Bord Gáis Networks

Tolka River Crossing

Foreshore Licence Application

ISSUE 1 | November 2011

BORD GÁIS NETWORKS

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SECTION 1

Comhshaol, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

FORESHORE ACTS 1933 TO 2003 - GENERAL GUIDANCE NOTES

The Foreshore Acts require that before the commencement of any works or activity (including the erection of any structures) on State-owned foreshore a licence or lease must be obtained from the Minister for Agriculture, Fisheries and Food. Such a lease or licence is subject to an annual rental payable to the Exchequer. Foreshore is the land and seabed between the high water of ordinary or medium tides (shown HWM on Ordnance Survey Maps) and the twelve-mile limit (twelve nautical miles is approximately 22.24 kilometres).

Applicants for a lease or licence are urged to consult the Department well in advance of finalising their proposals. An application for a lease or licence must be accompanied by 10 copies (15 copies if there is a possibility of significant impact on the marine environment, such as for sewerage schemes, dredging, marinas and any project requiring an EIS) of each of the following documents and be sent to:

Foreshore Unit
Department of Environment, Heritage and Local Government
c/o Johnstown Castle Estate
Wexford
Co. Wexford

1. Completed application form.**one with original signature**.
2. Ordnance Survey Map of 6" scale (latest edition) showing the precise area and the hectarage involved below the line of high water of medium tides clearly marked on the Map in distinctive colour. Applicants must certify and date all maps submitted, stating the area of foreshore involved in metric measurements (i.e. hectares or square kilometres etc). Plan, elevation and sectional drawing showing clearly the nature of the proposed works and lines and levels of high and low water of Spring tides.
3. Longitudinal section showing clearly how such works will be laid in relation to the surface of the seabed and having delineated on it the lines and levels of high and low water of Spring tides.
4. Certified copy (only 1 copy required) of the Company's Memorandum and Articles of Association and Certificate of Incorporation of a Limited Liability Company/Rule Book/Constitution for a club or Co-Operative Society as appropriate to the particular circumstance.

Additional copies or any or all documents may be requested to facilitate examination by the Department's specialist advisors.

Applicants are required to publish notice of their proposals in newspapers circulating in the area. The Department will prepare the notice and specify the newspapers in which it should be published. A three week period is allowed for representations and objections to be made to the Minister. The applicant is allowed an opportunity to comment on these before the final report is made to the Minister. That report will detail the proposal, the process that has been gone through, objections and commentary on them, and recommend whether or not to grant a lease or licence and if so under what conditions.

Certain developments are subject to the European Communities (Environmental Impact Assessment) Regulations, 1989 to 1999. An application for any development above the relevant threshold in the Regulations must include an Environmental Impact Statement (EIS). Applicants are encouraged to seek the Department's opinion at the scoping stage of the EIS. An appraisal of the environmental effects of a development below the threshold must be submitted by the applicant to allow the Minister to decide whether it is likely to have significant effects on the environment. Where the decision is "yes" an EIS is mandatory. The public consultation period for an application requiring EIS is one month and a copy of the EIS must also be provided by the applicant to the consultative bodies named in the Foreshore (Environmental Impact Assessment) Regulations, 1990 [SI N° 220 of 1990].

Developments on the foreshore require planning permission in addition to a Foreshore Lease/Licence/Permission. All Foreshore Leases, Licences and Permissions are without prejudice to the powers of the local planning authority. Applicants should, therefore, consult initially with the local planning authority regarding their proposal. In the case of developments on foreshore for, by or on behalf of a Local Authority where an EIS is required, applications should be made to An Bord Pleanála under **Part XV, Planning and Development Act 2000**. 10 copies of any applications made under this Act must be sent to this Department at the time of application to An Bord Pleanála.

Applicants seeking permission to lay an outfall or discharge pipe on the foreshore should also apply to the local authority or the Environmental Protection Agency for a licence under the Local Government (Water Pollution) Acts.

Developments on privately owned foreshore also requires the prior permission of the Minister under the Foreshore Acts.

Priority will be given to cases where emergency works are required for the preservation of human life. In such cases the Department should be contacted immediately by an application form with the required documents and drawings made available by whatever means allow for speediest arrival, with an undertaking to comply with any advice or instructions given by the Department. These completed applications would be dealt with as a priority in accordance with standard procedures, but it may be necessary for the Department to require modification of works carried out or their replacement with more permanent works of a design and nature acceptable to the Minister.

Telephone: +353 0539163400

Email: Error! Hyperlink reference not valid.**environ.ie** **Internet:** **www.environ.ie**

Comhshaol, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

APPLICATION FOR A LEASE/LICENCE/PERMISSION UNDER THE FORESHORE ACT 1933 (AS AMENDED)*

(This form should NOT be used for Applications for Offshore Electricity Generating Stations)

Please read Guidance Notes before completing this form

USE BLOCK CAPITALS IN BLACK INK

For Office Use
Application Ref. No._____
Date of receipt.

1. A. Name(s) of Applicant(s) in full
BORD GÁIS ÉIREANN

BGÉ is required to comply with the unbundling requirements of the EU Third Gas Directive (2009/73/EC). This Directive requires that, with effect from 3 March 2012 (or such later date as the Irish and UK governments may specify) (the "Transfer Date"), that the Networks business of BGÉ ("Bord Gáis Networks") be established as a separate legal entity ("Networks Newco"). Under the terms of the Third Directive the Networks Newco must be autonomous from the remaining businesses of BGÉ. This and associated obligations are referred to as the "Unbundling Obligation". To give effect to the Unbundling Obligation, certain contracts and legal arrangements which are currently held in BGÉ's name which relate to the Bord Gáis Networks business must be transferred to Networks Newco from the Transfer Date.

As part of the process of giving effect to the Unbundling Obligation, it is expected that this Application, if not already approved, will be transferred to Networks Newco on the Transfer Date. It is envisaged that such transfer will, as between BGÉ and Networks Newco, be effected pursuant to the Statutory Transfer Plan that will be provided for by the implementing SI when it is enacted. The transfer date will be determined by the Minister for Communications, Energy and Natural Resources. The transfer will take effect automatically after Ministerial consent and will not require you to do anything to give effect to it.

As Irish legislation implementing the Third Gas Directive has yet to be published, the arrangements set out in this note are subject to change. BGÉ will advise of any such change, as appropriate. As a matter of courtesy we will communicate the creation of the Networks Newco before the transfer date.

B. Address(es) of Applicant(s) in full

GASWORKS ROAD,
CORK

Telephone (021) 4534000 **Mobile**

Fax (021) 4534001 **E-mail** DBURKE@BGE.IE

RSI/PPS No:/CRO No: 4401890i

C. Signature of Applicant

Declan Burke **Date:** 11/11/2011

DECLAN BURKE
Projects Planning Manager

D. Name of contact person if different from above

PAUL BRADY

Address ARUP CONSULTING ENGINEERS

15 OLIVER PLUNKETT STREET, CORK, IRELAND

Telephone (021) 4277670 **Mobile** 087 9482677
Fax (021) 4272345 **E-mail** PAUL.BRADY@ARUP.COM

**** Legislation Applicable Foreshore Act, 1933 (No. 12); Foreshore (Amendment) Act, 1992 (No.17); Fisheries and Foreshore (Amendment) Act, 1993 (No. 54), Fisheries (Amendment) Act, 2003 (No. 21); European Communities (Environmental Impact Assessment Regulations, 1989 to 1999; Foreshore (Environmental Impact Assessment) Regulations, 1990 (S.I. No. 220); Planning and Development Act 2000 (No. 30) Part XV***

E. Name and Address of Applicant's Legal Advisors
(Applicants are strongly advised to seek legal assistance, prior to agreeing to accept an offer of a Foreshore lease/licence/permission as all are legally binding documents. Where an offer is made of a Foreshore Lease/Licence/Permission it will be done through the Applicant's Legal Advisors)

O'FLYNN EXHAMS

58 SOUTH MALL

CORK

Telephone (021) 4277788 **Fax** (021) 4272117_ **E-mail** EAMONN.MULDOON@OFLYNNEXHAMS.IE

2. (A) A detailed description of the proposed works which are to be carried out on the foreshore.
(Please feel free to use additional sheets, which should be signed and dated).

PLEASE REFER TO ATTACHED DESCRIPTION AND METHOD STATEMENT

(B) A Statement of reason for the works

BORD GÁIS ÉIREANN IS SEEKING A NINETY NINE (99) YEAR LICENCE FOR CROSSING OF THE TOLKA ESTUARY. BGÉ ARE PROPOSING TO CONSTRUCT A NEW GAS PIPELINE BETWEEN COOLOCK AND EAST WALL IN DUBLIN. THIS PIPELINE WILL NECESSITATE A CROSSING OF THE TOLKA RIVER CLOSE TO JOHN McCORMACK BRIDGE.
PLEASE REFER TO ATTACHED DESCRIPTION AND METHOD STATEMENT.

A statement of the disturbance to the foreshore, arising from these works, should be attached covering the impact on the marine environment including the impact on coastal erosion, navigation, fishing, fisheries (various species known to inhabit the area), pleasure boating and sailing, air navigation (if appropriate).

(C) Provide the following location details in respect of the area of foreshore for which the

Licence is sought

(i) Bay RIVER TOLKA ESTUARY (DUBLIN BAY)

(ii) County DUBLIN

(iii) Geographic co-ordinates in degrees, minutes and seconds
As shown on Drg. No. FL-001 (attached).
53^{O} 21' 30'' N 06^{O} 14' 03''W,
53^{O} 21' 30'' N 06^{O} 14' 03''W,
53^{O} 21' 29'' N 06^{O} 14' 04''W,
53^{O} 21' 29'' N 06^{O} 14' 03''W, ,

(iv) OS Map No. 3198

(v) Size (hectares) 0.036 hectares

(vi) Local Authority DUBLIN CITY COUNCIL

3. RECORD OF DOCUMENTS ENCLOSED WITH THIS APPLICATION (🗐)

An application for a lease or licence must be accompanied by 10 copies (15 copies if there is a possibility of significant impact on the marine environment, such as for sewerage schemes, dredging, marinas and any project requiring an EIS) of all relevant documents.

(i)	**Ordnance Survey Map (Scale of 1:10,560, i.e. a six inch map)** Applicants must certify and date all maps submitted, stating the area of foreshore involved in metric measurements (i.e. hectares or square kilometres etc) with the area involved clearly delineated in red thereon.		**Y**
(ii)	**British Admiralty Chart (largest available scale)**		**Y**
(iii)	**Decision of planning authority or An Bord Pleanála under Planning Acts (Required)** Developments on the foreshore require planning permission in addition to a Foreshore Lease/Licence/Permission. All Foreshore Leases, Licences and Permissions are without prejudice to the powers of the local planning authority. Applicants should, therefore, consult initially with the local planning authority regarding their proposal.	*see Note 1 below*	**1**
(iv)	**Copy of licence under Section 4 of Local Government Water Pollution Act, 1977**		**N/A**
(v)	**Environmental Impact Statement**	*see Note 2 below*	**2**
(vi)	**Drawings of the structures to be used and/or layout**		**Y**
(vii)	**Copy of any correspondence with the Department of the Environment, Heritage and Local Government (Heritage and Planning Division)**		**3**
(viii)	**Certified copy of Company's Memorandum and Articles of Association (Only one copy is required)**	*see Note 3 below*	**4**
(ix)	**Certificate of Incorporation of a Limited Liability Company/ Rule Book/Constitution for a Club or Co-Operative Society as appropriate**	*see Note 3 below*	**4**

(x) Other (specify) Drawings and documents listed in **"Any additional information"** below

(Note:It may not be necessary to include all of the above documents please refer to the accompanying "Guidance Notes".

NOTE 1: *Bord Gáis Éireann (BGÉ) will apply for permission to construct the pipeline under section 39A of the 1976 Gas Act.*

NOTE 2: *Environmental Report Attached*

NOTE 3: *Consultation has taken place with the Development Application Unit, Underwater Archaeology Unit and the National Parks and Wildlife Service.*

NOTE 4: *Bord Gáis Éireann (BGÉ) is a body corporate established under the 1976 Gas Act. As BGÉ is not a limited company, it's constitution is the 1976 Gas Act and as a result it does not have a memorandum and articles of association or a Certificate of Incorporation.*

4. Details of any previous Leases/Licences/Permissions received by the applicant for this or any adjoining sites (if appropriate)

(i) Date of Lease/Licence/Permission N/A

(ii) Reference number(s) N/A

5. Is all or any part of the Foreshore (the subject of this application) in private ownership?
(This search should be carried out in the Registry of Deeds and Land Registry and copies of results, including where appropriate, folio maps should be included).

NO. THE FORESHORE INVOLVED IS NOT IN PRIVATE OWNERSHIP.

If yes, please provide details of ownership.

N/A

Have adjacent land owners, whose properties may be affected by these works been consulted?
Please provide details/permissions as appropriate.

THE ADJACENT LAND IS IN THE OWNERSHIP OF DUBLIN CITY COUNCIL.
BORD GÁIS ÉIREANN ARE IN ONGOING CONSULTATION WITH DUBLIN CITY COUNCIL.

6. Employment Implications (if any)

N/A – EXCEPTING MINIMAL CONTRACTOR PERSONNEL

7. Capital cost of proposed works (€ - Euro)

Approx Cost: €300,000

8. Do the proposed works involve the draw down of European Union or State funding?

NO

If "Yes" give details, including any time restrictions, etc. applying

N/A

9. Do the proposed works provide for public use, restricted use or strictly private use? (give details)

THE RIVER TOLKA CROSSING WORKS ARE ASSOCIATED WITH A PRIVATE DEVELOPMENT. ALL WORKS ARE TEMPORARY.

10. Are there public health/safety implications arising from the proposed works? (e.g. effluent disposal, removal of derelict or dangerous structures etc.)

NO. A HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT PLAN WILL BE PUT IN PLACE PRIOR TO COMMENCEMENT OF THE CONSTRUCTION PHASE OF THE WORKS. THE DESIGN AND CONSTRUCTION OF THE CROSSING SHALL FULLY COMPLY WITH THE REQUIREMENTS UNDER THE FOLLOWING ACTS AND REGULATIONS:
- National Standards Authority of Ireland 2003 Irish Standards I.S. 328 *Code of Practise for Gas Transmission Pipelines and Pipeline Installation*
- Government of Ireland (2006) Statutory Instrument No. 504 of 2006 *Safety, Health and Welfare at Work (Construction) Regulations 2006*.

FOR FURTHER DETAILS REFER TO ATTACHED DESCRIPTION AND METHOD STATEMENT.

10a. Are there public navigational safety implications arising from the proposed works?

THE DEVELOPMENT INVOLVES THE INSTALLATION OF A GAS PIPELINE UNDER THE RIVER BY A TRENCHLESS CROSSING TECHNIQUE. ALL WORKS ASSOCIATED WITH THE CROSSING, WILL TAKE PLACE OUTSIDE OR BENEATH THE FORESHORE, JUST UPSTREAM OF THE JOHN McCORMACK BRIDGE AND WILL NOT RESULT IN DISRUPTION TO NAVIGATION, OR NAVIGATIONAL SAFETY. REFER TO DESCRIPTION AND METHOD STATEMENT FOR ADDITIONAL INFORMATION.

1. What marine activity is there in the area?

AS THE PROPOSED PIPE WILL CROSS THE TOLKA RIVER JUST UPSTREAM OF THE JOHN McCORMAC BRIDGE, THERE IS NO OR LITTLE MARINE ACTIVITY IN THE AREA INVOLVED.

2. How will the marine activity be affected by the proposed works?

DUE TO THE TEMPORARY CHARACTER OF THE PROPOSED WORKS, THERE WILL BE NO AFFECT ON THE MINIMAL (OR NON-EXISTENT) MARINE ACTIVITY .

3. What mitigating measures will be put in place?

N/A

5. How will the proposed works affect Marine Navigation in the future?

THE PIPELINE WILL BE LOCATED UNDER THE BED OF THE RIVER TOLKA AND WILL NOT HAVE ANY IMPACT ON MARINE NAVIGATION DURING THE OPERATIONAL PHASE OF THE GAS PIPELINE.

11. Will the works involve the storage and/or disposal of waste?

THE TEMPORARY CROSSING WORKS WILL NOT INVOLVE STORAGE OF WASTE ON THE FORESHORE. THE TRENCHLESS TECHNIQUE WILL INVOLVE THE REMOVAL OF MATERIAL FROM INSIDE A CASING BENEATH THE RIVER, WHICH WILL BE DISPOSED OF AT THE END OF THE CONSTRUCTION WORKS.

If "Yes" please give details of the type of waste and the proposed method of storage and/or disposal (including location)

EXCAVATED MATERIAL WILL BE REMOVED DIRECTLY FROM SITE AND DISPOSED OF AT AN APPROPRIATE LICENCED FACILITY. THERE WILL BE NO STORAGE OF EXCAVATED MATERIAL OR WASTE ON THE FORESHORE. PLEASE REFER TO ATTACHED DESCRIPTION AND METHOD STATEMENT FOR FURTHER DETAILS.

Certain developments are subject to the European Communities (Environmental Impact Assessment) Regulations, 1989 to 1999. It is the responsibility of the applicant to consult and comply with these Regulations. Where the relevant threshold in the Regulations is exceeded an application for permission under the Foreshore Acts must include an Environmental Impact Statement (EIS). Applicants are encouraged to seek the Department's opinion at the scoping stage of the EIS.

An appraisal of the environmental effects of a development below the threshold must be submitted by the applicant to allow the Minister to decide whether it is likely to have significant effects on the environment. Where the decision is "yes" an EIS is mandatory.

In the case of developments on foreshore for, by or on behalf of a Local Authority where an EIS is required, applications should be made to An Bord Pleanála under Part XV, Planning and Development Act, 2000. 10 copies of any applications made under this Act must be sent to this Department at the time of application to An Bord Pleanála.

Note: While every effort will be made to deal promptly with applications, priority will be given to dealing with applications involving public infrastructure, public health, public use and those having employment implications.

Any additional Information

THE FOLLOWING DOCUMENTATION IS INCLUDED WITH THIS APPLICATION:

- RIVER TOLKA CROSSING DESCRIPTION AND METHOD STATEMENT

- DRAWINGS:

  - Drawing No. FL-001: SITE LOCATION MAP (1:10,560 SCALE)

  - Drawing No. FL-002: ADMIRALTY CHART

  - Drawing No. FL-003: PLAN AND LONGITUDINAL SECTION

- ENVIRONMENTAL REPORT

Please send completed application form to:

Foreshore Unit
Department of Environment, Heritage and Local Government
c/o Johnstown Castle Estate
Wexford
Co. Wexford

Incorrectly completed or incomplete application forms cannot be processed and will be returned.

SECTION 2

Bord Gáis Networks

Santry to East Wall Pipeline Replacement Project

River Tolka Crossing Description and Method Statement

RP002_C2936.10

ISSUE 1 | November 2011

Ove Arup & Partners Ireland

Arup
15 Oliver Plunkett Street
Cork
Ireland
www.arup.com

Job number C2936.10

ARUP

Document Verification

ARUP

Job title		Santry to East Wall Pipeline Replacement Project		Job number C2936.10
Document title		River Tolka Crossing Description and Method Statement		File reference
Document ref		RP002_C2936.10		
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Issue 1	09/11/11	Description	Licence Application	
			Prepared by	Checked by	Approved by
		Name	Sabina Kwiatkowska	Paul Brady	Paul Brady
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
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		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

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Figure 1 Location of Pipeline Crossing of the River Tolka

Figure 2 A typical ramming pneumatic tool.

