



ENVIRONMENTAL BALANCE IN DESIGN AND CONSTRUCTION

## SCREENING REPORT AND NATURA IMPACT STATEMENT FOR A PROPOSED AVIATION FUEL PIPELINE FROM DUBLIN PORT TO DUBLIN AIRPORT

MARCH 2015





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## User is Responsible for Checking the Revision Status of this Document

Rev. Nr.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date
3	Final Revision	ME/MG	ME <i>Me</i>	ME <i>ME</i>	12.03.2015

**Client:** Fingleton White

**Keywords:** Aviation Fuel Pipeline, Dublin Airport, Dublin Port, Appropriate Assessment, Article 6 of the Habitats Directive, Natura 2000 sites.

**Abstract:** This document comprises the Stage One Screening Report and Stage Two Natura Impact Statement of the Appropriate Assessment process for the proposed aviation fuel pipeline running from Dublin Port to Dublin Airport.



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# 1 INTRODUCTION

Fehily Timoney & Company (FTC) has been retained by Fingleton White to prepare an Environmental Impact Statement (EIS) for a proposed 14.4 km pipeline which will transport aviation fuel from an inlet station at Dublin Port to a reception station at Dublin Airport. In compliance with the provisions of Article 6 of the Habitats Directive, as implemented by Part XAB of the Planning and Development Act 2000, as amended, in circumstances where a proposed plan or project is likely to have a significant effect on a European (or Natura 2000) site, either individually or in combination with other plans or projects, an Appropriate Assessment (AA) must be undertaken by the competent authority of the implications for the site in view of the site's conservation objectives. As part of the AA process, (and pursuant to guidance issued by the National Parks and Wildlife Service (NPWS) of the Department of Arts, Culture and the Gaeltacht), this Natura Impact Assessment contains information which permits the competent authorities (in this case Dublin City Council and Fingal County Council) to conduct both a Stage One screening assessment and a Stage Two appropriate assessment.

Article 6 of the Habitats Directive envisages a two-stage process, which is implemented in some detail by the provisions of sections 177U and 177V of the Planning and Development Act. Screening for appropriate assessment in accordance with section 177U is the first stage of the AA process (Stage One), in which the possibility of there being a significant effect on a European site is considered. Plans or projects that have no appreciable effect on a Natura 2000 site are thereby excluded, or screened out, at this stage of the process. Where screening concludes that there is the potential for significant effects, then it is necessary to carry out an AA (Stage Two) for the purposes of Article 6(3), and an NIS is produced. The NIS, which forms the basis of the AA, considers the impact of a project or plan on the integrity of a Natura 2000 site and on its conservation objectives, and where necessary, draws up mitigation measures to avoid/minimise negative impacts. The competent authority, in carrying out an AA, is required to make an examination, analysis, evaluation, findings, conclusions and a final determination as to whether or not the proposed development would adversely affect the integrity of the relevant Natura 2000/European site(s) in view of its conservation objectives. The purpose of this NIS is to provide data and information on the project and relevant European sites and an analysis of the potential effects on the site is presented in accordance with the NPWS guidance. This report includes both Stage One screening report (Section 5) and Stage Two appropriate assessment report (Section 6) of the AA process and assesses the potential impact of the proposed Aviation Fuel Pipeline on the European sites located within 10 km of the proposed development.

The proposed pipeline route does not lie within any Natura 2000 site. There are 15 Natura 2000 sites within a 10 km radius of the proposed pipeline route (including seven SPAs and eight cSACs<sup>1</sup>). At its southern end, the route lies adjacent to the South Dublin Bay and River Tolka Estuary SPA. This SPA is a large site (1,700 ha) that comprises a substantial part of Dublin Bay including the Tolka River estuary. One of the qualifying features for this SPA is the internationally important numbers of Light Bellied Brent Geese (hereafter referred to as Brent Geese) that the site supports.

## 1.1 Legislative Background

An AA is required where any proposed plan or project is likely to have a significant effect on any site that has been designated under the EU Habitats Directive (92/43/EEC), i.e. a Special Area of Conservation (SAC) or the EU Birds Directive (2009/147/EC), i.e. a Special Protection Area (SPA). Collectively SACs and SPAs are referred to as Natura 2000 sites, or 'European' sites. In general terms, they are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community.

The requirements for an AA are set out in the E.U. Habitats Directive 92/43/EEC. Articles 6(3) and 6(4) of this Directive state:

- 3. 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.*

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<sup>1</sup> At present all SACs in Ireland are 'candidate' SACs, and referred to as cSACs. The relevant Statutory Instruments for the SACs in Ireland have not yet been put in place, though these sites must still be afforded protection in accordance with the EU Habitats Directive (92/43/EEC).

*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.*

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

*Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.*

The statutory agency responsible for Natura 2000 sites is the National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage and the Gaeltacht (DAHG). In December 2009 "Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government" was published (DoEHLG, 2009). This guidance document was prepared jointly by the NPWS and Planning Divisions of DoEHLG (now DAHG), with input from local authorities. Previously, in 2001, the European Commission issued a guidance document. This NIS has been prepared in accordance with the relevant Irish and European Commission Guidance.

## 1.2 Regulatory Context

In 1997, the Habitats Directive was transposed into Irish National Law by the European Communities (Natural Habitats) Regulations, SI 94/1997 (as amended by S.I. 233/1998 & S.I. 378/2005). The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements. Following an additional amendment in 2013 (S.I. 499/2013) the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011 to 2013.

The Regulations have been prepared to address several judgments of the CJEU against Ireland, notably cases C-418/04 (*Commission v Ireland*) and C-183/05 (*Commission v Ireland*), in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.

## 2 METHODOLOGY

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process. Firstly, a project should aim to avoid any negative impacts on European or Natura 2000 sites by identifying possible impacts early in the project, and should design the project in order to avoid such impacts.

### 2.1 Appropriate Assessment Methodology

There are four stages in AA, as outlined in the European Commission Guidance document (2001). The following is a brief summary of these steps.

**Stage One - Screening:** This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 Site and considers whether it can be objectively concluded that these effects will not be significant.

**Stage Two - Appropriate Assessment:** In this stage, the impact of the project on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function. Mitigation measures should be applied to the point where no adverse impacts on the site(s) remain.

**Stage Three - Assessment of Alternative Solutions:** Should the Appropriate Assessment determine that adverse impacts are likely upon a Natura 2000 site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse impacts. For the avoidance of doubt, the developer does not purport to place reliance on Stage Three.

**Stage Four - Assessment where no alternative solutions exist and where adverse impacts remain.** Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary. European case law highlights that consideration must be given to alternatives outside the project area in carrying out the IROPI test. It is a rigorous test which projects are generally considered unlikely to pass. In any event, the developer does not purport to place any reliance on Stage Four.

In the preparation of this assessment therefore regard has been given to the EU Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011 - 2013, in addition to Part XAB of the Planning and Development Act 2000 as amended and with reference to the relevant guidance, in particular:

- *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 2001.
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats Directive' 92/43/EEC*, European Commission, 2000.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2009.

Throughout the Stage One screening assessment report and the appropriate assessment report the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*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, 2001). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 2 of this guidance document are also followed.

## 2.2 Impact Assessment

The first step in the screening process is to develop a list of Natura 2000 sites potentially affected by the proposed development. Each Natura 2000 site is reviewed to establish whether or not the proposed development is likely to have a significant effect on the integrity of the site, as defined by its structure and function, and its conservation objectives.

The qualifying interests of each Natura 2000 site are identified and the potential threats are summarised into the following categories for the screening process, and described within the screening matrix as follows:

Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct impacts can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.

Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the plan (or project) – in combination with other plans and projects - have been established. These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect impact, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.

Disturbance to fauna can arise directly through the loss of habitat (e.g. bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

## 2.3 Cumulative Impacts

In order to identify potential cumulative or 'In Combination Effects' of the proposed pipeline, together with other plans or projects the following data sources were consulted:

- Dublin City Council Development Plan 2011–2017
- Draft Fingal Development Plan 2011–2017

## 2.4 Consultation

A full consultation and scoping process was carried out by FTC as part of the EIS for the proposed development, in order to identify the key impacts of the project (see accompanying EIS, Chapter 5). The comments received from various consultees in relation to nature conservation and ecology are summarised in Table 2.1.

**Table 2.1: Consultation Responses in Relation to Nature Conservation and Ecology**

Consultee	Date of Response	Comments
Department of Arts, Heritage & the Gaeltacht – Development Applications Unit (DAU)	28/05/2014	A comprehensive response was received from the Development Applications Unit. The main points raised were: <ul style="list-style-type: none"> <li>• An ecological survey should be carried out of the proposed compound sites and route of the pipeline to survey the habitats and species present.</li> <li>• Inland Fisheries Ireland should be consulted with regard to fish.</li> </ul>

Consultee	Date of Response	Comments
		<ul style="list-style-type: none"> <li>• Existing records from the NPWS and Biodiversity Data Centre should be checked and reference made to various Biodiversity Plans.</li> <li>• EIS should address alien invasive species.</li> <li>• It may be necessary to obtain hydrological and/or geological data to assess impact on water table levels or groundwater flows.</li> <li>• EIS should assess cumulative impacts with other plans or projects.</li> <li>• If impacts on protected species and habitats are identified, then licences may be required.</li> <li>• Pre-construction ecology survey of site is recommended if development takes place long after original baseline surveys were carried out.</li> <li>• Appropriate Assessment of the development should be carried out following the relevant guidance documents.</li> </ul>
Department of Agriculture, Fisheries & Food	20/09/2011  22/09/2011  14/10/2011	<p>Aquaculture and Foreshore Management Division have no comments to make on consultation letter</p> <p>Proposal has been appraised and observations on this appraisal will be forwarded once completed</p> <p>This submission outlined a number of observations &amp; recommendations:</p> <ul style="list-style-type: none"> <li>• Assess the impact if any on agriculture/agricultural activities north of Dublin City</li> <li>• Impacts on water supplies (quality) during construction phase and leakage thereafter</li> <li>• Safety impacts</li> </ul>
Inland Fisheries Board	03/02/2011 Received 11/10/11  12/05/14	<p>This submission outlined a number of observations &amp; requirements that were outlined as part of earlier consultation for the proposed scheme on 03/02/2011:</p> <ul style="list-style-type: none"> <li>• The ecological integrity of the water systems must be maintained at all times</li> <li>• Measures should be taken to ensure comprehensive protection of the water bodies particularly at river and stream crossings taking cognisance of the <i>"Requirements for the protection of Fisheries Habitat during Construction and Development Works at River Sites"</i></li> <li>• Maintaining habitat integrity (both in stream and riparian) is essential in safeguarding the ecological value of waterways.</li> <li>• Any works directly affecting watercourse or riparian habitats including trenchless technology in the area must be first submitted as a method statement to IFI Blackrock for assessment and approval</li> <li>• Control of sediment and pollutants during the construction phase and operation phases to ensure there is no impact on the surface water systems</li> <li>• The installation of pipelines must in no way impact negatively on the passage of salmonids</li> <li>• No in-stream works should be carried out without the written approval of IFI Blackrock</li> </ul>

Consultee	Date of Response	Comments
Health Service Executive	May 2014	<p>It is recommended that regular water quality monitoring/sampling of any surface water bodies, water courses, streams, ditches and groundwater be carried out during construction and operational phases of the proposed development. Detailed mitigation measures should be identified during the Environmental Impact Assessment including visual leak detection in relevant and vulnerable areas of water bodies/courses and pipeline equipment.</p> <p>It is recommended that extra physical protection of pipes be provided at all river and stream crossings including the Tolka, Santry, Mayne, Wad, Naniken Rivers and the Cuckoo and Kilbarrack Streams which will require specialised construction techniques.</p> <p>Chemical and quantitative analysis of the Dublin Urban Waterbody should be regularly monitored against ELVs.</p> <p>The pipeline route also lies adjacent to the South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay pNHA, Santry Demesne pNHA and Royal Canal pNHA.</p>

## 3 STAGE ONE – SCREENING REPORT

### 3.1 Brief Description of the Project

The proposed aviation fuel pipeline will transport aviation fuel from an inlet station at Dublin Port to a reception station at Dublin Airport. The inlet and reception stations are existing structures which will be modified to accommodate the proposed pipeline. The proposed pipeline will be a 200 mm (8") nominal bore diameter steel pipe and 14.4 km in length. It will transport an estimated 2,700 million litres per annum.

The proposed route traverses two local authority functional areas – namely Dublin City Council and Fingal County Council. Consequently two planning applications will be made simultaneously to each planning authority. Each application will be accompanied by a Planning report, Safety and Environmental Impact Evaluation, Design Basis Report, Route Selection Report, Outline Emergency Response Plan, Construction Plan, Traffic Management Plan, Environmental Impact Statement (EIS) and a Natura Impact Statement (NIS).

This type of pipeline development is not a new concept and is in operation in UK and EU cities including Heathrow, Gatwick, Birmingham, Manchester, Amsterdam, Frankfurt, Brussels, Zurich and Luxembourg. Some of these pipelines have been in operation since 1950. The major oil companies currently operating in Ireland use these UK and European pipelines. Pipelines are used in these instances as a transport mode, to ensure that the fuel supply chain is both safe and flexible.

The proposed pipeline will be located predominantly within the road carriageway along its route. A short section of pipeline will be located along the Athletic Union League- Football Association of Ireland (AUL- FAI) Sports Complex at Clonshaugh as well as off road sections within Dublin Airport. There will be seven crossing points of watercourses including the Tolka, Santry, Mayne, Wad and Naniken Rivers and the Cuckoo and Kilbarrack Streams. Only two of these are open channel watercourses at the proposed crossing points (i.e. the Tolka and Santry Rivers) while the remainder are culverted at the point of crossing. In addition, the Santry is channelised at the point of crossing.

There will be the requirement for one to two storage compounds. Potential sites have been identified at Dublin Port and Malahide Road Industrial Park off Greencastle Road. These are vacant sites, having existing hardstanding and will not require any works to accommodate the pipe.

The application is for a 10 year permission within a planning corridor, to include road, footway and verges. Where the route passes through green areas and private amenity areas the planning corridor will be 8 m in width. This is to allow micro-siting of the pipeline during construction.

#### 3.1.1 [The Need for the Project](#)

Currently, aviation fuel is transported from Dublin Port to Dublin Airport via road tankers. The largest permitted road tankers are used, each having a capacity of 40,000 litres. At the current demand for fuel this equates to approximately 15,000 tanker trips per year. It is estimated that some 200,000 litres of diesel fuel are used each year by the tankers transporting the fuel, which equates to an annual emission of 500 tonnes of CO<sub>2</sub>.

