

9. Biodiversity

9.1 Introduction

This section describes the scope of works and methods to be applied in the identification and assessment of ecological (flora and fauna) impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on flora and fauna as part of the EIA and AA.

Flora and fauna refer to plants and wildlife, respectively. The term is used to refer to the indigenous plant and wildlife of a geographical region. Both are collective terms, referring to groups of plants (their communities or habitats) and wildlife specific to a region or a period of time. In addition to geographical groupings, environment also helps further their classification. Examples of such classification include aquatic and terrestrial flora and fauna.

9.1.1 Policy & Plan Context

The assessment of the flora and fauna will be conducted under the relevant legislation applicable to the Republic of Ireland. These include:

- European Communities (Birds and Natural Habitats) regulations 2011 S.I. 477 of 2011 (as amended);
- The EIA Directive (2014/52/EU);
- Environmental Liabilities Directive (2004/35/EC);
- The Habitats Directive (92/43/EEC) (as amended);
- The Birds Directive (2009/147/EC) (as amended);
- The Water Framework Directive (2000/60/EC);
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended);
- The Flora (Protection) Order 2015 S.I. 356 of 2015;
- Relevant fisheries legislation up to and including the Inland Fisheries Acts 1959-2010, (as amended);
- Objectives relevant to ecology and biodiversity in the latest County Development Plans of the relevant Counties crossed or potentially impacted by the Project;
- Bird species of medium and high conservation concern listed in the publication *Birds of Conservation Concern in Ireland 2014 – 2019*;
- Relevant policies in *Actions for Biodiversity 2011-2016, Ireland's 2nd National Biodiversity Plan* produced by the Department of Arts, Heritage and the Gaeltacht in 2011 (now the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs);
- Ireland's National Biodiversity Group and Biodiversity Forum are currently working on the *Actions for Biodiversity 2017 – 2021, Ireland's 3rd National Biodiversity Plan*. This document will be referenced should it become publically available during the EIA process for this project.

Additional guidance documents by relevant County Councils to developers on good practice relating to biodiversity and development will also be taken into consideration in the assessment of flora and fauna.

9.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The entirety of the study area will require sensitivity in the finalisation of the design process, accounting for potential proximity to a range of ecologically sensitive receptors, including international and nationally designated conservation sites. Such sites include, but are not limited to, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites, Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs). Wherever technically possible, the proposed development infrastructure has been sited and routed to avoid these sensitive areas in order to minimise and, in most cases, eliminate adverse effects. The project design at this current time is not yet finalised and is subject to ongoing design development and environmental impact assessment. This includes the location of the main water supply infrastructure, access ways and pipeline route, however, these elements of the proposed project will be incorporated into the EIA as the project design is developed and finalised. Environmental mitigation will also be added to the project design. The preferred route corridor currently intersects with one SAC - The Lower River Shannon SAC, one NHA - Cangort Bog and one pNHA - Grand Canal. This design stage mitigation through avoidance, where possible, of sensitive areas will reduce the potential for direct, indirect, secondary and cumulative effects and diminish the potential for significant impacts. Specifically in relation to designated Natura 2000 sites, the Natura Impact Statement prepared for the project (to inform the Appropriate Assessment process) will specify mitigation measures in order to avoid significant adverse effects on the integrity of any and all Natura 2000 sites within the zone of influence of the proposal.

9.2 Baseline Information

9.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including flora and fauna. A desktop review of all available data regarding the flora and fauna impacts over the study area has been undertaken and will be supplemented with additional field survey information to support the development of the EIA.

Work as part of the FOAR, has included identification of all national and international conservation sites, including the aforementioned SAC, SPA, pNHA and NHA designations. Additionally:

- At Parteen Basin proposed abstraction location, a number of ecological constraints were identified from the desk and field studies including the presence of mixed broadleaved woodland: Annex II and Annex IV species; and species protected under the Wildlife Act (1979), Amendment 2000.
- The potential ecological constraints at the proposed Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, were considered as low, with no records of designated sites, European or nationally protected species or habitats. Neither were any semi-natural habitats identified within the proximity of the site. Potential ecological constraints at the proposed Termination Point Reservoir were identified mainly from the desk study, as land access was limited.
- The pipeline was routed to avoid ecological constraints and minimise, where possible, international and national conservation sites, Annex I habitats and habitats that have high potential to support European or nationally protected species.

Following the identification of the Preferred Scheme, the desktop study and field surveys undertaken to date will be supplemented by an updated review of data sources and field study data.

