Galway Harbour Company

# New Harbour, Galway
# DRAFT
# Environmental Impact Statement
# Scope & Methodology

November 2010

Revision: A

TOBIN CONSULTING ENGINEERS

TOBIN
Patrick J. Tobin & Co. Ltd.

# REPORT

**PROJECT:** **New Harbour, Galway**

**CLIENT:** **Galway Harbour Company**
Harbour Offices,
New Docks,
Galway.

**Design Team:**

- TOBIN Consulting Engineers
- McCarthy Keville O'Sullivan – Planning & Environmental Consultants Limited
- Raymond Burke Consulting
- Dan Duggan (Geologist)
- Aquafact International Services Limited
- Biospheric Engineering Limited
- PC Roche & Associates
- Roddy Mannion Architects
- Realsim
- Laurence Dunne Archaeology
- Hyder Consulting Engineers
- Entec UK Limited

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## DOCUMENT AMENDMENT RECORD

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| **Project:** | **New Harbour Galway** |
| **Title:** | **EIS Scope & Methodology** |

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| **TOBIN Consulting Engineers** | | | | | | | |

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# (I) INTRODUCTION

The existing port is severely constrained to approximately 5,000 Tonne vessels by width of gates, daily access of 4 hours, channel and port draught and conflict with the adjacent City Centre.

The proposed port development will address all of the above by providing all day access for vessels in the range of 20,000 to 40,000 Tonnes as well as resolving city centre conflict, allowing enhanced oil delivery safety and providing capacity for Cruise Liner, Marina, Fishermen, Nautical Centre and Amenity Facilities.

The New Harbour development will provide 660m length of commercial quays which will multi function for all cargos and also as cruise liner berthage. There will also be 27.47 hA of land development area.

The applicant Galway Harbour Company and the design team for this project have been in consultations with An Bord Pleanála under Section 37B of the Planning and Development Act, 2000, as amended. An Bord Pleanála has served notice under Section 37B (4) (a) that is it of the opinion that the proposed development, falls within the scope of paragraphs 37A (2) (a) and (b) of the Act. Accordingly, An Bord Pleanála has decided that the proposed development would be **Strategic Infrastructure** within the meaning of Section 37A of the Planning and Development Act, 2000, as amended. It is now being requested that An Bord Pleanála formally scopes the project to the prescribed bodies and the relevant consultees under Section 37D of the Planning and Development Act, 2000, as amended.

This document is the Draft Scope & Methodology of the proposed Environmental Impact Statement (EIS) for the New Harbour project and it is intended to be used to facilitate the formal scoping on the project by An Bord Pleanála, as part of the next stage in the Strategic Infrastructure Development, Planning Application process.

Chapter (ii) herein *"Description of Development"*, gives a detailed description of the inclusions in the proposed planning application including the extent of the Harbour facilities and the type and staging of the construction.

Chapter (iii) herein *"Proposed EIS Environmental Topics"*, outlines the Environmental topics to be covered in the EIS. It is proposed that the EIS will follow the format of the **EPA Guidelines on the information to be contained in Environmental Impact Statements (March 2002).** See extract from the EPA Guidelines Chapter 1 - Preliminaries and General Methods in **Appendix 1** herein.

The **EPA Advice Notes on Current Practices (in the preparation of Environmental Impact Statements) (September 2003)** further details the topics usually addressed in EIS for particular project types and Project Type 10 gives guidance on the topics required for Port developments. It is proposed that the EIS will cover those topics. See extract from the EPA advice notes in **Appendix 2** herein.

In preparing the EIS layout, we propose to follow the "Grouped Format Structure" and this draft scoping document will follow such a pattern. We note that the above format represents current thinking in relation to the EIS structure. Other issues may arise which will then be included.

The development design has been prepared by Tobin Consulting Engineers who are the Project Managers and Editors for the EIS.

The Contributors assembled to address the Environmental topics are as follows:

1. Human Beings
    - McCarthy Keville O'Sullivan Planning & Environmental Consultants

- Tobin Consulting Engineers
- Raymond Burke Consulting

2. Fauna & Flora
   - McCarthy Keville O'Sullivan Planning & Environmental Consultants
   - Aquafact International Services Ltd.
3. Soil
   - Dan Duggan
   - Glover Site Investigations Limited
4. Water
   - Aquafact International Services Ltd.
5. Air Quality & Noise
   - Biospheric Engineering Limited
6. Climatic Factors
   - Biospheric Engineering Limited
7. The Landscape
   - PC Roche & Associates
   - Roddy Mannion Architects
   - Tobin Consulting Engineers
   - Realsim
8. Material Assets
   - 8.1. Roddy Mannion Architects
   - 8.2. Laurence Dunne Archaeology
   - 8.3. Hyder Consulting Engineers (Rail)
   - 8.4. Tobin Consulting Engineers (Road Infrastructure)
   - 8.5. Entec UK Limited (Risk Assessment)
   - 8.6. Tobin Consulting Engineers (Health & Safety)
9. Inter Relationship of all of the above Factors
   - All contributors

To facilitate the formal scoping by An Bord Pleanála each contributor has assembled their draft scope in the following pattern: - Introduction, Topics, Potential Significant Impacts and Methodology with each element briefly described.

This Summary of the Draft Scope & Methodology of the EIS document details all of the various sub topics to be covered in the EIS under the above main topics. It is supplemented with the scoping details and methodology for each of the Specialist contributors to the proposed EIS, to facilitate full scoping to be carried out on the project.

# (II) DESCRIPTION OF DEVELOPMENT

## INTRODUCTION

This Chapter has 8 sections describing the New Harbour Galway development.

**Section 1** describes the **Existing Galway Docks** – its background, existing facilities and the physical constraints.

**Section 2** presents a detailed description of the **proposed development areas** with a focus on the proposed New Harbour Development. The proposed site access and services are noted.

**Section 3** details the **stages of the New Harbour development** and the proposed works to be undertaken at each stage.

**Section 4** details the **main construction elements** of the proposed harbour development.

**Section 5** describes the **alternatives study** for the project.

**Section 6** describes the **sustainability study** for the proposed harbour development.

**Section 7** describes the **consultations process** for the proposed harbour development.

**Section 8** summarises the **New Harbour development and the requirements met**.

## SECTION 1 – EXISTING GALWAY DOCKS

### Historical Background

The original medieval port was situated at the present-day location of Spanish Arch and Long Walk due to the commerce and trade that was attracted by the “fourteen tribes of Galway” - an oligarchy of fourteen families who largely ruled Galway City, in those times.

In the 1800’s the port was moved to a natural lagoon located south of the city and under the Harbours Act of 1853 the commercial harbour as we know it was built.

The harbour was developed and deepened in 1964 to present dimensions. In 1995 planning permission was granted to fill the “forty acres” and reclaim land to regularise its boundaries and form the Galway Harbour Enterprise Park, to the East of the port.

The proposed National Heritage Area (pNHA), Special Protection Area (SPA) and Special Area of Conservation (SAC) designations on the inner Galway Bay Area were adopted in 1995, 1985 and 1997/1998 respectively within which the port has operated since those dates.

### Existing Dock Facilities

The depth of the existing dredged channel leading to the inner dock is –3.4m C.D. It is 79 m wide and 1.1 km long. The width of the dock gates is approximately 20m. The inner dock has an approximate area of 2.8ha and is largely dredged to –3.4m C.D. The existing dock’s quay area is approximately 1.43hA. The overall total existing quay wall length is 860m – 530m of which has adequate depth to allow use as working quays.

At present the dock gates can only be opened for two hours before high tide twice daily. This means that there is only a four hour window every 24 hours when ships can enter and leave the docks.

Between 1996 and 2003, Galway Harbour Company developed 21.39 hectares of land to the east of the existing Galway docks, as part of the Galway Harbour Enterprise Park development (an EIS was carried out in 1995 for this development). 2.7 hectares were preserved as an amenity salt marsh.

**Physical Constraints of Existing Galway Docks**

At present the existing Galway docks are restricted by several factors:

The dock gates are approximately 20 meters wide and the dredged channel leading up to the dock gate is only 3.4m below Chart Datum. Both these factors limit the size of vessel which can use the dock, to approximately 5,000 Tonne.

The dock facility is tide dependant, i.e. the gates can only be opened during a high tide which leaves a two-hour window twice daily where ships can enter and leave the dock.

There is limited berthage for large vessels in the inner docks due to its enclosed nature – approximately 530m of berthage usable.

Navigation into the docks is quite difficult due to the outflow of the River Corrib, requiring expert pilotage and navigation.

Currently there is very little serviced land available for harbour related industry, storage and facilities.

The above restrictions have led the Galway Harbour Company to propose the New Harbour Development detailed herein.

## SECTION 2 – DESCRIPTION OF PROPOSED DEVELOPMENT

### 2.1 Proposed Planning Application

The **Site Layout Drg. No. 2139-1121-A in Appendix 3** details the overall proposed planning application layout. The overall planning application development boundaries are outlined Red.

The New Harbour site is in the Galway Bay Complex - Special Area of Conservation (SAC), proposed Natural Heritage Area (NHA) and the Inner Galway Bay - Special Protection Area (SPA). Lough Atalia Bridge is a protected structure and there are road works proposed in the vicinity of the Bridge.

The development areas are noted on the layout drawing as areas No.'s 1-3. The development proposed at each area is as follows:

- Area 1 - New Harbour Development = 79.33 hA
- Area 2 - Proposed Harbour Access Junction = 0.42 hA
- Area 3 - Proposed Road Alignment under Lough Atalia Bridge = 0.32 hA

Hence, the Total Planning Application Development Area = 80.07 hA

## 2.2 Proposed New harbour Development

The development consists of 79.33 hA broken down as follows:

- Land development area = 27.47 hA (23.61hA of land to be reclaimed from the sea and 3.86 hA is existing Harbour Enterprise Park which is to be redeveloped)
- Breakwaters and Revetment area = 2.46hA
- Dredge Area = 49.40 hA

The Area of the development within the SAC is 77.23 hA
The Area of the SAC is 14,408.1 hA (Reference: Galway Bay Complex 000268)
The Area of the SPA is circa 11,904.8 hA (Reference: Inner Galway Bay 004031)
The Area of the pNHA is not specified but it is referred as similarly to the SAC above (Reference: Galway Bay Complex 000268).

The New harbour development will provide the following:

- 660m of quay berth to –12m C.D. depth
- Port development serviced by a –8m C.D. channel depth
- –8m C.D.depth 400m turning circle.
- 27.47 hA of land development.
- 660m of shelterd quays.
- Western Marina with 216 No. berths.
- Fisherman's Pier
- Nautical Centre Slipway
- Freight rail link to enable freight and cargo to be efficiently transported to and from the harbour resulting in positive road traffic and environmental benefits.

As noted above the New Harbour land area to be developed is 27.47 hA. This will provide the following land use area breakdowns in yards, quays, open space etc:

- Commercial Port back up Yard Areas = 8.66 hA
- Commercial Quay Areas = 1.94 hA
- Harbour Company Warehouse and Yards Area = 2.52 hA
- ESB & Security Yard Area = 0.53 hA
- Fire Water Storage Area = 0.49 hA
- Marina Boat Yard Area = 1.11 hA
- Fishermen Pier and Yard Area = 0.53 hA
- Roads and Access Area = 3.63 hA
- Rail Line Area = 1.88 hA
- Marina Village Buildings and Yard Area = 1.28 hA
- Nautical Centre Boat Yard = 0.53 hA
- Open Space Area = 4.37 hA

The development will provide for bulk cargos such as the following:

- Coal Yard
- Waste Export
- Steel Import Yard
- Scrap Metal Yard
- Car Import
- Ship Chandlers
- Roll on/Roll off Yard

- Container Yard
- Parklands
- Renmore Promenade
- Project Cargos – Ocean Energy Development & Servicing

### 2.3 Proposed Site Access & Services

**Access**

Harbour Access Junction improvements are proposed at the location highlighted in the proposed site layout drawing (Area 2). Access to the Proposed New Harbour will be through the existing Galway Harbour Enterprise Park (GHEP). The GHEP is accessible via a bridge, which crosses the entrance channel to Lough Atalia.