Figure 3 Sleeve pipe ramming underneath river.

Figure 4 Launch and Exit Pit approximate location.

Figure 5 A typical ramming operation.

Figure 6 Auger spoil from ramming sleeve.

1 Project Description

Bord Gáis Networks are in the process of reinforcing the existing transmission gas network in the Santry to East Wall area of Dublin City. This proposed reinforcement requires the construction of a new gas pipeline between East Wall Road and Coolock with a link line from Malahide Road to Swords Road via Griffith Avenue. The new pipeline will be 300mm in diameter and will be located predominantly within the road network and some public open spaces. The route of the pipeline will necessitate a crossing of the Tolka River.

The proposed River Tolka crossing is located next to Fairview Park, just upstream of the John McCormack Bridge. The crossing location is shown in Figure 1. The estuary of the Tolka River forms part of the proposed Natural Heritage Area (pNHA) and Special Protection Area (SPA).However the proposed pipeline crossing location is outside of the SPA and pNHA. It is proposed to construct the crossing using a trenchless crossing technique in order to minimise the potential for impact on the environment.

Permission to construct the pipeline is obtained from the Commission for Energy Regulation under section 39A of the 1976 Gas Act, as amended.

Bord Gáis Networks have had pre-application consultation with Commission for Energy Regulation in this regard and have begun the Section 39A application process.

2 Requirement for Foreshore Licence

The crossing of the River Tolka will require works below the High Water Mark and therefore will require a Foreshore Licence.
This Method Statement presents the scope and methodologies associated with the crossing works.

3 Description of the Proposed Works

3.1 Overview

The proposed gas pipeline will be used for the transmission of natural gas. It will link the existing network at Cadbury's AGI (above ground installation), Coolock to the ***Dublin City Pipeline*** at East Wall and also to the Swords Road AGI located close to the Regency Hotel.

3.1.1 Pipeline Design Details

The main engineering parameters of the proposed pipeline at the location of the crossing of the River Tolka are outlined as follows:

- 300mm Diameter
- 19 bar Design Pressure

- 11.91mm wall thickness,

3.1.2 Proposed Tolka Crossing Locations

Figure 1 Location of Pipeline Crossing of the River Tolka

The proposed pipeline will cross the River Tolka from East Wall Road to Fairview Park, just upstream of the John McCormack Bridge. The bank to bank width at the crossing point is approximately 26m.

Based on GSI data the ground conditions around the banks are a combination of made ground, gravel and glacial tills. The trenchless crossing will be carried out at a level below the made ground and will be a minimum of 1.6m below the true river bed.

3.2 River Crossing Methodology

During initial investigation, it was determined that a trenchless technique could be utilised for the crossing of the Tolka. The use of a trenchless technique will ensure that disturbance to the river itself, including the river banks and river bed, will be minimised or non-existent.

A number of techniques is available for tunnelling pipes of this scale and for the existing ground conditions at the Tolka crossing location. All techniques involve thrusting a sleeve pipe (concrete or steel) under the river bed, removing the spoil from the sleeve and then inserting the gas pipeline into the sleeve. The annulus between the pipe and the sleeve is then grouted. The main difference between the various tunnelling techniques is the equipment which is used to cut the soil and push the sleeve pipe. All involve a thrust pit on one side of the crossing and a reception pit on the opposite side and all work is confined to the entry and exit points and all would result in a dry crossing of the Tolka.

For the existing ground conditions at the Tolka crossing, i.e. gravel, it is envisaged that a **Pipe Ramming** or similar technique will be used. Pipe Ramming is an established and widely used trenchless method for installation of sleeve pipes and casings under different types of obstacles like road, rivers, and rails. The method uses a pneumatic hammer to drive casings/sleeves through the ground. On completion of the bore, the spoils are removed from within the casing and the gas pipeline is subsequently inserted through it. A typical pneumatically driven ramming machine is shown in Figure 2.

Figure 2 A typical ramming pneumatic tool. (Derived from Able-Tech Solutions Ltd. website)

The ramming machine is driven by a conventional compressor.

Pipe Ramming is fast and the working area is confined to points of entry and exit only, so it causes no disruption to river banks and bed. Also, as a dry method of installation does not generate slurry.

3.3 Pipe Ramming Construction Process Description

Pipe Ramming is a pneumatic method for installation of sleeve pipes and casings. The installation of the pipe shall be carried out in a number of segments. When shorter pipe segments are rammed, the ramming tool drives each pipe segment for its length through the ground, and then is returned back to the tool's original position for the new segment.

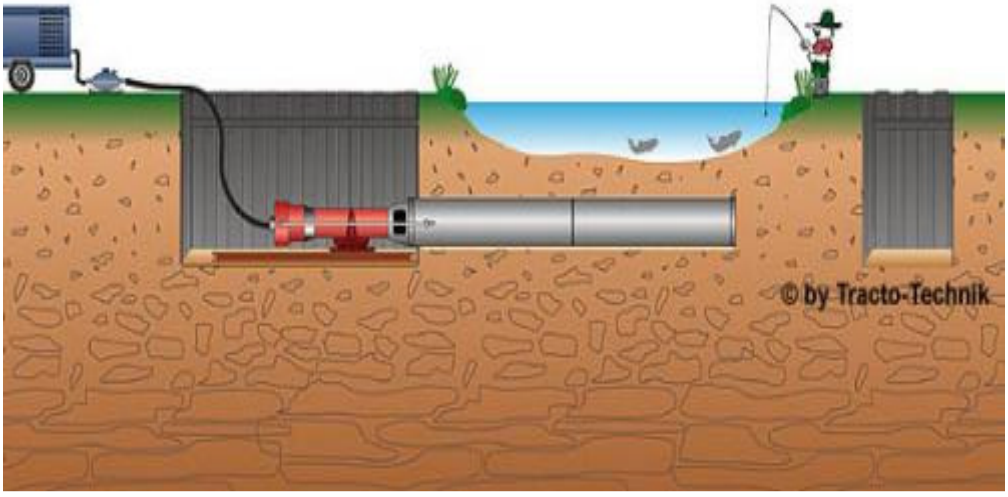

Figure 3 Sleeve pipe ramming underneath river. (Derived from Traco-Technic. website)

The basic components of a pipe ramming process include:

- Trial holing, service identification and re-location
- Construction of sheet piled launch and reception pits
- Pipe Ramming of approximately 650mm diameter sleeve pipe under river
- Installation of 12'' (300mm) gas pipeline in the sleeve.

3.3.1 Trial holing, service identification and re-location

To facilitate the excavation of the pits all existing services will be located by identification from service plans, CAT scanning and trial holes. The contractor will determine the exact location of all services before beginning the works.
All trial holing will be outside of the foreshore.

3.3.2 Construction of launch and Reception Pits

The method typically requires excavation of two pits, one at either side of the crossing, called launch (thrust) and exit (reception) pits; excavated to a level to facilitate the installation of the sleeve pipe. The approximate plan dimensions of the pits are respectively approximately 8m x 2.5m (launch pit), and approximately 3.5m diameter (exit pit). The pits will be excavated to a depth approximately 0.5m below the invert of the pipe. Trench sheets and walers/ or pre-cast concrete sections will be used to support the excavation. Before ramming, hardcore and blinding will be placed in the base of the pits.
Both pits will be maintained in a dry state using a small submersible pump. Access and egress will be by means of an adequately secured ladder and a handrail will be erected around pit edges. The edges of all pits shall be kept clear of all materials to prevent trip hazards and to provide a clear walkway within the work site.

Figure 4 Approximate Locations of Launch and Reception Pits.

3.3.3 Pipe Ramming

Prior to the commencement of the ramming operation, a cutting shoe is welded to the front end of the first sleeve pipe. This ring protects the end of the pipe from damage and with its hardened edge will break any cobbles or boulders encountered, subsequently both the first section of the pipe and the ramming tool are lowered onto the runner and lined up in the desired direction.

The hammer is connected to the back of the pipe and connected to the compressor. The rate of hammering is governed by the volume of air delivered. The first pipe is driven slowly until the pipe is established in the ground while maintaining line and level. The line and level of the first pipe is continually monitored to confirm correct orientation and to ensure the pipe does not deviate off line.

Having driven the first length, the hammer is disengaged and the next length lifted into place and butt welded by experienced coded welders. This process is continued until the crossing is completed, subsequently the equipment is removed from the launch pit and the spoil is removed from inside the pipe using an auger boring rig which augers the material out of the pipe.

Figure 5 A typical ramming operation crossing under the DART line on Serpentine Avenue in 2011.

Figure 6 Auger spoil from ramming sleeve.

All spoil will be removed from site. Access shall be maintained at all times and road and footpaths maintained free of mud and debris.
All works will be carried out within a secured fenced area. Temporary Herris fencing will be provided to secure the site.

3.3.4 Site Layout and Design

Heavy equipment will be required on both sides of the crossing. There is ready access to either side of the crossing via existing public roads. The working areas at either side of the crossing will be located outside of the foreshore.

The ramming equipment will be located on the northern side of the crossing in Fairview Park. The reception-side will be located on the southern side of the crossing, just west of the Alfie Byrne Road and East Wall Road junction. The ramming operation will progress from the northern side to the southern side. The ramming equipment will be removed from site after completion of sleeve casing installation.

The gas pipeline will be inserted from the northern side to the southern side through the steel casing under the river.

4 Consultation with Third Parties

The following have been consulted with:

- Department of the Environment Community and Local Government
    - Foreshore section
    - Engineering division
- Department of Arts Heritage and the Gaeltacht
    - Development Application Unit
    - National Parks and Wildlife Service
    - Underwater Archaeological Unit
- Dublin City Council
    - Archaeology Section
    - Conservation Officer – Architects Office
    - Water Projects
    - Road Design Office
    - Parks Department
    - Planning Department
- Commission for Energy Regulation
- Office of Public Works
- Inland Fisheries Ireland

5 Duration of Works

Anticipated commencement date for construction is April 2012

It is envisaged that construction will take approximately 1 month to complete.

6 Statement of Envisaged Disturbance to the Foreshore

6.1 Potential Environmental Impacts

An Environmental Report has been prepared for the crossing of the Tolka. The report is submitted with this Foreshore Licence Application.

The Environmental Report addresses the potential environmental impacts of the proposed development, and recommends mitigation measures to be implemented to minimise these impacts.

6.2 Other Potential Impacts

6.2.1 Erosion

The risk of erosion or bed scour during the construction and operation of the pipeline is nil as the pipeline will be installed trenchlessly. During the construction stage, localised vibrations associated with the trenchless crossing are unlikely to cause any temporary disturbance to the river bed due to the depth (cover) between the bed level and the pipe level. Surface disruption associated with pipe ramming is not envisaged as the sleeve pipe is first rammed through, before the soil within the pipe is removed. l. It is therefore concluded that the construction and the operation of the gas pipeline will not cause any erosion to the foreshore.

6.2.2 Impact on Marine Activity and Navigation

As the proposed crossing is located just upstream of the John McCormac Bridge there is minimal or non-existent marine activity. Therefore there will be no navigational safety implications associated with the short term crossing works.

6.2.3 Waste Management

The crossing works involve removal of spoils following pipe ramming. It will be accomplished by means of boring rig which augers the material out of the pipe after completion of the installation. There will be no storage of excavated material on the foreshore. All spoil will be removed from site using a tipper lorry and disposed of at an appropriate licensed facility.

During the construction phase the potential exists for spillages e.g. oil from machinery and general construction waste. As part of the project planning and in conjunction with the pollution control plan a detailed waste management plan will

be developed. This will be implemented and maintained during the construction phase to minimise risk of such spillages and govern the handling and disposal of all waste streams associated with the crossing works.

Signed: Declan Burke Date: 11/11/2011

DECLAN BURKE
Projects Planning Manager

SECTION 3

SECTION 4

Bord Gáis Networks
Tolka River Crossing
Environmental Report

C2936.10

Issue 1 | 9 November 2011

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Appendix A

Appropriate Assessment Screening Report

Executive Summary

Bord Gáis Networks (Bord Gáis) intends to construct a new gas pipeline between East Wall Road and Coolock, Dublin City in order to reinforce the existing gas network in the area. The project will require a trenchless crossing (from East Wall Road and Fairview Park) beneath the bed of the Tolka River, at a point just upstream of John McCormack Bridge. The trenchless crossing will comprise a small tunnel a minimum of two metres beneath the river bed. Two pits, a thrust pit on the northern side of the crossing and a reception pit on the southern side, will be required. All work will be confined to the entry and exit points. This methodology will result in a dry crossing of the Tolka.

The pipeline will have a nominal 300 millimetres diameter, a design pressure of 19 bar and a steel wall of thickness 11.91 millimetres.

It is envisaged that construction of the pipeline between East Wall Road and Coolock will commence in April 2012. It is anticipated that the construction of the trenchless crossing of the Tolka River will take approximately one month.

This Environmental Report has been prepared by Arup on behalf of Bord Gáis, in order to identify, avoid where feasible, or mitigate adverse impacts on the environment arising from the construction and operation of the trenchless pipeline crossing of the Tolka River.

A Foreshore Licence is required under the provisions of the 1933 Foreshore Act (No. 12 of 1922 as amended) for the proposed trenchless crossing of the Tolka River. This environmental report will be submitted with the Foreshore Licence Application.

An Appropriate Assessment Screening Report, was prepared by Moore Group Ecological Consultants, to determine whether the construction and operation proposed development would be likely to have significant effects on integrity of the designated South Dublin Bay and Tolka River Estuary Special Protection Area (Site Code) 004024. The Screening Report is appended to the Environmental Report. There will be no significant impacts on the Special Protection Area or on any other designated sites in the vicinity of the proposed works, as a result of the proposed development. Mitigation measures will be implemented, to ensure that there will be no significant residual impacts on aquatic habitats, the Special Protection Area or important plant and animal populations.

During construction, there are potential short-term impacts related to noise and dust nuisance arising from construction activities. Mitigation measures will be implemented during construction to ensure that there will be no significant noise impacts or impacts on air quality. There will be no impacts on noise or air quality during the operation of the pipeline.

Mitigation measures will be implemented during construction to ensure that there will be no significant impacts on the Tolka River. There will be no impact on the Tolka River during the operation of the pipeline.

The construction contractor will be required to prepare and comply with an environmental management plan, which will provide details of noise and dust control measures, as well as spill control and emergency response.

Liaison with the Parks Department of Dublin City Council will be undertaken during the construction works in Fairview Park. The root protection of mature trees will be undertaken in agreement with Dublin City Council Parks Department.

There will be no significant impact on archaeological, architectural or cultural heritage sites as a result of the proposed development. All works will be carried out outside the river walls, i.e. it will be a dry crossing and there will be no potential impact on the underwater archaeological resource. A suitably qualified archaeologist will examine the material excavated during the course of tunnelling works underneath the Tolka River. In the event of potential archaeological deposits being uncovered, excavation will cease, and the nature, extent and significance of the archaeological feature will be assessed. The most appropriate mitigation strategy will then be agreed with the Department of Arts Heritage and the Gaeltacht.

Once construction activities are completed, no other significant impacts on the environment are predicted to arise from this project.

1 Introduction

Bord Gáis Networks (Bord Gáis) intends to construct a new gas pipeline between East Wall Road and Coolock, Dublin City in order to reinforce the existing gas network in the area. The project requires a crossing of the River Tolka, at a point just upstream of John McCormack Bridge (from East Wall Road to Fairview Park). The Tolka River crossing will be constructed by means of a trenchless crossing technology, i.e. a small tunnel a minimum of 2m beneath the river bed (refer to **Section 2.3.4** for further details).

A Foreshore Licence is required under the provisions of the 1933 Foreshore Act (No. 12 of 1922 as amended) for the proposed trenchless crossing of the Tolka River. This environmental report will be submitted with the Foreshore Licence Application.

The proposed location of the crossing of the River Tolka is shown in **Figure 1.1** below.

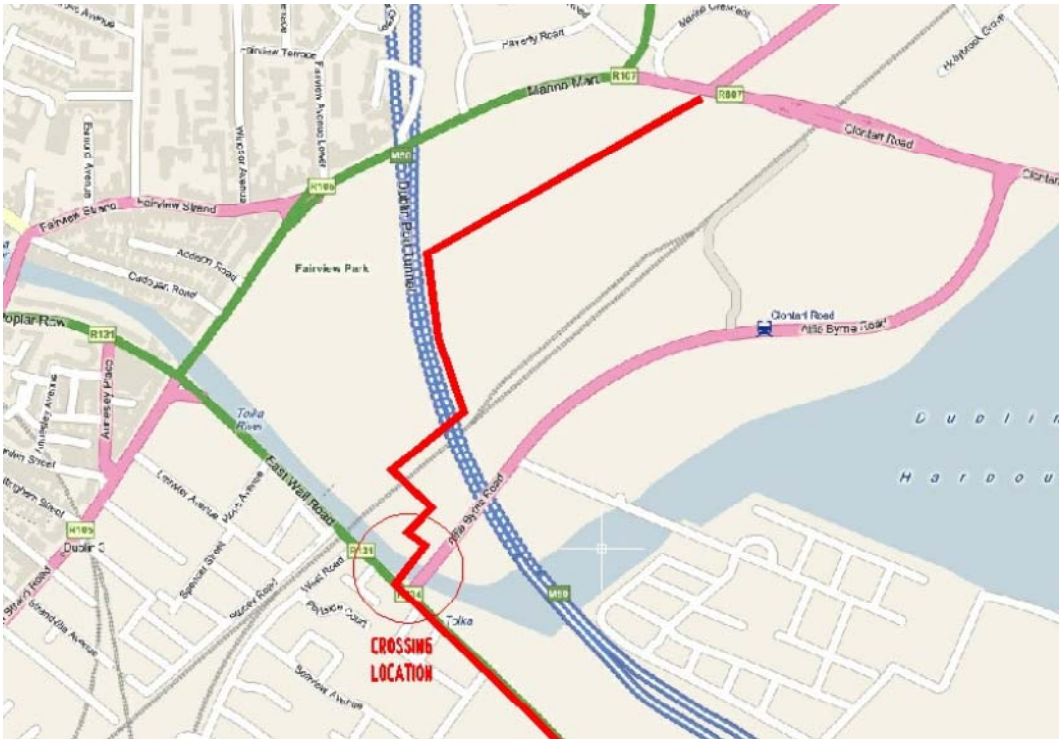

Figure 1.1 Crossing Point of the Tolka River

The proposed pipeline will have a nominal diameter of 300mm, a design pressure of 19 bar and a steel wall of thickness 11.91mm.

It is envisaged that construction of the pipeline between East Wall Road and Coolock will commence in April 2012. It is anticipated that the construction of the trenchless crossing of the Tolka River will take approximately 1 month.

This Environmental Report has been prepared to ensure that likely adverse environmental impacts associated with the pipeline are identified, and avoided, mitigated or minimised.

Bord Gáis retained Arup to prepare this environmental report on the proposed trenchless crossing of the Tolka River.

An Article 6 Appropriate Assessment (Stage 1) Screening Report for Natura 2000 Sites potentially impacted by the proposed route (in accordance with Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC) has been prepared by Moore Group consulting ecologists. The Appropriate Assessment Screening Report is appended to this report as **Appendix A** (refer also to **Chapter 4** *Flora and Fauna*).

1.1 Profile of Bord Gais

Bord Gáis is a statutory body that was established under the 1976 Gas Act. The company is responsible for the transmission, distribution and supply of natural gas in Ireland. Bord Gáis, which is wholly owned by the Irish State, employs approximately 1,000 staff and is headquartered at Gasworks Road, Cork.