The terrestrial and freshwater ecological assessment included a comprehensive review of existing data sources within and adjacent to the proposed abstraction location at Parteen Basin and along the proposed route corridor. The following datasets were inspected;

- Ordnance Survey Ireland: 6 inch historical raster mapping; Aerial Photography; 1:50,000 Discovery mapping; Vector data;
- NPWS Datasets (including review of documentation held on NPWS website): SPAs; SACs; NHAs, pNHAs; Protected species and Annex I habitat datasets;
- National Biodiversity Data Centre: Protected Species (e.g. Flora Protection Order, fauna protected under the Wildlife Act and EU Habitats Directive and species on the Red Data Lists); Bat landscape model; Invasive species records; general biodiversity records (flora and fauna);
- Relevant County Council Data: Ecological Corridors; Ecological Buffer Zones; Nature Development Areas; Habitat Data (including local biodiversity studies and County Wetland Surveys); Tree Preservation Orders;
- IWeBS data records for wintering birds within the study area;
- Bord na Móna ecological databases;
- Coillte databases;
- Inland Fisheries Ireland datasets (e.g. WFD fish studies);
- EPA Biological Water Quality Monitoring Data; and
- Water Framework Directive (WFD) Ecological Status of Catchments Data.

9.2.2 Field Surveys Underway and Completed

Ecological surveys have been undertaken, or are currently underway, for the terrestrial and freshwater sensitive ecological features within the study area which have been identified as key ecological receptors through the desk study and preliminary consultation process. The ecological surveys itemised below are necessary to characterise the baseline condition of the study area, which comprises a zone of influence extending from the development works. An accurate and comprehensive baseline description, including the provision of robust and scientific data, is necessary to establish and inform the assessment of significance with regard to ecological impacts. The timing of the ecological surveys takes account of constraints in terms of seasonality, recognised optimal survey windows and relevant licensing requirements. Surveys will be carried out during the most appropriate time of the year and during suitable conditions, following relevant guidance for target receptors. The scope of ecological surveys includes the proposed water abstraction facility and raw water rising main, water treatment works, pipeline corridor, and any ancillary infrastructure which will include all access routes and temporary work areas.

A number of ecological field surveys have been completed to date and some are still ongoing (at the time of publication of this report). A brief description of these is presented below:

Terrestrial Surveys

- Verification surveys were completed as preliminary ecological field assessments during April, 2016 to characterise and ground-truth ecologically sensitive receptors within the pipeline corridor which were identified during the desk study exercise. Follow up field survey data collection was prescribed;
- Habitat mapping surveys comprising both aerial/satellite imagery evaluations and field habitat surveys for the proposed pipeline route corridor have been completed, with minor elements ongoing. The study area has been outlined to include the entirety of the construction works area, zone of influence outside of the

works area; and survey of all ancillary works, including access routes, materials storage facilities, borrow pits etc. will be required. Focussed, specialist surveys have been undertaken at locations where Annex I habitat or habitats potentially corresponding to Annex I habitats were identified, in order to establish the status and extent of Annex I habitat within the works area. The *Interpretation Manual of European Union Habitats* will be referenced when defining habitat types. Botanical surveys will additionally identify protected flora listed on Annex II of the EU Habitats Directive (1992), the Flora Protection Order (2015), as well as species listed on the Red Data List;