It is also proposed to upgrade the road under Lough Atalia Bridge which is a protected structure (Area 3).

**Services**

For the proposed development, foul sewers will fall by gravity to a new pumping station. The pumping station will pump directly into the Galway city main drainage network via a separate rising main. Storm water collection pipes will discharge via a single outfall point. This single outfall pipe will be constructed to incorporate oil interceptors and shut off valves.

## SECTION 3 - STAGES OF DEVELOPMENT

It is proposed that the New Harbour development be broken down into 4 stages. The stages of development are as detailed below and as shown on the following figures:

### 3.1 Stage 1

- Reclamation of 17.32hA of quay areas and back up land.
- Formation of 400m quay – 30m wide
- Formation of 260m quay – 20m wide
- Formation of Pier head breakwater to provide requisite shelter and craft stability while berthed.
- Dredging of channels to -3.5m and -8m depth.
- Dredging of 400m diameter turning circle to –8m depth.
- Dredging of a -12m Berth pocket immediately adjacent to the proposed Quays.
- Full new oil handling capacity.
- Commercial Port formed.

The drawing of this stage is shown as Stage 1, Appendix 4.

### 3.2 Stage 2

- Formation of reclamation bund wall allowing for the reclamation of 5.79hA of additional back up land.
- Construction of rail embankment.

The drawing of this stage is shown as Stage 2, Appendix 4.

### 3.3 Stage 3

- Reclamation of 5.79hA of back up land and 0.5hA as fisherman pier and slipway areas.
- Formation of Marina Breakwater
- Dredging of future Marina to –3.5m C.D.
- Construction of Fisherman's Pier
- Construction of Slipway
- Construction of rail lines

The drawing of this stage is shown as Stage 3, Appendix 4.

### 3.4 Stage 4

- Western Marina with 216 No. berths.

The drawing of this stage is shown Stage 4 Appendix 4.

Stages 1 - 4 are shown in Appendix 4. They display the inclusions in each stage and the sequence of construction.

## SECTION 4 – MAIN CONSTRUCTION ELEMENTS

It is envisaged that the following construction methodology will be employed as the Main Construction Elements of the New Harbour:

- Lagoon Wall Construction
- Dredging Works
- Lagoon Land Reclamation
- Quay Wall Construction at Deepwater Berths
- Southern Breakwater Construction
- Marina Breakwater Construction
- Rail Link Construction
- Amenity and Open Space Lands
- Construction and provision of services
- Slipway Construction
- Fisherman's Pier Construction
- Marina Berth Construction
- Development of individual sites

### 4.1 Lagoon Wall Construction

It is proposed that the development will consist of three lagoons A, B & C. Lagoons A & B will be formed in Stage 1. Lagoon C will be formed in Stage 2.

The walls for lagoons A & B are proposed to be constructed using the following options:

Granular free draining rock fill placed on an adequate existing subgrade material. Weaker subgrade material beneath the proposed walls will be dredged to bedrock or adequate sub base material as required. Revetments will be constructed to the outer face of the lagoon wall.
Alternatively, double sheet pile wall driven into blasted bedrock / adequate overburden. The double sheet pile wall will be infilled with granular rockfill material to bedrock / adequate overburden. Weaker subgrade material beneath the proposed walls will be dredged to bedrock or adequate sub base material as required.

The walls for lagoon C are proposed to be constructed as follows:

Sheet piles driven into blasted bedrock/adequate overburden. Raking piles anchored into bedrock will be braced to the proposed sheet pile wall to provide support.

### 4.2 Dredging Works

In total it is envisaged that an estimated 1.6 million cu.m of sediment will have to be dredged. It is proposed that the main types of dredgers used for sediment dredging will be the trailer suction hopper dredger (for the upper softer layers and initial wall foundation clearances) and backhoe dredger (for the lower stiffer layers).

It is estimated that 6,100 cu.m of rock dredge will be required. It is proposed that rock will be dredged using drill and blast techniques in co-ordination with a backhoe dredger.

### 4.3 Lagoon Land Reclamation

As noted in section 4.1, it is envisaged that the development will consist of three lagoons A, B & C. Lagoons A & B will be formed in Stage 1. Lagoon C will be formed in Stage 2.

Lagoon A will initially accept the sediment dredged by the Trailer Suction Hopper Dredger i.e. the weaker and more fluid material and that required to be dredged from under lagoon walls and quay areas. Dredge from the backhoe dredger will be placed into Lagoon A upon completion of trailer suction hopper dredge filling. Lagoon B will accept the remainder of the Stage 1 backhoe dredge material. Both lagoons will be surcharged to allow for and to expedite settlement.

Lagoon C will be filled with dredged material from Stage 3. Surplus consolidated surcharge material stripped from Stage 2 land reclamation works will also be used to fill Lagoon C.

It is envisaged that vertical drains will accelerate the consolidation of the ground for all lagoons and so will minimise future settlement. Upon adequate settlement and consolidation and stripping of surplus surcharge material a yard capping layer will be applied.

### 4.4 Quay Wall Construction at Deepwater Berths

It is proposed to construct the quays at deepwater berth locations with double combiwall sheet piles driven into blasted rock/adequate overburden. It is proposed to dredge the existing seabed under the proposed quay areas to bedrock/adequate sub base material prior to construction of the quay walls. Granular infill to base level will be placed between the double sheet pile walls.

### 4.5 Southern Breakwater Construction

It is proposed that double sheet piles will be driven into blasted bedrock/adequate overburden to form the toe at either side of the breakwater. Granular rock fill will be placed between the double sheet piles to form the core of the proposed breakwater. Rock armour will be placed in layers onto the rock fill core. It is proposed to dredge the weaker and more fluid sea bed material under the proposed southern breakwater.

### 4.6 Marina Breakwater Construction

It is proposed to construct the marina breakwater using two methods of construction as follows:

Dredge the top existing weaker upper layer of seabed to provide an adequate bearing base for the breakwater. Granular rockfill will be placed to form the core of the breakwater. Rock armour will be placed in layers onto the rock fill core.

Dredge off the weaker and more fluid sea bed material under the breakwater. Double sheet piles will be driven into blasted bedrock/adequate overburden to form the toe at either side of the breakwater. Granular rock fill will be placed between the double sheet piles to form the core of the proposed breakwater. Rock armour will be placed in layers onto the rock fill core.

### 4.7 Rail Link Construction

It is proposed that the rail link and embankments will be designed and constructed to the standards appropriate to a modern standard-gauge mainline railway in Ireland. The rail link on reclaimed land where settlement will be an issue will be constructed on conventional piles.

### 4.8 Amenity & Open Space Lands

The landscape architect will design the landscaping of the amenity and open space lands including the western marina promenade, eastern promenade and the open space link formed between the two promenades. The Western Marina and Nautical Slipway Area provide further areas of amenity.

### 4.9 Construction & Provision of Services

It is proposed that all main services, with the exception of sewers, will be located in one central duct chamber which will extend onto the proposed quays. Foul sewer, storm sewer, watermain, fuel and bitumen pipelines, ESB, eircom, etc are some of the services to be provided.

### 4.10 Slipway Construction

It is proposed that a concrete slab will be poured to form the base of the slipway with vertical RC wall sections to either side. The slab will be poured on well-compacted engineered stone fill. A tamped concrete slipway surface finish will be provided.

### 4.11 Fisherman's Pier Construction

It is proposed that the fisherman port will be formed using a double sheet pile wall driven into blasted bedrock/adequate overburden. The double sheet pile wall will be infilled with granular rockfill material to adequate existing subgrade material.

### 4.12 Marina Berth Construction

It is proposed that a breakwater will form the seaward protection for the marina. The revetment formed during lagoon wall construction will form the landside boundary. The floating pontoons and walkways for the marina will be constructed on fibre reinforced concrete floats supported by tubular piles keyed into bed rock.

### 4.13 Development of Individual Sites

It is envisaged that all buildings located in the New Harbour Galway will require to be piled. Buildings will be constructed to the individual requirements of each site subject to such subsequent planning permissions. Yards will be surfaced with clause 804 and can be tarmacadam or concrete as required by the client who leases the site.

## SECTION 5 – ALTERNATIVES

Numerous alternatives both in location and layout design have been examined in relation to this proposed development. The design process has undergone a number of progressions in order to achieve the most sustainable and efficient harbour design.

Firstly alternative locations in County Galway were examined, ranging from Oranmore in the east to Rossaveal in the west. An objective analysis was carried out for each location resulting in a ranking of location alternatives, with the most sustainable and efficient harbour location chosen.

Once the general location was chosen, a more specific site location was decided upon within the general area. A number of harbour layout alternatives were then considered. The harbour layout design progressed with the main objective being to achieve the most sustainable and efficient harbour design.

## SECTION 6 – SUSTAINABILITY

The proposed development incorporates sustainability principles in its design, construction and operation.

The development is being designed to integrate these principles into all aspects of the decision making processes from pre feasibility through to construction completion.

The development is proposed in order to sustain harbour related industry in Galway, by relieving Galway Harbour of its physical constraints.

The following key sustainability principles will be used to assess the impact of the development:

- Low Carbon Production
- Low Waste Production
- Use of Sustainable Materials
- Promotion of Sustainable Transport modes
- Efficient Land Use
- Protection of Natural Habitats
- Promotion of Culture & Heritage
- Promotion of healthy and active living
- Promotion of the sustainable use of water

The development is being designed to fully incorporate the sustainable principles outlined above and to eliminate or reduce potential significant impacts on the sustainability of the development.

- Proposed layout being designed to have minimum impact on the existing pNHA, SAC & SPA natural habitats e.g. layout orientated to minimise effect on path of salmonoids from River Corrib to and from the open sea.
- Proposed construction methods to incorporate low carbon production.
- Location and layout being chosen to ensure minimum rock dredge, sediment dredge and seaward projection.
- Proposed construction methods being designed to ensure minimum environmental disturbance, minimum cost and maximum construction efficiency.
- All dredge material to be reused for land reclamation therefore satisfying the principles of low waste production and sustainable use of materials.

- Rail Link and Sea transport to reduce the vehicular transport associated with product delivery to and from the port location; satisfying both the low carbon sustainable principle and the promotion of sustainable transport principle.
- Amenity areas fully incorporated into harbour design to encourage active and sociable living and to preserve and promote the local nautical traditions, enhance marine amenities and generate maximum enhancement of Galway's maritime and tourist status with provision of marina and cruise liner facilities.
- Rainwater harvesting and sustainable drainage systems to be integrated into design to satisfy the sustainable use of water.

The principles noted above will each be dealt with in specific EIS sections e.g. Protection of Natural Habitats will be detailed in the Ecology Section of the EIS, etc.

## SECTION 7 - CONSULTATIONS

There is a significant and extensive consultation process associated with the new Harbour development which is on going and which will be continued with the proposed main public consultation scheduled for early in 2011. See **Appendix 5** herein for the **list of consultations** and meetings carried out to date on the project. The Galway Harbour Company website www.galwayharbour.com shows the design progress and also offers the opportunity for comment on the project.