Bord Gáis has developed a major natural gas network in Ireland, comprising 13,229 kilometres of pipeline, and associated facilities. The company provides gas to 640,000 users.

1.2 Environmental Impact Assessment

An Environmental Impact Statement (EIS) is not required for the proposed pipeline because it is below the threshold for projects, for which an EIS is required, as set out in Schedule 5 to the Planning and Development Regulations 2001:

> *Part 1 16 .- Pipelines for the transport of gas, oil or chemicals with a diameter of more than 800 millimetres and a length of more than 40 kilometres.*
>
> *Part 2 10.(i) (ii) - Gas pipelines and associated installations not included in Part 1 of this Schedule, where the design pressure would exceed 16 bar and the length of new pipeline would exceed 40 kilometres.*

The total length of the trenchless pipeline crossing will be approximately 26m, the diameter of the pipe will be nominally 300mm and the design pressure will be 19 bar. However, as part of Bord Gáis's commitment to best environmental practice, this environmental appraisal report has been prepared to ensure that potential environmental impacts associated with the pipeline are identified, and avoided, mitigated or minimised. This report takes cognisance of guidelines on the preparation of EISs as published by the Environmental Protection Agency.

1.3 Consents

1.3.1 Commission for Energy Regulation

The Gas (Interim) (Regulation) Act 2002 provides for the transfer of certain gas regulatory functions from the Minister for Public Enterprise to the Commission for Energy Regulation (CER). These functions include the issuing of consents for distribution and transmission pipelines, the granting of compulsory acquisition orders in relation to such pipelines, and extinguishing of public rights of way.

Section 39A of the Gas Act 1976 (inserted by Section 12 of the Gas (Interim) (Regulation) Act 2002) states that a person wishing to construct a transmission or distribution pipeline needs to obtain the consent of the CER. Therefore Bord Gáis will need to obtain the consent of the CER to construct the pipeline. The CER has the power to impose certain conditions on any consent granted, as well as the power to refuse to grant consent.

The development by Bord Gáis of an underground gas pipeline, in accordance with consent from the Minister under Section 39A of the Gas Act 1976, is an exempted development under the Planning and Development Regulations 2001-2009. Therefore the pipeline does not required planning permission from Dublin City Council.

1.3.2 Minister for Environment, Community and Local Government

Bord Gáis intends to apply to the Minister for Environment, Community and Local Government for a Foreshore Licence for the proposed trenchless crossing of the Tolka River. The provisions of the 1933 Foreshore Act (No. 12 of 1922 as amended) will apply.

1.3.3 Scoping & Consultation

The following have been consulted with:

- Department of the Environment Community and Local Government
  - Foreshore section
  - Engineering division
- Department of Arts Heritage and the Gaeltacht
  - Development Application Unit
  - National Parks and Wildlife Service
  - Underwater Archaeological Unit
- Dublin City Council
  - Archaeology Section
  - Conservation Officer – Architects Office
  - Water Projects
  - Road Design Office
  - Parks Department
  - Planning Department
- Commission for Energy Regulation
- Office of Public Works
- Inland Fisheries Ireland

An Appropriate Assessment Screening Report was submitted to the National Parks and Wildlife Service (refer to following **Section 4.2.4**). The Appropriate Assessment Screening Report is appended to this environmental report (refer to **Appendix A**).

2 Proposed Development

2.1 Introduction

This section describes the main features of the proposed development and summarises how it will be constructed and operated.

2.2 Main Features of the Proposed Development

The proposed development will be a trenchless gas pipeline crossing of the Tolka River, just upstream of John McCormack Bridge (**Figure 1.1**). The bank-to-bank crossing point is approximately 26m in width. The construction methodology for the crossing is described in **Section 2.3.4** *Tolka River Trenchless Crossing.*

2.2.1 Pipeline Design Features

The main design features of the pipeline are as follows:

- Approximately 26m in length
- Design Pressure 19 Bar
- Diameter 300mm (nominal)
- Steel wall of thickness 11.91mm

2.3 Construction Phase

2.3.1 General

It is envisaged that construction of the pipeline between East Wall Road and Coolock will commence in April 2012. It is anticipated that the construction of the trenchless crossing of the Tolka River will take approximately 1 month.

Prior to commencement of work, the contractor will prepare method statements and works programmes that will provide a more detailed breakdown of the phasing of the construction. This will incorporate the requirements of third parties and the mitigation measures outlined in this Environmental Report. The construction methodology described below should therefore be regarded as indicative rather than absolute, unless stated otherwise.

The contractor, in consultation with Bord Gáis, will also develop a Pollution Control Plan, a Contingency Plan and an Environmental Management Plan to control and monitor environmental performance throughout the project.

A construction management team will be employed by Bord Gáis to monitor the construction of the pipeline and audit the works to ensure they comply with the method statements and other procedures.

2.3.1 Pre-construction Works

Ahead of construction, the route of the pipeline will be surveyed and marked out, in consultation with Dublin City Council. This will establish the precise

alignment, with particular reference to traffic management, other services, utilities and potential impacts on mature trees. Exploratory slit-trenches will be excavated to confirm the location of services in the context of the final pipeline alignment.

2.3.2 Site Preparation

Construction activities at each side of the Tolka River will be undertaken within securely fenced areas.

Existing third party services and utilities will be located and marked. Warning posts will be erected for overhead cables, and temporary crossing points indicated. It is intended that the pipeline will be designed and constructed in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2006. The contractor shall liaise with the relevant service and utility providers, and adhere to guidelines regarding work in close proximity to overhead lines and other services and utilities.

2.3.3 Fencing

The construction area will be securely marked and fenced. The type of fencing will be agreed with Dublin City Council.

Gates and access points to the construction area will be maintained by the contractor throughout the construction period and will only be opened for access.

2.3.4 Tolka River Trenchless Crossing

Based on Geological Survey of Ireland data, ground conditions of the banks at the crossing point are a combination of made ground, gravel and glacial tills. The trenchless crossing will be carried out approximately 2m below the river bed.

A trenchless crossing technique will be used, to ensure that disturbance to the river itself, including the river banks and river bed, will be minimised or non-existent.

A number of tunnelling techniques can be used for tunnelling pipes of this scale and for the ground conditions that are present at the Tolka crossing location. All techniques involve thrusting a sleeve pipe (concrete or steel) under the river bed, removing the spoil from the sleeve and then inserting the gas pipeline into the sleeve. The annulus between the pipe and the sleeve is then grouted. The main difference between the various tunnelling techniques is the equipment used to cut the soil and push the sleeve pipe. All techniques involve a thrust pit on one side of the crossing and a reception pit on the opposite side and all work is confined to the entry and exit points. These methodologies result in dry crossings.

For the existing ground conditions at the Tolka crossing, it is envisaged that Pipe Ramming or a similar technique will be used. Pipe Ramming is an established and widely used trenchless method for installation of steel pipes and casings under different types of obstacles like road, rivers, and rails. The method uses a pneumatic hammer to drive steel casings/sleeves through the ground. On completion of the bore, the spoils are removed from within the casing and the gas pipeline can be subsequently inserted through it. A typical pneumatically driven ramming machine is shown in **Figure 2.3**.

The construction of the pits is described in the following **Section 2.4.2** *Construction of Launch and Reception Pits.* The pits are indicated on the following **Figure 2.2**.

Figure 2.2 Approximate locations of Launch and Reception Pits

Figure 2.3 Typical ramming pneumatic tool. (Source: Able-Tech Solutions Ltd. website)

The ramming machine has a cylindrical shape with a front cone for connecting the add-on cones and cotter segments which create a tight-fitting connection between pipe and machine. The ramming machine is driven by a conventional compressor.

Pipe Ramming is fast and the working area is confined to points of entry and exit only, so it does not cause disruption to river banks and bed. Also, as a dry method of installation, it does not generate slurry.

2.4 Pipe Ramming Construction Process Description

Pipe Ramming is a pneumatic method for installation of pipes and casings. The installation of the pipe shall be carried out in a number of segments. When shorter pipe segments are rammed, the ramming tool drives each pipe segment for its length through the ground, and is then returned to the tool's original position for the new segment.

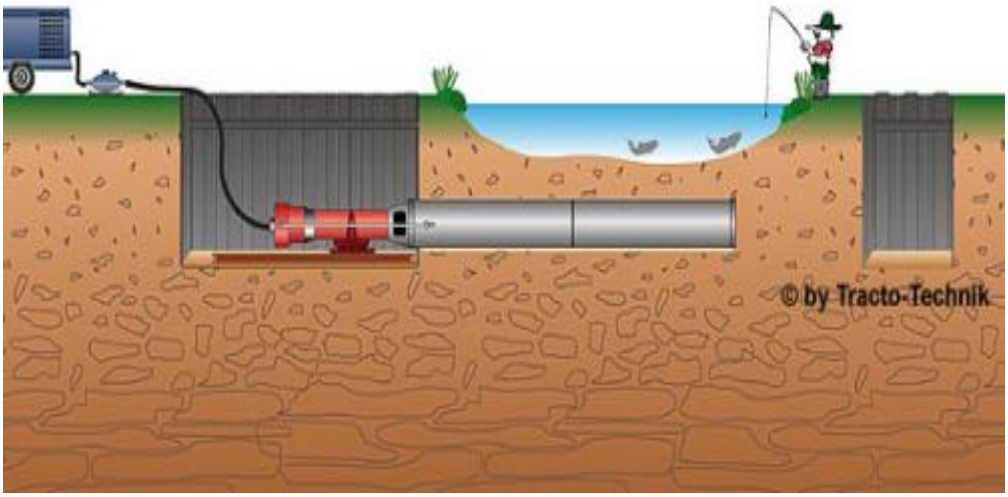

Figure 2.4 Typical steel pipe ramming underneath river. (Derived from Traco-Technic. website)

The basic components of a pipe ramming process include:

- Trial holing, service identification and re-location
- Construction of launch and reception pits
- Pipe Ramming of approximately 650mm diameter sleeve pipe under river
- Installation of a nominal 300mm gas pipeline in the sleeve.

2.4.1 Trial holing, service identification and re-location

To facilitate the excavation of the pits, the location of all existing services will be identified from service plans, CAT scanning and trial holes. The contractor will determine the exact location of all services prior to commencing the work.

All trial holing will be outside of the foreshore.

2.4.2 Construction of launch and Reception Pits

The method typically requires excavation of two pits, one at either side of the crossing, called launch and exit (reception) pits; excavated to a level to facilitate the installation of the pipe. The approximate locations of the pits at the Tolka crossing are indicated on **Figure 2.2**. The approximate dimensions of the pits will be 8m x 2.5m respectively below invert (launch pit), and 4m x 2m. The pits will be excavated to a depth approximately 0.5m below the invert of the pipe. Trench sheets and walers, or similar technology, will be used to support the excavation. Before pipe ramming commences, hardcore and blinding will be placed in the base of the pits.

Both pits will be maintained in a dry state using a small submersible pump. Access and egress will be by means of an adequately secured ladder and a handrail will be erected around pit edges. The edges of all pits shall be kept clear of all materials to prevent trip hazards and to provide a clear walkway within the work site.

2.4.3 Pipe Ramming

Prior to the commencement of the ramming operation, a cutting shoe is welded to the front end of the first pipe. This ring protects the end of the pipe from damage, and with its hardened edge, will break any cobbles or boulders encountered. Subsequently, both the first section of the pipe and the ramming tool are lowered onto the runner and lined up in the desired direction.

The hammer is connected to the back of the pipe and connected to the compressor. The rate of hammering is governed by the volume of air delivered. The first pipe is driven slowly until the pipe is established in the ground while maintaining line and level. The line and level of the first pipe is continuously monitored to confirm correct orientation and to ensure the pipe does not deviate off line.

Having driven the first length, the hammer is disengaged and the next length lifted into place and butt welded by experienced coded welders. This process is continued until the crossing is completed, subsequently the equipment is removed from the launch pit and the spoil is removed from inside the pipe using an auger boring rig which augers the material out of the pipe.

Figure 2.5 Typical ramming operation.

Figure 2.6 Auger spoil from ramming sleeve.

All spoil will be removed from site using a tipper lorry (Refer to **Section 2.4.8** *Construction Waste Material*). Access shall be maintained at all times and road and footpaths maintained free of mud and debris.

All works will be carried out within a secured fenced area. Temporary Heras fencing will be provided to secure the site.

2.4.4 Site Layout and Design

Heavy equipment will be required on both sides of the crossing. There is ready access to each side of the crossing via existing public roads. The working areas at either side of the crossing will be located outside of the foreshore.

The ramming equipment will be located on the northern side of the crossing. The reception-side will be located on the southern side of the crossing, just west of the Alfie Byrne Road and East Wall Road junction. The ramming operation will progress from the northern side to the southern side. The ramming equipment will be removed from site after completion of steel casing installation.

The gas pipeline will be inserted from the northern side to the southern side through the casing under the river.

2.4.5 Pressure Testing

On completion of the construction of the pipeline, a 'proof test' of the pipeline will be carried out to demonstrate fitness for purpose. This will take the form of a hydrostatic test, which involves filling the pipeline completely with water and raising the pressure to approximately 150% of its maximum operating pressure. A temporary water supply will be required for the hydrostatic testing of the pipeline. It is likely that this water will be supplied from the local Dublin City Council watermain. The supply and discharge of testing water will be carried out by agreement with the City Council. There will be no impact on water supply to local users.

2.4.6 Lighting

Lighting intrusion is unlikely to be significant since most of the construction working hours will be daylight hours.

2.4.7 Reinstatement

It will be a condition of the construction contract that the appointed contractor will reinstate the lands to the landowners' or the City Council's requirements, as appropriate.

Grassed areas and footpaths that are disturbed during the works will be fully reinstated, in consultation with affected parties. Topsoil will be replaced on grassed areas, and the land re-seeded.

2.4.8 Construction Waste

Small volumes of waste will be generated during the construction phase, including excess materials (pipe sections, etc), excavated material, and general domestic waste. These will be handled, removed off-site and disposed of in an appropriate manner. It is anticipated that practically all of the soil excavated during the

trenching will be removed from site and disposed of in an appropriately licensed waste management facility. All water used on site for hygiene and hydrostatic testing of pipes will be removed and disposed of appropriately.

As part of the project planning, and in conjunction with a Pollution Control Plan, an Environmental Management Plan and a detailed construction Waste Management Plan will be developed. These will be implemented and maintained during the construction phase and will govern the handling and disposal of all waste streams associated with the crossing works. There will be no temporary storage of excavated material or waste on the foreshore.

2.4.9 Construction Impacts and Mitigation Measures

The employment of good construction management practices will minimise the risk of pollution of soil, surface water or groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued guidance for project promoters, design engineers and site and construction managers. Specific guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (CIRIA 2006).

Mitigation measures for control of surface water runoff from the works areas are addressed in **Chapter 5** *Soils, Geology Surface Water and Groundwater.*

Construction impacts and mitigation measures are also addressed in other chapters of this report i.e. **Chapter 5** *Noise and Vibration, Air Quality and Climate,* **Chapter 4** *Flora and Fauna,* **Chapter 5** *Soils, Geology, surface Water and Groundwater,* and **Chapter 9** *Material Assets.*

The proposed crossing of the Tolka River is located just upstream of the John McCormack Bridge, where there is minimal or non-existent river traffic activity. In addition, the trenchless crossing will be beneath the river bed, such that no navigational safety implications will arise.

3 Noise and Vibration, Air Quality and Climate

3.1 Noise and Vibration

The proposed pipeline crossing is located in an urban area. Although this means that there are numerous noise sensitive receptors, it also means that the local population will be habituated to existing noise sources, such as road traffic and rail traffic.

Noise modelling, carried out by Dublin City Council, records that daytime traffic noise levels in the vicinity of the pipeline route are predicted to be typically in the range of records that daytime traffic noise levels in the vicinity of the pipeline route are predicted to be typically in the 65 – 70 dB(A) range. These existing noise levels are typical for an urban environment.

3.2 Potential Noise Impacts and Mitigation Measures

3.2.1 Construction Phase

Noise will be generated during the construction of the pipeline works due to construction traffic, excavation, welding and testing equipment. This has the potential to have an impact on dwellings and other noise sensitive locations in the immediate vicinity.

There are no mandatory noise limits for environmental construction noise in Ireland. Current good practice in construction noise control is to demonstrate compliance with the National Roads Authority *Guidelines for the Treatment of Noise and Vibration in National Roads Schemes* (NRA 2004). The NRA guidance will be followed in this project.

The following measures will be implemented to ensure that noise and vibration impacts are minimised:

- The construction work will be temporary in nature, with the duration of the crossing construction period being only one month.
- Construction hours will generally be limited to daytime, and will be in accordance with Dublin City Council requirements.
- The construction contract will require that equipment and machinery be well maintained, with silenced exhausts and acoustic covers to be used where appropriate.
- Construction equipment and plant will comply with the various regulations and standards for construction plant noise and vibration. *BS 5228 British Standard for Noise Control on Construction Sites* provides relevant guidance, which will be followed on site.

3.2.2 Operational Phase

No noise will be generated by the pipeline during the operational phase.

3.3 Air Quality and Climate

Air Quality Standards for the protection of human health and the environment have been developed at European level and implemented in Irish legislation. The standards set limit values for ground level concentrations of certain emissions for both the short term and the long term. Air quality in Ireland has generally improved in recent years. A project of this scale and type will not have any significant impacts on climate.

The pipeline route is in an urban area, close to the coast. The Environmental Protection Agency (EPA) reports annually on air quality. The EPA report for the year 2010 records that the Air Quality Standards are being met in Dublin City for all regulated air quality parameters.

3.4 Potential Air Quality Impacts and Mitigation Measures

3.4.1 Construction Phase

Construction activities are likely to generate some dust and exhaust emissions in the vicinity of the pipeline works. Measures that will be implemented to reduce these impacts are as follows:

- Most machinery used on site will be powered by diesel engines. In order to control the emission of excessive exhaust fumes and smoke, the contractor will be required to ensure that all items of plant and equipment are correctly adjusted and maintained.
- Dust management measures will be put in place to minimise any dust generation during construction. These will include proper housekeeping and site management. Proper storage of loose materials and proper containment of loose materials during transport will be carried out. Unsurfaced areas will be dampened as required to inhibit dust.

3.4.2 Operational Phase

The proposed pipeline crossing will operate as a completely closed system; in normal operation there will be no releases of gas in the atmosphere.

In the unlikely event of a major release of natural gas from the pipeline, the concentration would be high in the immediate vicinity of the leak. The gas which is lighter than air will be dispersed into the atmosphere by diffusion and wind action, and will pose no threat to the environment.

3.5 Conclusions

Noise will be generated during the construction phase, but the equipment and machinery will comply with the relevant regulations and guidelines. Noise and vibration impacts will be very short term (approximately one month), and every reasonable effort will be made to minimise the impact on local noise sensitive receptors.

It is not envisaged that the pipeline works will have any significant adverse impact relating to noise and vibration.

There will be no noise or vibration emissions from the operating pipeline.

The existing ambient air quality in the vicinity of the proposed pipeline is good. There will be minor temporary emissions to the atmosphere during the construction phase and none during the operational phase. No significant adverse impacts on air quality and climate are predicted.

A project of this scale and type will not have any significant impacts on climate.