The transportation of petroleum products by tanker along busy commuter roads raises a number of health and safety issues. A safety and environmental impact evaluation conducted by AMEC UK Limited concluded that the operation of the proposed pipeline has a significantly lower level of risk than the alternative use of road tankers (see Appendix 8).

From an economic perspective, the pipeline provides a sustainable and secure means of fuel supply for Dublin Airport. The Greater Dublin Area Draft Transport Strategy 2011 – 2030 states that in the Greater Dublin Area (GDA) there are two international gateways, namely Dublin Airport and Dublin Port and that the role and function of these facilities is of critical national importance and the management of transport to and from these locations needs to be considered at a regional level to ensure their efficient operation.

## 3.2 Brief Description of Proposed Route and Associated Habitats

A brief description of the habitats along the proposed route is provided in this section with reference to the Fossitt (2000) habitat classification system. Habitats along the proposed pipeline route are illustrated in Figure 3.2.

For most of the 14.4 km pipeline corridor, the pipeline will be laid within the existing public road. The road and adjoining footpaths are all classified as Buildings and Artificial Surfaces (BL3) habitat. The pipeline route originates at the proposed inlet station located within Dublin Port. From here the route passes along Tolka Quay and East Wall Road. The route then crosses under the open channel of the Tolka River to Alfie Byrne Road. At this point the Tolka River is contained within artificial embankments but is classified as Tidal Rivers (CW2) habitat.

On the northern side of the river, the route passes along Alfie Byrne Road, with Fairview Park lying to the west and the Alfie Byrne Open Space to the east. In Fairview Park, Scattered Trees and Parkland (WD5) and Amenity Grassland (Improved) (GA2) are the dominant habitats found within the Park. There are Treelines (WL2) and Hedgerows (WL1) along sections of the Alfie Byrne Road.

The route then follows Clontarf Road, Howth Road and Copeland Avenue before turning on to the Malahide Road (R109). Trees have been planted along the roadside and in the central reservation in places along the Malahide Road (R109). Just south of the Greencastle Road junction with the Malahide Road the route passes under the Santry River, a Depositing Lowland River (FW2). The Santry River flows under a bridge at Coolock and the proposed pipeline corridor will cross under the open channel section of the River. The Santry River is highly modified at this point within an open concrete channel.

The proposed pipeline corridor continues along the Malahide Road (R109) then along the R139 with Darndale Park and Belcamp Park just to the south of the road. Darndale Park contains Amenity Grassland (Improved) (GA2) habitat. Belcamp Park primarily contains Amenity Grassland (Improved) (GA2) and the northern edge of the park has an area of (Mixed) Broadleaved Woodland (WD1).

The Mayne River, a Depositing Lowland River (FW2) runs through the fields to the north of the R139. The proposed pipeline corridor crosses the Mayne River on the R139 at the roundabout, at the junction with the Clonshaugh Road. The river is culverted at the point of the crossing.

The route turns north on to the Clonshaugh Road. As the route continues north, it leaves the urban habitats behind, with the habitats occurring on either side of the road consisting of Arable Crops (BC1) and Improved Agricultural Grassland (GA1), and with Hedgerows (WL1) and Treelines (WL2) bordering the road. Along this section, the route crosses a culverted section of the Cuckoo Stream, a Depositing/Lowland River (FW2).

The route continues along the Clonshaugh Road until it turns west into the Athletic Union Sports Ground, where it crosses Amenity Grassland (Improved) GA2 habitat. The route then crosses the M1 and continues into Dublin Airport lands before finally reaching the Dublin Airport Storage Facility.

### **Additional River Systems along the Proposed Pipeline Corridor**

North of the junction with the Malahide Road (R109) and Collins Avenue the Wad River is culverted under the road. Similarly, further north the Naniken River is culverted under the Malahide Road (R109) at Artane. The proposed pipeline corridor crosses the Kilbarrack Stream on the Malahide Road (R109) at Newtown, where it is culverted at the point of the crossing. These rivers are classed as Depositing/Lowland Rivers (FW2). The pipeline will cross under each of the river systems using trenchless technology.

None of the habitats identified along the proposed route conform to any of the habitat types listed under Annex I of the E.U. Habitats Directive.

### 3.3 Brief Description of the Natura 2000 Sites

A total of 15 Natura 2000 sites lie within a 10 km radius of the proposed pipeline route (see Figure 3.1). These comprise of seven Special Protection Areas (SPAs) and eight candidate Special Areas of Conservation (cSACs). Site Synopses for all sites are included in Appendix 2.

The pipeline route is not located within any of these Natura 2000 sites but it does lie adjacent to one SPA, the South Dublin Bay and River Tolka Estuary SPA. A number of coastal Natura 2000 sites lie downstream of watercourses which are crossed by the pipeline route. Table 3.1 summarises the characteristics of each Natura 2000 site and includes their qualifying interests, conservation objectives and threats (extracted from NPWS site documents [www.npws.ie](http://www.npws.ie)). Figure 3.1 shows the location of these sites in relation to the route.

The SPAs are:

- South Dublin Bay and River Tolka Estuary (004024)
- North Bull Island (004006)
- Baldoyle Bay (004016)
- Malahide Estuary (004025)
- Ireland's Eye (004117)
- Howth Head Coast (004113)
- Rogerstown Estuary (004015)

The cSACs are:

- South Dublin Bay (000210)
- North Dublin Bay (000206)
- Baldoyle Bay (000199)
- Malahide Estuary (000205)
- Ireland's Eye (002195)
- Rockabill to Dalkey Island (003000)
- Howth Head (000202)
- Rogerstown Estuary (000208)



**Table 3.1: Summary of the Natura 2000 Sites within 10 km of the Proposed Pipeline, including Summary Description, Qualifying Interests, Conservation Objectives, Threats and Distance from Proposed Pipeline**

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
South Dublin Bay and River Tolka Estuary SPA (004024)	<p>The South Dublin Bay and River Tolka Estuary SPA is of international importance for Light-bellied Brent Geese and of national importance for nine other waterfowl species. As an autumn tern roost, it is also of international importance. Furthermore, the site supports a nationally important colony of Common Tern. All of the tern species using the site are listed on Annex I of the E.U. Birds Directive, as are Bar-tailed Godwit and Mediterranean Gull.</p> <p><b>Qualifying Interests of SPA:</b>            Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Grey Plover (<i>Pluvialis squatarola</i>) [A140], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina</i>) [A149], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Redshank (<i>Tringa totanus</i>) [A162], Black-headed Gull (<i>Croicocephalus ridibundus</i>) [A179], Roseate Tern (<i>Sterna dougallii</i>) [A192], Common Tern (<i>Sterna hirundo</i>) [A193], Arctic Tern (<i>Sterna paradisaea</i>) [A194], Wetlands &amp; Waterbirds [A999].</p>	<p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests, or Qualifying Interests, for this SPA</p>	<p>The main threat to this site is further reclamation for industrial and/or infrastructural purposes. The intertidal areas receive water that is somewhat polluted though there are no apparent impacts on the associated flora and fauna.</p> <p>Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging may be a problem and can cause disturbance to wintering birds. Disturbance to birds is also caused by walkers and dogs.</p>	0.045
South Dublin Bay cSAC (000210)	<p>This site lies south of the River Liffey and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats, a habitat listed on Annex I of the E.U. Habitats Directive. South Dublin Bay is also an internationally important bird site. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there.</p> <p><b>Qualifying features of cSAC:</b>            Mudflats and sandflats not covered by seawater at low tide [1140]</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013c). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are</p>	<p>The main threat to this site is further reclamation for industrial and/or infrastructural purposes. The intertidal areas receive water that is somewhat polluted though there are no apparent impacts on the associated flora and fauna.</p> <p>Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin</p>	1.69

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
North Island SPA (004006)	<p>The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Pale-bellied Brent Geese, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl.</p> <p><b>Qualifying Interests of SPA:</b> Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Teal (<i>Anas crecca</i>) [A052], Pintail (<i>Anas acuta</i>) [A054], Shoveler (<i>Anas clypeata</i>) [A056], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>)</p>	<p>likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>Port and shipping is a threat. Commercial bait digging may be a problem and causes disturbance to wintering birds. Disturbance to birds is also caused by walkers and dogs.</p>	2.72

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
North Dublin Bay cSAC (000206)	<p>[A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Curlew (<i>Numenius arquata</i>) [A160], Redshank (<i>Tringa totanus</i>) [A162], Turnstone (<i>Arenaria interpres</i>) [A169], Black-headed Gull (<i>Larus ridibundus</i>) [A179], Wetlands &amp; Waterbirds [A999]</p> <p>This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of ten habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected.</p> <p><b>Qualifying Interests of cSAC:</b> Mudflats and sandflats not covered by seawater at low tide [1140], Annual vegetation of drift lines [1210], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (<i>Spartinion maritimae</i>) [1320], Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330], Petalwort (<i>Petalophyllum ralfsii</i>) [1395], Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190].</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013). These aim to define the favourable conservation condition for qualifying habitats and species at the site. For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>dogs, and sailing activities. There is high disturbance from amenity activities which is probably responsible for the abandonment of the site by Little Tern</p> <p>Dunes are subject to high recreational pressures and moderate levels of grazing by rabbits which cause some localised damage. Damaged areas, however, are monitored by Dublin Corporation and appropriate management implemented.</p> <p>Abstraction of water by the golf clubs could result in a lowering of the water table which could affect the humid dune slacks. Any extensions to the two golf courses would be deleterious. The intertidal areas receive polluted water though there are no apparent significant impacts on the associated flora and fauna.</p> <p>Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging is a problem and causes disturbance to wintering birds.</p>	2.69

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
Baldoyle Bay cSAC (000199)	<p>Baldoyle Bay is a tidal estuarine bay protected from the open sea by a large sand dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. The site contains four habitats listed on Annex I of the EU Habitats directive: Salicornia mud, Mediterranean salt meadows, Atlantic salt meadows and Tidal mudflats. The site has two legally protected plant species and is also an important bird area and part of it is a Special Protection Area under the EU Birds Directive, as well as being a Statutory Nature Reserve.</p> <p><b>Qualifying features of cSAC:</b> Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (Spartinion maritimae) [1320], Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330], Mediterranean salt meadows (Juncetalia maritimi) [1410].</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2012).</p> <p>These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>A substantial part of the site is a Nature Reserve and is not significantly threatened in any way. The part of the site at the Mayne River, outside of the Nature Reserve, has been proposed for development in the past and is still considered to be under threat. The site receives pollution from a number of sources, chiefly the inflowing rivers but also an unsatisfactory sewage network.</p> <p>A new sewage works has been planned. Bait digging and controlled wildfowling may be problems. Spartina is well established in the inner estuary and may be causing unfavourable interactions with the intertidal and salt marsh habitats.</p> <p>Little Tern formerly nested but regular disturbance is a problem.</p>	2.53
Baldoyle Bay SPA (004016)	<p>Baldoyle Bay SPA is of high conservation importance, with an internationally important population of Brent Geese and nationally important populations of a further seven species, including two which are listed on Annex I of the E.U. Birds Directive. Baldoyle Bay is of high ornithological importance for wintering waterfowl, providing good</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013b).</p> <p>These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p>	<p>The majority of the site is a Nature Reserve and is not threatened. The site receives pollution from a number of sources, chiefly the inflowing rivers and, until recently, an</p>	2.97

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
	<p>quality feeding areas and roost sites for an excellent diversity of waterfowl species. The inner estuarine section is a Statutory Nature Reserve and is also designated as a wetland of international importance under the Ramsar Convention. The main threat to the birds is disturbance as it is located in a densely populated area.</p> <p><b>Qualifying features of SPA:</b> Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Wetlands &amp; Waterbirds [A999].</p>	<p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>unsatisfactory sewage network. Bait digging and controlled wildfowling may be problems. Spartina is well established in the inner estuary and may be causing unfavourable interactions with the intertidal and salt marsh habitats. Little Tern formerly nested but regular disturbance from walkers and dogs is a problem.</p>	
Malahide Estuary (004025) SPA	<p>The site is of high conservation importance, with an internationally important population of Brent Geese and nationally important populations of a further 12 species. Three of the species which occur regularly (Golden Plover, Bar-tailed Godwit and Ruff) are listed on Annex I of the E.U. Birds Directive.</p> <p><b>Qualifying features of SPA:</b> Great Crested Grebe (<i>Podiceps cristatus</i>) [A005], Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Pintail (<i>Anas acuta</i>) [A054], Goldeneye (<i>Bucephala clangula</i>) [A067], Red-breasted Merganser (<i>Mergus serrator</i>) [A069], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>)</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013e). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SPA, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the</p>	<p>The main problems or threats affecting this site are recreational activities, water pollution and infilling. Owing to the proximity of two large towns, the area is very popular for water sports and other amenity activities. These can cause disturbance to the bird populations - the intensity of such activities is likely to increase in the future. Pollution enters the system</p>	4.36

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
Malahide Estuary cSAC (000205)	<p>[A141], Knot (<i>Calidris canutus</i>) [A143], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Redshank (<i>Tringa totanus</i>) [A162], Wetlands &amp; Waterbirds [A999].</p> <p>This site is a fine example of an estuarine system with all the main habitats represented. The estuary is an important wintering bird site and holds an internationally important population of Brent Geese and nationally important populations of a further 15 species.</p> <p><b>Qualifying features of cSAC:</b> Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (<i>Spartinion maritimae</i>) [1320], Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330], Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410], Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p>	<p>conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Site specific conservation objectives have been published for this site (NPWS, 2013e). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats,</p>	<p>from the Broadmeadow River and from sewage plants at Swords and Malahide, and the inner estuary is particularly affected owing to its lagoonal character. The efficiency of the sewage plants may be upgraded in the future. Parts of the estuary have been infilled in the past for various developments, including housing and walk-ways, and this remains a threat.</p> <p>The main problems or threats affecting this site are recreational activities, water pollution and infilling. Owing to the proximity of two large towns, the area is very popular for water sports and other amenity activities. These can disturb the bird populations and impact on the dune habitats, and the intensity of such activities is likely to increase in the future. Pollution, mostly nutrients, enters the system from the Broadmeadows River and from sewage plants at Swords and Malahide. The inner estuary is particularly affected owing</p>	4.36