## SECTION 8 - SUMMARY

**In summary the proposed New Harbour development** will allow the following to be available to Galway Harbour Company:

- 27.47 hA of developed lands, 23.61 hA of which will be reclaimed from the sea.
- 660m of shelterd quays.
- –8m C.D. channel depth & a –8m C.D.depth 400m turning circle.
- Western Marina with 216 No. berths.
- Fisherman's Pier
- Nautical Centre Slipway
- Freight rail link to enable freight and cargo to be efficiently transported to and from the harbour resulting in positive road traffic and environmental benefits.
- Commercial Port formed.

The above proposal meets the following requirements:

- Sheltered quays and craft stability while berthed.
- Rail Requirement addressed in design from initial construction.
- The implementation of sustainable practices in design, construction, operation and administration of the proposed Harbour.
- The removal of the current constraints restricting the operation of the Galway Docks.

# (III) PROPOSED EIS ENVIRONMENTAL TOPICS

# 1 HUMAN BEINGS

## 1.1 PLANNING AND POLICY CONTEXT

### 1.1.1. INTRODUCTION

This section of the EIS sets out the planning context for the proposed development. It will identify the key relevant planning policy documents and assess how the proposed development supports the stated policies and objectives of these strategies and plans. In addition, any assessment will review any relevant planning history within and adjacent to the site of the proposed development.

This section will also outline and assess the alternatives considered in the location of and design of the proposed development. These alternatives include other locations and designs for the new harbour, as well as the "do-nothing scenario".

### 1.1.2 TOPICS

**Planning Policy Context**

The assessment of planning policy context will include reference to the national, regional and local planning policy documents set out below:

- National Spatial Strategy 2002-2020
- The National Spatial Strategy (NSS) Update and Outlook Report 2010
- National Development Plan 2007-2013
- National Ports' Policy Statement
- Ireland's Infrastructural Investment Priorities 2010 - 2016
- Regional Planning Guidelines for the West Region 2010-2022
- Galway City Development Plan 2011-2017

**Relevant Planning History**

The assessment will identify and detail any planning application history within or in the vicinity of the proposed development site that may be of particular relevance to the current proposals.

**Alternative Locations Considered**

This section will examine the role of ports, with particular regard to their primary functions and geographical distribution in association with the Business Case Consultants as outlined in Chapter 1.3.2.

**Alternative Designs Considered**

The assessment will identify the alternative designs in association with the Harbour Design Engineers.

### 1.1.3 POTENTIAL SIGNIFICANT IMPACTS

The assessment will consider the impacts and implications of the alternatives considered in reaching the currently proposed development, including a "do-nothing" scenario and use/expansion of other ports.

This part of the assessment will also examine the impacts and implications of alternative scales and forms of development at the site of the proposal and will detail how the current proposal was arrived at.

The likely and significant impacts of the proposed development will be identified and assessed under each topic heading and, where necessary or expedient, appropriate mitigation measures will be proposed.

### 1.1.4 METHODOLOGY

The relevant documentation and policy will be utilised to determine the planning context of the development.

## 1.2 HUMAN BEINGS - SOCIO ECONOMIC

### 1.2.1 INTRODUCTION

This chapter of the EIS describes the potential impacts of the proposed development on human beings. One of the principle concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the construction and operation of a development. Ultimately, all the impacts of a development impinge on human beings, directly and indirectly, positively and negatively.

The key issues examined in this chapter of the EIS include population, employment and economic activity, tourism, land-use, community facilities and health & safety. In assessing the potential socio-economic impacts of the proposed development, this chapter will also consider whether there is a justifiable need for the development and will assess its implications for the residents and visitors to the city and region.

### 1.2.2 TOPICS

**Population & Employment**

This section examines the population and employment characteristics of the receiving environment of Galway City, including current and future population, households, employment and tourism.

**Land Use**

This section describes the potential land use impacts of the proposed development, including the extent of land reclamation. The proposed development will be assessed within the context of land use for the City, including existing uses and future significant development opportunities at Ceannt Station and the Galway Harbour Village, as well as the impact on the existing Harbour Enterprise Park.

**Community Facilities & Amenities**

This section examines the potential impact of the proposed development on the city community, including existing and future community facilities and amenities.

**Economic Justification for New Harbour**

The socio-economic impacts of the proposed development will be assessed, with particular regard to population, tourism and employment in association with the Business Case Consultants as outlined in Chapter 1.3.

### 1.2.3 POTENTIAL SIGNIFICANT IMPACTS

The likely and significant impacts of the proposed development will be identified and assessed under each topic heading and, where necessary or expedient, appropriate mitigation measures will be proposed.

### 1.2.4 METHODOLOGY

Information regarding population and general socio-economic data will be sourced from the Central Statistics Office (CSO), the Census of Ireland 2006, the Galway City Development Plan 2011-17, Fáilte Ireland and any other pertinent data and information.

## 1.3 ECONOMIC JUSTIFICATION / BUSINESS CASE

### 1.3.1 INTRODUCTION

The purpose of this contribution is to provide details of the projected freight and other traffic volumes by mode through the new harbour from its opening, scheduled for 2015, through to 2035. In addition, the rationale for the projections will be provided as well as the economic and other benefits accruing with particular regard to economic development and the creation of sustainable cities and regions.

The current constraints to the operation of the port will be identified and the socio-economic implications of a “do-nothing” scenario will be assessed.

The projections will be presented within the context of Galway Harbour Company’s activities in the past and how Galway Harbour Company itself fits within the overall framework of the Irish commercial ports’ sector.

### 1.3.2 TOPICS

**Introduction**

- Opening Comments
- Development Objectives
- The Trend towards Larger Vessels
- The Significance of Petroleum Products Imports for Galway
- Road Infrastructure Development Facilitates Access
- Failure to Develop

**Galway Harbour Profile**

- Galway Harbour Company Employment etc
- Port Facilities
- Port Traffic and Throughput by Type of Product and Mode
- Economic Impact
- The Potential Contribution from the Cruise Sector
- Marine Leisure

**Alternatives**

- Rossaveel
- Mutton Island
- Foynes
- Sligo Port
- Conclusion of Assessment of Alternatives

**Traffic Projections**

- Economic Outlook/Framework
- Traffic Projections: High, Medium and Low
  - Key Assumptions for the Medium Set of Projections
  - Rationale for Projections
  - Specific Projections: High, Medium and Low by Mode

### 1.3.3 POTENTIAL SIGNIFICANT IMPACTS

The potential significant impacts will be developed as follows:

- Summarising the Need
- Failure to Proceed
- The Benefits Accruing

### 1.3.4 METHODOLOGY

The document will cover those areas of importance to the case for the new development.
The policy and planning issues, e.g., National Spatial Policy, Galway City Council Development Plan and Regional Planning Guidelines will be covered as per Chapter 1.1. In addition, the description of the proposed development and of the Galway Harbour Village and Ceannt Station Quarter – Urban Design Framework will be covered in Chapters 1.2 & Chapter 8.1 respectively.

Much of the information will be drawn from the revised Business Case document to be submitted by Galway Harbour Company to the Department of Transport which details the form, content and structure of such documents.

The approach to be adopted will follow the methodology used in the preparation of similar inputs for the EIS of the Dublin Port Gateway Development submission.

# 2 FAUNA & FLORA

## 2.1 INTRODUCTION

The key topics covered in this section are Fish, Fisheries, Mammals and Birds and Appropriate Assessment.

## 2.2 TOPICS

**Marine Biological Surveys**

- **Intertidal Surveys**

This will be carried out in the area where the proposed development will extend from the mainland and will include upper, mid and lower shores studies on marine plants and animals.

- **Subtidal Study**

This will include benthic surveys inside and outside the foot print of the new pier.

**Fish & Fisheries**

Baseline information in relation to fish and fisheries has been obtained mainly through desk study and interview with appropriate bodies including the Western Regional Fisheries Board, Galway Lobster Fisherman's Association, Local Fish Merchants and The Marine Institute.

**Birds**

The site lies within the Inner Galway Bay area, which is designated as an SPA for Birds. Largest numbers of birds in Inner Galway Bay are recorded from November to March annually. The qualifying Interests of the SPA include Great northern Diver, Cormorant, Grey Heron, Light bellied Brent Goose, Red-breasted Merganser, Ringed Plover, Bar-tailed Godwit, Turnstone, Sandwich and Common Tern in addition to other species listed as Special Conservation Interests for the site.

As the vast majority of the development lies beyond the high tide mark, birds that have the potential to be impacted will mainly be those associated with the intertidal zone or waters of the Harbour itself including waders, gulls, terns, grebes, divers and wildfowl. A Common Tern Colony is present on Rabbit Island, in addition to a large cormorant breeding colony on Deer Island, although this is over 10km SSW of the site.

**Mammals**

Mammals present in the Harbour area include Common Seal, Short-beaked Common and Bottle-nosed Dolphin and Harbour Porpoise. Grey Seal are also recorded in Galway Bay, but not commonly in the harbour area. The Irish Whale and Dolphin Group cetacean sighting database also includes historical sightings of other species up to the end of 2009 (currently available).

Species of conservation importance include Common Seal, often seen at the mouth of the River Corrib, close to Nimmo's Pier. There are no colonies of seals within the harbour itself but a number of seal haul-outs within the Inner Galway Bay Area.

**Consultation and Appropriate Assessment**

Ongoing consultation has been undertaken with the National Parks and Wildlife Service, Western Regional Fisheries Board and other consultees both through project scoping and obtaining baseline information. Scoping information has been received from the NPWS and Western Regional Fisheries Board and has formed the basis for scope of the surveys and impact assessment being undertaken as part of the Flora and Fauna Section of the EIS.

A meeting was held with the NPWS and Foreshore Licensing Sections of the Department of Environment, Heritage and Local Government in March 2010. At the meeting the project team outlined the scope of work, baseline results to date and proposed ongoing work. The NPWS requested consideration of Appropriate Assessment (Article 6(3) of Habitats Directive). The project team are currently of the opinion that IROPI (imperative reasons of over-riding public interest) will not be applicable to the project.

## 2.3 POTENTIAL SIGNIFICANT IMPACTS

Impact Assessment is ongoing. The scope of the impact assessment includes assessment of Loss of Habitat, Disturbance to migrating e.g. salmon, eel, trout during construction and operation. This also includes impact assessment of specific processes such as blasting, dredging on fish, mammals and bird species. Impact assessment in relation to potential changes in water chemistry, salinity and siltation patterns, etc will also be finalised based on water modelling study being completed by the Marine studies specialists.

Indirect impacts are also being considered, including exposure to possible increased poaching and predation by seals, cormorants, etc. Impacts associated with possible increased pollution events or oil spillage is also being considered with appropriate mitigation being designed where applicable.