- A number of surveys for protected mammal species have been completed and further surveys are ongoing. These surveys are focussed on species such as badger, bat species, hare species, and other protected under the EU Habitats Directive (1992) and the Irish Wildlife Act (Amendment 2000), where these species may occur within the zone of influence of the proposed development. Searches for evidence of protected mammal species and/or presence of suitable habitats have been undertaken by a qualified ecologist during an ecological walkover survey of the study area. Bat species are protected under the Wildlife Act (Amendment 2000) and Annexes II and IV of the EU Habitats Directive (1992). Bat surveys have been undertaken throughout the summer period of 2016 at proposed construction locations and throughout the zone of influence of the proposed development. These surveys have focussed on the potential for displacement or disturbance, arising from the loss of potential habitat and roosts. Surveys include activity surveys, daytime potential bat roost surveys, and targeted dawn and dusk emergence surveys. Transect walkovers, driven transects and use of static recording devices have been utilised within the proposed route corridor. Dedicated otter surveys (listed on Annex II of the EU Habitats Directive) will be completed along the margin of Parteen Basin, the Kilmastulla River (with regard to Lower River Shannon cSAC) and at watercourse crossing locations along the pipeline corridor route. The scope of protected mammal species surveys will be determined based on the presence of suitable habitat;
- Breeding and wintering bird surveys over a two year period to inform the EIA process are already underway. Wintering bird surveys for the 2014/2015 and the 2015/2016 winter bird period have been completed. Breeding bird surveys were undertaken for the 2015 and 2016 breeding bird season. Bird surveys will be continued into 2017 as the proposed project design is refined and finalised. Bird surveys have been focussed on species listed on Annex I of the EU Birds Directive, as well as Birds of Conservation Concern in Ireland (BOCCI) and Red Listed species occurring within the study area and the wider zone of influence of the proposed development;
- Additional protected fauna surveys will be required where suitable habitat exists for species listed on Annex II or IV of the EU Habitats Directive (1992), protected under the Wildlife Act (Amendment 2000) or on Red Data Lists. Where suitable habitat occurs detailed surveys will be required for Annex II invertebrate species including Marsh Fritillary and *Vertigo* spp. Additional broad-based studies to include a characterisation of the baseline condition for reptiles (common lizard), amphibians (common frog, smooth newt) and other invertebrates will be undertaken; and
- Survey for terrestrial invasive species focusing on those listed on the Third Schedule, Part 1, of the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. No. 477/2011.

Freshwater Surveys

- Biological water quality assessments (Small Stream Risk Score and Q-value indices as relevant), including a characterisation of the macroinvertebrate community are ongoing. These surveys will focus on watercourses potentially impacted by the proposed development (i.e. at the abstraction facility and those crossed by the proposed pipeline corridor and the construction or operational phase access routes etc.) where suitable sampling conditions occur. Biological water quality data will be correlated with riparian and fish habitat data to provide an ecological status classification for each watercourse assessed;
- Protected aquatic species surveys for species listed on Annex II of the EU Habitats Directive, i.e. lamprey species and White-clawed crayfish. Habitat suitability studies and targeted surveys will be undertaken under licence from NPWS (white-clawed crayfish) at watercourses potentially impacted by the proposed development, at the abstraction facility and at watercourses crossed by the proposed pipeline route where

potential exists for these species to occur (based on historical records and the presence of suitable habitat);

- Riparian and instream habitat surveys are ongoing to include botanical surveys, riparian habitat characterisation (RHAT methodology) and characterisation of all watercourses potentially impacted by the proposed development, including at the abstraction facility and those crossed by the proposed pipeline route. The surveys will include instream and riparian habitat communities listed on Annex I of the EU Habitats Directive (1992) and aquatic flora listed on Annex II of the EU Habitats Directive and/or the Flora Protection Order (2015);
- Fisheries surveys - Fish and fish habitat surveys have been undertaken and are ongoing for watercourses of significant fisheries value that are potentially impacted by the proposed development. The evaluation of watercourses and identification of fish populations will include a review of existing IFI data and consultation with this statutory agency. These surveys will focus on species of fisheries interest, as well as of conservation concern, i.e. Atlantic salmon, Brown trout, coarse fish species;
- Benthic sampling including invertebrate community and macrophyte community identification, substrate particle size analysis, and phytoplankton sampling, identification and enumeration has been undertaken within Parteen Basin. The water quality and phytoplankton sampling study extended into Lough Derg.
- In association with IFI, a fish stock survey within Lough Derg and Parteen Basin has been completed to include Pollan, other salmonids and coarse fish communities;
- In association with Waterways Ireland, a dedicated study of non-native invasive species has been completed within Lough Derg and Parteen Basin; additional surveys for aquatic invasive species, will be undertaken as required, based on existing desk top data.

9.2.3 Consultation

As part of the EIS consultation process, the following bodies have been contacted and/or will be engaged with further in order to inform the impact assessment and Appropriate Assessment for the project:

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| ▪ BirdWatch Ireland and local bird groups; | ▪ Local Authority Heritage/Biodiversity Officers; |
| ▪ Bord na Móna; | ▪ Iarnród Éireann; |
| ▪ Coillte; | ▪ Inland Fisheries Ireland; |
| ▪ Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs– Development Application Unit and National Parks and Wildlife Service; | ▪ Irish Peatland Conservation Council; |
| ▪ Department of Agriculture, Food and the Marine; | ▪ Irish Wildlife Trust; |
| ▪ Electricity Supply Board (ESB); | ▪ Lough Derg Science Group; |
| ▪ Golden Eagle Trust; | ▪ National Biodiversity Data Centre; |
| | ▪ Environmental Protection Agency (EPA); and |
| | ▪ Waterways Ireland. |

Note the above list is not exhaustive and additional bodies may be contacted as deemed appropriate.