3.6 References

British Standards BS 5228 British Standard for Noise Control on Construction Sites

Environmental Protection Agency (2011) *Air Quality in Ireland 2010*

National Roads Authority (2004) *Guidelines for the Treatment of Noise and Vibration in National Roads Schemes*

4 Flora and Fauna

4.1 Introduction

Moore Group Environmental Consultants carried out an ecological assessment to determine the potential impacts from the proposed trenchless gas pipeline crossing of the River Tolka. The Tolka River crossing will be constructed by means of a trenchless crossing technology, i.e. a small tunnel a minimum of 2m beneath the river bed. The proposed Tolka crossing is located immediately upstream of John McCormack Bridge in Dublin City as shown below in **Figure 4.1.** The crossing point of the Tolka River is located approximately 400m upstream of the aquatic boundary of the estuary which is designated as part of the South Dublin Bay and Tolka River Estuary SPA (Site Code 004024).

The proposed trenchless gas pipeline crossing has been designed to minimise potential impacts on the receiving environment.

The construction of the trenchless crossing will require the excavation of two pits, one at either side of River crossing, called launch and exit (reception) pits.

The proposed construction works and operational phase, and their potential impacts on existing habitats and species are addressed, specifically on rare or protected habitats and species in the study area. This chapter addresses the existing environment at the site of the proposed development and identifies areas of semi-natural habitats of high ecological value, designated nature conservation areas and Natura 2000 Sites at the site of the proposed development and also in the vicinity of the proposed development.

The locations of designated conservations areas in the vicinity of the proposed works are presented in **Figures 4.2** and **4.3**.

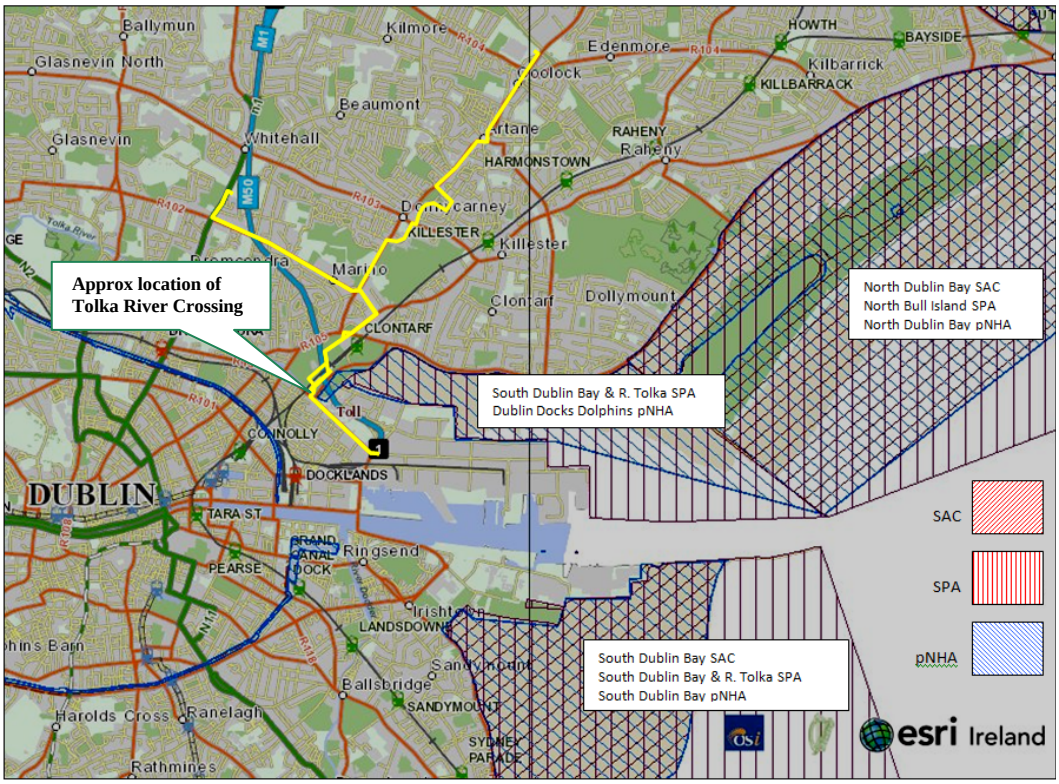

Figure 4.2 Showing the approximate location of the Tolka River crossing in relation to the South Dublin Bay and Tolka River Estuary SPA (hatched in red) and the North Dublin Bay pNHA (hatched in blue).

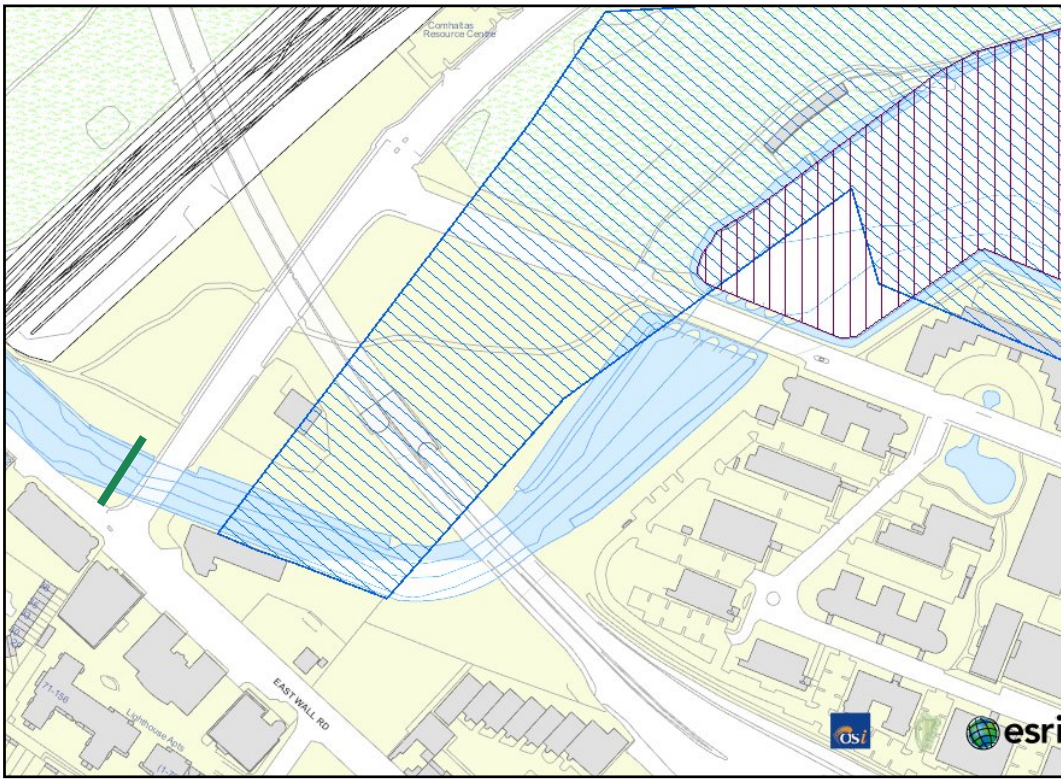

Figure 4.3 Showing in more detail, the approximate location (in green) of the Tolka River crossing in relation to the South Dublin Bay and Tolka River Estuary SPA (hatched in red) and the North Dublin Bay pNHA (hatched in blue).

4.2 Methodology

4.2.1 Introduction

This ecological assessment was undertaken in compliance with the European Communities (Environmental Impact Assessment) Regulations 1989 – 2000 and follows Guidelines on the Information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002). The aims of the ecological impact assessment are to:

- Establish baseline ecological data in the area of the proposed development.
- Determine the ecological value of each plant, animal or habitat.
- Assess the impact of the proposed development on any ecological features of value.
- Recommend mitigation measures to reduce or prevent the above impacts.
- Identify any residual impacts after mitigation.
- Form the basis of an Appropriate Assessment Screening Report.

The assessment of the likely impacts of the proposed development on ecological resources has regard to the following policy documents and legislation:

- Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000
- EU Habitats Directive 92/43/EEC
- EU Birds Directive 79/409/EEC
- European Communities (Natural Habitats) Regulations 1997 (as amended 2005)
- Flora (Protection) Order, 1999

The assessment was carried out in three stages, firstly through desktop assessment to determine existing records in relation to habitats and species present in the study area.

The second phase of the assessment involved a site visit to establish the existing environment in the area of the proposed development.

The final part of the assessment involves an evaluation of the proposed development area and determination of the potential impacts on the flora and fauna of the area. This part of the assessment also forms the basis for the Appropriate Assessment Screening Report (refer to **Section 7.2.5**), and is based on the following guidelines and publications:

- *Handbook for Phase 1 habitat survey* (JNCC, 1990, Rev. 2003; 2007)
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003)

- *Assessment of plans and projects significantly affecting Natura 2000 sites* (EC, 2002)
- *Managing Natura 2000 Sites* (EC, 2000) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007)
- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DEHLG, Rev. Feb. 2010)
- *Dublin City Development Plan 2011-2017* – (Dublin City Council)

4.2.2 Field Study

The site was visited on the 8th of September 2011 with the aim of gathering information on habitats present on the route of the pipeline. Areas which were highlighted during desktop assessment were investigated in closer detail. Habitats in the proposed development areas were classified according to the Heritage Council publication "*A Guide to Habitats in Ireland*" (Fossitt 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "*An Irish Flora*" (Webb, Parnell and Doogue 1996). Sights and signs of mammals and invertebrates were surveyed while walking the various habitats which lie within the survey area.

4.2.3 Scoping & Consultation

The following were consulted with:

- Department of Arts Heritage and the Gaeltacht
  - National Parks and Wildlife Service
- Dublin City Council
  - Parks Department
- Inland Fisheries Ireland

An Appropriate Assessment Screening Report was submitted to the National Parks and Wildlife Service (refer to following **Section 4.1.4**).

4.2.4 Appropriate Assessment

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

It was determined that Appropriate Assessment (AA) would be required for the project given the proximity of the South Dublin Bay and Tolka River SPA, and the connectivity to it through the Tolka River. It was determined through

Appropriate Assessment Screening that there would be no impact on the adjacent Natura 2000 sites.

The Appropriate Assessment Screening Report is presented as **Appendix A** to this environmental report.

4.3 Existing Environment

4.3.1 Designated Conservation Areas

The project site is located approximately 400m upstream of the aquatic boundary of the South Dublin Bay and Tolka River SPA (Site Code 004024). In addition, the project has potential biological connectivity with a number of other inter-designated sites as per **Table 4.1** below. These sites are addressed in the Screening process of the accompanying Appropriate Assessment.

The nearest designated site is the North Dublin Bay pNHA (Site Code 000206). At its nearest point the pNHA is approximately 60m from the proposed works (refer to **Figure 4.3**). The pipeline will cross the Tolka River a minimum of 2m beneath the river bed, using a trenchless crossing technology. The crossing point of the Tolka River is located approximately 400m upstream of the aquatic boundary of the estuary which is designated as part of the South Dublin Bay and Tolka River Estuary SPA (Site Code 004024).

Table 4.1 Designated conservation areas with potential biological connectivity with the project.

Area Name	Designation	Site Code
North Dublin Bay	SAC	000206
North Dublin Bay	pNHA	000206
South Dublin Bay	SAC	000210
South Dublin Bay	pNHA	000210
South Dublin Bay and Tolka River Estuary	SPA	004024
Dublin Dock Dolphins (inc. in above)	pNHA	000201
North Bull Island	SPA	004006

4.3.2 Non-designated Areas

Five main habitat types were identified during fieldwork in September 2011. These habitats and their classification codes are listed below in **Table 4.2**. The predominant habitats recorded at the site of the proposed development are depositing/lowland rivers, amenity grassland, treelines and artificial surfaces.

Table 4.2 Habitat types according to Fossitt (2000)

Habitat	Habitat Category	Habitat Type
(F) Freshwater	(FW) Watercourses	(FW2) Depositing/lowland rivers
(G) Grassland	(GA) Improved grassland	(GA2) Amenity grassland
(W) Woodland and scrub	(WL) Linear woodland	(WL2) Treelines
		(WD5) Scattered trees and parkland
		(WS3) Ornamental/ non-native shrub
(B) Cultivated and Built Land	(BL) Built Land	(BL3) Buildings and artificial surfaces

4.3.3 Fauna

Birds

Birds recorded reflected a mixed grassland and urban representation. A list of bird species recorded at the site is shown in **Table 4.3** below. Species of conservation concern are noted in accordance with BirdWatch Irelands 'Birds of Conservation Concern Ireland' (BoCCI), which lists threatened species using colour codes. Red List bird species are of high conservation concern, while Amber List birds are of medium conservation concern or of concern in a European population context. Green List Species are all other regularly occurring species in Ireland whose conservation status is presently considered favourable. All species are protected under the Wildlife Act 1976 and Wildlife Amendment Act 2000.

Table 4.3 Bird species observed during the site visit.

Bird species	Scientific name	BoCCI Status
Sparrow	*Passer domesticus*	**Green List**
Great Tit	*Parus major*	**Green List**
Chaffinch	*Fringilla coelebs*	**Green List**
Goldfinch	*Carduelis carduelis*	**Green List**
Blackbird	*Turdus merula*	**Green List**
Magpie	*Pica pica*	**Green List**
Wood pigeon	*Columba palumbus*	**Green List**
Swallow	*Hirundo rustica*	**Amber List**
Mute Swan	*Cygnus olor*	**Amber List**

Mammals

Otter

Otters (*Lutra lutra*) along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive. There were no signs of otter, holts, spraints or prints in the study area.

Badger

Badgers (*Meles meles*) are protected under the Wildlife Act 1976. There were no signs of badger or badger setts in the study area.

Bats

All bats (and their roosting places) are protected under the Natural Habitats Regulations and the Wildlife Acts (1976, 2000). It is likely that bats are present in Fairview Park. Six species of bats have been recorded in the Phoenix Park and it is likely that they commute to different part of Dublin City's parklands.

Fish

Salmon

The Atlantic Salmon (*Salmo salar*) is listed in Annexes II and V of the European Union's Habitats Directive as a species of European importance. Recent surveys by Inland Fisheries Ireland have recorded salmon and sea trout in the Tolka River. In the case of salmon, these are the first records in 100 years and bode well for the water quality and improved passage for salmonids in the river.

4.3.4 Site Evaluation and Conservation Status

The main habitat of conservation concern is that of the Tolka River and its discharge into Dublin Bay forming connectivity with the various Natura 2000 sites in the bay.

The treelines of Fairview Park are well established and provide habitats for birds and insects and possible bats during the summer months. There are no preserved trees in Fairview Park.

There are no rare or protected species of flora under the footprint of the proposed development. The nearest areas of conservation concern are those in Dublin Bay.

The majority of bird species recorded are woodland and urban species listed as green in terms of conservation concern. Overall, bird numbers in the survey area were low. Swallow was the most frequently recorded species.

4.4 Potential Impacts

4.4.1 Direct Impacts

Habitats & Flora

There are no rare or protected flora or fauna under the footprint of the proposed development. There will be no direct impacts on rare or protected species in the designated conservation areas.

There is potential for pollution of the Tolka River in the form of elevated suspended solids or hydrocarbons from surface water runoff during construction during periods of heavy precipitation. This would have a detrimental effect on Salmonids. However, this will be avoided by the use of a trenchless crossing technology under the river. In addition, the construction mitigation measures are described in the following section will be implemented.

There is potential for disturbance to nesting birds through the removal of vegetation and disturbance to trees in Fairview Park. It is envisaged that none of the mature trees in the park will be felled. Some of the younger trees (saplings) will be felled under the supervision of Dublin City Council Parks Department.

4.4.2 Indirect Impacts

Water Quality

Given the proposed methodology of a trenchless crossing under the Tolka River, and the proposed construction mitigation measures, there will be no direct impact on the River and no indirect impacts on the downstream designated areas.

A finding of no significant effects is presented in the Appropriate Assessment Screening Report (refer to **Appendix A**), in accordance with the EU Commission's methodological guidance (European Commission, 2001).

4.5 Mitigation Measures

The employment of good construction management practices will minimise the risk of pollution of the Tolka River. A Pollution Control Plan, an Environmental Management Plan and a detailed construction Waste Management Plan will be will be implemented and maintained during the construction phase and will govern the handling and disposal of all waste streams associated with the crossing works. There will be no temporary storage of excavated material or waste on the foreshore.

The Construction Industry Research and Information Association (CIRIA) in the UK has issued guidance for project promoters, design engineers and site and construction managers. Specific guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (CIRIA 2006).

Construction measures and precautions will include the following, to ensure the protection of the River:

- There will be no direct discharges to surface waters, during the construction phase of the project.
- Storage of excavated soil from the construction activities will be sited well away from the River.
- All fuels, oils and other chemicals used in the execution of the works will be stored in secure bunded areas. Particular care will be taken during refuelling and maintenance of plant and equipment to avoid spillage. The construction contractor will be required to keep machinery in good working order.
- Dewatering flows will be passed through tanks if appropriate to remove sediment in order to minimise any potential environmental impacts.
- All domestic effluent generated on site will be held in appropriate portable toilet facilities prior to treatment off-site.
- The contractor will be required to prepare and implement an Environmental Management Plan, which will include details of methods for the control of spills, and emergency response procedures.
- All vegetation to be cut or removed will be carried out outside the bird breeding season from March 1st to August 31st to avoid impacts on associated flora.
- It is envisaged that no mature trees will be removed during the construction of the pipeline. However, should the removal of any mature trees be required, they will ideally be felled in the period late August to late October, or early November, in order to avoid the disturbance to any roosting bats. Felling of mature trees, if required, will be completed by mid-November at the latest because bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Ivy-covered trees, once felled will be left on intact on-site for 24 hours prior to disposal to allow any bats beneath the foliage to escape overnight.

4.6 Conclusions

There will be no significant impacts on flora and fauna or on the integrity of designated sites as a result of the proposed development.

4.7 References & Bibliography

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Government of Ireland, 1976, *Wildlife Act, 1976,* Stationery Office, Dublin.

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Birds Directive (79/409/EEC) Council Directive of 2 April 1979 on the conservation of wild birds.

Habitats Directive (92/43/EEC) Council Directive of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

5 Soils, Geology, Surface Water and Groundwater

5.1 Receiving Environment

Ground conditions along the proposed pipeline route were interpreted based on desk study information. According to the records of the Geological Survey of Ireland, the solid geology underlying the crossing comprises (from South to North) 'Dark grey to black limestone and shale' and 'Dark limestone and shale (Calp)'.This is illustrated in **Figure 5.1**.