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
Ireland's Eye SPA (004117)	<p>This relatively small island is of high ornithological importance, with seven seabird species having populations of national importance - Gannet, Cormorant, Herring Gull, Great Black-backed Gull, Kittiwake, Guillemot and Razorbill. The regular presence of a breeding pair of Peregrine Falcon is also of note. This species is listed on Annex I of the EU Birds Directive.</p> <p><b>Qualifying features of SPA:</b> Cormorant (Phalacrocorax carbo) [A017], Herring Gull (Larus argentatus) [A184], Kittiwake (Rissa tridactyla) [A188], Guillemot (Uria aalge) [A199], Razorbill (Alca torda) [A200].</p>	<p>and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests, or Qualifying Interests, for this SPA</p>	<p>to its lagoonal character. The efficiency of the sewage plants may be upgraded in the future. Parts of the estuary have been infilled in the past for various developments and this remains a threat.</p> <p>The present status of most of the breeding seabirds on Ireland's Eye appears favourable.</p> <p>The principal direct threat to the nesting birds is potential disturbance from visitors to the island. While the present level of disturbance does not appear to be having adverse impacts on the majority of the breeding birds (most of which are on relatively inaccessible cliffs), regulation and management of visitors to the island may be necessary in the future. Brown rats are long established on the island but their recent status is not well known. It is likely, however, that the presence of rats may be a factor in keeping the Puffin population at a low level.</p>	7.0
Ireland's Eye 002193 (cSAC)	<p>This uninhabited marine island has a well-developed maritime flora, with two habitats (sea cliffs and shingle) listed on Annex II of the EU Habitats Directive, and nationally important seabird</p>	<p>Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) for which the SAC has been</p>	<p>The main threat to the island would be an increase in the numbers of visitors to the island. This</p>	7.3

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
	<p>colonies. Owing to its easy access and proximity to Dublin it has great educational and amenity value. This relatively small island is of high ornithological importance, with seven seabird species having populations of national importance.</p> <p><b>Qualifying features of cSAC:</b> Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p>	selected	could impact upon the more sensitive sandy habitats and cause disturbance to the breeding seabirds.	
Rockabill to Dalkey Island cSAC (003000)	<p>This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south county Dublin. The site encompasses Dalkey, Muglins and Rockabill islands. This site is of conservation importance for reefs, listed on Annex I, and Harbour Porpoise, listed on Annex II, of the E.U. Habitats Directive.</p> <p><b>Qualifying features of cSAC:</b> Reefs [1170], Harbour porpoise (Phocoena phocoena) [1351]</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013d). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-</p>	-	7.2

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
Howth Head cSAC (000202)	Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants. <b>Qualifying Interests of cSAC:</b> Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], European dry heaths [4030].	term basis. Objective: 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. For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.	At present the only threats are control of heath fires and possibly excess visitors. In future the growth of Dublin may increase visitor pressure and possibly air pollution. Overfishing in the Irish Sea may affect sea bird numbers.	<b>8.35</b>
Howth Coast SPA (004113)	The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Kittiwake. The populations of Kittiwake and Black Guillemot are of national importance, while the Razorbill, Guillemot and Fulmar populations are of regional importance. The cliffs also support a breeding pair of Peregrine Falcon, a species listed on Annex I of the E.U. Birds Directive. The site is easily accessible and has important amenity and educational value due to its proximity to Dublin City. <b>Qualifying Interests of SPA:</b> Kittiwake ( <i>Rissa tridactyla</i> ) [A188]	Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	Despite the high numbers of casual visitors to the site, there does not appear to be any significant disturbance to the seabird colonies (some of which are on inaccessible cliff faces). Over-fishing in local waters could put pressure on food supplies for the birds.	<b>8.35</b>
Rogerstown Estuary cSAC (000208)	This site is a good example of an estuarine system, with all typical habitats represented, including several listed on Annex I of the EU Habitats Directive. Rogerstown is an internationally	Site specific conservation objectives have been published for this site (NPWS, 2013g). These aim to define the favourable	A significant part of estuary (intertidal flats and salt marsh) has been lost due to landfilling and this	<b>8.6</b>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
Rogerstown Estuary SPA (004015)	<p>important waterfowl site and has been a breeding site for Little Terns. The presence within the site of three rare plant species adds to its importance.</p> <p><b>Qualifying features of cSAC:</b></p> <p>Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (Spartinion maritimae) [1320], Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330], Mediterranean salt meadows (Juncetalia maritimi) [1410], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130].</p>	<p>conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>remains a threat. Landfill site is also a major source of pollution to estuary. Other sources of pollution include input of raw sewage from a local town and general pollution inputs from a rich agricultural hinterland. Dunes at site are considered to be in a highly vulnerable state due to a combination of natural (i.e. erosion) and anthropogenic factors. Erosion has removed much of nesting area of Little Tern.</p>	
	<p>Rogerstown Estuary is an important link in the chain of estuaries on the east coast. It supports an internationally important population of Brent Geese and a further 14 species in numbers of national importance. Bird populations have been well monitored since the 1980s and the site is counted at monthly intervals each winter (September to March) as part of the Irish Wetland Bird Survey (I-WeBS). The site is a statutory Nature Reserve and a candidate Special Area of Conservation under the E.U. Habitats Directive.</p> <p><b>Qualifying features of SPA:</b></p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013h). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SPA, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary</p>	<p>A significant part of the estuary (intertidal flats and salt marsh) has been lost due to landfilling; while this remains a threat it is unlikely because of the site's various conservation designations. The landfill site is a major source of pollution to the estuary. Other sources of pollution include input of raw</p>	8.82

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives	Threats	Approx. Distance from Pipeline (km)
	<p>Greylag Geese (<i>Anser anser</i>) [A043], Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Shoveler (<i>Anas clypeata</i>) [A056], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Knot (<i>Calidris canutus</i>) [A143], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Redshank (<i>Tringa totanus</i>) [A162], Wetlands &amp; Waterbirds [A999].</p>	<p>for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>	<p>sewage from a local town and general pollution inputs from a rich agricultural hinterland. Erosion has removed much of the nesting area of Little Tern. Illegal shooting causes disturbance to wintering waterfowl.</p>	











### 3.4 Assessment Criteria

#### 3.4.1 Description of the elements of the project likely to give rise to impact on Natura 2000 sites

*Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.*

As set out in the NPWS Guidance (DoEHLG, 2009), the task of establishing whether a plan or project is likely to have an effect on a European or Natura 2000 site(s) is based on a preliminary assessment using available information and data, and other available environmental information (e.g. water quality data), supplemented as necessary by local site information and ecological surveys. This is followed by a determination by the competent authority as to whether there is a risk that the effects identified could be significant. A precautionary approach is required.

Some examples given in the NPWS Guidance of effects that are likely to be significant are:

- Any impact on an Annex I habitat
- Causing reduction in the area of the habitat or Natura 2000 site
- Causing direct or indirect damage to the physical quality of the environment (e.g. water quality and supply, soil compaction) in the Natura 2000 site
- Causing serious or ongoing disturbance to species or habitats for which the Natura 2000 site is selected (e.g. increased noise, illumination and human activity)
- Causing direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site
- Interfering with mitigation measures put in place for other plans or projects

The individual elements of the proposed aviation fuel pipeline project (either alone or in combination with other plans or projects) likely to give rise to significant impacts on the Natura 2000 sites within 10 km of the site of the proposed development are as follows:

1) Construction Compound setup and delivery of pipe

There will be the requirement for one to two storage compounds. Potential sites have been identified at:

- Dublin Port
- Malahide Road Industrial Park off Greencastle Road

These will be vacant sites, having existing hard-standing and will not require any works to accommodate the pipe. The use of these sites is dependent on availability and the terms and conditions when a contractor is appointed. In the event that one or more is not available, additional, existing facilities will be sourced.

The compounds will be used for the storage of the pipe itself along with pipe fitting which is typically delivered in lots of 400 – 500 m in 12 m lengths direct from Europe via Dublin Port to the storage compound. There will be no requirement for the storage of fill material at these sites as this will be delivered direct to the point of excavation by suppliers on an as needed basis.

Plant and machinery will be housed overnight at these locations. Refuelling from bunded fuel tanks will take place in dedicated hard-standing areas within the compounds. Upon completion of the pipeline the compounds will be restored to their previous condition.

## 2) Route Proofing &amp; Trench Excavation

The proposed route of the pipeline has been selected based on a review of information available in relation to known services and consultation with the various utility providers. Notwithstanding this, the final location of the pipeline within the roadway will be determined through slit trenching which will be conducted by each working crew. The slit trenching will advance a few meters ahead of the excavation and laying of the pipe.

An open-cut approach using trenching will be adopted as it is a standard method for the construction of a steel pipeline of this nature. Each trench will be 500 mm to 700 mm in width. To date approximately 200 km of similar steel pipelines ranging from 100 mm to 600 mm (nominal bore) have been laid through urban areas in Ireland (gas network).

The sequence of construction works within the road will be as follows:

- Set up Traffic Management Plan in agreement with Dublin City Council and/or Fingal County Council Roads and Traffic departments
- Establish of a safe working zone with barriers which will only be accessible to authorised personnel
- Saw cut of the carriageway
- Break out the surface with an excavator with breaker attachment
- Excavate to the required depth to accommodate the pipeline at 1.2 metres of cover
- Remove of the excavated material to an appropriate permitted/licensed facility (in agreement with the local authorities)
- At road crossings steel plates will be installed over the first half of the carriageway to facilitate traffic management during excavation of the second half of the carriageway.
- Steel plates will also be installed as a temporary measure, where required, to allow temporary access to property or to facilitate traffic movement along a carriageway.
- Off-road trench excavation will be to the same specification as on road excavations.

The estimated total volume of soil to be excavated and removed from site is approximately 15,120 m<sup>3</sup>, with a similar volume of material being required as backfill. A breakdown of these quantities is as follows:

## Imported Material:

- |             |                      |
|-------------|----------------------|
| • Surfacing | 3,024 m <sup>3</sup> |
| • Leanmix   | 6,048m <sup>3</sup>  |
| • Granular  | 5,397m <sup>3</sup>  |

All material excavated will be loaded directly on to an awaiting HGV which will remove the material offsite for disposal at an appropriate facility. In the event the facility is not open (i.e. outside of normal working hours), the material will be transported to the temporary construction compounds and stored on the truck (and covered) until the next working day.

Where contaminated material or made ground is encountered, this will be left in-situ and tested to determine its nature and composition in accordance with the Landfill Directive waste acceptance criteria (WAC). In the interim the material will be covered to prevent leaching. The material will subsequently be removed by a permitted contractor to an appropriate facility all of which will be agreed with the respective local authority and/or EPA.

There are seven crossing points of watercourses including the Tolka, Santry, Mayne, Wad and Naniken Rivers and the Cuckoo and Kilbarrack Streams. Two of these (the Tolka and Santry) are open channel while the remaining are culverted.

Site investigations (SI) works have been carried out as part of this EIS at the Tolka and Santry River crossings. Trial pits were excavated to determine if trenchless technology, comprising the excavation of pits on either side of the crossing and thrust boring underneath the culvert/river bed could be used. The results of the SI have confirmed that the use of trenchless techniques will be possible at these locations.

There are several trenchless technologies available for example:

- Horizontal Directional Drilling (HDD)
- Micro-tunnelling
- Pipe Jacking
- Auger Boring

Trenchless techniques will significantly minimise the environmental impacts of construction works at these locations.

### 3) Pipe Laying & Re-instatement Operations

Pipe laying operations will consist of the following:

- Laying of pipe bedding material which will typically consist of compacted sand or pea gravel
- Welding of pipe lengths together, radiographing and wrapping of joints
- Installation of pipe section in trench
- Welding of the new section to previous sections
- Radiographing the welded joint
- Acceptance of radiographic results
- Wrapping of the pipe joint with a 3 ply external coating in accordance with DIN 30670 - Polyethylen coatings of steel pipes and fittings
- Completing as-build records
- Surrounding the pipe with imported sand/pea gravel backfill
- Installation of sub-duct for management system including optical fibre cable
- Installation of safety warning tape
- Backfilling of the trench with lean mix concrete compacted during and following placement
- Re-instatement of the trench and road surface
- Removal of debris and sweep clean
- Removal of route markers, safety fencing etc.
- Re-opening of the section to traffic
- Close down traffic management
- Note: Pipe-laying of off road sections will be similar but backfill material may vary to match the excavated soil.

### 4) Construction of above ground installations at Dublin Port and Dublin Airport

Above ground installations will be constructed inside existing facilities at Dublin Port and Dublin Airport. The Dublin Port station will be situated in an industrial compound adjacent to the existing oil storage facilities and will consist of:

- Above ground pipe work
- 3 no. pumps
- Metering
- Pigging facility
- Communications and control building
- 2.4 m high security fence

The station will be similar in appearance to that in Dublin Port consisting of:

- Above ground pipe work
- Metering
- Pigging facility
- Control valves
- Communications and control building
- 2.4 m high security fence

## 5) Testing and Commissioning of Pipeline

Prior to testing, swabbing pigs are passed through the pipe to clear any extraneous matter from the pipeline. The pipeline will then be pressure tested to ensure it meets design requirements.

Hydrostatic testing involves filling the entire pipeline or sections of it with clean water and pressurising in accordance with IS EN 14161 - 2011. The test water will be sourced from the mains.

The pipeline is emptied of water using air swabbing pigs. The test water (approximately 400 m<sup>3</sup>) will be collected and tested for contamination and then disposed of in a controlled manner to either an appropriate water body in accordance with a discharge licence from the relevant local authority or collected and discharged to an appropriate wastewater treatment plant. The pipeline is then dried by desiccant drying. The fuel is then admitted and the pipeline is pressurised in accordance with IS EN 14161 - 2011, after which the pipeline becomes operational.

## 6) Operational Maintenance of Pipeline

The pipeline will be operated in accordance with I.S. EN 14161:2011 – Petroleum and natural gas industries – Pipeline transportation systems (ISO 13623:2009 modified) and using proven procedures and systems that are industry standard for fuel pipelines in the UK. The following control systems will be put in place:

- *Monitoring & Control* - A Supervisory Control and Data Acquisition System (SCADA) will monitor the operations and provide status display, alarm and event history and logging of measurements. A PLC based alarm system will alert the on-call operator using a pager. If the operator fails to respond, a backup callout via 24 hour call centre service will be initiated to the emergency response team, details of which are provided in the outline emergency response plan (refer to Appendix 3.7 of Volume 3 of the EIS).
- Computational Model pipeline leak detection (CPM) - with automatic shutdown will be installed in compliance with API Recommended Practice 1130 (2007, Reaffirmed 2012) and German TRFL ("Technische Regeln für Fernleitungen" - Technical Rules for Pipelines) which requires two different leak detection methods.

One leak detection model will be capable of detecting leaks during transients e.g. starting up, shutting down and changing flow conditions. The leak detection systems will be chosen from specialist leak detection vendors with a significant installed base and proven track record on similar fuel product pipelines in Europe and particularly the UK.

Leak detection systems will utilise current best available technology fiscal grade, International Organisation of Legal Metrology (OIML) approved Coriolis 0.1% uncertainty mass flow meters at both ends of the pipeline. The two computation models proposed are:

- Negative Pressure Wave - API Method B.5. Analysis of the pressure and flow measurements to detect negative pressure and rarefaction
- Flow/Pressure Mode - API Method B.4. Analysis of flow and pressure measurements using signature recognition to detect an imbalance anomaly which would indicate a leak. Flow/Pressure model will incorporate Mass Balance, Static Pressure (shut-in), and Leak Location functions.

