detail in Chapter 10 of Volume II of the EIAR.
Guidelines for construction works near waterways 'Guidelines on protection of fisheries during construction works in and adjacent to waters' (2016) should be followed.	Noted. Measures for construction works near waterways are assessed in detail in Chapter 10 of Volume II of the EIAR.
Geological Survey of Ireland (GSI)	
Proposed developments need to consider any potential impact on specific groundwater abstractions and on groundwater resources in general. Recommendations to use GSI map viewer to assess potential impacts on specific groundwater abstractions and on groundwater resources in general. A locally important aquifer underlies the proposed development, along with a range of groundwater vulnerabilities. The Groundwater Data Viewer indicates an aquifer classed as a 'Locally Important Aquifer - Bedrock which is Generally Moderately Productive' underlies the proposed development. The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. GSI recommend the use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.	Groundwater management measures are assessed in detail Chapter 10 of Volume II of the EIAR.
The proposed site is a County Geological Site (CGS).	Known and impacts are assessed in Chapter 9 of Volume II of the EIAR.
A copy of reports detailing any site investigations carried out would be much appreciated by GSI for their national database.	Noted. Site investigation works including any additional boreholes or trial pits required to inform the design phase are proposed as per standard construction phasing of the project, see Chapter 5 of Volume II of the EIAR.

3.6 Data Limitations and Difficulties Encountered

3.6.1 Desk Study

Sources of desk study information are neither exhaustive nor necessarily easily available, and an extensive effort was made to obtain ecological data in the public domain to inform the description of the baseline environment and its assessment. Additional information, not in the public domain, is likely to exist, but could not be obtained or assessed here. This limitation is acknowledged and incorporated into the assessment and is deemed to not affect the certainty or predictability of the assessment.

All reasonable effort has been made to obtain current datasets and to use dependable online resources for research, although it is acknowledged that public sources of biological data are often not as current as would be desired.

3.6.2 Field Study

Field study limitations included:

- The receiving environment (i.e. baseline condition) may naturally vary through seasons and between years (NRA, 2009). All reasonable effort has been made to address this (e.g. combined use of desk and field survey data), and the limitation is acknowledged.
- No dedicated fisheries or invertebrate (aquatic) survey was carried out in respect of the proposed development, owing to the lack of any instream works.
- Presence of bird species was recorded if incidental during walkover surveys, but a dedicated bird survey was not carried out in respect of the proposed development given there is no change to overall operational phase of the site.

3.7 Relevant European Sites

The identification of relevant European sites to be included in this NIS was based on the identification of sources-pathways-receptors within the Zone of Influence (Zol) of the proposed development.

3.7.1 Source-Pathway-Receptor Model

A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source-pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potentially Likely Significant Effects (LSEs) resulting in adverse effects on the integrity of a European site. These are termed as 'relevant' European sites/QIs/SCIs throughout this NIS.

3.7.2 Zone of Influence

The proximity of the proposed development to European sites, and more importantly QIs/SCIs of the European sites, is important when identifying potentially significant effects. During the initial scoping of this NIS, a 15 km zone of influence was applied for impact assessment. A conservative approach has been used, which minimises the risk of overlooking distant or obscure effect pathways, while also avoiding reliance on buffer zones (e.g. 15 km), within which all European sites should be considered. This approach assesses the complete list of all QIs/SCIs of European sites in Ireland (i.e. potential receptors), instead of listing European sites within buffer zones. This follows Irish departmental guidance on AA:

'For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects' (DoEHLG, 2010; p.32, para 1).

Following the guidance set out by the NRA (2009), the proposed development has been evaluated based on an identified Zol with regard to the potential impact pathways to ecological feature (e.g. mobile and static). The Zol of the proposed development on mobile species (e.g. birds, mammals, and fish), and static species and habitats (e.g. saltmarshes, woodlands, and flora) is considered differently. Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several metres (e.g. in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have Zols within close proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source.

Hydrological linkages between the proposed development and European site (and their Qis/SCIs) can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. As a precautionary measure, a reasonable worst-case Zol for water pollution from the proposed development site is considered to be the surface water catchment. In this NIS, the surface water catchment is defined at the scale of Catchment Management Unit (CMU), as adopted in the River Basin Management Plan (RBMP) for Ireland 2018-2021 (DoHPLG, 2018).

In this NIS, therefore, 'relevant' European sites are those within the potential Zone of Influence (Zol) of activities associated with the construction and operation of the proposed development, where adverse effects to integrity of QIs/SCIs of these European sites could arise.