9.3 Potential Impacts

9.3.1 Potential Construction Phase Impacts

Preliminary scoping of potential direct, indirect, cumulative impacts associated with the proposed development has highlighted the following constraints, receptors and potential adverse effects; these are detailed in the absence of mitigation. The impact assessment will account for all works associated with the project; the project will, in entirety, require assessment for impact significance. It is important to note that this is an iterative process

accounting for design avoidance and incorporation of mitigation to minimise the potential for adverse effects. Potential effects identified at scoping stage are outlined below:

- Project construction will lead to direct habitat loss, potentially affecting sites of high ecological value, for example, designated conservation sites and Annex I habitats located outside of designated sites. Loss of habitat area for undesignated sites of high local importance e.g. species rich grasslands, scrub, treelines, hedgerows and woodland which are common to the locality along the route corridor of the pipeline and along any access routes or ancillary works. Direct habitat loss may result in the destruction of protected flora. Where avoidance is not possible, a license will be sought under the Section 21 of the Wildlife Acts (Amendment 2000) and, if approved, mitigation measures will be undertaken to reduce the impact of the project. There is the potential for direct impacts, including habitat loss, within the Lower River Shannon SAC at Parteen Basin. The scale and extent of the proposed development gives rise to the potential for additional impacts, in the absence of mitigation, affecting designated Natura 2000 sites or NHA. These impacts may extend from short term, to long-term or permanent effects;
- Severance effects (i.e. fragmentation or loss of connectivity of habitat) includes indirect impacts on habitats located outside of the works area / route corridor but which are within the zone of influence of the proposed works. Potential pathways for effects are via hydrological or hydrogeological pathways; e.g. water-dependant habitats, wetlands and peatlands. This may result in the fragmentation or indirect loss of integrity of Annex I habitats, or protected flora which may occur within such habitats. These impacts may extend from short term, to long-term or permanent effects;
- Temporary effects such as increased lighting (security or night time works) which may impact on bats and other nocturnal species; direct mortality/injury of animals arising from the disturbance or removal of dwellings or habitat – such effects may potentially impact protected species listed on the EU Habitats Directive or on the Wildlife Act (Amendment 2000), including, but not limited to; badgers (through damage to setts); bats (through removal or damage to mature trees or other features used by bats); otters (through damage to holts); breeding birds (through removal of vegetation containing nests); and at watercourses / aquatic habitats which may contain lamprey, salmon and white-clawed crayfish. These impacts may extend from short term, to long-term or permanent effects;
- Physical disturbance may result in indirect impacts resulting in the displacement of rare and protected fauna from their dwellings or habitats. Examples may include impacts affecting tree roots, ground nesting birds, badger setts or aquatic habitats;
- Introduction and/or spread of non-native invasive species within the proposed development site, ancillary sites, and the wider zone of influence, including across water catchments. These impacts may extend from short term, to long-term or permanent effects;
- Direct loss or indirect disturbance to aquatic ecological receptors, including fisheries, Annex II species and their habitat and food sources. This may arise through permanent or temporary physical removal, alteration of hydrology or flow regime, or through indirect habitat alteration leading to increased sedimentation and change in geomorphological character affecting downstream reaches. Without mitigation, impacts may occur during sensitive life stages or over extended time periods;
- Direct damage to riparian margins;
- Pollution of surface water receptors through accidental spillage or discharge of polluting substances, or via elevated suspended solids and siltation through run-off to watercourses; and
- Pollution of groundwater sources, particularly in high groundwater vulnerability zones.