The performance figures for CPM leak detection are as follows:

Performance Criteria	Limit
Minimum detectable leak rate under static conditions	10 litres /hr
Minimum detectable leak rate under flowing conditions	1% of flowrate
Time to confirm 1% flowing leak	10 minutes ( approximately 500 litres loss)
Response time for a 5% flowing leak	2 minutes ( approximately 500 litres loss)
Response time for 10% or greater flowing leak	1 minute ( approximately 500 litres loss)
Leak location accuracy	+/- 100 meters

The leak detection system will be calibrated and validated using leaks simulated by drawing off fuel at the terminals and at intermediate points along the pipeline route (emergency shutdown valves).

- *Safety* - A set of safety plans and procedures will be put in place to cover the unlikely event of an accident with the pipeline. This safety plan will include a communications link to Dublin Port, DCC, FCC, the DAA and the HSA. The plan will be based on existing plans used by the aviation fuel transportation industry in the UK and adapted or modified as necessary to meet local conditions and the requirements of Dublin Fire Brigade.
- *Cathodic Protection* - A Cathodic Protection (CP) system will be installed to prevent external corrosion of the pipe. An impressed current cathodic protection system with deep well anode groundbeds will be installed to prevent external corrosion of the pipe. This is to avoid and minimise sensitivity to stray currents e.g. as compared with a sacrificial anode system.
- *Physical Protection*- The depth of cover to the pipeline will be 1.2 m. The trench will be backfilled with 300 mm of sand and pea gravel, then 700 mm of lean mix concrete to 200 mm below ground surface.
- *Visual Leak detection* - Fortnightly inspections will be carried out on the pipeline route. An operator will survey the route on foot to detect factors that could affect the safety and the operation of the pipeline. Inspections will identify any third party activities along the route which may encroach on the pipeline.
- *Maintenance* - Regular inspection of the stations, filters, valves and other fittings will take place on a planned maintenance schedule. This will ensure that the line is properly maintained and meets the safety requirements. Within the first year of operation an inline corrosion survey/intelligent pigging run will be carried out to establish a baseline. This will be repeated every 10 years.
- *Emergency Shutdown Valves* – Emergency shutdown valves which are remotely controlled will be installed at both ends and two intermediate points of the pipeline. In the unlikely event of a rupture to the pipeline, the provision of these valves will limit potential spill volume. These are strategically located to limit the drain down of the pipeline contents to any low point taking into account topography of the route.

#### 7) Decommissioning and Validation of Pipeline

In the unlikely event that the pipeline is decommissioned, the pipeline will be decommissioned in accordance with Sections 13.2.4 and 13.6 of I.S. EN 14161:2011. The pipeline will be emptied of fuel and flushed with water sourced from mains. The water will then be collected, sampled for contaminants and disposed of either to a surface water body (if uncontaminated) or collected and taken offsite for disposal at an appropriate wastewater treatment facility (under licence), if contaminants are found.

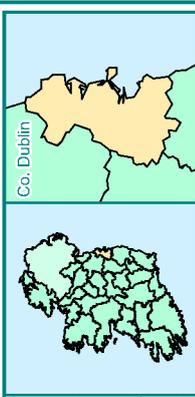
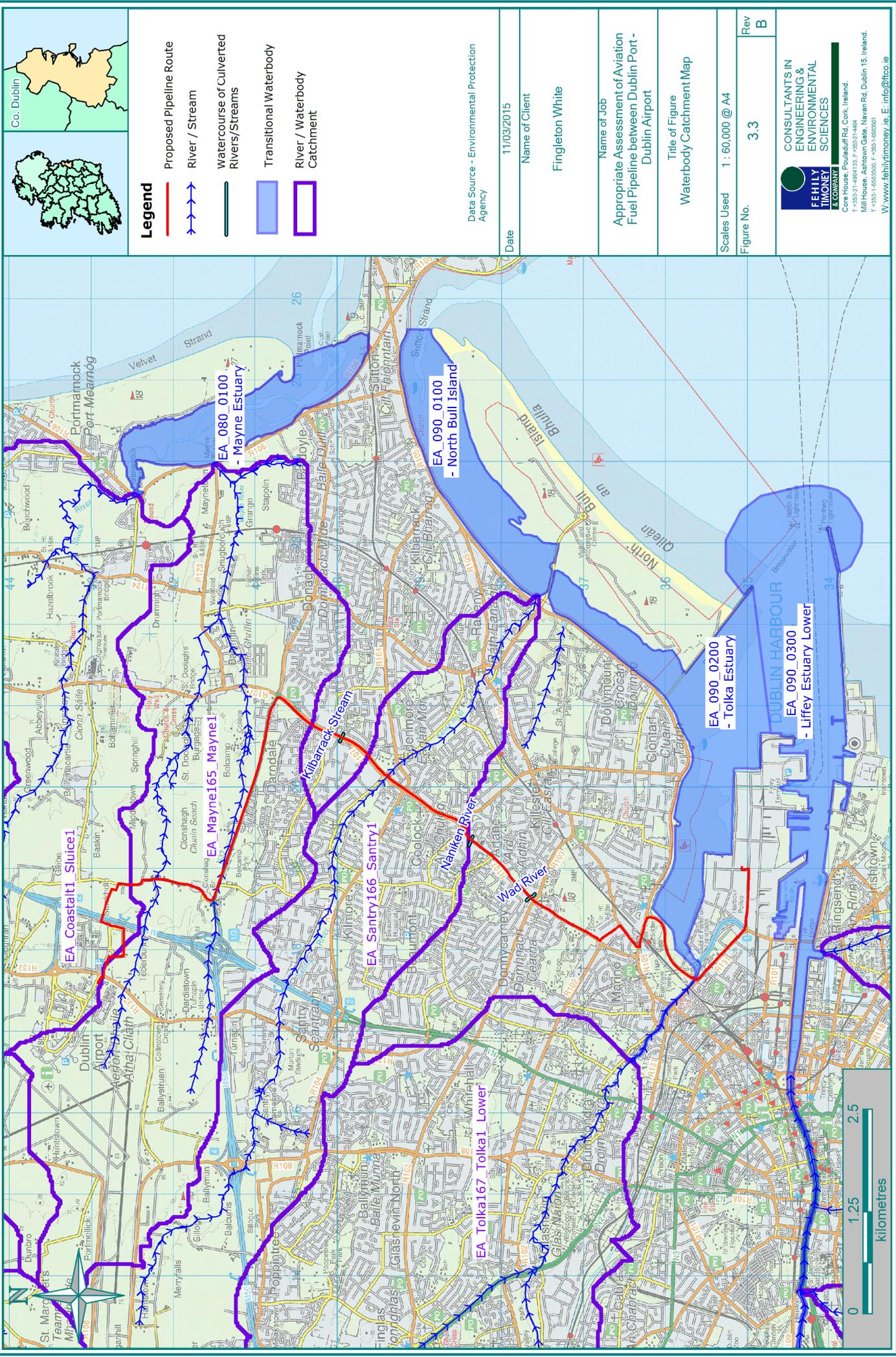
When records or estimates show that the design fatigue life has been reached, the pipeline can be revalidated by hydro-testing, or by internal inspection using a tool capable of the detection of longitudinal crack-like defects, particularly in or near the seam weld. If inspection is used, the detection limits of the inspection tool for crack-like defects will be taken into account when establishing the future fatigue life of the revalidated pipeline.

The likely impacts of the proposed pipeline on the remaining Natura 2000 sites are discussed in further detail in Section 3.4.

Table 3.2 overleaf, provides a summary of elements of the project and their potential impacts on European Sites.

**Table 3.2: Summary of Elements of the Project and their Potential Impacts on Natura 2000 Sites**

Project Element	Potential Impact on Natura 2000 Sites	Natura 2000 Site Affected
Construction of pipeline.	<ul style="list-style-type: none"> <li>disturbance and displacement of key bird species (<i>e.g.</i> Brent Geese) through noise and vibration, disturbance to flightpaths</li> </ul>	<ul style="list-style-type: none"> <li>South Dublin Bay and River Tolka Estuary SPA</li> <li>North Bull Island SPA</li> </ul>
	<ul style="list-style-type: none"> <li>hydrological impacts to groundwater or surface water, such as contaminated runoff and increased siltation, leading to mortalities of fish and/or other aquatic fauna and flora in downstream Natura 2000 sites</li> </ul>	<ul style="list-style-type: none"> <li>South Dublin Bay and River Tolka Estuary SPA</li> <li>North Bull Island SPA</li> <li>North Dublin Bay cSAC</li> <li>South Dublin Bay cSAC</li> <li>Baldoyle Bay cSAC</li> <li>Baldoyle Bay SPA</li> <li>Howth Head Coast SPA</li> <li>Howth Head Coast cSAC</li> <li>Ireland's Eye cSAC</li> <li>Ireland's Eye SPA</li> </ul>
Operation of pipeline	<ul style="list-style-type: none"> <li>hydrological impacts to groundwater or surface water from a leak of the pipeline, leading to mortalities of fish and/or other aquatic fauna and flora in downstream Natura 2000 sites</li> </ul>	<ul style="list-style-type: none"> <li>South Dublin Bay and River Tolka Estuary SPA</li> <li>North Bull Island SPA</li> <li>North Dublin Bay cSAC</li> <li>South Dublin Bay cSAC</li> <li>Baldoyle Bay cSAC</li> <li>Baldoyle Bay SPA</li> <li>Howth Head Coast SPA</li> <li>Howth Head Coast cSAC</li> <li>Ireland's Eye cSAC</li> <li>Ireland's Eye SPA</li> </ul>



**Legend**

- Proposed Pipeline Route
- River / Stream
- Watercourse of Culverted Rivers/Streams
- Transitional Waterbody
- River / Waterbody Catchment

Data Source - Environmental Protection Agency
Date 11/03/2015
Name of Client Fingleton White
Name of Job Appropriate Assessment of Aviation Fuel Pipeline between Dublin Port - Dublin Airport
Title of Figure Waterbody Catchment Map
Scales Used 1 : 60,000 @ A4
Figure No. 3.3
Rev B

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### 3.5 Description of the likely impact of the project on Natura 2000 Sites

Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:

Size and Scale
<p>The proposed pipeline will be a 200 mm (8") nominal diameter steel pipe and 14.4 km in length. It is proposed to lay the pipeline within the existing road surface between Dublin Port and Dublin Airport, for the majority of its length. It is estimated that once the pipeline is operational, it will be capable of carrying 2,700 million litres of aviation fuel per annum. Currently, aviation fuel is transported from Dublin Port to Dublin Airport via road tankers.</p> <p>The proposed pipeline does not cross through any Natura 2000 site, and thus there will be no direct impacts on any Natura 2000 site via fragmentation of habitats, or reduction habitat area. It is anticipated that there will be no significant impact on any Natura 2000 site as a result of the size and scale of this development.</p>
Land Take
<p>The pipeline route does not lie within a Natura 2000 site and consequently there will be no impact on any Natura 2000 site by way of direct land take associated with this development.</p>
Distance from Natura 2000 Site or Key Features of the Site
<p>Table 3.1 shows the distances of the Natura 2000 sites from the proposed pipeline corridor. The route does not lie within any Natura 2000 site.</p> <p>The nearest Natura 2000 sites are all within the Dublin Bay area with the closest site being South Dublin Bay and River Tolka Estuary SPA, which lies only 0.04 km from the southern end of the route, close to the Alfie Byrne Road where the proposed pipeline crosses under the Tolka River. South Dublin Bay cSAC is 1.69 km from the route, and the two sites in North Dublin Bay; North Bull Island SPA and North Dublin Bay SAC, are approximately 2.7 km away. At the northern end of Dublin Bay, Howth Head cSAC and Howth Head Coast SPA are 6.8 and 8.3 km respectively from the proposed pipeline.</p> <p>The proposed pipeline crosses under the Santry River at Coolock (see Figure 3.3). The Santry flows east to Dublin Bay and into the North Dublin Bay cSAC and North Bull Island SPA. These Natura 2000 sites are at a downstream distance of approximately 3 km from the pipeline where it crosses under the Santry River.</p> <p>Towards the northern end of the proposed pipeline route, the Mayne River and Cuckoo stream are both crossed by the pipeline route. These two watercourses flow eastwards towards the coast. They join up and then flow into Baldoyle Bay. Baldoyle Bay cSAC and SPA are 2.5 and 2.9 km directly east of the proposed pipeline route, and some 5–6 km downstream distance from the route. Ireland's Eye cSAC and SPA are a further 7.0 and 7.3 km out from the coast.</p> <p>The potential hydrological impacts on these downstream Natura 2000 sites are discussed under <b>Emissions</b>.</p>

### Excavation and Resource requirements (water abstraction etc.)

The pipeline route does not lie within a designated site and there will be no direct impacts on any Natura 2000 site as a result of excavation or resource requirements. Resources such as backfill will only be sourced from authorised sites. Storage of excavated materials overnight in compounds, if left uncovered, could result in indirect impacts via run-off which may percolate into downstream sites.

It is possible that vibrations associated with construction works/ excavations near or under river beds, may cause a temporary disturbance to migrating fish associated with designated sites downstream.

Water requirements for hydrostatic testing, decommissioning (if applicable) and re-validation will be sourced from the mains supply. Consequently there will be no impacts on European sites through water abstraction.

### Emissions (disposal to land, water or air)

#### *Construction*

During construction, release of silt or contaminants such as fuel or oil, into local watercourses could lead to contamination of the designated sites lying downstream of the watercourse. In addition poorly managed reconnaissance of existing underground services could lead to damage and subsequent release of water including contaminated water into the environment from existing services such as foul/storm sewer pipes.

Release of run-off from contaminated material or made ground as a result of excavations may indirectly affect Aquatic habitat quality and thus available habitat for species of conservation interest such as Brent Geese, Otter etc.

Pumping of groundwater to sewers/watercourses during construction of the pipeline, could lead to contamination of existing services and waterbodies.

The storage and disposal of any waste materials arising from construction/excavation activities or soil heaps stockpiled along the pipeline corridor could pollute groundwaters, watercourses and aquifers by wind, run-off or rain waters.

Uncontrolled discharge of water from hydro-static testing of pipeline during commissioning. Contamination with sediment and pollution of watercourses could lead to damage to the ecological integrity of surface water systems, the River Tolka which represents a regionally significant salmonid system, the Mayne and Santry Rivers.

Inadequate bunding at refuelling and storage locations (hydrocarbon interception etc.) in temporary compounds could lead to pollution of watercourses.

Inadequate sanitary facilities could lead to pollution of watercourses.