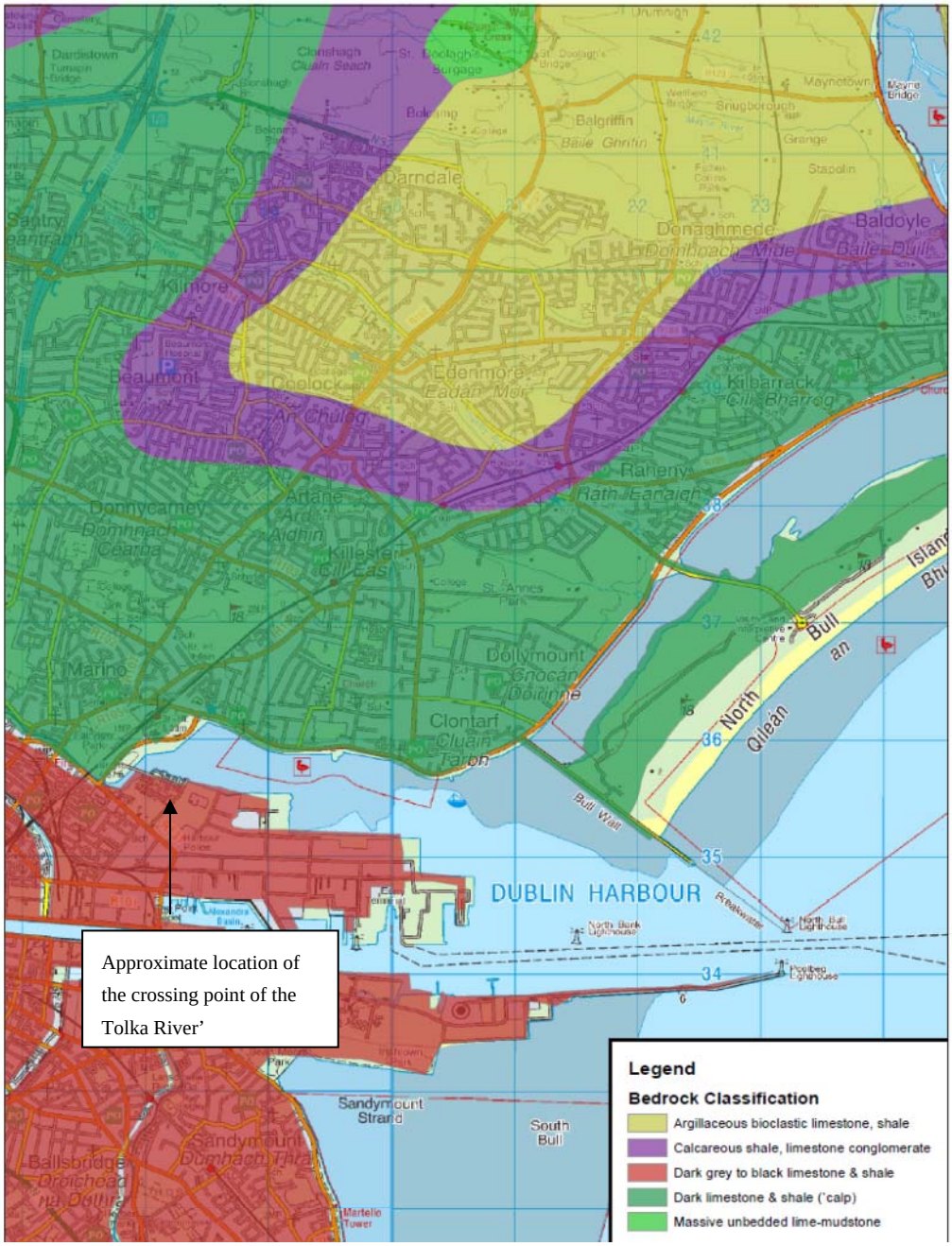

Figure 5.1 Bedrock Classification in the Vicinity of the Proposed Development
(Geological Survey of Ireland)

Ground conditions in the vicinity of the Tolka River crossing comprise made ground, gravel and glacial tills.

Fairview Park was originally a tidal mud flat which was used for landfilling. The area is most likely underlain by extensive made ground due to its previous use as a landfill and there is anecdotal evidence of this fill containing medical waste. Environmental site investigations will be undertaken along the route of the pipeline in this area and any contaminated material and soils identified within the depths of the proposed excavations will be disposed of in an appropriate authorised waste disposal facility.

The route is located over a Locally Important aquifer – bedrock which is moderately productive only in local zones.

The proposed development comprises a trenchless crossing of the Tolka River which will be undertaken immediately upstream of John MacCormack Bridge.

5.2 Potential Impacts and Mitigation Measures

The construction of the pipeline crossing of the Tolka River will be undertaken using trenchless technology, (as outlined in **Section 2.3.4**) to ensure that there is no impact on the river bed.

There will be no risk of erosion or bed scour during the construction and operation of the pipeline as the pipeline will be installed using trenchless technology.

During the construction stage, localised vibrations associated with the trenchless crossing are unlikely to cause any temporary disturbance to the river bed, due to the depth (cover) between the river bed level and the pipe level. Surface disruption associated with pipe ramming is not envisaged as the sleeve pipe will be rammed through, prior to soil within the pipe being removed.

It is important that the underlying aquifer, the Tolka River, any drainage pathways to water, and soils are protected during construction, as there is a potential risk of pollution from suspended solids, fuels and chemical spills.

The employment of good construction management practices will minimise the risk of pollution to soil, surface water and groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued guidance for project promoters, design engineers and site and construction managers. Specific guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (CIRIA 2006).

Construction measures and precautions which will be taken to ensure the protection of surface waters, soils and groundwater, include the following:

- There will be no direct discharges to surface waters, soils and groundwater during the construction phase of the project.
- All fuels, oils and other chemicals used in the execution of the works will be stored in secure bunded areas. Particular care will be taken during refuelling and maintenance of plant and equipment to avoid spillage. The construction contractor will be required to keep machinery in good working order.

- Dewatering flows will be passed through tanks if appropriate to remove sediment in order to minimise any potential environmental impacts.
- All domestic effluent generated on site will be held in appropriate portable toilet facilities prior to treatment off-site.
- The contractor will be required to prepare and implement an Environmental Management Plan, which will include details of methods for the control of spills, and emergency response procedures.
- Any contaminated material and soils identified within the depths of the proposed excavations will be disposed of in an appropriate authorised waste disposal facility.

5.2.1 Operational Phase

There will be no direct emissions to surface waters, soils or groundwater during the operational phase of the project.

5.3 Conclusions

The proposed pipeline is not predicted to have any significant adverse impacts on soils, geology, surface water or groundwater.

6 Material Assets

6.1 Receiving Environment

The material assets that are relevant to the proposed pipeline are land use and property, cultural heritage and natural resources and energy use.

6.2 Land Use and Property

The pipeline will be laid exclusively in publicly-owned lands. No compulsory acquisition of private lands will be required. The Dublin City Council land uses that will be traversed by the pipeline include footpaths and grassed areas.

6.3 Cultural Heritage

Moore Group was commissioned by Arup to carry out a cultural heritage assessment of the proposed crossing. Mitigation measures are proposed, and the likely potential residual impacts of the proposed development upon the cultural heritage of the area are indicated.

For the purposes of this report the definition of "cultural heritage" is taken broadly from the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972, which considers the following to be "cultural heritage":

- Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science.
- Groups of Buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science.
- Sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

6.3.1 Conventions and Legislation

Ireland has ratified several European and international conventions in relation to the protection of its cultural heritage. Outlined herein are pertinent summaries of relevant conventions and legislation.

The National Monuments Act 1930 to 2004

Irish legislation for the protection of archaeological heritage is based on the National Monuments Acts 1930 and amendments of 1954, 1987, 1994 and 2004. These acts are the principal statutes governing the care of monuments in the Irish Republic. They provide for the protection of national monuments through the use of preservation orders. The Minister for the Environment, Heritage and Local Government has a specific role in relation to the protection of the archaeological

heritage through powers provided by these acts and the National Cultural Institutions Act 1997. The overall state archaeological service is provided by the Department of Arts, Heritage and the Gaeltacht (DAHG) (formerly known as the Department of Environment, Heritage and Local Government), and delivered through the Planning and Heritage Section of the DAHG and the National Museum of Ireland (Irish Antiquities Division) on behalf of the Minister.

The European Landscape Convention 2000

In 2002 Ireland ratified the European Landscape Convention - also known as the Florence Convention, which promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. It is the first international treaty to be exclusively concerned with all dimensions of European landscape. The Convention came into force on 1 March 2004 and is part of the Council of Europe's work on natural and cultural heritage, spatial planning and the environment. It applies to the entire territory of the ratified parties and relates to natural, urban and suburban areas, whether on land, water or sea. It therefore concerns not just remarkable landscapes but also ordinary everyday landscapes. The European Landscape Convention introduces the concept of "landscape quality objectives" into the protection, management and planning of geographical areas.

The Planning and Development Act 2000

Under arrangements which came into operation on 1 January 2000 (The Planning and Development Act 2000), the system of listing buildings was replaced with strengthened procedures for the preservation of protected structures and structures in architectural conservation areas (ACA).

A protected structure is a structure that a local authority considers to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view. Details of protected structures are entered by the authority in its Record of Protected Structures, which is part of the development plan. Each owner and occupier of a protected structure is legally obliged to ensure that the structure is preserved.

The Architectural Heritage and Historic Properties Act, 1999

The Architectural Heritage (National Inventory) and Historic Properties (Miscellaneous Provisions) Act, was promulgated in 1999 as a direct response to the Granada Convention (see below). The Act provides for the establishment of a national inventory of architectural heritage and for related matters and to provide for the obligations of local sanitary authorities in respect of registered historic monuments. Although this Act provides no direct protection for architectural sites, it is used by local authorities to inform the compilation of their Record of Protected Structures which, under the Planning and Development Act 2000, does afford legal protection.

European Convention on the Protection of the Archaeological Heritage (Valletta Convention), 1997

In 1997 the Republic of Ireland ratified the Council of Europe European Convention on the Protection of the Archaeological Heritage (the 'Valletta Convention'). Obligations under the Convention include: provision for statutory protection measures, including the maintenance of an inventory of the

archaeological heritage and the designation of protected monuments and areas; the authorisation and supervision of excavations and other archaeological activities; providing for the conservation and maintenance of the archaeological heritage (preferably in situ) and providing appropriate storage places for remains removed from their original locations; providing for consultation between archaeologists and planners in relation to the drawing up of Development Plans and development schemes so as to ensure that full consideration is given to archaeological requirement, making or updating surveys, inventories and maps of archaeological sites and taking practical measures to ensure the drafting, following archaeological operations, of a publishable scientific record before the publication of comprehensive studies and preventing the illicit circulation of elements of the archaeological heritage, including co-operation with other states party to the convention.

European Convention on the Protection of the Architectural Heritage (Granada Convention), 1997

Also in 1997 the Republic of Ireland ratified the Council of Europe Convention on the Protection of the Architectural Heritage of Europe (the 'Granada Convention'). Obligations under this convention include maintenance of inventories of architectural heritage, provision of statutory measures to protect the architectural heritage, the adoption of integrated conservation policies, which include the protection of the architectural heritage as an essential town and country planning objective, developing public awareness of the value of conserving architectural heritage, etc.

UNESCO World Heritage Convention, 1972

In an international context Ireland is a ratified member of The World Heritage Convention, adopted by UNESCO in 1972. The Convention provides for the identification, conservation and preservation of cultural and natural sites of outstanding universal value for inclusion in a world heritage list. The World Heritage status is a non-statutory designation and no additional statutory controls result from this designation. However the impact of proposed development upon a World Heritage Site will be a key material consideration in determining planning applications.

Dublin City Development Plan

The Dublin City Development Plan 2011-2017 is the relevant strategic document guiding Dublin City Councils overall strategy for the proper planning and sustainable development of their administrative area. The plan was prepared in accordance with the Planning and Development Acts, 2000-2006 and with the requirements for Local Area Plans contained within the Planning and Development (Amendment) Act 2002. The purpose of the plan is to inform the general public, the statutory authorities, developers and other interested bodies of the policy framework and broad land use proposals that will be used to guide development throughout the administrative area.

6.3.2 Assessment of Potential Impacts – Methodology

The assessment of impacts upon the archaeological, architectural and cultural heritage is based on a desktop study of published and unpublished documentary and cartographic sources, followed by a field survey and consultation with

statutory stakeholders. In light of the legislative protection afforded to the cultural heritage resource (see above) this report assesses the archaeological, architectural, cultural and historical importance of the subject area and examines both the direct and indirect effects of the proposed development on the receiving environment as well as potential impacts, and recommends mitigation measures.

6.3.2.1 Desk Based Study

A desk-based study was undertaken and included a review of aerial photography and Ordnance Survey Ireland (OSI) First Edition Mapping (Circa 1830). In addition, the following were reviewed:

- National Monuments, a now out of date data set previously available from www.heritagedata.ie
- Record of Monuments & Places (RMP) from www.archaeology.ie
- Records of Protected Structures (RPS) from Dublin City Council
- Demesnes Landscapes and Historic Gardens indicated on the OSI First Edition Mapping.

All townlands located within 2km of the proposed development were listed and cross-referenced with the list of National Monuments (a list for County Dublin available from www.archaeology.ie), the list of Preservation Orders available from the DAHG, and lists contained in appendices 6 and 7 to the Report of the Commissioners or Church Temporalities of Ireland (1879) which contain lists of Churches, School Houses and Graveyards that were vested in the Representative Church Body and the Burial Boards under The Irish Church Act, 1869.

The Dublin City Development Plan 2011-2017 was reviewed and several other documentary and literary sources were reviewed to obtain a comprehensive understanding of the cultural heritage of the region.

In order to assess the potential impact of the proposal, the following sources were also consulted or reviewed:

- Excavations Bulletin
- Topographical files of the National Museum of Ireland
- Cartographic Sources
- Toponym analysis
- Aerial photographs
- Published archaeological inventories
- Documentary Sources: a number of literary references were consulted.

6.3.2.2 Consultation

Consultation was carried out with the following stakeholders:

- Development Applications Unit of the Department of Arts, Heritage and the Gaeltacht.
- Archaeological section of Dublin City Council.
- Conservation Officer, City Architect's Division, Dublin City Council.

- Underwater archaeology section of DAHG.

Specific consideration of the Code of Practice between Bord Gáis Networks and The Minister for Arts, Heritage, Gaeltacht and the Islands was taken into account.

6.3.2.3 Field Survey

Following a detailed desk study of the subject area, a field survey was undertaken on the 8 September 2011 to further assess the potential impacts that the proposed development would have on local cultural heritage resource.

6.3.3 Existing Environment

6.3.3.1 Locational Details

Dublin City is situated at the mouth of the River Liffey in the east of the county. The place name is derived from *dubh linn*, meaning the 'black pool', believed to have been located closer to the mouth of the Liffey where Viking settlers first set up their long phort or 'ship camp'. The ford over the Liffey accounts for Dublin's other name – *Ath Cliath*, meaning ford of the hurdles. The geographical setting of the town, as a harbour, crossing point, defensive site and gateway for inland navigation has been of tantamount importance to the development of the town through the ages.

County	Dublin
Area	East Wall to Santry
Townland (s)	Various (refer to Section 6.3.4.13 Toponym Analysis)
OS Sheet number (s)	14, 15, 18, 19

6.3.4 Archaeological, Architectural and Historical Background

Literary research relating to the local area is vital to highlight sites that hold historic or folkloric importance within the local, regional or national consciousness. Research was undertaken in two phases. It comprised a paper study of all available archaeological, historical and cartographic sources and a site walkover. The following is based on a document search and paper study.

6.3.4.1 Mesolithic Period

The Mesolithic (middle stone age) people were the first inhabitants of Ireland, arriving about 9000 years ago. They were a mobile society relying on wild resources for food, which was hunted and gathered using stone tools as well as boats, nets and traps. Settlement was in temporary and semi permanent groups of huts constructed of wood slung with hide, which may have operated as seasonal or hunting camps.

In many cases, the edges of coastal estuarine areas were the preferred location of Mesolithic (c. 6000 BC – 4000 BC) settlement. This is well attested to in the general area by the excavations carried out at Sutton in the 1940's and 1970's.

Here, a shell midden was uncovered, which had been formed when Howth was an Island. The excavations produced artefacts of flint, chert and stone. Radiocarbon dates suggest a sixth millennium provenance with a later hearth in the midden being dated to 4340 – 3810 BC.

6.3.4.2 Neolithic Period

Farming was first adopted in the Middle East but spread gradually across Europe in succeeding centuries, arriving in Ireland about 4000 BC. Tending of crops and animals required a more sedentary lifestyle and larger permanent settlements were built. The megalithic (from the Greek mega – large and lith – stone) monuments of the Neolithic people built as communal tombs or for ceremonial purposes, are relatively common in the landscape. New methods were adopted for shaping stone tools and the first long distance trade networks were established.

The earliest substantial evidence for human habitation in this area dates to the Neolithic period (c. 4000 BC – 2500 BC). The most immediate evidence comes from the excavations at Lambay Island. Lambay Island is an important site, with excavations indicating significant axe manufacturing capabilities and further Neolithic activity.

6.3.4.3 The Bronze Age

As stone tools were replaced by the use of copper, later combined with tin to make bronze, the structure of society also changed over centuries. While some communal megalithic monuments, particularly wedge tombs continued to be used, the Bronze Age is characterised by a movement towards single burial and the production of prestige items and weapons, suggesting that society was increasingly stratified and warlike.

Although there is some debate about the provenance of the standing stones, it is generally accepted that they date from the later part of the Bronze Age.

6.3.4.4 The Iron Age/Early Historic Period

In late Bronze Age Ireland the use of the metal reached a high point with the production of high quality decorated weapons, ornament and instruments, often discovered from hoards or ritual deposits. The Iron Age however is known as a ‘dark age’ in Irish prehistory. Iron objects are found rarely, but there is no evidence for the warrior culture of the rest of Europe, although the distinctive La Tené style of art with animal motifs and spirals was adopted. Life in Iron Age in Ireland seems to have been much as it was in the early historic period – mixed farmers living in or around small defended settlements known as ringforts or stone cashels.

There is little evidence in the area for bronze or Iron Age activity apart from enclosures and ringforts, the domestic dwelling places of the later prehistoric and early historic period. There are enclosures in Raheny, Kilbarrack, Clontarf and Mainestown, indicating that there was settlement in this area at the time. The low lying coastal plain and mouth of the Liffey would have attracted settlers from earliest times.

6.3.4.5 Viking and Later Historic Period

Prior to the arrival of the Vikings, there was possibly a monastic community in Dublin (believed to have been located just south of Dublin Castle); in the annals there is reference to the bishops and abbots of Dublin in the 7th and 8th centuries. It has also been suggested that there was a second smaller settlement nearby the ford across the Liffey, accounting for Dublin`s second name 'Ath Cliath', meaning the ford of the hurdles. Therefore it can be said that there may have been an ecclesiastical and a secular settlement in Dublin before the Vikings came.

Dublin was the first settlement established by the Vikings and was the basis for the establishment of further settlements in the southeast in Wexford and Waterford and in the southwest in Limerick. According to contemporary Irish annals they set up a 'longphort' or shipcamp at 'Dubhlinn' in 841. The Viking camp here lasted only 61 years until 902, when they were expelled by the combined forces of the king of Leinster and the king of Brega. They returned again in 917 under Sitric to develop a raiding base but were driven out in 1170 by Strongbow and the invading Anglo-Normans.

The location of the first Viking base, the 'longphort', is uncertain. There are several possibilities posited for its location and the most likely is the site of Dublin Castle. The camp was probably enclosed by large earthen banks with direct access to the sea and their fleet, and it was presumably well defended. A certainty is that the camp was substantial in size as it was recorded in 849 that it could cope with the loss of 1000 fighting men and the arrival of a fleet of 140 warships.

The 10th century settlement was enclosed by a series of earthen banks sections of which have been exposed by excavations at Wood Quay, Essex Street West and to the south of Christchurch Place. Within these banks was a thriving, bustling town, with a mixture of traders and merchants dealing both overseas and with the Irish outside Dublin. The town they lived in was laid out in an organised but cramped fashion, creating a streetscape that still exists in some parts of the City today: long, individual property boundaries fronting onto the public streets. Each plot contained the main family house, constructed of post and wattle walls with a thatch roof, as well as outhouses and workshops.

The Vikings continued to occupy Dublin until the late 12th century. According to Giraldus Cambrensis, the Anglo-Normans made 'an enthusiastic assault on the walls, were immediately victorious and valiantly overran the city, with considerable slaughter of the inhabitants'. Those who were lucky to survive were expelled and forced to occupy an area on the northside of the Liffey, where Oxmanstown is located today.