9.3.2 Potential Operational Phase Impacts

Potential adverse effects for the operational phase of the proposed development, in the absence of mitigation have been identified as:

- The placement and management of the pipeline may result in long-term habitat alteration, and consequent changes in land-management and potential habitat loss within the footprint of the pipeline corridor. Direct and indirect habitat fragmentation and loss of connectivity for high value ecological habitat features including, for example, woodland or water-dependant habitats may occur, which could be severed by the project. As above, such severance impacts could extend beyond the footprint of the route corridor, resulting in operational impacts along access routes, etc.;
- Long-term human disturbance at the permanent compound at the abstraction facility at Parteen Basin, at the proposed water treatment works site, the site of the proposed break pressure tank and also at the proposed termination point reservoir in the vicinity of Peamount Reservoir and environs in South County Dublin. This would have localised effects, resulting in a reduction in usable habitat area for a range of fauna occurring within this area which currently use the margins and habitats around the basin;
- Human disturbance impacts on retained and surrounding habitats along the pipeline corridor, potentially associated with trampling and noise from maintenance tasks and vehicle access along operational access routes;
- Long-term lighting impacts affecting nocturnal fauna at the abstraction facility and associated compound and at the proposed water treatment works site;
- Abstraction at the Parteen Basin will take place within the operational water level range managed by the ESB and currently defined by their hydropower operations. The project will not require any alteration to the operational water level range and the abstraction volumes will be calculated as a subtraction of existing flows used by the ESB for generation. This is defined as the flows to the Ardnacrusha power facility will be curtailed to compensate in equal volume for the water abstracted for water supply. It is important to note that the proposed abstraction, coupled with appropriate curtailment of power generation during dry weather periods, will not impact on minimum water levels in Parteen Basin or in Lough Derg upstream. Nonetheless it will be necessary to assess the operational impacts, if any, on aquatic flora and fauna which may occur within Parteen Basin as a result of the operational flow regime. This assessment of operational impact will also need to assess the in-combination and cumulative effects of the existing and future operational regime managed by the ESB;
- The potential for direct impacts on the fish community (salmonids including Atlantic salmon and Brown trout; coarse fish species; Lamprey; Pollan; and Eels) and on aquatic habitats and flora within Parteen Basin will be assessed. Direct impacts may arise from a localised alteration to flow pattern in the vicinity of the intake. Water levels will be managed in line with the existing regime by the ESB post abstraction; where the project will not have additional or cumulative requirements influencing water level controls on Parteen Basin. Alterations in frequency, duration, seasonality or extent of the preceding, may potentially affect the baseline condition which supports the existing fish community, sub-littoral, littoral and riparian habitats, and the conservation objectives of the SAC within which they exist. Particular attention will need to be given to assessing any such impacts on priority Annex I Alluvial forests, Atlantic salmon, Sea Lamprey and Otter, which are Qualifying Interests of the Lower River Shannon SAC and where the conservation objectives are to 'restore' the favourable conservation condition of each;
- Operational impacts on aquatic receptors, including water-dependant habitats and aquatic species, may occur along the pipeline route where pipeline maintenance or repair could result in discharges of water from the Shannon catchment to watercourses of a different hydro-chemistry, or ecological status, with potential for alteration of the aquatic habitat. The introduction of aquatic invasive species through this pathway could also occur. Direct impacts at such locations may include scouring, increases in siltation/sedimentation and hydrological effects associated with increased flows. The discharge of potentially treated drinking water to freshwater habitats will be in compliance with the objectives set out within the WFD.

9.3.3 Potential Mitigation

The ecological team will advise on required mitigation measures during both the design and construction phases of the project.

Specific mitigation measures will be incorporated into the EIS based on the outcomes of the impact assessment. The principal mitigation measures incorporated into the project is the iterative avoidance of sensitive areas, flora and/or fauna during the design stage of the project, informed by completed and ongoing ecological field surveys.

9.4 Proposed Methodology & Assessment Scope

The methodology used to assess and mitigate potential impacts will be based on established best practice and the following guidance documents:

- 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009); 'Ecological Surveying Techniques for Flora and Fauna' (NRA, 2009)) and other guidelines in the NRA's Environmental Planning and Construction Guideline Series (National Roads Authority, 2005 – 2011); and
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal' (CIEEM, 2016)⁴.

In line with the above guidance, the assessment will cover potential impacts on flora and fauna and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The assessment will be informed by detailed flora and fauna surveys as detailed above in Section 9.2.2 during the course of 2016 and 2017.

9.5 Appropriate Assessment

European Sites (Natura 2000), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the European Union Birds Directive (2009/147EC) and Habitats Directive (92/43/EEC). Articles 6(3) and 6(4) of Habitats Directive specify the procedures that must be followed when considering any proposed plan or project which may potentially affect a designated European Site.

Article 6(3) requires that: *"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"*.

Article 6 (4) states: *"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 overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory*

⁴ CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted”.