Poor spill containment measures could lead to pollution of watercourses.

The excavation of trenches for pipe laying, and the launch and reception areas at river/stream crossings could lead to silt laden surface water run-off.

Fouling of the road network by construction traffic with subsequent potential for sediment run-off to surface water.

Damage and subsequent release of water/effluent into the environment from existing services such as existing foul/storm sewer pipes, watermains etc.

Inadequate management of construction phasing could lead to concentrated risks to a single watercourse.

Flooding or storm water run-off from events during construction or operation could potentially carry contaminants into downstream designated sites.

Works leading to erosion of the river banks/bed could negatively impact on the fisheries habitat present. Open trench construction methods will be used for the sections of the pipeline route which lie within roadways or off road sections within agricultural or amenity lands. However, where the pipeline route crosses a watercourse, trenchless techniques will be used (see Section 3.4.1) whereby the pipeline runs below the bed of the river.

The pipeline will cross under two open water river sections, the Tolka and Santry Rivers. At these locations trenchless techniques will be used to cross under the riverbed. At the Mayne, Wad and Naniken Rivers and the Cuckoo and Kilbarrack Streams, the pipeline will cross under existing culverted sections of these watercourses. See Figure 3.3 Waterbody Catchment Map for the locations of the watercourse crossings.

Trenchless techniques may result in indirect impacts downstream on designated sites. Although a less intrusive construction method than traditional open cut for crossing watercourses (and consequently has less potential impact); there is the possibility of surface disturbance if a 'frac out' (inadvertent release of drilling fluid or a release of sediment laden groundwater) occurs into a watercourse. There is also the potential for sediment laden water or other deleterious substances to enter a surface water feature as the result of grading, drilling excavations, equipment washing, or other construction related activities during directional boring.

Given the fact that trenchless techniques will be used to cross all watercourses, the potential indirect impacts on downstream designated sites due to any potential contamination during construction will be very slight and temporary in nature in comparison to those from open cut techniques.

Despite this, the precautionary approach will be taken and potential impacts on the downstream Natura 2000 sites will not be screened out. This includes the following sites, Baldoyle Bay cSAC, Baldoyle Bay SPA, North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA.

#### *Operation*

During operation of the proposed pipeline, any release of fuel (e.g. through rupture or leak of the pipeline) does have potential for pollution of downstream designated sites, and subsequent mortality of fish and other aquatic fauna. Thus, operational impacts of the pipeline on downstream Natura 2000 sites cannot be screened out with certainty.

### **Transportation Requirements**

Construction of the pipeline will involve additional traffic movements with vehicles delivering materials. This will only occur during the construction phase which will last some 10 months. The proposed pipeline route will be divided into four discrete working zones, where the pipeline will be laid simultaneously in each zone.

It is to be noted that currently aviation fuel is transported to Dublin Airport from Dublin Port via road tankers. The current requirement is approximately 15,000 road tanker trips per year. These road tankers currently emit vehicle emissions impacting on the air quality en route to the airport as well as giving rise to noise and vibrational impacts. Once the pipeline becomes operational there will be a reduction in the number of HGV vehicles on the roads as a result of the proposed development.

Transport of materials to and from working sites may facilitate the spread of invasive species including invasive species of aquatic flora which may impact on downstream European Sites such as the South Dublin Bay and River Tolka Estuary SPA, the North Dublin Bay cSAC and the South Dublin Bay cSAC.

### **Duration of Construction, Operation, Decommissioning**

The construction phase of the project is subject to obtaining all the necessary approvals. It is anticipated that construction works will be completed over a 10 month period commencing in February and continuing until November (dependent on consent timelines) holidays.

Construction works along the Alfie Byrne Road and Malahide Road (R139) will only be carried out during the period May to September in order to prevent disturbance to any wintering Brent Geese. Re-instatement works such as permanent road re-surfacing will be carried out where possible within this time frame

If the pipeline is decommissioned, it will be emptied of fuel and flushed with water sourced from mains. The water will then be collected, sampled for contaminants and disposed of either to a surface water body (if no contaminants are present) or collected and taken offsite for disposal at an appropriate wastewater treatment facility (under licence) if contaminants are found.

When records or estimates show that the design fatigue life has been reached, which will be in excess of 50 years, the pipeline can be revalidated by hydrotesting, or by internal inspection using a tool capable of the detection of longitudinal crack-like defects, particularly in or near the seam weld. If inspection is used, the detection limits of the inspection tool for crack-like defects will be taken into account when establishing the future fatigue life of the revalidated pipeline.

## Disturbance and Displacement

### *Construction disturbance impacts*

A section of the pipeline route will be laid along the Alfie Byrne Road which lies adjacent to the South Dublin Bay and River Tolka Estuary SPA. Brent Geese are present in the Dublin Bay area in internationally important numbers and they are a qualifying interest of the South Dublin Bay and Tolka River Estuary SPA, Malahide Bay SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA and the North Bull Island SPA. Brent Geese are also mentioned as a species of note in the site synopsis for Malahide Bay cSAC, North Dublin Bay cSAC, South Dublin Bay cSAC, Baldoyle Bay cSAC and Rogerstown Estuary cSAC. On a precautionary basis, and following consultation with Birdwatch Ireland, a degree of interconnectivity between all Brent Geese sites has been assumed.

Brent Geese over-winter in Ireland, generally arriving in September/October and leaving in April. Brent Geese that winter in Dublin Bay utilise a number of inland feeding sites and in particular amenity grasslands within Dublin including football pitches, golf courses, parks and virtually any area of open grassland. Brent occasionally use the Alfie Byrne Open Space grassland area for feeding. A section of the pipeline will be laid along the R139 which is just north of Belcamp Park. Belcamp Park is a known feeding area for Brent Geese which is linked to the SPAs in Dublin Bay. See appended (Appendix 3) Winter Bird Survey report on Brent Geese usage of these areas.

During the construction phase of the development, there will be increased human presence associated with the works, as well as increased machinery and noise levels. This has the potential to have a negative impact through disturbance and displacement of birds, in particular Brent Geese but also other qualifying bird species, from the South Dublin Bay and River Tolka Estuary SPA. This SPA is 0.02 km from the proposed pipeline corridor along the Alfie Byrne Road. To a lesser extent, Brent Geese and other qualifying bird species from North Bull Island SPA may be impacted by disturbance and displacement. This SPA is 2.3 km away. It is unlikely that Howth Head Coast SPA (designated for Kittiwake) will be impacted by disturbance and displacement as it is 8 km away. Similarly Brent Geese in Baldoyle Bay SPA are unlikely to be impacted by disturbance as this site is 3.2 km away from the proposed pipeline. Brent Geese utilising Belcamp Park which is adjacent to the R139 may also be impacted by disturbance and displacement from construction works.

In order to assess the importance of the River Tolka Inner Estuary and the Alfie Byrne Open Space (which is situated alongside the South Dublin Bay and River Tolka Estuary SPA) for Brent, a dedicated winter bird survey of was carried out from November 2013 to March 2014 (see Appendix 3). As part of this survey, simultaneous surveys of Brent at Belcamp Park, along the R139 were carried out. Counts were done simultaneously to ensure no double counting of Brent by observers. The visit period at both sites started at either the exact low water time or high water time, using Dublin Docks datum, and varied over the five visits where practicable due to weather. All Brent Geese, waterbird and gull species observable were counted hourly or half hourly for a six hour period at each VP location, and flightlines were recorded.

### *Brent at the Alfie Byrne Open Space and River Tolka Inner Estuary*

In general, Brent were not found to utilise the Alfie Byrne Open Space on a regular basis to feed. On only two occasions were Brent recorded on the Alfie Byrne Open Space before flying onto the estuary. Brent presence on the Alfie Byrne Open Space was 112 minutes which equates to 6.22% of the total survey time (of 30 hours). Brent were found in the Tolka Estuary throughout the survey period. Brent were present in each month with a maximum count of 747 in February. The mean number of Brent on the Tolka Estuary over the five visits was 108.03.

The conclusion of this survey was that the construction of the aviation fuel pipeline would not have any adverse impact on the feeding and roosting of birds, including Brent Geese, on the mudflat and on the water of the River Tolka Inner Estuary (see Appendix 3). Similarly, due to such occasional use of the grassland at the Alfie Byrne Open Space for feeding by Brent, construction works would have minimal impact. Birds that use this busy urban area are accustomed to continuous human presence and background noise from traffic movements. Nonetheless, the precautionary principle will be applied in this case and the impact of disturbance and displacement during construction on Brent Geese and other water birds will not be screened out.

### *Brent at Belcamp Park*

With regard to Belcamp Park, although this is some distance from the South Dublin Bay and River Tolka Estuary SPA, Brent from these designated sites were found to use this park to feed. There was a minimum of 271 minutes of Brent presence on the playing pitches at Belcamp Park, accounting for 16.42% of the total survey time. Brent were found to graze on only a small area of Belcamp Park, in the southwest of the park and screening vegetation is in place between the location of the proposed works and the recorded feeding sites. Nonetheless, the precautionary principle will be applied in this case and the impact of disturbance and displacement during construction on Brent Geese at Belcamp Park will not be screened out.

### *Other qualifying birds*

During the Brent Geese surveys carried out along the Alfie Byrne Road and the Tolka Estuary, and at Belcamp Park, all other waterbird species were counted. The results indicated that some water bird species of high conservation concern use these areas. Of note was the presence of Black-tailed Godwit and Bar-tailed Godwit which were present in the Tolka Estuary for part of the time in nationally important numbers (140 and 160 respectfully as 1% of the national population). Also of note were the red-listed species (according to Colhoun & Cummins, 2013) including Black-headed Gull, Wigeon, Goldeneye, Dunlin Redshank, Curlew and Herring Gull. Of these, Bar-tailed Godwit, Black-headed Gull, Dunlin and Redshank are qualifying species of the South Dublin Bay and River Tolka Estuary SPA. Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank and Black-headed Gull are qualifying species of the North Bull Island SPA.

Works adjacent to the Tolka River and Belcamp Park could lead to temporary disturbance to localised numbers of these species but given the availability of alternative areas, and the existing high levels of noise in the areas, these impacts are likely to be slight, and are not expected to have a significant impact on the conservation objectives of these SPAs. Impacts on these species are screened out at this stage.

### *Operational Disturbance Impacts*

Damage to the pipeline, resulting in a subsequent leak of fuel during operation could lead to potential disturbance to and/or displacement of key species (if this occurs during the winter period when Dublin Bay supports the internationally important numbers of Brent and other wildfowl) in areas adjacent to the pipeline within the Dublin Bay site. Thus, operational impacts of the pipeline on downstream Natura 2000 sites supporting Brent and other wildfowl cannot be screened out with certainty.

## Cumulative and In-Combination Effects

The pipeline passes through two local authority functional areas namely, Dublin City Council and Fingal County Council. Both local authorities have produced Development Plans which will help to guide and plan developments in their respective areas. Dublin City Council has adopted the Dublin City Council Development Plan 2011–2017. Fingal County Council has produced the Draft Fingal Development Plan 2011–2017. Both of the development plans also have undergone a process of Appropriate Assessment and have produced Natura Impact Statements (NIS) to accompany the plans. The two development plans and their respective NISs have been considered in producing this NIS for the proposed aviation fuel pipeline.

The EIS produced for the planning application for the aviation fuel pipeline, describes in some detail, how the objectives and policies within the Dublin City Council Development Plan are relevant to the proposed pipeline. The NIS for the Dublin City Council development Plan states:

*'The Dublin City Development Plan 2011-2017 as adopted will not have an adverse effect on the integrity of Natura 2000 sites. The policies and objectives of the plan have been devised to anticipate and avoid the need for developments that would be likely to significantly and adversely affect the integrity of any Natura 2000 sites. Furthermore, such developments as will be permitted on foot of the provisions of this plan and the plans/projects mentioned above shall be required to conform to the relevant regulatory provisions for the prevention of pollution, nuisance or other environmental effects likely to significantly and adversely affect the integrity of this Natura 2000 site.'*

The key strategic objectives for Dublin Airport include:

- Objective EE46 "Safeguard the current and future operational, safety, technical and developmental requirements of Dublin Airport, having regard to the environmental impact on local communities.
- Objective T038 "facilitate the operation and future development of Dublin Airport recognising its role in the provision of air transport, both passenger and freight".

Furthermore, proposed local objective 399 seeks 'to support the construction of an oil pipeline from Dublin Port to provide fuel service to Dublin Airport'.

Once again, a NIS was prepared for the Fingal Development Plan 2011–2017. The NIS identified that a number of Natura 2000 sites were at risk of potential significant impacts as a result of some of the proposed policies and objectives. Measures are proposed within the NIS in order to mitigate for any potential impacts. As a general measure, there is the proposal for a greater commitment for Appropriate Assessment of plans, the Development Plan was considered to provide adequate scope for assessment of projects. Additionally, recommendations are made to add commitments to the wording of a number of policies and objectives to provide Appropriate Assessment. However, none of these policies or objectives are relevant to the proposed aviation fuel pipeline.

The NIS report concludes that the Development Plan, with the measures proposed in the NIS, will prevent inappropriate development from occurring within the boundaries of Natura 2000 sites.

In summary, the proposed aviation fuel pipeline falls in line with the policies and objectives of the Dublin City Development 2011-2017 and the Fingal County Development Plan 2011-2017. Both the NIS reports prepared for these development plans have concluded that, with mitigation, that there will be no potential significant impacts on Natura 2000 sites. It is to be noted that these conclusions do not negate the need for individual plans or projects arising from the development plans to undertake an Appropriate Assessment process if there is still the potential to significantly impact on a Natura 2000 site.

The following individual plans or projects have been identified as having the potential to combine cumulatively in terms of possible impacts on European or Natura Sites during the relevant phases as outlined below:

***Cumulative impacts during construction***

The cumulative impacts of the construction of the proposed pipeline on the following proposed schemes have been considered for the purpose of this NIS:

- Metro North (on hold post 2016 when budgetary constraints will be reviewed)
- Proposed Eastern By-Pass
- proposed road scheme / bridge over the River Tolka just before the Railway Bridge along East Wall Road
- The proposed pipeline avoids the East Link Road proposals as outlined by DCC for Dublin Bay in the September 2007 Report *An Integrated Economic, Cultural and Social Vision for Sustainable Development*
- Proposed Cloghran Sewerage Scheme
- Rapid Bus Transit Projects
- Greater Dublin Drainage Project - new wastewater treatment works at preferred site north of R139
- North Fringe Water Supply Scheme, Contract 5 - North City Arterial Watermain: The Clontarf Flood Defence project comprises a series of flood bunds and walls along Clontarf Promenade between Alfie Byrne Road and the Bull Wall to protect nearby roads and properties from coastal flooding. The total length is circa 3km. Due to the synergies and common location of the North City Arterial Watermain and the Clontarf Flood Defences it was decided to combine the two projects. Planning approval was received in July 2008.