A table of the impacts currently being considered is outlined below:

| Species | Potential Impact |
|---|---|
| Atlantic Salmon | Loss of habitat |
| | Disturbance to smolts due to reduction in area of migration route. |
| Sea Trout | Disturbance to migration during construction (general & blasting & dredging) – adults & juveniles |
| Eel | Disturbance to migration during operation (general & dredging) – adults & juveniles |
| Sea Lamprey | Damage to heath due to changes in water chemistry |
| Other fish species | Damage to health due to siltation |
| | Impacts from low Dissolved Oxygen during construction |
| | Indirect Impacts |
| | Disturbance to migration due to River Corrib water deflection - e.g. into Lough Atalia |
| | Disturbance to migration due to changes in e.g. salinity or water chemistry |
| | Exposure of displaced fish to poaching |
| | Increased predation by seals/birds due to narrowed entrance to Corrib |
| | Damage to health of migrating fish by pollutants during operation |
| | Disturbance/Damage to health of migrating fish due to |

| | |
|---|---|
| | siltation during operation (e.g. manoeuvring vessels) |
| | Damage to health of fish/death associated with oil spill |
| | |
| Otter | Loss of Habitat |
| Common Seal | Disturbance due to construction (general - noise, etc) |
| Grey Seal | Disturbance during construction (blasting, dredging, general) |
| Dolphin & Porpoise | Disturbance while operational - specific events (increased siltation, dredging, etc) |
| | Indirect Impacts |
| | Damage to health by pollutants during operation |
| | Damage to health/death associated with event e.g. oil spill |
| | |
| Common Tern | Loss of Habitat |
| **All other important bird species (i.e. other terns, gulls, waders, egret, petrels, divers, sea duck etc.)** | Disturbance due to construction (general, blasting, other noise, etc) |
| | Disturbance to breeding common tern colony on Rabbit Island (construction) |
| | Disturbance while operational (general) |
| | Disturbance while operational - specific events (increased siltation, dredging, etc) |
| | Disturbance to breeding common tern colony on Rabbit Island when operational (e.g. increased activity) |
| | Indirect Impacts |
| | Damage to health by pollutants during operation |
| | Damage to feeding grounds |
| | Damage to health/death associated with event e.g. oil spill |
| | |
| **Shellfish, crustaceans, food fish** | Loss of Habitat |
| | Disturbance due to construction (general, blasting - noise, etc) |
| Shrimp & Whelk | Disturbance while operational (general) |
| Oysters | Disturbance while operational - specific events (increased siltation, dredging, etc) |
| Mussel | **Indirect Impacts** |
| Lobster | Damage to health/death by pollutants during operation |
| | Damage to health/death associated with event e.g. oil spill |
| | Unsaleable for consumption following local pollution |
| Other benthic organisms | Loss of habitat. Increased siltation during dredging (both capital, and maintenance). |
| Plankton (both phyto- and zoo). | Loss of habitat. Increased siltation during dredging (both capital, and maintenance). |
| Marine benthic algae and phanaerogams. | Loss of habitat. Increased siltation during dredging (both capital, and maintenance). |
| | |

## 2.4 METHODOLOGY

**Biological Surveys**
The Methodology for the Biological Surveys will include remote sampling using a grab to collect sea bed samples at each of the sampling sites for the following: Sedimentology/Sediment Chemistry, Macrofauna (washed through a 1 mm sieve and identified to species). There will also be Sediment Profile Imagery (SPI) data will be collected to augment the grab survey work.

Results and discussion will be presented on the following topics under the **Biological Surveys**: Sedimentology Sediment type, % of main grain sizes at each site; Sediment Chemistry: heavy metals, organic carbon; Macrofauna, Univariate Analyses: names and numbers of the main infaunal invertebrate taxa, diversity, eveness and richness; Multivariate Analyses: dendrogramme and MDS analysis; Sediment Profile Imagery (SPI) : analyses of images.

**Fish & Fisheries**
Data obtained includes locally-landed crustaceans and shelled molluscs, shrimp landing data, catch data for the Galway and High Bank salmon angling fisheries, the Galway commercial salmon netting fishery, Galway eel fishery and catch data for the Salmon drift net fishery in Galway Bay.

In addition, a salmon tagging exercise was completed to obtain more detailed baseline information with regard to salmon smolts entering the Corrib as referred to in Chapter 4.

Similarly, elver surveys of areas around the Inner Bay were also completed to obtain more detailed information with regard to elver populations, habitat usage, etc. Previous work was completed on similar study areas by TK McCarthy in the 1980s.

The most economically important finfish in the Galway Fishery and Inner Galway Bay include Atlantic Salmon, Trout and Eel. There is a relatively large body of data about these fish available. Important shellfish in the Inner Bay include Shrimp, Lobster, Velvet Crab, Whelk and cultivated oysters in addition to smaller scale fisheries for Scallop, Mussel and Winkle.

Baseline information in relation to these species was prioritized as these are most significant species ecologically and economically.

**Birds**
In the main, baseline information has been obtained from the I-WeBS Survey data for Inner Galway Bay, which have been regularly counted since 1976 by the Galway Branch of BirdWatch Ireland. The site of the proposed development lies within the Barna to Oranmore Bay section of the count area and the counts from Nimmo's Pier, Lough Atalia and Ballyloughaun sub-sections cover its immediate vicinity. In addition to desk study, our consultant ornithologist has extensive survey knowledge of the local area and site specific information from winter 2009/spring 2010 was also compiled.

**Mammals**
The basis of the baseline information for the mammals aspect of the assessment is mainly based on desk study and consultation with statutory and non-statutory bodies and also includes research of previous specific surveys completed in the surrounding area. An acoustic model of noise levels at these seal haul outs is being undertaken, to assess likely level of impact associated with construction activity as referred to in Chapter 5.2.

**Appropriate Assessment**
An Article 6(3) Appropriate Assessment will be completed as a separate document to the EIS, but included as an Appendix to the EIS document.

# 3 SOIL

## 3.1 INTRODUCTION

This Chapter examines the potential impacts of the New Harbour Development Galway will have on Estuarine, Marine and glacial soils, solid Geology and groundwater conditions. Impact assessments will be undertaken to assess the effect the proposed works will have on the geology and groundwater in the Bay and surrounding areas.

The assessment will be carried out by our consultant Geotechnical expert with specialist inputs from blasting and piling specialists.

## 3.2 TOPICS

**Existing Environment**

- Desk Study Information
- Description of Post Glacial Soils
- Description of Glacial Soils
- Description of Bedrock Geology
- Hydrogeological Conditions

**Proposed Works**

- Outline of proposed Harbour Development
- Geotechnical aspects associated with dredging, bund construction, consolidation of dredged materials, drilling/blasting and sheet piling in rock
- Construction Monitoring
- Post Construction Monitoring and Residual Risks

## 3.3 POTENTIAL SIGNIFICANT IMPACTS

- Dispersion of sediment by dredging equipment
- Settlement of Causeway Bunds
- Basal/toe Failure of Bunds
- Consolidation of Dredged Materials
- Effect of Blasting on Soil, Rock and Groundwater
- Disturbance of soils by Sheet Piling

## 3.4 METHODOLOGY

**Desk Study**

Review of available information sources including Geological Memoir, aerial photography, bathymetric data, chart records, previous investigation and historical data.

**Site Investigation**

Interpretation of site investigation works specifically carried out for the New Harbour Development. The investigation will include Shell/Auger boring with in situ testing, piezocone testing with dissipation testing to measure the in situ characteristics of the alluvium, continuous undisturbed samples to assess the sedimentology of the soils. Triple tube rotary core boreholes will be drilled to prove the depth and quality of bedrock.

**Impact Assessment**
After establishing the nature of the existing geological and hydrogeological environment the effects of the proposed development during and after construction will be determined. Mitigation measures, to reduce or eliminate potential impacts, will be identified

# 4 WATER

## 4.1 INTRODUCTION

This section of the EIS will provide details on the benthic and marine ecology, sediment quality, and general oceanography and detailed modelling studies at the proposed location.

## 4.2 TOPICS

**Bathymetry**

A bathymetric survey of the area to be developed will be carried out and used for modelling purposes.

**Oceanography**

This section will detail Water movement within inner Galway Bay including long shore drift, effects at the River Corrib and Water Quality.

**Hydrodynamic, Sediment, and Wave Climate Model Studies**

The area to be modelled will be Inner Galway Bay i.e. eastwards from a line drawn between Spiddal on the north shore south to Black Head, Co. Clare.

The model proposed for use in the current project is: TELEMAC. This is the most suitable hydrodynamic software in terms of international standards and efficiently achieves high resolution within the study area.

- **Hydrodynamic, Sediment, and Wave Climate Model Studies**

This section will include a Model description, scientific background, Model development, Model calibration and validation with the associated Results and Discussion.

- **Wave Climate Studies**

This section will include an Introduction, Methodology, Wind Data, and Simulations for coarse grid model, and Results for coarse grid model and Wave Characteristics for inner Galway Bay. The Results for fine grid model on both Deep water waves and locally generated waves will be presented

- **Salinity Model**

This section will give the Model description, scientific background, Model development and Model calibration and validation.

- **Dredge Spoil Model**

This section will give the Model description, scientific background, Model development, Model calibration and validation. The Results of the modelling and a discussion will be presented.

**Flood Risk Assessment Report**

Included as appendix to this EIS section will be a Flood Risk Assessment Report in keeping with the requirements of the Flood Risk Management Planning Guidelines. The Flood Risk Assessment will include combined and independent flood risk from Astronomical, storm surge, wave climate and River Corrib Fluvial Flood Flow sources and will include a statistical analysis of the Galway Port Tidal Data, Corrib Estuary River Corrib hydrometric data.

## 4.3 POTENTIAL SIGNIFICANT IMPACTS

The likely and significant impacts of the proposed development will be identified and assessed under each topic heading and, where necessary or expedient, appropriate mitigation measures will be proposed. The section will detail the impacts, mitigation measures and contingency plans. The impacts of the Hydrodynamic, Sediment, and Wave Climate Model Studies will be assessed for the potential significant impacts.

The new structure will alter the local current and velocity climate and this in turn will cause changes in the distribution of sediments and benthic organisms. The output of the hydrodynamic and sediment models will be assessed to determine the significance of these changes. The structure will also have the potential to alter local wave climate conditions which can also effect sedimentation patterns and long shore drift. Changes in the wave climate (both oceanic and coastal) at the site will be evaluated and discussed in terms of possible significant alterations to local sediment distribution.

In reducing the spatial extent that the River Corrib has to disperse its waters under spate/storm conditions, the possibility arises for potential flooding at the docks and the Claddagh. A flood study will be carried out to assess the significance of this event. This spatial reduction for the Corrib Plume will also alter salinity conditions in the inner Bay. A study of these changes will be carried out by modelling the variations and the ecological significance of these changes will be discussed.

During the capital dredging and infilling operations, suspended sediment loadings in the sea water will increase. These will be modelled and both the near field and far field changes will be determined and the ecological significances of these temporal changes will be assessed.

## 4.4 METHODOLOGY

The data used in the EIS has been collected from various field surveys including sediment samples, an SPI survey, release and tracking of radio tagged smolts and deployment of current meters. The report will cover those areas of importance to the case for the new development.
Terrestrial ecology, fish, birds and mammals are being dealt with in a separate section on the basis of this initial study.

Salmon smolt migration will be covered in the manner requested by the Western regional Fisheries Board. This involves inserting radio tags into migrating salmon smolts and deploying listening stations in an arc from Mutton Island to Ballyloughan. The results of the radio tagging experiment will be presented.
The **Model** proposed for use in the current project is: TELEMAC. This is the most suitable hydrodynamic software in terms of international standards and efficiently achieves high resolution within the study area.

This two-dimensional finite element numerical model will be used to simulate flow and transport processes in different free-surface flow problems. TELEMAC-2D has been developed from Laboratoire d'Hydraulique der EDF-DER (Chatou,Paris).

The following list of physical processes are taken into account by TELEMAC-2D:

- shallow water equations
  - local acceleration (inertia)
  - advective acceleration
  - Coriolis acceleration
  - barotropic pressure gradient
  - baroclinic pressure gradient (depth integrated)
  - atmospheric pressure gradient
  - turbulent diffusion and dispersion
  - bottom friction
  - wind friction
  - Turbulence can be optionally calculated using a K-Epsilon turbulence model.

With the aid of the numerical model TELEMAC-2D the following physical quantities can be calculated:

- depth-averaged scalar velocity
- depth-averaged velocity in x-direction
- depth-averaged velocity in y-direction
- water depth
- free surface elevation

The finite element method allows for a variable density grid to be used allowing larger elements to be used in the more open homogenous regions away from the Shoreline and refining down to a higher density of elements where bathymetry is more variable and where shoreline geometry dictates. Element sizes could vary in size from 250m down to 25m. TELEMAC-2D uses triangular elements with all element nodes having their geometry defined in terms of x, y, z.