The new rulers in Dublin quickly occupied and defended their new town, and from the late 12th century onwards there was a period of vast expansion in Dublin. By the middle of the 13th century, the town had been expanded northwards and a new city was built also acting as a quay wall. Within the walls, the royal castle was built and developed, where it still stands today.

Medieval Dublin remained confined to the walled town save a 1312 extension north to the river. Within the walls, the principle buildings were the castle, Christchurch Cathedral and the Parish Churches of St. Audeon, St. Michael, St. Nicholas, St. Werburgh, St. John the Evangelist and St. Mary Le Dam. By the

beginning of the 17th century Dublin City had extended little beyond its medieval limits with the exception of a small extension north to the river. The study area remained for the most part separated from the City and was occupied by farming communities, small villages and estates and church owned lands and granges occupied by tenant farmers. At the close of the Cromwellian period, the town wall, with its eight gates and nine towers was in poor repair; the cathedrals and parish churches were in ruins and the abbeys and friaries were gone. The population too had been reduced, with as little as 9000 people living in the City and environs at the time.

By 1800, the population had climbed to close to 200,000 and the City had begun to impinge on the study area and a gradual population increase occurred. The land was mainly either industrial and residential, associated with the harbour, or agricultural, growing wheat and oats and supplying barley for the Dublin breweries in the 18th and 19th centuries, supplying fruit and vegetables for market, with some dairy cattle and horse rearing. The construction of the Dublin and Drogheda railway in 1844 led to a commensurate population growth. However, the greatest period of growth was experienced in 1880 with the advent of the horse drawn tram service from Dublin City Centre to Dollymount.

6.3.4.6 East Wall Road

The rapidly expanding population of Dublin in the latter half of the 17th century and a growing economy necessitated expansion beyond the City's walls. New land was required and this coincided with the necessity of keeping the harbour open to shipping. Land which became reclaimed in the Docklands area was held by the City as the shoreline was included in the riding of the franchises from as early as 1488. Private development however was also encouraged as a result of the provision of preferential rents and leases (Margaret Cowen & Co. Ltd. 2009, 51).

A survey of 1682 resulted in the division of "the strand between Mabbot's Mill (the area of Connolly Station) and the Furlong of Clontarf" into 152 lots. The area of the North Lotts was susceptible to flooding at high tide and it was a requirement of allocation that each owner would defend his lot against inundation. It appears that this was unsuccessful however as four years later the granting of land was annulled. It is probable that the reclamation effort required to secure the area from the sea was beyond individual effort and was more likely a job to be undertaken with municipal support.

"Consequently, at the close of the 17th century, it is unlikely that any development had taken place in the area east of the North Strand, although it would be unusual if the area had not been continually used for riverine activities" (ibid., 52).

An Act was passed in 1707 which established the Ballast Office, and in 1710 it began river containment works at the site of the present North Wall.

By 1756 the area of the North Lotts had been reclaimed and the wall completed, with the pattern of the plots recorded on Rocque's 1756 Map of Dublin. In the early stages these new tracts of land were unattractive to the people of the City, and the area remained largely under-developed. However, the moving of the Custom House from the centre of the City at Wood Quay to its new location at Custom House Quay in the latter half of the 18th century was part of a general

movement eastwards from the old City. Rocque's map clearly shows the area of the North Lotts, with "North Wall", "Mayor Street", "Sherriff Street", "East Quay" and "The Strand" all being recorded. East Wall Road is recorded but not named on Rocque's map. Individual plots are recorded in between these roads.

In the 18th and 19th centuries, the area saw a steady increase in its volume of trade, and this brought increased political pressure to improve port facilities. In the 1860s, Dublin Port Engineer Bindon Blood Stoney began to evaluate the costs of both masonry and concrete for the purpose of constructing new quay walls when it became clear that the berthage facilities along the North Wall needed improvement. By 1869, the deep-water berths at East Wall and the south side of Alexander Basin were also constructed, and the river was dredged to a depth of twenty feet from Dublin Bay to the City.

Until 1800, most trade took place on the south side of the Liffey, but with the opening of the New Custom House in1791, port development shifted to the north bank of the river. The original Custom House Dock opened in 1796, and it was supplemented by George's Dock in 1821 which included large warehouses and storage vaults. The development of the Alexandra Basin allowed much larger ships to discharge their cargo at all stages of the tide, and this naturally led to a reduction in the amount of traffic docking at the railway terminus. The outbreak of the First World War saw renewed passenger activity in the area with the railway yards being used for troop movement. Political instability in the early years of the 1920s led to the military zoning of the area. The Transport Act of 1944 nationalised the railway system in Ireland, and the two railway companies were taken over by Córas Iompair Éireann (CIE), along with the canal.

6.3.4.7 Fairview Park and Tolka River

The name of the parish of Fairview is frequently associated with an earlier parish name – Clonturk, which takes its name from a townland on the road to Swords. Clonturk probably means "plain of the Tolka", Cluain meaning 'meadow', Turk being a derivation or corruption of Tolka. It has also been suggested that it may mean "meadow of the boars" from torc – boar (Weston, 1920).

Close by the Parish Church at Fairview, is Philipsburgh Avenue, which may derive its name from Philipsburg on the Rhine (ibid). The old Jewish graveyard is located nearby. Founded in 1718, its mortuary chapel bears the inscription "Built in the year. 5618." - roughly 1857-8 in the Christian calendar.

The area of modern day Fairview began to develop with the construction of Annesley Bridge in 1797. Rocque's map of 1756 clearly shows that Ballybough Bridge was the only means of crossing the Tolka River in this area. Fairview Park was originally tidal mud flats and was used for land fill in the early 1900s. The park was developed in the late 1920s.

The suburb of Marino is located immediately north and east of Fairview park. Marino House, designed by Sir William Chambers in 1757 and built towards the close of the 18th century was a gift to the Lord Charlemont from a Thomas Adderley. The granite entrance gate is surmounted by sculptured representations of the arms of the Charlemont family, and the motto "Deo duce, ferro comitante" ("With God as my guide, my sword by my side"). In the grounds is a highly embellished Doric temple. Both the Charlemont and nearby Croydon estates

eventually formed the current Parish of Marino, developed in the 18th and 19th centuries.

Eighteenth and 19th century pottery was recently revealed in Fairview Park as a result of monitoring groundworks in the area (Dr. Ruth Johnson, Dublin City Archaeologist, pers. comm.).

The Tolka River (in Irish An Tulcha, the flood) is one of Dublin's three main rivers (along with the Liffey and the Dodder). Annesley Bridge was originally the mouth of the river, but reclamation has resulted in the Tolka flowing immediately south of Fairview Park before entering in to the sea north of East Wall Road.

6.3.4.8 Cultural Heritage Sites in the Vicinity of the Proposed Development

There are no cultural heritage sites within 500m of the proposed trenchless crossing of the Tolka River. The nearest cultural heritage sites are located approximately 1km to the west of the proposed crossing.

National Monuments

Under the National Monuments Act (1930) and its various amendments archaeological sites in the ownership or guardianship of the state or a local authority and sites under preservation orders are designated as National Monuments and offered the highest level of protection under Irish Legislation. In order to ensure that all potential National Monuments were recorded the following methodology was employed in assessing potential impacts. All National Monuments in the ownership or guardianship of the state or a local authority or sites under Preservation Orders within 10km of the proposed development were reviewed in GIS to ascertain whether there was any potential for direct impacts (physical or on their setting) or indirect impacts.

There are no National Monuments in the vicinity of the proposed Tolka crossing. The nearest National Monument is the Casino at Marino which is located approximately 2 kms north of the proposed crossing point.

Sites Protected by Preservation Orders

All townlands within 5km of the proposed development site were cross referenced with the list of sites under Preservation Orders available from the DoEHLG and no sites with this protective status were found.

Sites in the Ownership or Guardianship of a Local Authority

A review of the 'Report of the Commissioners or Church Temporalities of Ireland (1879') was carried out. There are no sites listed in the ownership or guardianship of the Local Authority within 200m of the study area. There are 10 listed within 500m of the study area. All of these sites are ecclesiastical and consist of either churches or graveyards with well-defined boundaries.

Note: The above number can be misleading as both churches and graveyards are given separate designations despite occupying the same site.

6.3.4.9 Sites and Monuments Record (SMR) / Record of Monuments and Places (RMP)

The Record of Monument and Places (RMP) dataset was reviewed. There are no sites within 500m of the proposed crossing.

6.3.4.10 Previous Archaeological Fieldwork

The Excavations Bulletin is both a published annual directory and an on-line database that provides summary accounts of all the excavations carried out in Ireland – North and South – from 1970 to 2010 (currently the latest edition). The number of excavations carried out annually in Ireland has increased enormously during this period. To illustrate, Excavations 1970 has 41 reports, while Excavations 2005 contains over 1700. The database gives access to summary descriptions of almost 15,000 reports and can be browsed or searched using multiple fields, including Year, County, Site Type, Grid Reference, Licence No., Sites and Monuments Record No. and Author. The online database, http://www.excavations.ie covers the years from 1970 to 2008, while the 2009 and 2010 versions are available in book form. The following lists the results for the townlands of the subject area.

Dublin

2006:655

Crescent Place, Fairview

No archaeological significance

31802 23642

-

06E0922

Monitoring of construction groundworks took place at 22 Crescent Place, at the rear of 22 Marino Crescent, Fairview, during 13 and 14 September 2006. No. 22 Marino Crescent is part of an 18th-century terrace and is a protected structure in the current Dublin City Council Development Plan. The development site was previously occupied by a single-storey concrete workshop and is located immediately to the north of the zone of archaeological potential for DU018–067 (classified as ‘burials’).

Four foundation trenches in a rectangular grid were dug within the site with a mini-digger equipped with a toothless bucket. A dark-brown/grey garden soil was noted beneath the concrete floor surface. The subsoil consisted of a malleable mid-brown silty clay. Along the eastern and western boundaries of the site were found calp-limestone garden wall foundations. Examples of 19th- and early 20th-century household waste were recovered from the garden soils.

No archaeological features, deposits or artefacts were discovered during the course of the excavation of the four foundation trenches.

Sinclair Turrell, Archaeological Development Services Ltd, Windsor House, 11 Fairview Strand, Fairview, Dublin 3.

Dublin

2008:476

Former Charlemont Demesne, Marino

Historic estate

31785 23730

DU018–144

C222; E3453

A programme of monitoring and limited excavation was carried out on the site of the new Medico-Legal Centre within a small area of the former Charlemont Demesne at Marino. The new centre is located to the north-west of the Casino, a national monument. The development footprint lies close to the remains of two historically noted landscape features of the demesne: the Gothic Room and what was referred to as the Serpentine Lake. These features were not thought to be visible in today's landscape. A series of test-trenches was initially opened by Sylvia Desmond and Peter Kerins in order to establish their possible survival (Excavations 2007, No. 529)….

….It was hoped to establish the extent of the Serpentine Lake and perhaps locate other features associated with Charlemont's 18th-century landscaping schemes. In any event, ground reduction never exceeded 1.4m in depth, and over most of the area only extended to some 0.4m, which was not sufficiently deep to uncover the continuation of the possible masonry revetment recorded in Desmond and Kerins' Trench 5.

The reduction of the footprint and the construction of a temporary area of hard standing were undertaken through late June and July. The extent of the football pitch had already been reduced some years ago to a level c. 1.7m below that of the surrounding area.

Ground reduction was undertaken by a tracked excavator with a 2m bucket. The area was reduced to the required level in a series of east–west strips up to 6m in width, with the area impacted upon by a new reinforced concrete road to the south of the Medico-Legal Centre being initially examined. It was found that the sod level sealed two general deposits: to the east was a large area of introduced soil containing modern material, presumably dating to the construction of the football pitch. To the west was a darker soil, more organic in content, containing tree roots, vegetative matter and other modern material. The interface of both deposits extended along a north–south line and it seems the darker material came from the Serpentine Lake and had been spread out over an area to the east, rather than being removed wholesale from the site.

The slight foundation courses of two masonry walls were sealed by the more organic material and appeared to have more or less demarcated its eastern edge. Its degree of truncation rendered it impossible to phase the wall in any meaningful way. Its antiquity (or otherwise) may be indicated by the recovery of a decayed spent cartridge of a starter pistol below one of the masonry blocks, in such a

position that it would appear unlikely to have arrived there accidentally. The wall was in any case left in situ and will not be impacted upon by the development.

The reduction of the area of landscaping to the rear of the centre was undertaken in two stages and resulted in a limited excavation of masonry and brick footings immediately to the east of what would appear to be the eastern elevation of the Gothic Room along with an investigation of a parallel wall some 9m to the north-east and a later wall, linking both earlier structures diagonally.

Flowerpot fragments or horticultural wares have traditionally been discarded by archaeologists (or at the very least treated with a modicum of derision). Pioneering work by English archaeologist, the late Chris Currie, has to a certain extent redeemed the humble flowerpot, establishing a rough chronology for the artefact type (Currie 1993). The pots recovered from Marino were of various sizes, all of a similar if not identical fabric, the usual unglazed red earthenware. All were hand-thrown and appear to have had the classic drainage hole in the centre of the base. The rims fell into two categories, those with a slightly everted rim and those with a thicker rim. A body sherd of the latter category was stamped

BOYLE

NORTHSTRAND

There is no record of such a firm on the North Strand in Dublin from the late 1830s and if the Northstrand alluded to is the nearby Dublin district, the flowerpots are presumably earlier. Recovered from the sondage was a minimum vessel count of twelve pots and the deposition probably represents a ‘flowerpot midden’ as identified by Currie (2005, 85).

The major finding of the investigations at Marino has been the recovery of F20, the eastern foundation of the Gothic Room. On the basis that something of a fair face remains over the upstanding twin arches, it would appear likely that the eastern wall at any rate was up to 1.5m in thickness, with the arches that are hidden behind the hoarding today being either recessed back from the foundation or representing the rear face of a double wall. This may have been undertaken as a device for hanging plants in an attempt to create a romantic ruin.

The shell of the Gothic Room appropriately became a small graveyard and it is likely that the northern and southern walls at least were demolished and subsequently rebuilt in concrete blocks in the relatively recent past.

References

Currie, C.K. and Locock, M. 1993 Excavations at Castle Bromwich Hall Gardens 1989–91. Post-Medieval Archaeology 27, 111–99.

Currie, C. 2005 Garden Archaeology: A Handbook. Council for British Archaeology. York.

Franc Myles, Margaret Gowen & Co. Ltd, 27 Merrion Square, Dublin 2.

Dublin

2001:476

Dublin Port Tunnel, Whitehall

Ploughed fields

O169383

01E0351

Monitoring was conducted in a large ploughed field (High Park) at Whitehall during preparatory works for the compound and access shaft of the Dublin Port Tunnel. The monitoring identified a series of field boundaries dating from the 18th to the early 20th century. Sherds of post-medieval pottery were also recovered. The results of the monitoring reflect the depiction of the site on historical maps such as those of Rocque (1760) and Duncan (1821).

A small quantity of 17th- and 18th-century pottery (Staffordshire slipware and North Devon gravel-tempered ware) was identified from the ploughzone, but the majority of the pottery was 20th-century in date. A single sherd of local medieval pottery was retrieved from the topsoil. No flint (worked or otherwise) was recovered from the topsoil. The pottery sherds contained in the matrix of topsoil were not associated with any archaeological features. The occurrence of pottery in these quantities reflects the manuring of farmland over the centuries and indicates that the field at High Park has been cultivated for many centuries.

Edmond O'Donovan, Margaret Gowen & Co. Ltd, 2 Killiney View, Albert Road Lower, Glenageary, Co. Dublin.

Dublin

2008:385

Greencastle Avenue, Coolock

No archaeological significance

319860 239804

08E0542

An assessment took place in the form of monitoring of groundworks associated with a residential development at Castle Avenue, Coolock, Co. Dublin. The site of the proposed development was located within close proximity to DU015–072, the site of a dwelling dated to the 16th/early 17th century ad, which is recorded as being a tower-house or a fortified house. During the course of this monitoring no features or deposits of an archaeological nature were identified.

Robert O'Hara, Archaeological Consultancy Services Limited, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.

Dublin

2007:450

Coolock

No archaeological significance

23197 23895

07E1070

Testing and monitoring took place in relation to the development of retail units adjacent to a 'possible chapel site' (DU015–084). The site, at the corner of Malahide Road and Coolock village, had previously been a Shell petrol station; decommissioning works included the removal of up to 4m of contaminated soils across 70% of the site. Testing was undertaken mechanically across the site. The remaining undisturbed ground contained no archaeological features. Monitoring of piling works was undertaken, but no archaeological material was found.

Sian Keith, Margaret Gowen & Co. Ltd, 27 Merrion Square, Dublin 2.

6.3.4.11 Topographical Files of the National Museum of Ireland

The topographical files of the NMI identify all recorded finds held in the NMI archive that have been donated to the state in accordance with national monuments legislation. The files sometimes include reports on excavations undertaken by NMI archaeologists in the early 20th century. Valuable information that can be gleaned might include the exact location, ground type, depth below ground level and condition when found, of each find. However, the amount and the usefulness of the information available on each find can vary considerably. The topographical files are listed by county and townland and/or street name. The following **Table 6.1** lists the finds/artefacts which are listed in the inventory for townlands relevant to the proposed development.

Table 6.1 Topographical Files of the NMI in the Study Area

Townland	Reg. No.	Description	Additional Information
Beaumont	1969:64	Plano-Convex Flint Knife	Found in garden.
Beaumont	1969:65	Bronze buckle fragment	No further information available
Beaumont	1969:66	Bronze Mount	No further information available
Beaumont	1969:67	Bronze Mount Fragment	No further information available
Beaumont	1969:68	Bronze fragment	No further information available
Beaumont	1969:69	Bronze fragment	No further information available
Clontarf	1927:68	Boss of a shield	Originally from collection of Dr. Nelligan
Clontarf	1916:30:00	Bronze Axehead	V shaped ornament below the stop ridge, greenish patina. Purchased through Dr. Westropp from Mr. C.Murphy.
Clontarf	P1953:11	Flint Flake	Found in garden. Creamy white flake with a little iron staining. L: 5.5. W: 2.25cm, T: .8cm.
Clontarf	1907:116	Bronze Ring Pin	Stem is round sectioned and swelling gradually towards the middle. Ornamented with panel of strokes and alll over interlaced patter at the top. 12cm in length.
Clontarf	A1898:117	Rowel spur	Iron, 16th century

Townland	Reg. No.	Description	Additional Information
Clontarf	1941:972	Flint Axe	No further information available
Clontarf	1931:02:00	Bronze Axehead	No further information available
Clontarf	1968:300	Bronze Axehead	Flat. Thin curved butt. Narrow eges, slightly convex and with traces of lozenge ornament. 14cm long
Clontarf	1968:312	Bronze Axehead	Flanged. Damaged butt. Cutting edge splayed. L: 10.2cm.
Drumcondra	NA	Copper coin of Vespasian	Found in garden - not acquired
Drumcondra	NA	Iron Pike	No further information available
Drumcondra	1929:80-82	Flakes	Found in garden at 7 Clare Road, Whitehall
Kilmore Big	1A/174/90	Human skeletal remains	Found during excavation works for 'Little Tykes' advance factory in IDA business park.

The above finds are typically multi period and range over a wide area with the Bronze Age in particular being well represented.

6.3.4.12 Underwater Archaeology

The Tolka River will be crossed using trenchless crossing methodology, i.e. a small tunnel under the river. The tunnel, approximately 650mm in diameter will be constructed a minimum of 2 metres beneath the river bed. The construction of the crossing will require a thrust pit on the north side of the crossing and a reception pit on the south side. All works will be carried out outside the river walls, i.e. it will be a dry crossing.