***Cumulative Impacts during Operation***

The cumulative impacts of the operation of the proposed pipeline on the following proposed schemes have been considered for the purpose of this NIS:

- Metro North (on hold post 2016 when budgetary constraints will be reviewed)
- Proposed Eastern By-Pass
- proposed road scheme / bridge over the River Tolka just before the Railway Bridge along East Wall Road
- The proposed pipeline avoids the East Link Road proposals as outlined by DCC for Dublin Bay in the September 2007 Report *An Integrated Economic, Cultural and Social Vision for Sustainable Development*
- Proposed Cloghran Sewerage Scheme
- Rapid Bus Transit Projects
- Greater Dublin Drainage Project - new wastewater treatment works at preferred site north of R139
- North Fringe Water Supply Scheme, Contract 5 - North City Arterial Watermain: The Clontarf Flood Defence project comprises a series of flood bunds and walls along Clontarf Promenade between Alfie Byrne Road and the Bull Wall to protect nearby roads and properties from coastal flooding. The total length is circa 3 km. Due to the synergies and common location of the North City Arterial Watermain and the Clontarf Flood Defences it was decided to combine the two projects. Planning approval was received in July 2008, Potential impacts such as a spillage or leak causing pollution have been considered. Many of these projects are linear, crossing through different catchments, over a few kilometres, therefore the probability of a significant pollution incident concentrated within any one catchment is very low.

### 3.6 Description of the Likely Changes to the Site

Describe any likely changes to the site arising as a result of:

- reduction of habitat area
- disturbance to key species
- habitat or species fragmentation
- reduction in species density
- changes in key indicators of conservation value (water quality etc)

Reduction in habitat area
<p>There will be no loss of habitat or reduction in habitat area within any Natura 2000 site as a result of the proposed aviation fuel pipeline.</p>
Disturbance to Key Species
<p>The only key species that could be potentially impacted through disturbance is Brent Geese as they are known to use the Alfie Byrne Open Space, the Tolka Inner Estuary, and Belcamp Park for feeding during the winter period. Brent Geese are present in the Dublin Bay area in internationally important numbers and they are a qualifying interest of the South Dublin Bay and Tolka River Estuary SPA, Malahide Bay SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA and the North Bull Island SPA. Brent Geese are also mentioned as a species of note in the site synopsis for Malahide Bay cSAC, North Dublin Bay cSAC, South Dublin Bay cSAC, Baldoyle Bay cSAC and Rogerstown Estuary cSAC. On a precautionary basis, and following consultation with Birdwatch Ireland, a degree of interconnectivity between all Brent Geese sites has been assumed.</p> <p>Only a catastrophic loss of fuel from the pipeline during operation could result in potential disturbance to key species and only if this occurs during the winter period when Dublin Bay supports the internationally important numbers of Brent and other wildfowl. Operational impacts of the pipeline on downstream Natura 2000 sites supporting Brent and other wildfowl cannot be screened out with certainty.</p> <p>There are no other disturbance issues causing significant impacts on key species as a result of the proposed development.</p>
Habitat or Species Fragmentation
<p>No habitat or species fragmentation is expected in any of the Natura 2000 sites located within 10 km of the pipeline route.</p>
Reduction in Species Density
<p>During construction, release of silt or contaminants such as fuel or oil, into local watercourses could lead to contamination of the designated sites lying downstream of the watercourses. Siltation of downstream Natura 2000 sites for example could lead to adverse impacts on filter-feeding inter-tidal species which may be present in the habitat 'mudflats and sandflats not covered by seawater at low tide [1140]'. This habitat is a qualifying interest of South Dublin Bay cSAC, North Dublin Bay cSAC and Baldoyle Bay cSAC. Contamination by silt or oil could lead to reduced growth of, or reduced species density of, inter-tidal flora such as <i>Salicornia</i> in the mudflats. Ireland's Eye cSAC, Howth Head cSAC or Rockabill to Dalkey Coast cSAC will not be adversely impacted by water quality changes due to their distance out from the coast line. Ireland's Eye SPA ,Howth Head Coast SPA are at a sufficient distance out from the coastline to be un-impacted by the proposed pipeline</p> <p>During operation of the pipeline, any release of fuel does have potential for pollution of downstream designated sites, and subsequent reduction in species density, such as <i>Salicornia</i> in the mudflats for example. Thus, operational impacts of the pipeline on downstream Natura 2000 sites cannot be screened out with certainty.</p>

### Changes in Key Indicators of Conservation Value

The key indicators of conservation value for the SPAs which could be potentially impacted (South Dublin Bay and Tolka River Estuary SPA, North Bull Island SPA, Malahide Estuary SPA, Baldoyle Bay SPA, Rogerstown Estuary SPA, Malahide Bay SPA) would be the abundance of key wintering species (e.g. Brent Geese, Oystercatcher, Ringed Plover, Golden Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit and Redshank). Ireland's Eye SPA and Howth Head Coast SPA are at a sufficient distance out from the coastline to be un-impacted by the proposed pipeline.

The key indicators of conservation value for the cSACs which could potentially be impacted (North Dublin Bay cSAC, South Dublin Bay cSAC, Baldoyle Bay cSAC, Malahide Estuary cSAC, Rogerstown Estuary cSAC) would be the Annex I habitats present within these sites, and in the instance of Baldoyle Bay cSAC, Rogerstown Estuary cSAC and Malahide Bay cSAC the occurring populations of Brent Geese:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Annual vegetation of drift lines [1210]
- Salicornia and other annuals colonizing mud and sand [1310]
- Spartina swards (*Spartinion maritimae*) [1320]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Humid dune slacks [2190]
- Salt meadows (*Juncetalia maritimi*) [1410]
- Brent Goose

North Dublin Bay SAC also contains one species that is listed on Annex II of the E.U. Habitats Directive, the rare liverwort, Petalwort (*Petalophyllum ralfsii*). This plant is located on North Bull Island. Ireland's Eye cSAC and Howth Head cSAC are at a sufficient distance out from the coastline to be un-impacted by the proposed pipeline.

## 3.7 The Likely Impacts on the Natura 2000 Site as a Whole

Describe any likely impacts on the Natura 2000 site as a whole in terms of:

- interference with the key relationships that define the structure of the site;
- interference with key relationships that define the function of the site.

The main impacts are disturbance and displacement of Brent Geese and contamination of inter-tidal habitats and species. These impacts could lead to a reduction in Brent Geese populations over time and a reduction in habitat quality.

### 3.7.1 Indicators of Significance of these Impacts

Provide indicators of significance as a result of the identification of effects set out above in terms of:

- loss
- fragmentation
- disruption
- disturbance
- change to key elements of the site (e.g. water quality etc.)

**Table 3.3: Indicators of Significance of the Potential Impacts**

Potential Impact	Significance Indicator
Disturbance to key species	Temporary decline in abundance of wintering Brent Geese within Dublin Bay due to avoidance during construction, reduced availability of marine foraging areas due to reduction in habitat quality following contamination event.
Decline in water quality due to increased siltation/turbidity during construction or through a leak of aviation fuel during operation of the pipeline.	Change in the Q-biotic index level in the watercourses downstream of the site (baseline data held by the EPA). Loss of habitat area through deposition of silt, contamination by fuel.

### 3.7.2 The likely Significance of the Potential Impacts

*Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known.*

There are two elements of the project that provide the potential for impacts on Natura 2000 sites. Construction of the pipeline may result in significant impacts on wintering Brent Geese via disturbance or displacement; both construction and operation of the pipeline may result in significant impacts on water bodies and aquatic habitats downstream from the pipeline in the event of a leak or spillage of fuels or other contaminants.

## 3.8 Screening Conclusion

There is the possibility that there could be effects on the South Dublin Bay and River Tolka SPA, the North Bull Island SPA, the Malahide Bay SPA, the Malahide Bay cSAC, the North Dublin Bay SAC, South Dublin Bay cSAC and Baldoyle Bay cSAC, Baldoyle Bay SPA and Rogerstown Estuary SPA (via its assumed connectivity in regard to Brent Geese), and Rogerstown Estuary cSAC (via its assumed connectivity in regard to Brent Geese) as a result of the proposed fuel pipeline. In the absence of mitigation measures (which are not considered at this stage), these potential impacts could be of significance. As a result, there is an obligation on the competent authority to carry out an appropriate assessment (i.e., Stage Two of the AA process) and, in this context, a Natura Impact Statement has been completed by the developer in respect of the above sites.

No potential impacts on remaining European sites (Ireland's Eye SPA, Ireland's Eye cSAC, Howth Head cSAC, Howth Head Coast SPA, Rockabill to Dalkey Island cSAC) within 10 km of the proposed development were identified. Therefore these sites have been 'Screened Out' at Stage One of the AA process. In accordance with the recommendations of the guidance document, '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, 2001 <sup>(5)</sup>, a Finding of No Significant Effects Report has been recorded in respect of these completed for these Natura 2000 sites (see Appendix 1).

## 4 STAGE TWO – NATURA IMPACT STATEMENT

This Natura Impact Statement addresses the Natura 2000 sites which have been identified as being potentially impacted by the proposed aviation fuel pipeline. These are:

- South Dublin Bay and Tolka River Estuary SPA
- North Bull Island SPA
- Baldoyle Bay SPA
- Malahide Estuary SPA
- Rogerstown Estuary SPA
- South Dublin Bay cSAC
- North Dublin Bay cSAC
- Baldoyle Bay cSAC
- Malahide Estuary cSAC
- Rogerstown Estuary cSAC

### 4.1 Assessment of the Effects of the Project or Plan on the Integrity of the Sites

*Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the site (from screening assessment)*

There are two elements of the project that provide the potential for effects on the Natura 2000 sites:

- During construction, there is the potential for disturbance and displacement of feeding and roosting Brent Geese. Brent Geese are known to use the Alfie Byrne Open Space, the Tolka Inner Estuary, and Belcamp Park for feeding during the winter period. Disturbance impacts on Brent Geese from the South Dublin Bay and River Tolka Estuary SPA, and to a lesser extent from North Bull Island SPA and Baldoyle Bay SPA may occur. Brent Geese are present in the Dublin Bay area in internationally important numbers and they are a qualifying interest of the South Dublin Bay and Tolka River Estuary SPA, Malahide Bay SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA and the North Bull Island SPA. Brent Geese are also mentioned as a species of note in the site synopsis for Malahide Bay cSAC, North Dublin Bay cSAC, South Dublin Bay cSAC, Baldoyle Bay cSAC and Rogerstown Estuary cSAC. On a precautionary basis, and following consultation with Birdwatch Ireland, a degree of interconnectivity between all Brent Geese sites has been assumed.
- During construction and operation of the pipeline there is the potential for contamination of waterbodies and impacts on downstream Natura 2000 sites. The Natura 2000 sites that could be impacted are South Dublin Bay cSAC, South Dublin Bay and River Tolka SPA, North Bull Island SPA, North Dublin Bay cSAC, Baldoyle Bay cSAC.

### 4.2 The Conservation Objectives of the Sites

*Set out the conservation objectives of the NATURA 2000 site.*

The conservation objectives of the Natura 2000 sites are to maintain the favourable conservation status of the key species and habitats for which the sites have been designated. For a qualifying habitat the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable. For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. The qualifying habitats and species of the Natura 2000 sites, in addition to conservation objectives are laid out in Table 4.1, overleaf.



Table 4.1: Key Species and Habitats for Natura 2000 sites Potentially Impacted by the Pipeline

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
South Dublin Bay and River Tolka Estuary SPA (004024)	<p>The South Dublin Bay and River Tolka Estuary SPA is of international importance for Light-bellied Brent Geese and of national importance for nine other waterfowl species. As an autumn tern roost, it is also of international importance. Furthermore, the site supports a nationally important colony of Common Tern. All of the tern species using the site are listed on Annex I of the E.U. Birds Directive, as are Bar-tailed Godwit and Mediterranean Gull.</p> <p><b>Qualifying Interests of SPA:</b></p> <p>Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Grey Plover (<i>Pluvialis squatarola</i>) [A140], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina</i>) [A149], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Redshank (<i>Tringa totanus</i>) [A162], Black-headed Gull (<i>Croicocephalus ridibundus</i>) [A179], Roseate Tern (<i>Sterna dougallii</i>) [A192], Common Tern (<i>Sterna hirundo</i>) [A193], Arctic Tern (<i>Sterna paradisaea</i>) [A194], Wetlands &amp; Waterbirds [A999].</p>	<p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests, or Qualifying Interests, for this SPA</p>
South Dublin Bay cSAC (000210)	<p>This site lies south of the River Liffey and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats, a habitat listed on Annex I of the E.U. Habitats Directive. South Dublin Bay is also an internationally important bird site. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there.</p> <p><b>Qualifying features of cSAC:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013c).</p> <p>These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural</p>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
North Bull Island SPA (004006)	<p>The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Pale-bellied Brent Geese, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl.</p> <p><b>Qualifying Interests of SPA:</b> Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Teal (<i>Anas crecca</i>) [A052], Pintail (<i>Anas acuta</i>) [A054], Shoveler (<i>Anas clypeata</i>) [A056], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Curlew (<i>Numenius arquata</i>) [A160], Redshank (<i>Tringa totanus</i>) [A162], Turnstone (<i>Arenaria interpres</i>) [A169], Black-headed Gull (<i>Larus ridibundus</i>) [A179], Wetlands &amp; Waterbirds [A999]</p>	<p>range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>
North Dublin Bay cSAC (000206)	<p>This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of ten habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected.</p> <p><b>Qualifying Interests of cSAC:</b> Mudflats and sandflats not covered by seawater at low tide [1140], Annual vegetation of drift lines [1210], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (<i>Spartinion maritimae</i>) [1320], Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330], Petalwort (<i>Petalophyllum</i></p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013).</p> <p>These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
Baldoyle Bay cSAC (000199)	<p>ralfsii) [1395], Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190].</p> <p>Baldoyle Bay is a tidal estuarine bay protected from the open sea by a large sand dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. The site contains four habitats listed on Annex I of the EU Habitats directive: Salicornia mud, Mediterranean salt meadows, Atlantic salt meadows and Tidal mudflats. The site has two legally protected plant species and is also an important bird area and part of it is a Special Protection Area under the EU Birds Directive, as well as being a Statutory Nature Reserve.</p> <p><b>Qualifying features of cSAC:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], <i>Spartina swards</i> (<i>Spartinion maritimae</i>) [1320], Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330], Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410].</p>	<p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Site specific conservation objectives have been published for this site (NPWS, 2012). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>
Baldoyle Bay SPA (004016)	<p>Baldoyle Bay SPA is of high conservation importance, with an internationally important population of Brent Geese and nationally important populations of a further seven species, including two which are listed on Annex I of the E.U. Birds Directive. Baldoyle Bay is of high ornithological importance for wintering waterfowl, providing good quality feeding areas and roost sites for an excellent diversity of waterfowl species. The inner estuarine section is a Statutory Nature Reserve and is also designated as a wetland of international importance</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013b). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this cSAC, the</p>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
<p>Malahide Estuary SPA (004025)</p>	<p>under the Ramsar Convention. The main threat to the birds is disturbance as it is located in a densely populated area.</p> <p><b>Qualifying features of SPA:</b></p> <p>Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Wetlands &amp; Waterbirds [A999].</p> <p>The site is of high conservation importance, with an internationally important population of Brent Geese and nationally important populations of a further 12 species. Three of the species which occur regularly (Golden Plover, Bar-tailed Godwit and Ruff) are listed on Annex I of the E.U. Birds Directive.</p> <p><b>Qualifying features of SPA:</b></p> <p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005], Light-bellied Brent Geese (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Pintail (<i>Anas acuta</i>) [A054], Goldeneye (<i>Bucephala clangula</i>) [A067], Red-breasted Merganser (<i>Mergus serrator</i>) [A069], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Knot (<i>Calidris canutus</i>) [A143], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Redshank (<i>Tringa totanus</i>) [A162], Wetlands &amp; Waterbirds [A999].</p>	<p>conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Site specific conservation objectives have been published for this site (NPWS, 2013e).</p> <p>These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SPA, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations</p>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
Malahide Estuary cSAC (000205)	<p>This site is a fine example of an estuarine system with all the main habitats represented. The estuary is an important wintering bird site and holds an internationally important population of Brent Geese and nationally important populations of a further 15 species.</p> <p><b>Qualifying features of cSAC:</b></p> <p>Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (Spartinion maritimae) [1320], Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330], Mediterranean salt meadows (Juncetalia maritimi) [1410], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p>	<p>on a long-term basis.</p> <p>Site specific conservation objectives have been published for this site (NPWS, 2013e). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>
Rogerstown cSAC (000208)	<p>This site is a good example of an estuarine system, with all typical habitats represented, including several listed on Annex I of the EU Habitats Directive. Rogerstown is an internationally important waterfowl site and has been a breeding site for Little Terns. The presence within the site of three rare plant species adds to its importance.</p> <p><b>Qualifying features of cSAC:</b></p> <p>Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310], Spartina swards (Spartinion maritimae) [1320], Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330], Mediterranean salt meadows (Juncetalia maritimi) [1410], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130].</p>	<p>Site specific conservation objectives have been published for this site (NPWS, 2013g). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SAC, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is</p>