The wave climate analysis using wave climate spectral model will be carried out and calibrated against measured wave data from a wave buoy deployed at the subject site.

The tidal impact and Fluvial Flood Flows will be assessed using the Telemac2D hydraulic model software and calibrated against hydrodynamic survey data from previous and commissioned surveys.

As the proposed development site lies within an SAC, an Article 6(3) Appropriate Assessment will be required to accompany the EIS as also referred to in Chapter 2 Fauna and Flora and this will be included as an Appendix to the EIS document as previously stated.

# 5 AIR QUALITY & NOISE

## 5.1 AIR QUALITY

### 5.1.1 INTRODUCTION

This section will outline the Air Quality, Odour generation, operation emissions coming based on the New Harbour development.

### 5.1.2 TOPICS

Air quality impacts are likely to be of most concern during the construction phase when dust emissions could arise. There could also be some odour generation resulting from the dredging

activity. During operation there will be impacts due to traffic and ship emissions while in port. There will however be minor greenhouse gas impacts associated with the construction and operation phases.

### 5.1.3 POTENTIAL SIGNIFICANT IMPACTS

- Construction-related impacts on climate are to be investigated.
- Impacts of shipping and railway for freight transport on the reduced quantities of carbon dioxide produced.
- Construction of the proposed development may result in dust emissions, which could result in nuisance at nearby receptors for short periods of time.
- Dredging activities during construction could result in odours being generated, which may cause nuisance at nearby receptors for short periods of time
- Relocating the shipping away from the population centre in the city could have a beneficial impact on air quality in the current harbour area

### 5.1.4 METHODOLOGY

Relevant air quality baseline data will be obtained from a number of sources including the Environmental Protection Agency and from the ongoing air quality monitoring carried out by the Galway Harbour Company. Climate data will be obtained from Met Éireann. The potential adverse impacts of dust will be assessed qualitatively by considering the potential for impacts at sensitive receptors in close proximity to the sites. Sensitive receptors will comprise places where it would be reasonable to expect people to be exposed to ambient air quality; they will include:

- Residential dwellings
- Industrial or commercial uses sensitive to dust (including food
- businesses)
- Public open spaces
- Recreational areas and sports grounds
- Schools and other educational establishments
- Churches and buildings of similar religious sensitivity
- Theatres, auditoria and concert halls
- Hospitals and nursing homes

There are no established criteria for the assessment of dust deposition arising from construction sites. A risk-based approach has therefore been developed to identify the potential to generate significant quantities of dust near to sensitive receptors. This is based on studies highlighted by the Building Research Establishment[1]. These studies suggest that nuisance is unlikely to occur at distances greater than 50 metres from a construction site boundary (1). One of these has also shown that at least half the people living within 50 metres of the site boundary of a road construction scheme were seriously bothered by construction nuisance due to dust, but that beyond 100 metres less than 20 percent of the people were seriously bothered. On this basis, a risk evaluation matrix has been devised and used to determine the significance of effects arising from construction dust deposition.

[1] Control of dust from construction and demolition activities, ISBN 1860816126

Operational impacts from the proposed scheme will be assessed against EU air quality standards which have been transposed into Irish law. The legislation relevant to this assessment is the Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC) which transposes the daughter Directives set by the European Commission. These established new air quality standards for NO2, PM10 and PM2.5, which are relevant to this study.

The EIS will quantify potential emissions from shipping operating in the port using published data on NOx, SO2, hydrocarbon and particulate emissions from ships while in port. This data will be used to determine the potential impact on background air quality levels.

The EIS will identify areas where mitigation is likely to be required to minimise any significant impacts, including monitoring and control proposals during the construction and operation phases.

## 5.2 NOISE

### 5.2.1 INTRODUCTION

The Environmental Protection Agency and An Bord Pleanála have well established guidelines for both the level and timing of noise emissions. The construction and operation phases of this proposed development have the potential to generate significant noise emissions. While the construction phase could generate significant vibration levels, there are no significant vibration impacts envisaged for the operational phase.

There are no agreed standards for underwater noise and vibration. The Marine Strategy Framework Directive identifies anthropogenic noise and vibration as a form of pollution which must be monitored and controlled.

### 5.2.2 TOPICS

**Airborne Noise & Vibration**
Some noise impacts could arise at night due to the probability that dredging operations will need to take place during appropriate tidal conditions. It is anticipated that pile-driving activity will be restricted to daytime operation. Every effort has been made in the proposed design to avoid the need for blasting, but such a need could arise and the EIS will provide appropriate mitigation should a requirement arise.

**Underwater Noise & Vibration**
Dredging and Pile-Driving are recognised as significant sources of anthropogenic noise and vibration. International studies have identified threshold levels required to protect marine mammals and there is an emerging consensus on the noise threshold which is likely to impact fish.

### 5.2.3 POTENTIAL SIGNIFICANT IMPACTS

**Airborne Noise & Vibration**
- Construction-related noise on the extension to the Enterprise Park impacting adjacent properties.
- Construction related vibration from pile-driving and other construction activities on vibration sensitive locations.
- Noise from dredging activities during both daytime and night time.
- Impact noise from pile driving activities during the daytime.
- Impact of shipping noise at night on properties not currently impacted.

- Increased noise from additional activity (traffic and operational) on the Enterprise Park will arise and the impact of this will be addressed.
- Relocating the shipping away from the population centre in the city could have a beneficial impact on noise levels in the current harbour area.
- Airborne noise during construction and operation may have an impact on noise sensitive fauna in the Natura sites during specific events.

**Underwater Noise & Vibration**

- Dredging and pile-driving noise potentially impacting on salmon and eel migration from the Corrib system.
- Construction related noise potentially impacting on marine mammals porpoise, dolphins and seals) in the inner part of Galway Bay.
- Possible blasting noise impacting on fauna in the inner Galway Bay area.
- Operational shipping noise potentially impacting on fauna in the inner Galway Bay area.

### 5.2.4 METHODOLOGY

**Airborne Noise & Vibration**

Noise and vibration impacts from the construction and operation phases will be evaluated by reference to sensitive receptors in the vicinity of the proposed development. Sensitive receptors will comprise places where it would be reasonable to expect people or fauna to be exposed to noise and vibration; they will include:

- Residential dwellings
- Industrial or commercial uses sensitive to vibration (including precision engineering and electronics businesses)
- Public open spaces
- Recreational areas and sports grounds
- Schools and other educational establishments
- Churches and buildings of similar religious sensitivity
- Theatres, auditoria and concert halls
- Hospitals and nursing homes
- Natura sites & sensitive species of fauna

Background noise levels will be measured at noise sensitive locations to provide a context for evaluating the noise emissions from the proposed development.

Airborne noise prediction maps will be prepared for the wider harbour area to determine both construction and operational noise levels emanating from the proposed development during the day and night time periods.

Construction noise will be predicted and assessed against recognised criteria, such as those used by the National Roads Authority for the construction of major road schemes. Vibration levels will be similarly addressed.

The EIS will identify areas where mitigation is likely to be required to minimise any significant impacts, including monitoring and control proposals during the construction and operation phases.

**Underwater Noise & Vibration**

Underwater noise impacts from the construction and operation phases will be evaluated by reference to sensitive receptors in the vicinity of the proposed development. Sensitive receptors will comprise places where the fauna consultants have identified particular sensitivities in Galway Bay, they include:

- Common Seal haul out and breeding sites
- Tern and gull breeding sites
- Heronrys
- Cormorant sites
- Porpoise & dolphin areas

Underwater noise sources will be either measured or quantified from previous studies. Background noise levels and transmission characteristics will be calculated to allow predictions of the geographical extent of the zone of impact for underwater anthropogenic underwater noise to be identified.

Using best international practice zones of potential impact will be identified for various construction activities in order to develop appropriate mitigation measures.

The impact of underwater noise during the operational phase will be calculated with reference to shipping and other marine noise sources using best international practice.

The EIS will identify areas where mitigation is likely to be required to minimise any significant impacts, including monitoring and control proposals during the construction and operation phases.

# 6 CLIMATIC FACTORS

## 6.1 INTRODUCTION

This chapter will analyse the study on climatic factors for the development.

## 6.2 TOPICS

Climate change is generally considered to be one of the most significant environmental threats facing the world. The member states of the European Union (EU) are party to the Kyoto Protocol and have a collective responsibility to reduce overall emissions of greenhouse gases by 8% below 1990 levels by 2012. Ireland has an obligation to limit its increase in emissions over this period to no more than 13%.

## 6.3 POTENTIAL SIGNIFICANT IMPACTS

**Climatic Conditions**

The nature and scale of the proposed development is such that no significant impact is likely to be caused to the general climatic conditions.

**Design**

A lifetime carbon account will be prepared for the development to assess the carbon climate consequence.

**Microclimate**

Impacts will arise e.g. increased shelter of the site and the adjacent Enterprise Park and environs. These will be assessed.

## 6.4 METHODOLOGY

Emissions of greenhouse gases during the construction of the scheme would result from dredging activities, non-road mobile machinery used on site and additional HGV and worker traffic.

Consideration will also be given to the impact of the development on climate, particularly in terms of the effect of vehicle movements.

# 7 THE LANDSCAPE

## 7.1 INTRODUCTION

This section of the EIS will assess the Landscape and Visual Impact of the proposal for land reclamation to develop a new harbour immediately south of the Galway Harbour Enterprise Park. The site is situated within the environmental boundaries of Galway City and is within walking distance of Galway City centre.

The assessment will be conducted to assess the receiving environments capacity and to address the impacts of the proposed development.

In visual terms the developments proposals will be viewed as the built environment, access roads, lighting, parking, and increased intensity of use and landscape proposals.

## 7.2 TOPICS

**Basis for the Landscape Impact Assessment**

The assessment is concerned with a description of the existing landscape character, establish the extent of visibility of the proposed development and quantify the significance of this visual intrusion upon on the existing landscape and visual character.

**Definition of Visual Impacts**

The visual assessment uses the following defined terminology; Visual Intrusion, Visual Obstruction, Visual Impact and Duration of impact.

**Receiving Environment**

- **Site Location**

Survey description of the existing site and its proximity to Galway City, Galway Bay, railway embankment, existing enterprise park on the north, the shoreline that runs along the sites southern boundary, the Renmore Lagoon, Ballyloughaun Beach, Roscam and the Lough Atalia Channel.

- **Landscape Character**

The general character of the existing enterprise park is of an industrial nature. The Galway Harbour Enterprise Park presently contains oil depots and warehousing to the west of the site, including many port related industrial premises of significant scale. The proposed site and much of the existing Enterprise Park is within the area designated as a Special Area of Conservation.

**Planning Context**

- **Existing Zoning and Listing**

The site at which the proposed development will take place is presently unzoned due to the fact that the development requires the reclamation of land from the sea.

- **Listed Views**

The Galway City Development Plan does not list any view within the site. There are designated views from lands to the east and west of the site. These are designated as Views of Special Amenity Value and Interest.

**Site Characteristics**

The proposed development is to extend the land and infrastructure of Galway Harbour Enterprise Park. The present nature of the site will transform from being the Harbour Enterprise Park foreshore and seascape to being an enclosed harbour.

**Visual Ambience**

The visual ambience of the site areas to which the public have access will be assessed including the Regional visual compartment and localized visual compartment.

**Views**

The visual impact will be assessed from the principle areas with views of the site which are both panoramic and linear largely from the shoreline and public roadways within the City and Inner Bay area.

**Proposed Development**

Summary of proposed with emphases on environmental, landscape and visual impact, including; Site layout, Car parking, Cycle Routes, Lights, Landscaping, Utility services, Sculpture and urban focal point.

## 7.3 POTENTIAL SIGNIFICANT IMPACTS

**Impacts on the Landscape and landscape character**

This includes an assessment of the 'do nothing' approach alongside the predicted impacts of changes in landscape character, visibility and land use.