6.3.4.13 Toponym Analysis

Townland names are a rich source of information for the land use, history, archaeology and folklore of an area. The placenames can have a variety of language origins such as, Irish, Viking, Anglo-Norman and English. The names can provide information on families, topographical features, and historical incidents. In terms of the built environment many names reference churches, fords, castles, raths, graveyards, roads and passes etc. In compiling the data in the following **Table 6.2**, a number of resources were consulted including the Placenames Database of Ireland www.logainm.ie and Irish Names of Places by P.W. Joyce (Joyce, 1913).

Table 6.2: Placenames in the Area of the Proposed Development

Townland Name	Irish Version	Translation
Ayrfield	NA	English derivation
Ballybough	Baile Bocht	Probably derives from the Irish baile "town" and bocht meaning "poor".
Beaumont	NA	Derives from the Old French beu or bel meaning ‘fair’ or ‘lovely’ and mont meaning ‘hill’
Clontarf	Chluain Tarbh	From the Irish Cluain meaning plain or meadow and tarbh meaning bull

Townland Name	Irish Version	Translation
Drumcondra	Droim Conrach	Conra's Ridge
Edenmore	Eadan Mór	Big brow of the hill deriving from Eadan meaning a 'hill-brow' and mór meaning big or large
Grace Park	NA	Probably of English derivation
Harmonstown	NA	Probably of English derivation
Kilmore	Cill Mór	Great Church
North Dock	NA	Of English derivation
Priorswood	NA	Of English derivation
Whitehall	NA	Of English derivation

6.3.4.14 Aerial Photography

The usefulness of aerial photography is that it allows for a different perspective, 'the distant view'. Archaeological sites may show up on the ground surface, depending on their state of preservation, by light and shadow contrasts (shadow marks), tonal differences in the soil (soil marks) or differences in height and colour of the cultivated cereal (crop marks). It is also a useful aid in pinpointing existing features and can assist in ascertaining their extent and degree of preservation.

A review of available aerial photographs was carried out. Particular attention was paid to the only notable greenfield area, Fairview Park. Nothing of significance was noted.

6.3.4.15 Cartographic Research

Introduction

Analysis of historic mapping shows how the landscape has changed over time. The comparison of editions of historic maps can show how some landscape features have been created, altered or removed over a period of time. Sometimes features that appear on these early maps are found to be of potential archaeological significance during fieldwork. For this study the following historic maps were consulted:

- Rocques Map, 1760
- Taylor's Map, 1816
- First edition Ordnance Survey 6" Maps circa 1830.

Further cartographic analysis is discussed in **Section 6.3.4** above.

County Dublin 1756, Rocque's map

Rocque's map shows the limit of the City at roughly the line of the present day North Circular Road. The study area is primarily rural with small villages and divided by fields. Several arterial roads are prominent, in particular the present Drumcondra, Malahide, and Howth roads. Settlement is shown scattered along these at intervals, indicating the first stage 'ribbon development' stage of the

building up of this area. The original location of Clontarf Castle can be estimated from the map. A possible bawn wall is also depicted, with rounded corner turrets at its northern end. The Tolka River and Santry River, with Santry Demesne to the west, are shown. The demesne lands at Marino are also depicted.

Taylor's Map 1816

As with Rocque's map, the study area is shown to be mostly open countryside with the occasional dispersed homestead present. Again, the Tolka River and Santry River are shown. The demesne lands at Marino are also depicted.

First edition Ordnance Survey 6" Maps circa 1843

The first edition Ordnance Survey Map shows the subject area slightly more built up than on the previous but still predominantly rural outside the line of the Royal Canal. The built up area is just extending to the north of the Tolka River into modern Marino. The area of the modern Fairview Park is still shown as part of the estuary with the edge of buildable land immediately east of the North Strand Road. The estate of Marino is prominent with extensive grounds laid out around Marino House with a temple and formal gardens.

6.3.5 Architectural Heritage

6.3.5.1 Architectural Conservation Areas (ACA)

There are no Architectural Conservation Areas (ACAs) designated within the Dublin City Development Plan 2011-2017 (DCDP) in the vicinity of the proposed crossing. The nearest ACA relates to the area around Marino Casino which is located approximately 2kms north of the proposed development.

Record of Protected Structures (RPS) / National Inventory of Architectural Heritage (NIAH)

The NIAH for the study area has not been completed.

A review of the Dublin City Development Plan was carried out. None of the recorded protected structures listed in the Plan are in the vicinity of the proposed crossing.

A review of Appendix 12 of the Dublin City Development Plan (stone setts) and Appendix 13 A and B (paved areas and paved areas and streets with granite kerbing) was also carried out. None of the features listed are present on the proposed pipeline route.

6.3.5.2 Demesne Landscapes and Historic Gardens (DLHG)

There are no demesne landscapes in the vicinity of the proposed crossing. The nearest demesne landscape is demesne landscape in is the Marino estate, located approximately 2kms north of the proposed River crossing.

6.3.6 Field Inspection

Investigation of the proposed route began at the East Wall road and continued into Fairview Park.

6.3.7 Potential Impacts on Cultural Heritage

The proposed project consists of a trenchless crossing beneath the bed of the Tolka River which could potentially impact upon the archaeological heritage of the study area.

Where an architectural or cultural heritage feature or site is physically located within an area where works take place and the work entails the removal of part, or all of the site or feature, a direct impact will occur. There is also potential for direct impacts on as yet undiscovered sites and features. The greatest threat to cultural heritage and archaeological sites, both known and unknown, would occur during the construction phase in the form of ground disturbance.

Direct impact can occur:

Where the site or feature is physically located within the footprint of the development and entails the removal of part, or the entire monument or feature.

Where enabling or access works entail the removal of part, or the entire monument or feature.

There is also potential for direct impacts on as yet undiscovered archaeology. Undiscovered remains may occur where:

- Sub surface remains exist with no visible trace above ground.
- Unrecorded sites are present in areas that have not been surveyed.
- Unrecorded sites are present within areas that have not been readily accessible to survey.

6.3.8 Cultural Heritage Mitigation Measures

The Tolka River will be crossed here using trenchless crossing methodology, i.e. a small tunnel under the river. The tunnel, approximately 650mm in diameter will be a minimum of 2 metres beneath the river bed.

All works will be carried out outside the river walls, i.e. it will be a dry crossing and there will be no potential impact on the underwater archaeological resource.

A suitably qualified archaeologist will examine the material excavated during the course of tunnelling works underneath the Tolka River.

In the event that archaeological deposits are discovered, all work in the vicinity must cease and contact be made with the National Monuments Section of the Department of Arts, Heritage and the Gaeltacht on how best to proceed.

6.3.9 Predicted direct Impacts on Cultural Heritage

No known archaeological or cultural heritage sites will be directly impacted upon by the proposed works. There will be no direct impact upon the underwater

cultural heritage resource. Nevertheless there is the potential that the works may have a negative impact on any previously unknown sub-surface archaeological remains that may exist.

6.3.10 Cultural Heritage Residual Impacts

There will be no direct impacts upon the known architectural or recorded cultural heritage resource.

6.4 Fencing

The construction area will be securely fenced to prevent public access to the works. Access will be provided as necessary in accordance with individual requirements.

6.5 Water Use

Water will be used in small quantities for cleaning, toilet facilities and wheel washing, etc. Water will also be required for the hydrostatic testing of the pipeline.

6.6 Energy Use

Energy use for the pipeline works will include fuel for the vehicles and machinery on the site, transport of materials to the site, and electricity used for site offices, lighting, etc.

A variety of items of machinery will be needed during the construction phase to ensure that the pipeline is laid safely and efficiently. However, the exact requirements will only be known when detailed design work is completed. The construction contractor will be required to ensure that all plant will be serviced regularly to minimise emissions and that it will be inspected before being allowed on site.

Pipe manufacture is a highly specialised task and there are very few manufacturers world-wide. Therefore it is difficult to reduce the energy used in the transportation of the pipe. However, marine and rail transport will be used as far as possible to bring sections of the pipe to the site.

Electricity use for lighting and heating of the construction site offices and working areas is expected to be minimal, as most work will be carried out in daylight.

6.7 Potential Impacts and Mitigation Measures

6.7.1 Construction Phase

No impacts are predicted for any houses, walls, or other structures. Water will be used and disposed of in accordance with Dublin City Council requirements.

6.7.2 Operational Phase

The proposed pipeline crossing of the River will be part of the overall pipeline project which will reinforce the gas network in the area, and will therefore have a beneficial impact on material assets.

6.8 Conclusions

Since the affected land areas will be reinstated to pre-construction conditions, there will be no significant adverse effects on material assets in the area. The new pipeline will be a valuable new material asset.

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Appendix A

Appropriate Assessment Screening Report

A1 Appropriate Assessment Screening Report

Please see Appropriate Assessment Screening Report overleaf.

Appropriate Assessment

Screening Report

as required under Article 6(3) of the Habitats Directive

(Council Directive 92/43/EEC)

18th October 2011

Santry to East Wall Pipeline Project

(East Wall to Coolock Pipeline and

Swords Road to Malahide Road Pipeline)

Prepared by: Moore Group – Environmental Services

On behalf of Dublin City Council

1. Introduction

The Habitats Directive (Council Directive 92/43/EEC) requires that all plans and projects must be screened for potential impact on Special Areas of Conservation (SACs) or Special Protection Areas (SPAs). This process aims to establish whether a full Appropriate Assessment as required by Article 6 of the Directive is required in any particular case.

This report presents a screening assessment for a proposed new gas pipeline in Dublin City. The pipeline will be routed between East Wall Road and Coolock and will include a link pipeline from Malahide Road to Swords Road. This new pipeline is reinforcing the gas network in this area. The pipeline will be approximately 12" in diameter and will be buried to a minimum depth of 1.2m. The nearest Natura 2000 site is the South Dublin Bay and River Tolka Estuary SPA which is c. 180m from the pipeline route and proposed AGI at its nearest point. The pipeline will cross beneath the Tolka River approximately 400m upstream of the aquatic boundary of the estuary which is designated as part of the South Dublin Bay and River Tolka Estuary SPA.

It has been prepared by Moore Group - Environmental Services in accordance with Articles 6(3) and 6(4) of the Habitats Directive. The report was compiled by Ger O'Donohoe M.Sc. who has 17 years experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements in both terrestrial and aquatic habitats.

1.1 Background - The Habitats and Birds Directives

The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) is the main legislative instrument for the protection and conservation of biodiversity in the EU. Under the Directive member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a European Union context. The Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds), is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention. Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. Article 6(3) and 6(4) of the Directive set out key elements of the

system of protection including the requirement for Appropriate Assessment of plans and projects (see Appendix A). Article 6(3) of the Habitats Directive requires an appropriate assessment of any plan or project likely to have a significant effect on an SAC or SPA.

1.2 Screening for Appropriate Assessment

Screening has been undertaken in fulfillment of the requirements of the Habitats Directive and taking into account the Department of the Environment, Heritage and Local Government's Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

2. Methodology

Screening has been undertaken in accordance with the European Commission's Assessment of Plans and projects significantly affecting Natura 2000 sites (European Commission, 2001) and the Department of the Environment, Heritage & Local Governments Guidance on Appropriate Assessment of Plans and Projects in Ireland which comprises the following steps:

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

3. Description of the Project

Bord Gáis Éireann proposes to reinforce the gas network between Santry and East Wall. To achieve this a new pipeline is required between East Wall Road and Coolock with a link line from Malahide Road to Swords Road AGI. This new pipeline is effectively replacing the existing Santry to East Wall Pipeline. The new pipeline will be circa 9km in length, 300mm (12 inch) diameter. It will be laid in streets and public green space along the route and will be buried to a minimum depth of 1.2m. It will start at the junction of East Wall Road and Tolka Quay road, run along East Wall Road, cross beneath the Tolka River and then

on to just north of the junction between Oscar Traynor Road and Malahide Road, via green spaces and side streets.

The Tolka River will be crossed using trenchless crossing methodology, i.e. a small tunnel under the river. The tunnel, approximately 650mm, diameter will be a minimum of 2 metres beneath the river bed. The construction of the crossing will require a thrust pit on the north side of the crossing and a reception pit on the south side. All works will be carried out outside the river walls, i.e. it will be a dry crossing. The rail line in Fairview Park will also be crossed using a similar trenchless technique.

In addition to the pipeline, there will be an AGI to be located south of the CLASAC building adjacent to Fairview Park. The AGI will consist of a one storey building, approximately 20x4m in plan area, an access road to the building and a parking area for a vehicle/van outside the building.

The route of the pipeline in north Dublin City is presented in Figure 1 below. The locations of adjacent designated conservations areas are presented in Figures 2 and 3.

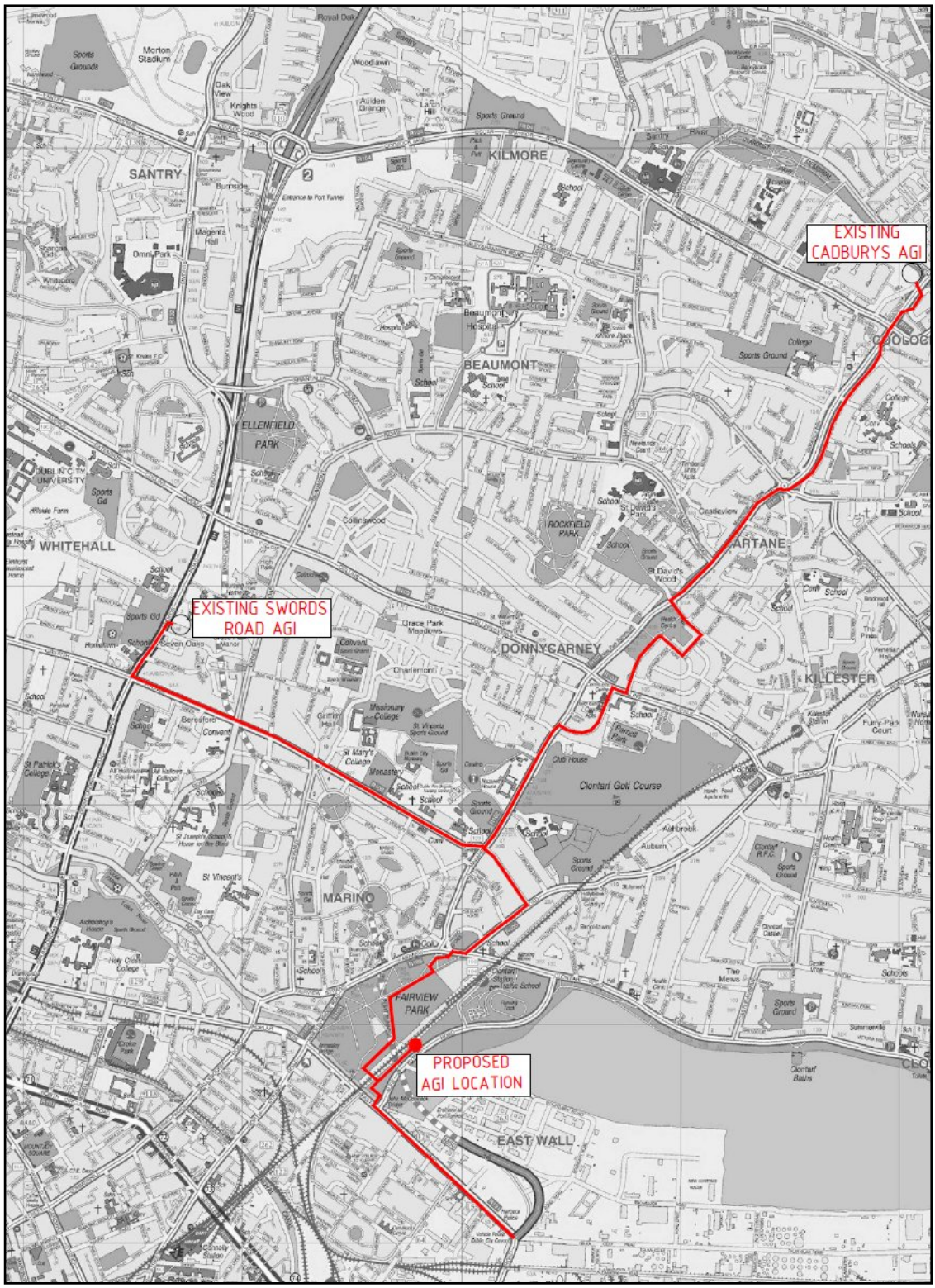

Figure 1. Route of the proposed pipeline works.

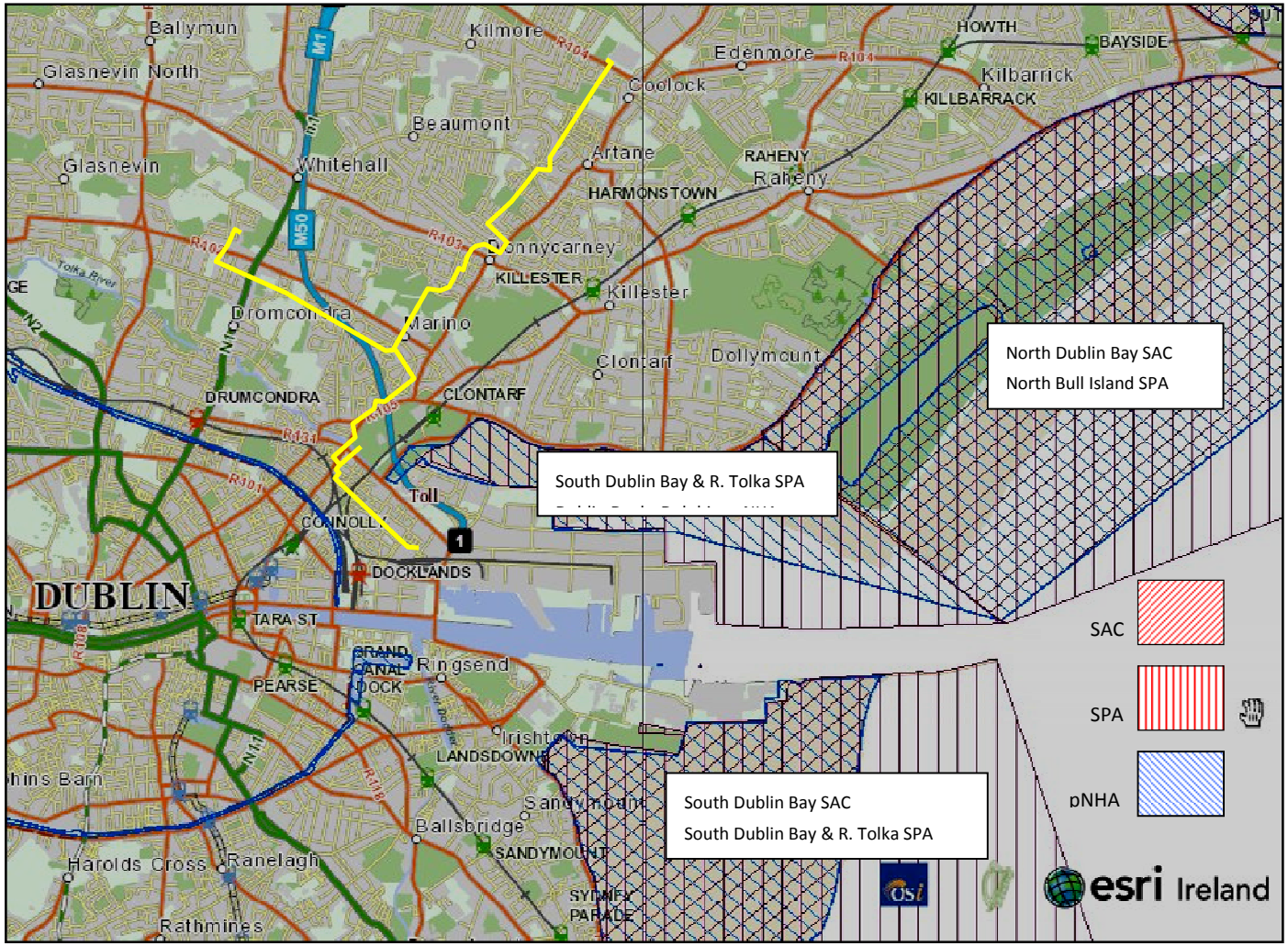

Figure 2. The pipeline route (in yellow) in relation to designated areas in the area.