Designated Site	Summary of Site & Qualifying Interests	Conservation Objectives
Rogerstown Estuary SPA (004015)	<p>Rogerstown Estuary is an important link in the chain of estuaries on the east coast. It supports an internationally important population of Brent Geese and a further 14 species in numbers of national importance. Bird populations have been well monitored since the 1980s and the site is counted at monthly intervals each winter (September to March) as part of the Irish Wetland Bird Survey (I-WeBS). The site is a statutory Nature Reserve and a candidate Special Area of Conservation under the E.U. Habitats Directive.</p> <p><b>Qualifying features of SPA:</b></p> <p>Greylag Geese (Anser anser) [A043], Light-bellied Brent Geese (Branta bernicla hrota) [A046], Shelduck (Tadorna tadorna) [A048], Shoveler (Anas clypeata) [A056], Oystercatcher (Haematopus ostralegus) [A130], Ringed Plover (Charadrius hiaticula) [A137], Grey Plover (Pluvialis squatarola) [A141], Knot (Calidris canutus) [A143], Dunlin (Calidris alpina) [A149], Black-tailed Godwit (Limosa limosa) [A156], Redshank (Tringa totanus) [A162], Wetlands &amp; Waterbirds [A999].</p>	<p>maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p> <p>Site specific conservation objectives have been published for this site (NPWS, 2013h). These aim to define the favourable conservation condition for qualifying habitats and species at the site.</p> <p>For a qualifying habitat in this SPA, the conservation objectives are achieved when its natural range is stable or increasing, the structures and functions necessary for long-term maintenance are likely to continue for the foreseeable future and the conservation status of the associated species are favourable.</p> <p>For a qualifying species, favourable conservation status is achieved when the species concerned is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</p>

### 4.3 Potential Impacts on Key Species and Key Habitats

*Describe how the project or plan will affect key species and key habitats. Acknowledge uncertainties and any gaps in information.*

During construction, release of silt or contaminants such as fuel or oil (from lubricants etc.), into local watercourses could lead to contamination of the designated sites lying downstream of the watercourses. Siltation of downstream Natura 2000 sites for example could lead to adverse impacts on filter-feeding inter-tidal species which may be present in the habitat 'Mudflats and sandflats not covered by seawater at low tide [1140]'. This habitat is a qualifying interest of South Dublin Bay cSAC, North Dublin Bay cSAC and Baldoyle Bay cSAC. Contamination by silt or other contaminants could lead to reduced growth of, or reduced species density of, inter-tidal flora such as *Salicornia* in the mudflats. During operation of the pipeline, any release of fuel (e.g. through rupture of the pipeline) has the potential for pollution of the downstream designated sites, and subsequent reduction of species, such as *Salicornia* in the mudflats for example.

A key species that could be potentially impacted through disturbance is Brent Geese as they are known to use the Alfie Byrne Open Space, the Tolka Inner Estuary, and Belcamp Park for feeding during the winter period. Disturbance impacts on Brent Geese from the South Dublin Bay and River Tolka Estuary SPA, and to a lesser extent from North Bull Island SPA and Baldoyle Bay SPA could occur. Additional sites which may be interconnected in terms of Brent usage are also considered as having the potential to be impacted.

### 4.4 Potential Impacts on the Integrity of the Site

*Describe how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project and plan (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes and geological changes etc). Acknowledge uncertainties and any gaps in information.*

With the application of the mitigation measures outlined below it is not considered likely that there will be any long term impacts on the key relationships that define the structure or function of the Natura 2000 sites considered in this NIS.

### 4.5 Mitigation Measures to be Introduced

*Describe what mitigation measures are to be introduced to avoid or reduce the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information*

- *List measures to be introduced*
- *Explain how the measures will avoid the adverse effects on the integrity of the site*
- *Explain how the measures will reduce the adverse effects on the integrity of the site*
- *Provide evidence of how they will be implemented and by whom.*

The following mitigation measures will be implemented in order to avoid adverse effects of this development on the integrity of the Natura 2000 sites.



Table 4.2: Details of Mitigation Measures to be Introduced

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<b>Mitigation Measures to be Implemented Prior to Construction</b>			
<p>The selected route is in areas of high regulation in terms of the control of third party interference, thereby reducing the possibility of impact through design.</p>	<p>This will reduce the likelihood of third party interference as the regulatory process will highlight the presence of the fuel pipeline to any parties seeking to carry out works.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>Optimum route has already been selected.</p>
<p>The final location of the pipeline within the proposed corridor will be determined through slit trenching. This will allow for micro-siting of the pipeline in areas of service congestion.</p> <p>Route proofing will be undertaken within the proposed corridor to identify/confirm the location of all services and utilities.</p>	<p>Micro-siting of the pipeline will ensure that existing services are avoided.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site Construction Programme.</p>
<b>Mitigation Measures to be Implemented During Construction</b>			
<p>Further consultation will be held with the IFI in advance of any works. All works will take cognisance of the IFI "Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites". Cognisance will be taken of the NRA "Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes" in the planning and implementation of the watercourse</p>	<p>This measure will reduce the risk of sediment runoff or pollutants reaching onsite watercourses. This in turn will reduce/avoid adverse impacts on water quality of downstream Natura 2000 sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>crossings of the rivers and streams.</p> <p>The project will be subject to and in accordance with a foreshore licence for the River Tolka crossing as the river is tidal at that point.</p>	<p>This will reduce the significance of third party interference should it occur.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the construction plan (an outline of which is appended to this NIS).</p>
<p>The minimum depth of cover above the proposed pipeline will be 1.2m consisting of 300 mm of sand or pea gravel, 700 mm of lean mix concrete, 200 mm surfacing, reducing third party interference. The depth will be increased where necessary to avoid clashing with existing drains or sewers.</p>	<p>This will reduce the significance of third party interference should it occur.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Existing vacant sites with hardstand areas are to be utilised for site compounds.</p>	<p>This will avoid additional land take and indirect contamination that may have been associated with the construction of compounds (e.g. concrete pouring).</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Construction works along the Alfie Byrne Road and Malahide Road (R139) will only be carried out during the period May to September in order to prevent disturbance to</p>	<p>This will avoid any significant disturbance to wintering geese.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>any wintering Brent Geese. Re-instatement works such as permanent road re-surfacing will be carried out where possible within this time frame</p>		<p>contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>NIS).</p>
<p>Japanese Knotweed identified during surveys is to be managed in accordance with Best Practice Guidelines available on the Invasive Species Ireland website (<a href="http://www.invasivespeciesireland.com">www.invasivespeciesireland.com</a>) and according to the NRA (2010) 'Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads'. An invasive species management plan has been included in Appendix 6 of this NIS. At present the options for control of Japanese Knotweed are to treat it with an appropriate herbicide application or to excavate the material. Disposal of dead material can either be on-site, in which case it is to be buried to at least 5 m depth, or by transporting to an appropriate waste management facility.</p>	<p>This will avoid the spread of invasive species such as Japanese Knotweed and other, Aquatic invasives, into European sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Should it be required, any pumping of groundwater during construction of the pipeline will only be carried out under licence from DCC or FCC. Any contaminated discharges from dewatering activities will be passed through a settlement pond before discharging to the surface water sewer network.</p>	<p>This will avoid the contamination of European sites through discharge of contaminated waters.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site Construction Plan (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>Alternatively, such discharges will be pumped to onsite bowzers where they will be removed off-site for treatment at an appropriate WWTP. There will be no direct pumping of contaminated water from the works to a watercourse at any time.</p> <p>A FRA Stage 1 has been prepared which takes cognisance of the impact of the location of construction areas shown to be within the indicative floodplain. The FRA Stage 1 report is included in Appendix 4 of this NIS.</p> <p>The section of roadway proposed for the location of the launch pit for the Cuckoo Stream skirts the 1 in 100 year indicative fluvial floodplain of the Cuckoo Stream at that location and it is in a local low point which experiences pluvial flooding. Access to the launch pit will be protected from floodwaters during construction, using temporary mitigation measures, such as temporary berms.</p> <p>The section of roadway proposed for the location of the launch and reception pits for the Kilbarrack Stream crossing is below the 1 in 100 year indicative floodplain level of the Kilbarrack Stream at that location. Access to the pits will be protected from floodwaters during construction at the location of the Kilbarrack Stream.</p>	<p>This will avoid the release of contaminants following a flood event.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the construction plan. (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>The launch and reception areas for the Santry River trenchless crossing will be raised on platforms during construction to avoid any ingress of floodwaters. Access to the pits will be protected from floodwaters during construction.</p> <p>The crossing location for the Naniken River is within a local low point which may experience pluvial flooding, according to the indicative mapping. Temporary mitigation measures, such as temporary berms will be put in place to divert pluvial flood flows from an extreme event at the launch and reception pits.</p> <p>Flood warnings and extreme weather forecasts will be strictly monitored to ensure the safety of construction personnel during construction activities at Clontarf Road and adjacent to the River Tolka. Construction activities will be suspended and excavations protected in advance of any extreme storm or flood forecasts and they will only resume when the extreme event has passed.</p>	<p>This will avoid contamination of downstream European Sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Discharges arising from the construction phase of the proposed scheme, such as dewatering of trenches, entering the foul/surface water sewer network will be subject to and in accordance with the requirements of any discharge licences granted by DCC and FCC. Any contaminated discharges will be passed through a settlement pond</p>			