**Impact of the proposed development**

This will cover the Impact on Visual Character, Views from Residential Properties and Public Views. A series of photomontages of existing receiving environment and the proposed environment will be inserted and described.

Measures to reduce the visual intrusion of the proposed development are being considered during the various stages of the drafting of the site layout to allow natural screening by function of the elements of land use required. These are considered under the following: Sustainable Landscape Proposals, Planting, Bio Diversity and Construction Impact. They will be assessed for predicted and residual impacts to reduce the visual intrusiveness of the project.

## 7.4 METHODOLOGY

The methodology employed in the preparation of the report is based upon EPA Guidelines and advice notes on environmental impact statements.

The assumption used in this study was that the viewing is from a spectator height of 1.5 m. Detailed observations are carried out from the lands and public roads which surround the site.

**Landscape in the Existing Environment**

The study which will examine the landscape is a combination of two separate but related aspects.

First is a visual impact, which is the extent to which the new developments can be seen.
Second are impacts on the character of the landscape that is responses that are felt towards the combined effects of the new landscape.

The following will be included in the assessment:

**Context**

Noting areas from which the existing site is visible with particular attention given to views from roads, residences and designated tourism routes and viewpoints.

**Character**

Description of the character of the site that is perceived both within the site and wider landscape is important to include, as is the description of the intensity and character of land use.

**Significance**

This entails the level of visual intrusion upon designated views, designated landscape and designated landscape amenity areas. The significance of impacts on the perceived environments will depend on the ability of the existing environment to absorb the proposed development, also partly on the number of people affected but also on value judgements about how much the changes will matter.

**Vulnerability**

The extent to which the landscape or views are capable of being changed in such a way as would not alter the perceived character.

# 8 MATERIAL ASSETS

## 8.1 ARCHITECTURAL

### 8.1.1 INTRODUCTION

This specialist section of the E.I.S. examines the impact of the new harbour at a number of visual and cultural levels and layers ranging from the urban macro scale, impact on the existing bay, waterfront and city amenities, the design and micro impact of individual building types, to the more subliminal impact on the cultural, social and historical experience of the city. These impacts can be summarized as follows:

**City Scale**
The visual impact on the city and in particular from Claddagh/Salthill area, existing Harbour/City Centre area and Renmore/Roscam area will be assessed. The cultural impact on the city in terms of its historical, character and physical context and development will also be assessed. The "image" impact on the city in terms of the tourist, festival and social human experience of the city.

**Urban Scale**
The impact on the fabric of the city in particular the city centre extension, the impact on the city movement patterns and the new urban sub-areas of the new harbour.

**Architectural Scale**
The provision of an appropriate overall harbour architectural language and context, the design of the "softer" building elements – i.e. The Harbour Offices, Cruise Terminal Building etc and the design of the "harder" elements – i.e. warehouse, storage facilities etc.

### 8.1.2 TOPICS

**Background**
This section will include the Context, Brief History of Harbours, Brief History of Shipping, Nature and Understanding of Harbours, Design of Harbours, Current Trends in Harbours and Ports as Environmental Battlegrounds.

It will then give the following in relation to Galway Harbour: A Brief history, Recent History, Harbour Impact on City, Symbols of the City, Contemporary City Image, Volvo Ocean Race and the Existing Harbour Relationship to City

This section will discuss Conservation Policy, History of Planning, Tradition of City Reclamation, Tradition of Infrastructure to Amenity Use and The Long Walk as Model

Galway City Development Plan 2011 – 2017 will be referenced as applicable.

**Design**
The design section will cover the Description of Project, Significance of Site, Existing Enterprise Park, The Challenge, Visual Context, Urban Design Principles and Approach, Connectivity, New Harbour Sub-Areas, Urban Vision and the New Portscape.

The Approach to Architectural Design will be outlined and there will be a Brief for Individual Building Types. Tradition of Existing Harbour Building Types will be explored. There will be a hierarchy of Building Types i.e. Harbour Office, Passenger Terminal and Storage/Warehouse Building

Future Development Control will also be discussed in conjunction with Landscaping and Sustainability

### 8.1.3 POTENTIAL SIGNIFICANT IMPACTS

The types of Impact will be covered in this section as follows: Urban Waterfront Experience, Particular Views, Backdrops, Claddagh/Salthill, City Centre/Existing Harbour, Renmore/Roscam, Distant Views, Sea Approach Impact, New Harbour Experience, Views from New Harbour, Nature and Understanding of Change, Bay Impact, Cultural/Character Impact, Social/Historical Impact and Image Impact.

It will also outline the Rebranding of City, The Cruise Passenger Experience and Overall Human Experience of City.

### 8.1.4 METHODOLOGY

This section will consist of an overall study report based on research, analysis, observation, assessment, study and experience backed up with contemporary maps, drawings, photographs, photomontage, 3D images, including historical maps, drawings, photographs and images.

**Visual Methodology**

**Figure 1: Rendered plan view of proposed new harbour superimposed on high resolution BKS aerial photography taken at low tide in May 2007.**

The visual modellers have already modelled in 3D from CAD plans provided by the Harbour Engineers of the proposed new harbour. The model has been created in Autodesk Studio Max and is georeferenced in 3D space in Irish National Grid.

In a separate research project for the Marine Institute and Geological Survey of Ireland, the visual modellers have created a 3D model of the entire Galway Bay area, incorporating OSI terrain data and ortho photography with the Marine Institutes bathymetry data which covers the entire bay, including a lidar survey which has acquired height information.

This means that within a virtual desktop environment we can position ourselves anywhere within the Virtual Bay and see the simulated impact the harbour would have on the view from that point. Current analyses shows that the harbour will be barely visible at all from distant views beyond the city and that the visual impact will be minimal even from views within the city.

It is expected that between 20 and 30 views will be produced. The virtual bay model will be offered to the editors and the other consultant parties to help decide where these locations should be.

**Photography Methodology**

Photographs will be taken with a 12megapixel Nikon D90 SLR camera. The photographs will be taken with the following features and considerations;

1. The focus will be set at infinity for all shots.
2. Imagery will be taken at 1.65m above ground (eye level) for all shots
3. Images will be geo-tagged with position of the shot locations accurate to within 1m. Locations will be chosen on an identifiable mark on the ground where possible.
4. Lighting conditions have a considerable impact on the visual impact of a scene. For this reason photography will be taken in a range of lighting conditions, cloudy and sunny for comparison. In sunny conditions, views from the city will show the harbour in shadow.

**Photomontage Methodology**

The camera view within the 3D model workspace will be set up with the same field of view parameters as photography camera. Renders of the harbour from each photography position will be produced. These renders will then be merged with the photography in Photoshop to show the views that will be seen when the development is built.

## 8.2 ARCHAEOLOGICAL AND CULTURAL HERITAGE

### 8.2.1 INTRODUCTION

The chapter will assess the impacts of the proposed development on the known recorded and potential unknown terrestrial and underwater archaeology.

Of critical importance, from an underwater archaeological perspective, is that the construction of the proposed development will involve the reduction of the seabed to a depth of max. -12m Chart Datum by a program of phased dredging works (**Site Layout Drawing. No. 2139-1121A See Appendix 3**).

In essence, the majority of the assessment will focus on the underwater archaeology as the proposed development site (PDS) is largely submarine in nature.

### 8.2.2 TOPICS

The baseline assessment will include: research and analysis of recorded published and unpublished material of a corpus of documentary, cartographic and photographic sources. A

shoreline field assessment and underwater geophysical and archaeological dive-truthing surveys will also be included in the baseline study.

The assessment will be undertaken with due regard to the *Guidelines on the Information to be contained in Environmental Impact Statements 2002* and *Advice Notes on Current Practice 2003,* published by the Environmental Protection Agency. Furthermore, the undertaking of the geophysical surveys shall be undertaken with due regard to the unpublished specifications for the carrying out of geophysical surveys for archaeological purposes, compiled by the Underwater Archaeological Unit (UAU) of the National Monuments Service.

The protected Structure at Lough Atalia Bridge will also be assessed.

### 8.2.3 POTENTIAL SIGNIFICANT IMPACTS

There will be no impact by the proposed development on recorded archaeological sites as there are no known recorded terrestrial sites within the PDS or abutting it.

A preliminary review of baseline data had thus far revealed no previously unrecorded terrestrial archaeological sites.

The Galway Bay area has been the focus of intense archaeological and historical activity, maritime and terrestrial, up to the modern period and at least four recorded shipwrecks are known from the Port area alone. Consequently there is a possibility of encountering these wrecks and / or potential archaeological features or artefacts relating to these wrecks. The results of the geophysical surveys and archaeological dive truthing are not completed to date. However, it is likely that several anomalies may have to be investigated.

Given the level of recorded prehistoric and historic cultural activity in Galway Port, particularly in the area around Lough Atalia, there is a distinct possibility of encountering previously unrecorded underwater archaeological wrecks, features and artefacts.

Furthermore, given the depth and nature of the sediment within the PDS, there is a high potential that this sediment may contain previously unrecorded underwater archaeological wrecks, features and artefacts. Given, that the sediment within the PDS will be removed by dredging works to varying depths down to -12m there is a high possibility that current unknown potential archaeology will be impacted.

Any impacts on Lough Atalia Bridge will be explored.

Ameliorative measures
In the context of ameliorative measures of impacts the preferred option is mitigation by avoidance or preservation *in situ.* However, if this is not possible, other mitigation measures may be recommended, including preservation by archaeological record.

### 8.2.4 METHODOLOGY

The assessment will explore the archaeological context of the PDS. It will provide detailed descriptions of character, significance and sensitivity of the archaeological heritage. A range of methodologies will be utilised to assess the potential impacts by the proposed development. These include: a research study, field walking, analysis of geophysical data and a dive survey.

The research study will include the following sources;

- The Record of Monuments and Places (RMP) along with the original record files of the Archaeological Survey.

- The Topographic Files of the National Museum of Ireland will be consulted to determine if any archaeological artefacts had been recovered from the area. A search for any previous archaeological investigations in the surrounding townlands will be carried out on the database of Archaeological Excavations (www.excavations.ie).
- Aerial Photography: A variety of low and high altitude aerial photography vertical and oblique will be examined. Infra red aerial photos undertaken by the Marine Institute will also be examined as well as the aerial orthophotographic imagery from the National Monuments Service web site, www.archaeology.ie.
- Documentary sources: A comprehensive bibliography of sources relating to the historical and archaeological background of the area will be consulted including annalistic publications and gazetteers. The unpublished *Shipwreck Inventory of Ireland for County Galway* compiled by the Underwater Archaeology Unit (UAU) of the National Monuments Service in Dublin will form an essential baseline source for of the research.
- Cartography: Several historic maps and charts will be examined.
- Consultations with relevant authorities, local and national, as well as stakeholders and other specialist and non specialist individuals.
- There will be trial holes and a report on Lough Atalia Bridge.

Integrated into the assessment will be the results of Field Surveys including:

- Inspection of the entire proposed Galway Port Development site and relevant coastal environs by experienced licensed maritime archaeologists at optimum low water opportunity.
- The results of recently completed, project dedicated, licensed underwater geophysical surveys across the entirety of the PDS, including closely spaced side-scan sonar and magnetometer, undertaken on behalf of Aquafact in consultation with Laurence Dunne Archaeology and liaison with the UAU. The results of these geophysical surveys, in association with other relevant underwater geophysical datasets, will be used to identity submarine anomalies which may represent or reflect potential areas of archaeological significance.
- Dive Survey: Arising from the results of the geophysics, anomalies detected within the PDS that have the potential to be cultural in nature will be the subject of a licensed archaeological dive survey and licensed metal detection survey.