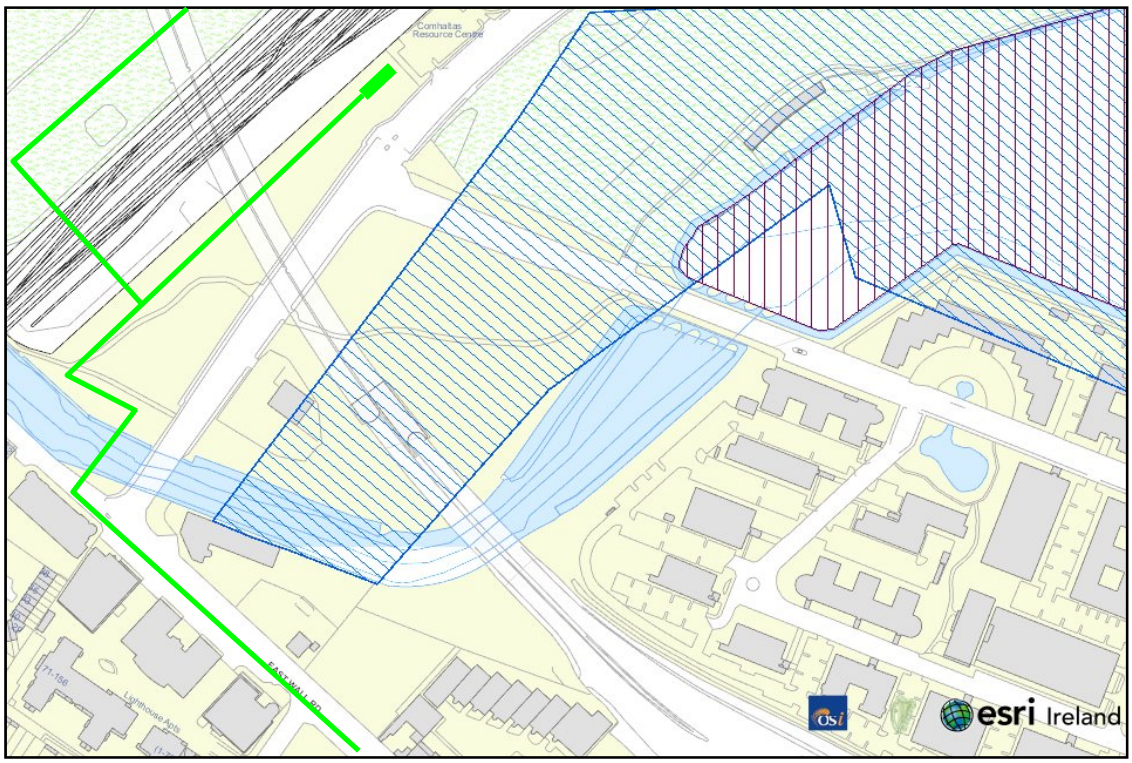

Figure 3. Showing the detailed location (in green) of the pipeline works and AGI in relation to the South Dublin Bay and River Tolka Estuary SPA (hatched in red) and the North Dublin Bay pNHA (hatched in blue)

4. Identification of Natura 2000 sites

The project site is located approximately 400m upstream of the aquatic boundary of the South Dublin Bay and River Tolka SPA (Site Code 004024). In addition, the project has potential biological connectivity with a number of other inter-designated sites as per Table 1 below. Excerpts from the Site Synopses for the Natura 2000 sites are presented below.

Area Name	Designation	Site Code
North Dublin Bay	SAC	000206
North Dublin Bay	pNHA	000206
South Dublin Bay	SAC	000210
South Dublin Bay	pNHA	000210
South Dublin Bay and River Tolka Estuary	SPA	004024
Dublin Dock Dolphins (inc. in above)	pNHA	000201
North Bull Island	SPA	004006

Table 1. Designated conservation areas having potential biological connectivity with the project.

4.1 North Dublin Bay SAC 000206

This SAC covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of the SAC. The island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. This site is an excellent example of a coastal site with all the main habitats represented. The 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. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

4.2 South Dublin Bay SAC 000210

This SAC 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 an important site for waterfowl. 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. This SAC is a fine example of a coastal system with extensive 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.

4.3 South Dublin Bay and River Tolka Estuary SPA 004024

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin –this is included within the site. Tolka Estuary SPA is of international importance for Light-bellied Brent Goose 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 Bartailed Godwit and Mediterranean Gull.

4.4 North Bull Island SPA 0040006

This SPA covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses. A well-developed and dynamic dune system stretches along the seaward side of the island. 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 Lightbellied Brent Goose, Blacktailed 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.

5. Identification of potential impacts to Natura 2000 sites and assessment of Significance

Given the proposed methodology of a trenchless crossing under the River Tolka, there will be no direct impact on the River and no indirect impacts on the downstream designated areas.

6. Concluding Statement

Given the proposed methodology of a trenchless crossing under the River Tolka, there would be no direct impact on the River and no indirect impacts on the downstream designated areas.

A finding of no significant effects report is presented in Appendix C in accordance with the EU Commission's methodological guidance (European Commission, 2001).

7. References

European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC).

Appendix A

Article 6(3) and (4) of the Habitats Directive

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. 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.

Appendix B

National Parks and Wildlife Service Site Synopses

SITE NAME : NORTH DUBLIN BAY SAC
SITE CODE : 000206

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site. The island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (Ammophila arenaria) is dominant on the outer dune ridges, with Lyme Grass (Leymus arenarius) and Sea Couchgrass (Elymus farctus) on the foredunes. Behind the first dune ridge, plant diversity increases with the appearance of such species as Wild Pansy (Viola tricolor), Kidney Vetch (Anthyllis vulneraria), Bird's-foot Trefoil (Lotus corniculatus), Rest Harrow (Ononis repens), Yellow Rattle (Rhinanthus minor) and Pyramidal Orchid (Anacamptis pyramidalis). In these grassy areas and slacks, the scarce Bee Orchid (Ophrys apifera) occurs.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (Alnus spp). The water table is very near the surface and is only slightly brackish. Saltmarsh Rush (Juncus maritimus) is the dominant species, with Meadow Sweet (Filipendula ulmaria) and Devil's-bit (Succisa pratensis) being frequent. The orchid flora is notable and includes Marsh Helleborine (Epipactis palustris), Common Twayblade (Listera ovata), Autumn Lady's-tresses (Spiranthes spiralis) and Marsh orchids (Dactylorhiza spp.). Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. On the lower marsh, Glasswort (Salicornia europaea), Saltmarsh Grass (Puccinellia maritima), Annual Sea-blite (Suaeda maritima) and Greater Sea-spurrey (Spergularia media) are the main species. Higher up in the middle marsh Sea Plantain (Plantago maritima), Sea Aster (Aster tripolium), Sea Arrowgrass (Triglochin maritima) and Sea Pink (Armeria maritima) appear. Above the mark of the normal high tide, species such as Scurvy Grass (Cochlearia officinalis) and Sea Milkwort (Glaux maritima) are found, while on the extreme upper marsh, Sea Rushes (Juncus maritimus and J. gerardii) are dominant. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "Salicornia flat", which is dominated by Salicornia dolichostachya, a pioneer Glasswort species, and covers about 25 ha. Tassel Weed (Ruppia maritima) occurs in this area, along with some Eelgrass (Zostera angustifolia). Eelgrass (Z. noltii) also occurs in Sutton Creek. Cordgrass (Spartina anglica) occurs in places but its growth is controlled by management. Green algal mats (Enteromorpha spp., Ulva lactuca) cover large areas of the flats during summer. These sediments have a rich macrofauna, with high densities of Lugworms (Arenicola marina) in parts of the north lagoon. Mussels (Mytilus edulis) occur in places, along with bivalves such as Cerastoderma edule, Macoma balthica and Scrobicularia plana. The small gastropod Hydrobia ulvae occurs in high densities in places, while the crustaceans Corophium volutator and Carcinus maenas are common. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three Rare plant species legally protected under the Flora Protection Order 1987 have been recorded on the North Bull Island. These are Lesser Centaury (Centaurium pulchellum), Hemp

Nettle (Galeopsis angustifolia) and Meadow Saxifrage (Saxifraga granulata). Two further species listed as threatened in the Red Data Book, Wild Sage (Salvia verbenaca) and Spring Vetch (Viciaa thyroides), have also been recorded. A rare liverwort, Petalophyllum ralfsii, was first recorded from the North Bull Island in 1874 and has recently been confirmed as being still present there. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl. During the 1994/95 to 1996/97 period the following species occurred in internationally important numbers (figures are average maxima): Brent Geese 2,333; Knot 4,423; Bar-tailed Godwit 1,586. A further 14 species occurred in nationally important concentrations - Shelduck 1505; Wigeon 1,166; Teal 1,512; Pintail 334; Shoveler 239; Oystercatcher 2,190; Ringed Plover 346; Grey Plover 816; Sanderling 357; Dunlin 6,238; Blacktailed Godwit 156; Curlew 1,193; Turnstone 197 and Redshank 1,175. Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling, Dunlin).

The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. Ringed Plover, Shelduck, Mallard, Skylark, Meadow Pipit and Stonechat also nest.
A wellknown population of Irish Hare is resident on the island. The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland (Orders Diptera, Hymenoptera, Hemiptera).
The main landuses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrrounding intertidal flats.
The site is used regularly for educational purposes.

North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. This site is an excellent example of a coastal site with all the main habitats represented. The 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. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.
23.11.1999

SITE NAME: SOUTH DUBLIN BAY SAC
SITE CODE: 000210

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. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion gates. The main channel which drains the area is Cockle Lake.

There is a bed of Eelgrass (Zostera noltii) below Merrion Gates which is the largest stand on the

east coast. Green algae (Enteromorpha spp. and Ulva lactuca) are distributed throughout the area at a low density. Fucoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include Fucus spiralis, F. vesiculosus, F. serratus, Ascophyllum nodosum and Pelvetia canaliculata. Lugworm (Arenicola marina) and Cockles (Cerastoderma edule) and other annelids and bivalves are frequent throughout the site. The small gastropod Hydrobia ulvae occurs on the muddy sands off Merrion Gates.

South Dublin Bay is an important site for waterfowl. 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. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344) and Dunlin (2628), Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Geese regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the EU Birds Directive, also occur. Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area. At low tide the inner parts of the south bay are used for amenity purposes. Baitdigging is a regular activity on the sandy flats. At high tide some areas have windsurfing and jet-skiing.

This site is a fine example of a coastal system with extensive 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.

25.2.2000

SITE NAME: SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA
SITE CODE: 004024

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake.

A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (Zostera noltii) below Merrion Gates which is the largest stand on the east coast. Green algae (Enteromorpha spp. and Ulva lactuca) are distributed throughout the area at a low density. The macro-invertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (Arenicola marina), Nephthys spp. and Sand Mason (Lanice conchilega), and bivalves, especially Cockle (Cerastoderma edule) and Baltic Tellin (Macoma balthica). The small gastropod Spire Shell (Hydrobia ulvae) occurs on the muddy sands off Merrion Gates, along with the crustacean Corophium volutator. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are mean peaks for the five year period 1995/96-99/2000. 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. An internationally important population of Light-bellied Brent Goose (525) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at Merrion. Light-bellied Brent Goose is also known to feed on the grassland at Poolbeg. The site supports nationally important numbers of a further nine species: Oystercatcher (1,263), Ringed Plover (161), Golden Plover (1,452), Grey Plover (183), Knot (1,151), Sanderling (349), Dunlin (2,753), Bar-tailed Godwit (866) and Redshank (713). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (397) and Turnstone (75).

South Dublin Bay is a significant site for wintering gulls, especially Black-headed Gull (3,040), but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter. Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin –this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey of the dolphin in 1999 recorded Common Tern nesting here in nationally important numbers (194 pairs). This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007. The south bay is an important tern roost in the autumn (mostly late July to September). Birds also use the Dalkey Islands to the south.

The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. More than 10,000 terns have been recorded, consisting of Common, Arctic and Roseate terns. The wintering birds within this site are now well-monitored. More survey, however, is required on the wintering gulls and the autumn terns. Booterstown Marsh supports an important population of Borrer's Saltmarsh-grass (Puccinellia fasciculata), a rare, Red Data Book species that is listed on the Flora (Protection) Order, 1999. The South Dublin Bay and River

Tolka Estuary SPA is of international importance for Light-bellied Brent Goose 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 Bartailed Godwit and Mediterranean Gull.

01.05.2008

SITE NAME: NORTH BULL ISLAND SPA
SITE CODE: 004006

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island

sand spit is a relatively recent depositional feature, formed as a result of improvements to
Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (Ammophila arenaria) is dominant on the outer dune ridges. Species of the fixed dunes include Wild Pansy (Viola tricolor), Kidney Vetch (Anthyllis vulneraria), Bird's-foot Trefoil (Lotus corniculatus), Pyramidal Orchid (Anacamptis pyramidalis) and, in places, the scarce Bee Orchid (Ophrys apifera). A feature of the dune system is a large dune slack with a rich flora, usually referred to as the 'Alder Marsh' because of the presence of Alder (Alnus glutinosa) trees. The water table is very near the surface and is only slightly brackish. Sea Rush (Juncus maritimus) is the dominant species, with Meadowsweet (Filipendula ulmaria) and Devil's-bit Scabious (Succisa pratensis) being frequent. The orchid flora is notably diverse in this area.

Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. On the lower marsh, Glasswort (Salicornia europaea), Common Saltmarsh-grass (Puccinellia maritima), Annual Seablite (Suaeda maritima) and Greater Sea-spurrey (Spergularia media) are the main species. Higher up in the middle marsh Sea Plantain (Plantago maritima), Sea Aster (Aster tripolium), Sea Arrowgrass (Triglochin maritima) and Thrift (Armeria maritima) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (Cochlearia officinalis) and Sea Milkwort (Glaux maritima) are found, while on the extreme upper marsh, Sea Rush and Saltmarsh Rush (Juncus gerardi) are dominant.

The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Tasselweed (Ruppia maritima) and small amounts of Eelgrass (Zostera spp.) are found in the lagoons. Common Cord-grass (Spartina anglica) occurs in places. Green algal mats (Enteromorpha spp., Ulva lactuca) are a feature of the flats during summer. These sediments have a rich macroinvertebrate fauna, with high densities of Lugworm (Arenicola marina) and Ragworm (Hediste diversicolor). Mussels (Mytilus edulis) occur in places, along with bivalves such as Cerastoderma edule, Macoma balthica and Scrobicularia plana. The small gastropod Hydrobia ulvae occurs in high densities in places, while the crustaceans Corophium volutator and Carcinus maenas are common. The sediments on the seaward side of North Bull Island are mostly sands and support species such as Lugworm and the Sand Mason (Lanice conchilega). The site includes a substantial area of the shallow marine bay waters.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of three species exceed the international threshold – Light-bellied Brent Goose

(1,548), Black-tailed Godwit (367) and Bartailed Godwit (1,529) (all waterfowl figures given are average maxima for the five winters 1995/96 to 1999/00). The site is the top site in the country for both of these species. A further 14 species have populations of national importance – Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Ringed Plover (139), Golden Plover (1,741), Grey Plover (517), Knot (2,623), Sanderling (141), Dunlin (3,926), Curlew (937), Redshank (1,431) and Turnstone (157). The populations of Pintail and Knot are of particular note as they comprise more than 10% of the respective national totals. Species such as Grey Heron, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser and Greenshank are regular in winter in numbers of regional or local importance. Gulls are a feature of the site during winter, especially Black-headed Gull (2,196). Common Gull (332) and Herring Gull (331) also occur here. While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter. The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters.

The site has five Red Data Book vascular plant species, four rare bryophyte species, and is nationally important for three insect species. The rare liverwort, Petalophyllum ralfsii, was first recorded from the North Bull Island in 1874 and its presence here has recently been reconfirmed. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. A well-known population of Irish Hare is resident on the island.

The main landuses of this site are amenity activities and nature conservation. The North Bull Island is one of the main recreational beaches in Co. Dublin and is used throughout the year. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. North Bull Island is also a Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. Much of the SPA is also a candidate Special Area of Conservation. The site is used regularly for educational purposes and there is a manned interpretative centre on the island.

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 Lightbellied Brent Goose, Blacktailed 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.

Appendix C

Finding of no significant effects report

Finding no significant effects report matrix

Name of project or plan

Santry to East Wall Pipeline

Name and location of the Natura 2000 site(s)

The pipeline, where it crosses the Tolka River, is located approximately 400m upstream of the aquatic boundary of the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024).

Description of the project or plan

Bord Gáis Éireann proposes to reinforce the gas network between Santry and East Wall. To achieve this a new pipeline is required between East Wall Road and Coolock with a link line from Malahide Road to Swords Road AGI. This new pipeline is effectively replacing the existing Santry to East Wall Pipeline. The new pipeline will be circa 9km in length, 300mm (12 inch) diameter. It will be laid in streets and public green space along the route and will be buried to a minimum depth of 1.2m. It will start at the junction of East Wall Road and Tolka Quay road, run along East Wall Road, cross beneath the Tolka River and then on to just north of the junction between Oscar Traynor Road and Malahide Road, via green spaces and side streets.

The Tolka River will be crossed using trenchless crossing methodology, i.e. a small tunnel under the river. The tunnel, approximately 650mm, diameter will be a minimum of 2 metres beneath the river bed. The construction of the crossing will require a thrust pit on the north side of the crossing and a reception pit on the south side. All works will be carried out outside the river walls, i.e. it will be a dry crossing. The rail line in Fairview Park will also be crossed using a similar trenchless technique.

Is the project or plan directly connected with or necessary to the management of the site(s)

No

Are there other projects or plans that together with the projects or plan being assessed could affect the site

Dublin City Council proposes to construct a watermain through Fairview Park and along Alfie Byrne Road and Clontarf Road. However, the timing of the construction of the watermain is unknown. There are no other developments in planning that would have a cumulative affect.

The assessment of significance of effects

Descibe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.

Given the proposed methodology of a trenchless crossing under the River Tolka, there would be no impact on the River or the downstream designated areas.

Explain why these effects are not considered significant.

There would be no disturbance or inputs to the Tolka River and therefore no impact on the downstream designated areas.

List of agencies consulted: provide contact name and telephone or e-mail address

DAU, Department of the Arts, Heritage and Gaeltacht.

Response to consultation

A response from the NPWS is pending

Data collected to carry out the assessment

Who carried out the assessment

Moore Group Environmental Services.

Sources of data

NPWS database of designated sites at www.npws.ie

Level of assessment completed

Desktop Assessment and field visit.

Where can the full results of the assessment be accessed and viewed

Dublin City Council Planning Section.

Overall Conclusions

Given the proposed methodology of a trenchless crossing under the River Tolka, there would be no impact on the River or the downstream designated areas.