Appropriate Assessment (AA) is an assessment of whether a plan or project, alone or in combination with other plans or projects, could affect the integrity of any European sites, otherwise known as Natura 2000 sites (EC Habitats Directive 92/43/EEC). Appropriate Assessment screening requires the preparation of an Appropriate Assessment Screening Report which determines, whether a plan or project (which is not directly connected with or necessary to the management of a European Site), individually or in combination with other plans or projects, would be likely to have a significant effect upon any European site. A project may be “screened-in” and require AA if there is a possibility or uncertainty of significant adverse effects upon a European site. The Appropriate Assessment Screening Report informs the AA process; however, the decision-making responsibility is with the designated Competent Authority.

Where the potential for significant adverse effects has been identified and the project has been ‘screened in’ an AA is required. The Competent Authority must complete the AA, informed by the preparation of a Natura Impact Statement (NIS). This must determine whether the proposal will adversely affect the *integrity* of any European Sites, either alone or in combination with other projects or plans. Similar to the EIA process, where adverse impacts have been identified, mitigation is required to reduce/minimise/avoid such impacts is required.

Parteen Basin, the location of the abstraction facility, lies within the Lower River Shannon SAC. With the exception of the Lower River Shannon SAC, all other European sites have been avoided during the routing of the preferred 200m route pipeline corridor. It is important to note that the project design at this current time is not yet finalised and is subject to ongoing, iterative design development and environmental impact assessment. This includes the location of the main water supply infrastructure, access ways and pipeline route within the emerging preferred corridor. Environmental mitigation will also be added to the project design.

Qualifying Interest habitats and species for the Lower River Shannon SAC are:

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

In addition to the Lower River Shannon SAC, there are a number of other SAC’s and SPA’s potentially within the ‘zone of influence’ of the proposed development, where the potential for indirect and/or in combination

impacts requires evaluation within the framework of the Appropriate Assessment. These sites may include, but are not limited to:

- Lisduff Fen SAC;
- Clonaslee Eskers and Derry Bog SAC;
- Island Fen SAC;
- Lough Derg (Shannon) SPA;
- Slievefelim to Silvermines Mountains SPA;
- Slieve Bloom Mountains SPA;
- Poulaphouca Reservoir SPA;
- Wicklow Mountains SPA;
- River Boyne and River Blackwater SPA;
- Middle Shannon Callows SPA;
- All Saints Bog SPA;
- Dovegrove Callows SPA;
- River Little Brosna Callows SPA;
- Slieve Aughty Mountains SPA;
- Lough Derg, North-East Shore SAC;
- River Shannon Callows SAC;
- Kilcarren-Firville Bog SAC;
- Ballyduff/Clonfinane Bog SAC;
- Liskeenan Fen SAC;
- Sharavogue Bog SAC;
- Ridge Road, SW of Rapemills SAC;
- All Saints Bog and Esker SAC;
- Redwood Bog SAC;
- Moyclare Bog SAC;
- Ferbane Bog SAC;
- Clara Bog SAC;
- Raheenmore Bog SAC;
- Split Hills and Long Hill Esker SAC;
- Charleville Wood SAC;
- River Boyne and River Blackwater SAC;
- Mount Hevey Bog SAC;
- Rye Water Valley/Carlton SAC;
- Glenasmole Valley SAC;
- Wicklow Mountain SAC;
- Red Bog, Kildare SAC;
- Pollardstown Fen SAC;
- Mouds Bog SAC;
- Ballynafagh Lake SAC;
- Ballynafagh Bog SAC;
- River Barrow and River Nore SAC;
- Mountmellick SAC;
- Slieve Bloom Mountains SAC;
- Kilduff, Devilsbit Mountain SAC,
- The Long Derries and Edenderry SAC;
- Silvermines Mountains SAC;
- Silvermines Mountains West SAC;
- Keeper Hill SAC;
- Bolingbrook Hill SAC;
- Clonmoylan Bog SAC;
- Slieve Bernagh Bog SAC; and
- Glenomra Wood SAC.

The potential for significant adverse effects on any Natura 2000 sites from the proposed development, alone or in-combination with other plans or projects, as well as an assessment of whether there will be any impact on the integrity of any Natura 2000 sites, will be determined through the Appropriate Assessment process, under the requirements of Article 6 of the EU Habitats Directive: taking account of direction and rulings from the European Court of Justice, and the following guidance documents:

- 'Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities' (DECLG, 2010);
- 'Guidance document – Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (European Commission, 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' (European Commission, 2002); and

- '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' (European Commission, 2007).