## 8.3 RAIL DESIGN

### 8.3.1 INTRODUCTION

It is proposed to undertake the track design of the project as laid out below. The work has been divided up into four stages: - Optioneering, Outline Design, Detailed Design and Approved for Construction.

### 8.3.2 TOPICS

**Optioneering**
It is understood that the previously undertaken feasibility study concludes that the proposed port rail head is achievable, however from a track design point of view it is thought that further optioning would be beneficial to finalise the possible different options available and to meet client expectations in operability as the original feasibility does not expand upon detailed track layout options.

**Outline Design Single Option**
Outline design of a single design option, including production of horizontal and vertical rail alignments including Plain Line and Switches and Crossings works, preparation of a detailed rail survey specification, preparation of preliminary construction details for ballasted and in-slab rail construction types.

**Detailed Design Single Option**
Detail design of a single design option, including production of horizontal and vertical rail alignments including Plain Line and Switches and Crossings works, preparation of full construction details for ballasted and in-slab rail construction types and setting out data.

**Approved for Construction (AFC)**
The details will be brought to the level of Approved for Construction.

### 8.3.3 POTENTIAL SIGNIFICANT IMPACTS

**T**he following impacts are to be assessed in conjunction with the design process:

- Main line existing and proposed speeds
- Proposed depot and access line speeds
- Areas proposed for embedded rail to allow road traffic passage
- Details of proposed dock levels
- Are the existing tracks on the main line suitable for increase in traffic load
- Preferred S&C geometries for both main line and depot
- Operational study to establish possible movements into and out of the depot

### 8.3.4 METHODOLOGY

An optioning exercise to provide additional flexibility within the layout if possible and to review the proposed operational needs of the facility will be carried out. Review of the existing proposal pertaining to the revised layout drawing number 2139-1121A **(See Appendix 3)** to be undertaken. It is envisaged that this element of the work will need to be combined with a site visit and meeting to be held between all interested parties including the harbour authority and in conjunction with C.I.E. / Irish Rail.

Main topics for discussion:-

- Junction with mainline arrangements
- Sidings arrangements
- Choice of switches and crossing
- Headshunts and passing loops
- Number and layout of tracks
- Track materials
- Operational requirements

The Outline design of a single design option will involve liaison with the harbour authority and C.I.E. / Irish Rail. Design risk assessment and preliminary review of any existing geotechnical investigation data. At the end of this it is intended to provide information to a suitable level to obtain an agreement in principal from C.I.E. / Irish Rail.

The Detail design of a single design option will involve liaison with the harbour authority and C.I.E. / Irish Rail. Design risk assessment and preliminary review of any existing geotechnical investigation data. At the end of this stage it is envisaged that this information will be submitted to C.I.E. / Irish Rail for their formal technical approval.

## 8.4 ROAD INFRASTRUCTURE & TRAFFIC

### 8.4.1 INTRODUCTION

The Traffic Chapter of the EIS for the Strategic Infrastructure Development (SID) planning application for the proposed New Harbour, Galway will include for analysis of the traffic generated by the New Harbour. This section will include an overview of the proposed scope and methodology for the Transport Assessment being undertaken in support of this development.

### 8.4.2 TOPICS

**Road Network Analysis**
It is proposed to analyse the road network for a number of assumed milestone years, 2016 (assumed year of opening of phase 1 of the new harbour), 2021 (assumed full opening of harbour), and 2031 (design year). Background traffic will be growthed within the city based on the Draft Galway City Development Plan, while NRA forecast growth indices will be used to grow traffic entering the city model cordon area.

**Saturn Model**
SATURN results will outline the proposed harbour impact on the surrounding road network, particularly the Moneenageisha Junction, where additional traffic generated as a percentage of existing traffic flows, will be calculated and verified as being in line with NRA Traffic and Transport Assessment Guidelines.

**Galway City Council Policy**
GCC's proposed Smarter Travel, Public Transport and Walking & Cycling strategies are expected to improve traffic flows in general throughout Galway City. A number of proposals have been identified and targeted for implementation in the short-to-medium term. It is proposed that two scenarios will be tested in the final Transport Assessment:
Scenario 1: Based on the existing road network, and
Scenario 2: Based on the implementation of the Smarter Travel, Public Transport and Walking & Cycling strategies in the timeframe identified by Galway City Council.

**Junction Upgrade Measures**
Junction upgrade measures will be proposed (at the harbour hotel) by the development and additional junction upgrade measures will be identified, where necessary, for junctions within the designated study area.

**Lough Atalia Bridge**
It is proposed to lower Lough Atalia Road under the existing railway bridge, which is currently subject to a height restriction. Upon the lowering of the road simultaneous, 2-way movement of large heavy goods vehicles will be possible, thus significantly improving road safety at this location.

**Pedestrian & Cyclist Links**
It is also proposed to provide pedestrian and cyclist links between the City Centre and Renmore via the harbour, which will further encourage modal shift from the private car to more sustainable modes.

### 8.4.3 POTENTIAL SIGNIFICANT IMPACTS

The scope of the Transport Assessment will include for addressing the impacts at the following:
- The proposed Harbour access junction;
- The Lough Atalia Road / Fairgreen Road traffic signals junction;

- The Forster Street / Bóthar Uí Eithir traffic signals junction;
- The Lough Atalia Road / College Road traffic signals junction;
- Moneenageisha Traffic Signals Junction;
- Fr. Griffin Road / Raven's Terrace Priority Crossroads Junction;
- Fr. Griffin Road / Fairhill Road Traffic Signals Junction.

### 8.4.4 METHODOLOGY

Significant and ongoing liaison is being carried out between the Traffic Engineers and Galway City Council.

A Mobility Management Framework is being examined, which identifies a number of measures the harbour could implement to minimise the potential impact of harbour-related activities. Such measures include: the restriction of haulage activities during the AM and PM peak periods; incentivising the use of public transport and other non-private car modes of transport as a primary mode of transport to and from the development; a rail link is proposed to allow for goods to be transported by rail; the provision of a shuttle bus service from Ceannt Station to the harbour.

Galway Harbour Company is committed to adopting a pro-active approach to the implementation of a Mobility Management Framework, which will ensure a reduced impact of the development on the surrounding road network. The proximity of the site to the city centre and transport hub will also promote as sustainable a development as possible.

In order to estimate the amount of traffic expected to be generated by the proposed harbour development, the results of an origin / destination (OD) survey will be utilised. This OD survey identified which elements of the existing Harbour and Enterprise Park are currently generating vehicular trips, thereby facilitating the identification of the Strategic Infrastructure Development (SID) application-related traffic.

For haulage-related activities, a trip rate based on tonnages will be applied to surveyed vehicles relating to these activities. A baseline tonnage of 1 million tonnes is considered to be the maximum tonnage achievable from the existing harbour (as historically this was the highest annual tonnage recorded), with all tonnage above this figure considered to be additional traffic as a result of the construction of the proposed new harbour.

For marina-related traffic, a trip rate will be obtained from the TRICS database, an industry-standard tool used in the estimation of development-generated traffic.

Traffic generated from the cruise liner element of the development will be estimated using an analysis of cruise liner statistics for Ireland, and estimating the number of buses and service vehicles required to facilitate the movement of the expected number of passengers.

Traffic relating to the extension of the Enterprise Park, while not forming part of the SID application, will be accounted for in the analysis. The amount of existing Enterprise Park-related traffic will be identified in the base-line surveys, and it is considered that the Enterprise Park will double in size due to the harbour development. As such, a growth factor of 2 will be applied to the existing Enterprise Park-related traffic. It should be noted that this element of the overall harbour development is subject to a planning application through the local authority, when a greater degree of detail will be available. For the purposes of this report, however, it is considered that the above assumptions are sufficient to adequately assess the potential impact of the Enterprise Park on the surrounding road network.

Galway City SATURN model is to be used in the analysis for the Transport Assessment. The SATURN model has been validated to the appropriate DMRB standards and is "fit for purpose" for

use in the analysis of the impact of the proposed harbour on the surrounding road network, as stated by GCC's consultants.

For sensitivity testing, modelling runs will be carried out which include traffic expected to be generated by the proposed Harbour Village and Ceannt Station Quarter developments. Traffic volumes for the Ceannt Station Quarter have been extracted from a draft EIS prepared for CIE in October 2008, while the TRICS database will be utilised to generate traffic for the current anticipated development schedule for Galway Harbour Village.

It should also be noted that the while the proposed Harbour Village development has been designed to be self-sustaining by achieving a work-life balance, no reduction factor will be applied to the traffic figures to account for this overall design principle. As such, the analysis contained within the Transport Assessment will be considered conservative.

## 8.5 RISK ASSESSMENT (OIL TERMINAL)

### 8.5.1 INTRODUCTION

The proposed development is within the consultation distance for the oil storage facilities. Therefore the Health and Safety Authority (HSA) are statutory consultees. In order to ensure that the risk to the occupants of the new harbour facilities is acceptable quantified risk assessment (QRA) will be carried out.

### 8.5.2 TOPICS

The QRA will cover the following topics:

**Existing Topaz Terminal**
An indication of the risk to individual parts of the development can be made by comparison with the PADHI criteria however it is also necessary to assess the overall societal risk.

The QRA would be based upon the projected maximum throughput (currently 1.2 million tonnes p.a.) and the report will include the basis for the study, description of the method and any relevant sensitivities, and final conclusions about the risk.

The development also includes provision for a possible future marina village and this will be assessed.

**New Jetties**
The jetties and transfer pipelines do not come under the scope of the Seveso Regulations (they have no inventory) and there is no specific regulatory requirement to submit a quantified risk assessment of petroleum pipelines in Ireland[2] but it is proposed to assess the jetties.

**Leeside Site**
It is understood that the Leeside terminal site will in the medium term be closed and its activities relocated to the Topaz site.

[2] One of the recommendations from Buncefield was for the UK to consider including gasoline pipes in the scope of the UK Hazardous Pipeline Regulations which would require a QRA.

### 8.5.3 POTENTIAL SIGNIFICANT IMPACTS

**Existing Topaz Terminal**
The QRA will include final conclusions about the risk from the TOPAZ terminal.

It will also examine the risk to the village stage 1 and stage 2 within the main QRA in order to assess the implications of this village at an early stage in design, and to help identify any constraints.

**New Jetties**
Whilst a quantified risk assessment for the jetties and pipeline is not strictly required for planning a quantified risk assessment will be carried out for the new jetties.

**Leeside Site**
If the Leeside site will still be operational after the development begins, the Leeside site would contribute to the overall risk to the new development and so would be considered as part of the QRA described above.

A section identifying the scale and likelihood of accidental releases to the environment to be considered in the EIS would also be included.

### 8.5.4 METHODOLOGY

The Q.R.A. will be carried out by preparing a quantified risk assessment, as follows:

- Identify the incidents at **Topaz** with off-site impact and review the consequence distances (some of this has been done already as part of phase 1);
- Superimpose consequence distances onto the plan of the development to identify which parts of the development could be affected;
- Use site-specific data to establish the probability of the incidents occurring;
- Use information about the development to determine the vulnerability of the population in event of those incidents;
- Determine the level of societal risk e.g. by calculating risk integrals for the different sections of the development based on representative set of scenarios;

Assess the overall risk to the development with reference to the criteria that are included in the HSA planning approach document and comparison to the current situation.

A detailed risk assessment of the **jetties and pipeline** will be carried out in order to:
- Demonstrate adequate separation between hazards and people (or identify any problems at an early stage);
- Reassure the authorities as to the compatibility of elements within the development;
- Aid the development of emergency plans for the harbour;
- Provide input into the scale and likelihood of accidental releases to be considered in the Environmental Impact Study (EIS);
- Help ‘future proof’ the development in event of introduction of regulations around gasoline pipelines.