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>before discharging to the surface water/sewer network. Alternatively, such discharges will be pumped to onsite bowzers where they will be removed off-site for treatment at an appropriate WWTP. Should it be required, any pumping of ground water to sewers/watercourses during construction of the pipeline, will only be carried out under a trade effluent discharge licence from DCC or FCC. There will be no direct pumping of any contaminated water from the works to a watercourse at any time.</p>			
<p>The river/stream crossings will be completed using trenchless technology. The choice of trenchless technique will depend primarily on the geological/geotechnical ground conditions pertaining to the proposed crossing. Following consultation with Local Authorities and IFI the most appropriate method will be selected. Trenchless techniques will significantly reduce the risk of siltation due to the construction works at the location of the proposed river crossings, as there will be no disturbance to the bed of the river or flow within the channel itself. Silt fencing will be provided around any exposed areas to prevent the ingress of suspended solids into adjacent watercourses. These mitigation measures will prevent surface water contamination and will prevent subsequent flows of contaminated</p>	<p>This will reduce the risk of siltation and any consequential impacts on downstream European Sites. These mitigation measures will prevent surface water contamination and will prevent subsequent flows of contaminated water into watercourses environmentally protected receiving waters.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site Construction Plan (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>water into watercourses reaching environmentally protected receiving waters.</p>	<p>These measures will avoid the risk of sediment or pollutants entering onsite watercourses and will prevent adverse impacts on aquatic flora and fauna in onsite watercourses. This in turn will avoid adverse impacts on water quality and on aquatic flora and fauna in downstream Natura 2000 sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the construction plan.</p>
<p>All backfill material (sand or pea gravel and leanmix concrete) will be brought to each working area on an as needed basis and will be not be stockpiled on site. This will prevent silt laden run-off. Excavated soil will be removed directly onto an awaiting HGV and removed by a permitted contractor for recovery/disposal at an appropriate facility (in agreement with the local authorities).</p>	<p>These measures will avoid the risk of sediment or pollutants entering onsite watercourses and will prevent adverse impacts on aquatic flora and fauna in onsite watercourses. This in turn will avoid adverse impacts on water quality and on aquatic flora and fauna in downstream Natura 2000 sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Hydrocarbon interceptors will be provided at the temporary compound and any stored fuels and oils will be banded to 110 % of the storage vessel. Drainage from banded areas will be diverted for safe disposal off site. The integrity and water tightness of bunds and their resistance to penetration by water or other material stored therein will be confirmed by the contractor prior to use as a storage area and checked regularly. Only</p>	<p>This will avoid contamination of downstream European sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>emergency maintenance to construction plant will be carried out on-site, and will preferably be carried out at the temporary construction compound(s), unless vehicles have broken down necessitating maintenance at the point of breakdown. Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/equipment will take place in designated bunded areas within the temporary construction compound. The vehicles and equipment will not be left unattended during refuelling. All plant and machinery will be stored within the Compound(s) each night.</p> <p>Any hazardous waste residuals or potentially contaminated sludge from spill clean-up will be stored within appropriate metal or plastic containers in temporary bunded storage areas in the construction compounds prior to removal by an authorised waste management contractor for off-site treatment/recycling/disposal at a permitted or licensed facility. Any materials to be stored overnight in compounds will be left in trucks and covered to prevent run-off.</p>	<p>These measures will avoid the risk of sediment or pollutants entering onsite or nearby watercourses and will prevent adverse impacts on aquatic flora and fauna. This in turn will avoid adverse impacts on water quality and on aquatic flora and fauna in downstream European sites.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p><b>Mitigation Measures to be Implemented During Operation</b></p>			
<p>The pipeline shall be protected from excessive leakage in the event of a rupture by the use of emergency shutdown valves. Emergency shutdown valves which are remotely controlled will be installed at both</p>	<p>These measures will avoid excessive leaks.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>ends and two intermediate points of the pipeline. In the unlikely event of a rupture to the pipeline, the provision of these valves will limit potential spill volume. These are strategically located to limit the drain down of the pipeline contents to any low point taking into account topography of the route. All valves will meet the requirements of ISO14313 /API 6D. Mainline valves on the pipeline will be full-bore ball valves. The ball valves will be of fully welded body construction to minimise the risk of leaks.</p>		<p>competent supervisory staff overseeing the works.</p>	<p>The developer shall ensure that full training is provided for operational personnel and monitors and that this is updated during the operation phase to accommodate change of personnel.</p>
<p>The fibre-optic communications cable laid above the pipeline has a secondary function of causing the pipeline to shut down in the event of third part interference.</p>	<p>This will reduce the significance of third party interference should it occur.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>A Cathodic Protection (CP) system will be installed to prevent external corrosion of the pipe. An impressed current cathodic protection system with deep well anode groundbeds will be installed to prevent external corrosion of the pipe. This is to avoid and minimise sensitivity to stray currents e.g. as compared with a sacrificial anode system.</p>	<p>This will avoid corrosion and consequent leakage of fuel from the pipeline.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>
<p>Fortnightly inspections shall be carried out on the pipeline route. An operator will survey the route on foot to detect factors that could affect the safety and the operation</p>	<p>This will reduce the impacts of any leaks and avoid any third party interference which may inadvertently cause leaks.</p>	<p>Mitigation measures will be implemented by the Developer.</p>	<p>The developer shall ensure that full training is provided for operational personnel and monitors and that this is updated during the operation phase to accommodate change of</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<p>of the pipeline. Details of the frequency of inspections and results will be recorded in a monitoring report to be submitted to the competent authority.</p> <p>Regular inspection of the stations, filters, valves and other fittings will take place on a planned maintenance schedule. This will help to ensure that the line is properly maintained and meets the safety requirements. Within the first year of operation an inline corrosion survey/intelligent pigging run will be carried out to establish a baseline. This will be repeated every 10 years.</p> <p>Additional external leak detection will be provided at the Tolka River which will comprise a slotted duct installed in the pipeline trench with a sensing cable installed in the duct. This will be visually inspected as part of the maintenance schedule to monitor any leakage near the Tolka River.</p>	<p>This will ensure that the pipeline is operated in accordance with IS EN 14161 – Petroleum and natural gas industries – Pipeline transportation systems (ISO 123:2009 modified) Annex D</p>	<p>Mitigation measures will be implemented by the Developer. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>personnel.</p> <p>The developer shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p> <p>The developer shall ensure that full training is provided for operational personnel and monitors and that this is updated during the operation phase to accommodate change of personnel.</p>
<p>Run-off from the AGIs at Dublin Port and Dublin Airport will pass through a retention oil interceptor.</p>	<p>This will avoid any contamination of the Tolka River.</p>	<p>Mitigation measures will be implemented by the Developer and the Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p> <p>The developer shall ensure that full training is provided for operational personnel and monitors and that this is updated during the operation phase to accommodate change of personnel.</p> <p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of the site construction plan (an outline of which is appended to this NIS).</p>

Mitigation Measure	How Measure will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Likely Success	Monitoring scheme to prevent mitigation failure
<b>Mitigation Measures to be Implemented During Decommissioning</b>			
<p>As part of the decommissioning process the pipeline will be emptied of fuel and flushed with water sourced from mains. The water will then be collected, sampled for contaminants and disposed of either to a surface water body (non-contaminated) or if contaminated, collected and taken offsite for disposal at an appropriate wastewater treatment facility (under licence) .</p>	<p>This will avoid any discharge of contaminated water into European Sites.</p>	<p>Mitigation measures will be implemented by the Developer and the decommissioning Contractor. All required mitigation measures will be included as a contractual obligation on the contractor, in combination with competent supervisory staff overseeing the works.</p>	<p>The developer/contractor shall ensure that mitigation measures are adhered to at all times as part of a decommissioning plan</p>



## 4.6 Efficacy of the Mitigation Measures

*Provide evidence of the degree of confidence in the likely success of the mitigation measures*

The mitigation measures were drawn up using guidelines set out in the following guidance documents:

- Fisheries Guidelines for Local Authority Works. Department of the Marine and Natural Resources. 1998.
- Fisheries Protection Guidelines, Requirements for the protection of fisheries habitat during construction and development works at river sites. Murphy, D.F., Eastern Regional Fisheries Board (2003)
- Guidelines for the crossing of watercourses during the construction of National Road Schemes. Environmental Series on Construction Impacts. NRA, 2005
- Environmental Impact Assessment of National Road Schemes – A Practical Guide, NRA (2005 & 2008).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes. NRA (2006 & 2009).
- Institute of Environmental Assessment. 1995. Guidelines for Baseline Ecological Assessment. Taylor & Francis, UK
- Forest and Water Guidelines 4th Edition (Forestry Commission 2004) (UK Guidance)
- BS6031: 1981 Code of Practice for Earth Works (UK Guidance)
- CIRIA Report C502 Environmental Good Practice on Site
- CIRIA 521 - Sustainable Urban Drainage Systems; Design Manual for Scotland and Northern Ireland
- CIRIA Report C532 Control of Water Pollution from Construction Sites
- CIRIA Report C648 Control of Pollution from Linear Construction Project. Technical Guidance
- CIRIA Handbook C650 Environmental good practice on site
- CIRIA Handbook C651 Environmental good practice on site checklist
- CIRIA Report C697 – The SUDS Manual
- Greater Dublin Strategic Drainage Study (GSDSDS): Technical documents of Regional Drainage Policies, March 2005, including Tolka Study Area – Watercourses and Storm Sewers
- Dublin City Council's Dublin Coastal Flood Protection Project DCFPP
- Fingal – East Meath Flood Risk Assessment and Management Study (FEMFRAMS)
- Eastern Catchment Flood Risk Assessment and Management Study (EASTCFRAMS)
- Proposed Cloughran Sewerage Scheme tender drawings
- North Fringe Water Supply Scheme
- Department of the Environment, Heritage and Local Government (DoEHLG) - *The Planning System and Flood Risk Management Guidelines for Planning Authorities, November 2009*
- Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites (Eastern Regional Fisheries Board)
- Biological River Water Quality Data, (Environmental Protection Agency (EPA))
- BPGCS005, Oil Storage Guidelines
- Design Manual for Roads and Bridges (National Roads Authority (NRA) DMRB), March 2013)

The following Pollution Prevention Guidance notes (PPG) were also consulted in drawing up these mitigation measures:

- PPG01 General guide to the prevention of water pollution
- PPG3: Pollution Prevention Guidelines
- PPG4: The disposal of sewage where no mains drainage is available PPG02 Above ground oil storage tanks
- PPG05 Works in near or liable to affect watercourses
- PPG06 Working at construction and demolition sites
- PPG07 Operating Refuelling Sites
- PPG8: Safe storage and disposal of used oil
- PPG11 Preventing pollution at industrial sites
- PPG18 Control of spillages and firefighting run-off
- PPG20 Dewatering underground ducts and chambers
- PPG21 Pollution Incident Response Planning
- PPG23 Maintenance of Structures over Water
- PPG26 Pollution Prevention Storage and Handling of Drums & Intermediate Bulk Containers

Accordingly, given the provenance of the mitigation measures as set out above, those mitigation measures (when properly implemented) will be successful in ensuring that the European sites are preserved at a favourable conservation status by ensuring the lasting preservation of the constitutive characteristics of those sites.

In circumstances where the mitigation measures have been developed in the light of the best scientific knowledge, no reasonable scientific doubt remains to the *absence* of any adverse effects caused by the proposed development on the integrity of the European Sites potentially affected in circumstances where those mitigation measures are implemented.

#### 4.7 Timescale for the Implementation of Mitigation Measures

*Provide a timescale relative to the project or plan when the mitigation measure will be implemented*

The construction phase of the project is subject to obtaining all the necessary approvals. It is anticipated that construction works will be completed over a 10 month period commencing in February and continuing until November (dependent on consent timelines).

A Construction Programme is included in Appendix 5. Road opening licences will be required for sections of the pipeline along public roadway. A detailed construction plan will be agreed with DCC, FCC and the IFI for the Tolka River Crossing.

#### 4.8 Contingency Plan for Mitigation Failure

*Explain how any mitigation failure will be addressed*

##### Construction Phase

On appointment of contractor a detailed Construction Plan will be produced for this development which will include:

- o Method Statements
- o Silt Management Programme
- o Mitigation measures to be implemented

Prior to construction, the contractor will submit to the client appropriate contingency plans and reporting procedures to address and manage any pollution events that occur. All construction staff will be made aware of pollution prevention measures and will be trained in their use. All works in or adjacent to watercourses will comply with the EPA/Fisheries/OPW requirements

##### Operation Phase

As detailed previously in this document, the pipeline will be operated using proven procedures and systems that the industry currently uses in the UK. This will help to ensure that best practice is followed from the start of the operation.

In the unlikely event of damage to the pipe and a subsequent leak the fuel will form a pool around the pipe. As part of the operator's emergency response plan (Appendix 7) the leaked fuel will be pumped out into a tanker. The fuel stays in a liquid form. The procedure for clean-up is similar to that for a spillage from a road tanker, in relation to the use of Personal Protective Equipment (PPE), notification to statutory bodies, prevention of the spreading of fuel, absorbing fuel and removing or pumping fuel to a tanker.

The following details the proposed monitoring and control during operation:

- *Monitoring & Control* - A Supervisory Control and Data Acquisition System (SCADA) will monitor the operation and provide status display, alarm and event history and logging of measurements. A PLC based alarm system will alert the on-call operator using a pager.

If the operator fails to respond, a backup callout via 24 hour call centre service will be initiated to the emergency response team, details of which are provided in the outline emergency response plan (refer to Appendix 7).

- Computational Model pipeline leak detection (CPM) - with automatic shutdown will be installed in compliance with API Recommended Practice 1130 (2007, Reaffirmed 2012) and German TRFL ("Technische Regeln für Fernleitungen" - Technical Rules for Pipelines) which requires two different leak detection methods.

One leak detection model will be capable of detecting leaks during transients e.g. starting up, shutting down and changing flow conditions. The leak detection systems will be chosen from specialist leak detection vendors with a significant installed base and proven track record on similar fuel product pipelines in Europe and particularly the UK.

Leak detection systems will utilise current best available technology fiscal grade, OIML approved Coriolis 0.1% uncertainty mass flow meters at both ends of the pipeline. The two computation models proposed are:

- Negative Pressure Wave - API Method B.5. Analysis of the pressure and flow measurements to detect negative pressure and rarefaction
- Flow/Pressure Mode - API Method B.4. Analysis of flow and pressure measurements using signature recognition to detect an imbalance anomaly which would indicate a leak. Flow/Pressure model will incorporate Mass Balance, Static Pressure (shut-in), and Leak Location functions.

The performance figures for CPM leak detection are as follows:

Performance Criteria	Limit
Minimum detectable leak rate under static conditions	10 litres /hr
Minimum detectable leak rate under flowing conditions	1% of flowrate
Time to confirm 1% flowing leak	10 minutes ( approximately 500 litres loss)
Response time for a 5% flowing leak	2 minutes ( approximately 500 litres loss)
Response time for 10% or greater flowing leak	1 minute ( approximately 500 litres loss)
Leak location accuracy	+/- 100 meters

The leak detection system will be calibrated and validated using leaks simulated by drawing off fuel at the terminals and at intermediate points along the pipeline route (emergency shutdown valves).

- *Safety* - A set of safety plans and procedures will be put in place to cover the unlikely event of an accident with the pipeline. This safety plan will include a communications link to Dublin Port, DCC, FCC, the DAA and the HSA. The plan will be based on existing plans used by the aviation fuel transportation industry in the UK and adapted or modified as necessary to meet local conditions and the requirements of Dublin Fire Brigade.
- *Cathodic Protection* - A Cathodic Protection (CP) system will be installed to prevent external corrosion of the pipe. An impressed current cathodic protection system with deep well anode groundbeds will be installed to prevent external corrosion of the pipe. This is to avoid and minimise sensitivity to stray currents e.g. as compared with a sacrificial anode system.
- *Physical Protection*- The depth of cover to the pipeline will be 1.2 m. The trench will be backfilled with lean mix concrete.
- *Visual Leak detection* - Fortnightly inspections will be carried out on the pipeline route. An operator will survey the route on foot to detect factors that could affect the safety and the operation of the pipeline. Inspections will identify any third party activities along the route which may encroach on the pipeline.

- *Maintenance* - Regular inspection of the stations, filters, valves and other fittings will take place on a planned maintenance schedule. This will ensure that the line is properly maintained and meets the safety requirements. Within the first year of operation an inline corrosion survey/intelligent pigging run will be carried out to establish a baseline. This will be repeated every 10 years.
- *Emergency Shutdown Valves* – Emergency shutdown valves which are remotely controlled will be installed at both ends and two intermediate points of the pipeline. In the unlikely event of a rupture to the pipeline, the provision of these valves will limit potential spill volume. These are strategically located to limit the drain down of the pipeline contents to any low point taking into account topography of the route.

## 4.9 Results of Consultation

The results of the consultations are discussed under Section 2.4 of this document.

## 4.10 Conclusion

In summary, it can be concluded that in light of the conservation objectives and rationale for designation of the European or Natura 2000 sites under consideration, the potential for significant indirect impacts exists as a result of aspects of the proposed Aviation Fuel Pipeline. These potentially significant impacts have been evaluated and with the implementation of the proposed mitigation measures, it is concluded that the proposed development will not result in any impacts that will adversely affect the integrity of the considered sites, having regard to the sites' respective conservation objectives, in circumstances where "no reasonable scientific doubt" remains as to the absence of such adverse effects.

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