Risks to people would be presented as consequence distances from the jetty and as a risk transect from the pipeline line and presented on diagrams of the facility. The risk transect shows the individual risk as a function of perpendicular distance from the pipeline. This method is described in standards such as BS PD8010. The QRA report would include commentary on the layout, design aspects and any risk reduction recommendations.

## 8.6 SAFETY HEALTH AND WELFARE

### 8.6.1 INTRODUCTION

This section will outline the scope of Safety, Health and Welfare aspects to be considered in the proposed development.

### 8.6.2 TOPICS

**Human Beings**
This concerns the interfaces of the proposed development on the safety, health and welfare of all people who could be affected by it during its full lifetime.

### 8.6.3 POTENTIAL SIGNIFICANT IMPACTS

The safety, health and welfare of people can be impacted over the full range of activities associated with the new harbour development, from concept initiation right through to the end of the design life of the harbour and its redevelopment or replacement.

The key phases during which these safety and health impacts will be influenced or directly experienced cover: -

- Concept Design and Planning
- Preparatory Investigations
- Scheme Design
- Construction Procurement
- Preparatory Construction Activities
- Construction On-Site and Interfaces with other neighbouring activities
- Operational Handover
- Lifetime Operation
- Maintenance/Repair
- Refurbishment/Replacement/Regeneration

The main categories of people who will influence or be impacted variously from a safety and health perspective during these phases will be: -

- The Client and support bodies
- The planners and project managers
- The various designers
- The Project Supervisor Design Process
- The Contractors
- The Project Supervisor Construction Stage
- Galway Harbour Company personnel, stevodores, dockers, clients, passengers & visitors
- Personnel associated with the various operational activities within the development and with neighbouring activities
- Statutory bodies interfacing with the development
- Visitors to the development

### 8.6.4 METHODOLOGY

Right from project inception, from feasibility through concept development and on to planning stage, the team have had as a prime consideration, the protection of the safety, health and welfare of all people who could be affected by the development. The Client has appointed competent persons, who are adequately resourced to fulfil this imperative. The team will continue to advise the Client on the procurement and appointment of appropriate persons to continue this process,

through design, construction and operational handover, so that the facility can designed, constructed, operated, and maintained safely.

This process is governed by a comprehensive legislative system, which has, and will continue to be, the framework used by the team to deliver a safe and healthy project for all people affected. The primary legislation governing safety is the 2005 Safety Health & Welfare at Work Act, with some obsolescent legislation ranging from the 1955 Factories Act, the 1980 Safety in Industry Act to the 1989 Safety Health & Welfare at Work Act. These are supported by numerous and significant statutory instruments, the key ones affecting this development being the Safety Health & Welfare at Work (Construction) Regulations 2006 to 2010, and the Safety Health & Welfare at Work (General Application) Regulations 2007 to 2010, again with some obsolescent regulations covering particular safety and health sensitive activities. There are other legislative enactments and instruments that will have an indirect affect on the development, but that will be taken account of, particularly in the areas of Road Safety, and Dangerous Substances. There is a range of quasi-legal Codes of Practice, developed under the auspices of the Health and Safety Authority, which provide best practice approaches to compliance with the statutory requirements. In addition, there is a range of Ministerial Orders, covering such aspects as traffic management, which will also be referenced where appropriate. Some European Directives, e.g. covering dangerous substances and transport thereof, will also be taken into account.

# 9 INTER RELATIONSHIP OF THE ENVIRONMENTAL FACTORS

This chapter will detail the inter relationship of all of the above Environmental factors 1 - 8. The New Harbour site is in the Inner Galway Bay - Special Area of Conservation, National Heritage Area and a Special Protection Area. Lough Atalia Bridge is a protected structure and there are road works proposed in the vicinity of the Bridge. The Environmental Factors of all of the above will be assessed accordingly.

The inter relationship of the Environmental Factors will be assessed using the standard approach to Impact Assessment as outlined in the **EPA Guidelines on the information to be contained in Environmental Impact Statements (March 2002).**

# (IV) APPENDICES

| | | |
|---|---|---|
| Appendix 1 | - | EPA Guidelines on the Information to be contained in Environmental Impact Statements |
| Appendix 2 | - | EPA Advice Notes on current practice (in the preparation of Environmental Impact Statements) |
| Appendix 3 | - | Site Layout Plan – Drawing No. 2139-1121A |
| Appendix 4 | - | Stages of Development (Stages 1 – 4) |
| Appendix 5 | - | List of Consultations |

# APPENDIX 1

EPA GUIDELINES ON THE INFORMATION TO BE CONTAINED IN ENVIRONMENTAL IMPACT STATEMENTS

# APPENDIX 2

EPA ADVICE NOTES ON CURRENT PRACTICE
(IN THE PREPARATION OF ENVIRONMENATAL IMPACT STATEMENTS)

# APPENDIX 3

SITE LAYOUT PLAN - DRAWING NO. 2139 - 1121A

# APPENDIX 4

STAGES OF DEVELOPMENT (STAGES 1 – 4)

# APPENDIX 5

LIST OF CONSULTATIONS

## List of Consultations

| Name of Relevant Party | Date | Notes |
|---|---|---|
| ***Planning Meetings*** | | |
| Galway City Council Planning Department | 14th March 2006 | Pre-planning meeting discussing the overall project, scoping, economic justification, roads issues and environmental concerns. GCC recommended additional scoping be carried out. |
| Galway City Council Planning Department | July 2006 | Pre-planning meeting discussing the overall project, scoping, economic justification, roads issues and environmental concerns. |
| An Bord Pleanála | 28th June 2007 | Pre-Planning Consultation No. 1 outlining the project |
| An Bord Pleanála | 9th October 2007 | Pre Planning Consulation No. 2<br>The following were some of the main issues discussed; Transportation, Visual Impact & Consideration of Alternatives. |
| An Bord Pleanála | 7th May 2010 | Pre Planning Consultation No. 3 with An Bord Pleanala. The following were some of the main issues discussed; Transportation, Phasing of development |
| An Bord Pleanála | 18th August 2010 | Pre Planning Consultation No. 4 with An Bord Pleanala. The following were some of the main issues discussed; Reduced scale of project and SID status. |
| ***Press Releases*** | | |
| City / Connaught Tribune | 18th August 2006 | Initial press release with map showing proposed site and giving a brief description of the proposed development. |
| The Galway Independent | 23rd August 2006 | Press release with map showing proposed site and giving a brief description of the proposed development. |
| Various National and Local Papers | ~ | Articles and letters on the proposed developments and dockland regeneration in Galway, often-in conjunction with the adjacent proposed CIE development. |
| ***Consultations*** | | |
| Western Regional Fisheries Board | July 2004 | Meeting to discuss proposed Harbour Development |
| <u>Residents Associations</u><br><br>Mellows Park<br>Wellpark Residents<br>Renmore Residents<br>Claddagh Residents<br>Lough Atalia<br>Residents Winters<br>Property<br>Management<br>Galway Property<br>Management | 10th October 2006 | Galway Harbour Company gave a presentation on the proposed development along with a brief description of the docklands regeneration. Issues arising were discussed and queries answered by both The Galway Harbour Company and TOBIN Consulting Engineers.<br><br>There was generally a positive response to the project. A number of issues that were raised are being addressed in this EIS. |
| An Taisce | 24th October 2006 | Galway Harbour Company gave a presentation on the proposed development along with a brief description of the docklands regeneration. An Taisce were generally favourable towards the proposals and were satisfied that any issues they had were being covered in this EIS. |

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| Inishore Fishermen | 27th October 2006, 15th December 2006 and 12th January 2007. | Galway Harbour Company gave a presentation on the proposed development in general and focused on the proposed new fishing facilities.<br><br>A series of meetings occurred where issues raised by the fisherman were addressed and incorporated in the design of the proposed fishing facility. Responses were generally positive regarding the development in general and the fishing facility in particular. |
| Galway Cycling Campaign | 21st December 2006 | Galway Harbour Company gave a presentation on the proposed development and docklands regeneration. Responses were generally positive. |
| Rail Procurement Authority | September 2007 | Discussions on the proposed development and how a light rail service could be incorporated. |
| CIE | September 2007 | Discussions on the proposed underpass |
| Inishore Fishermen | September 2007 | Discussion on how development would impact fishermen |
| The Nautical Centre Group & Galway Sea Sports Association | 5th October 2007 | Tobin Consultancy Engineers held a consultation with the Nautical group to discuss the best location for the Nautical centre, sailing centre and marina berths |
| The Department of Transport Officials | 24th January 2008 | Tobin Consulting Engineers meet with the Dept. of Transport officials to discuss the business plan for the New Harbour, Galway. |
| Electricity Supply Board - E.S.B. | 9th June 2008 | Meeting with Pat Boyce and Geroid Quinn re: Power Requirements of the New Harbour Galway. |
| Irish Rail | 10th July 2008 | Meeting between Myles McHugh and Jimmy Meade, TOBIN Consulting Engineers and Hyder Rail Consultants – Rail Link |
| Transportation and Infrastructure Department- Galway City Council | 14th August 2008 | Meeting with Joe Tansey - Director of the Transportation and Infrastructure- Galway City Council Re: The roads solution to the New Harbour Galway using the existing road network upgrades. |
| Tpi – Galway City Council's Road Consultants | 29th August 2008 | Meeting with Tpi, Galway City Council's road consultants Re The modelling of the proposed road solution using the existing road networks upgrades. |
| Electricity Supply Board - E.S.B. | 1st September 2008 | Meeting with Pat Boyce and Geroid Quinn re: Power Requirements of the New Harbour Galway. |
| Dept. of Agriculture, Fisheries and Food | 25th November 2008 | Consultation in relation to foreshore issues |
| Galway Fire and Rescue Services | 2nd February 2009 | Consultation with chief fire officer and senior assistant fire officer in relation to proposed fire fighting procedures in new harbour |
| CIE | 3rd February 2009 | Rail link and agreements discussed |
| City Council Consultation Group | 12th February 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Galway Transportation Unit | 26th February 2009 | Consultation re City Council traffic model |
| Labour Party | 27th February 2009 | Meeting re new harbour plans |
| City Council Consultation Group | 25th March 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |

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| Galway Transportation Unit | 31st March 2009 | Meeting re merits of proposed road upgrades |
| Galway Transportation Unit | 7th April 2009 | Meeting re merits of proposed road upgrades |
| Galway Transportation Unit | 26th May 2009 | Consultation re City Council traffic model |
| City Council Consultation Group | 28th May 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Galway Fire and rescue services | 6th July 2009 | Consultation with chief fire officer and senior assistant fire officer in relation to proposed fire fighting procedures in new harbour |
| Galway Transportation Unit | 13th July 2009 | Meeting re merits of proposed road upgrades & discussion re road model |
| Galway Transportation Unit | 15th July 2009 | Teleconference re City Council road model |
| City Council Consultation Group | 21st July 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Galway Transportation Unit | 18th August 2009 | Meeting re merits of proposed road upgrades |
| Galway Transportation Unit | 8th September 2009 | Meeting re merits of proposed road upgrades |
| City Council Consultation Group | 16th September 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Western Regional Fisheries Board | 5th October 2009 | Meeting to discuss New Harbour – requirements to be included for study in the EIS |
| Galway Transportation Unit | 9th October 2009 | Meeting re merits of proposed road upgrades, model and tonnages |
| Department of Transport & Galway Harbour Company | 12th October 2009 | Consultation re proposed harbour plans |
| City Council Consultation Group | 13th October 2009 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Minister Noel Dempsey TD, Minister for Transport | 16th October 2009 (GHC) | - Brief on Harbour Plans and agreement to proceed to Planning Application<br>- Integrated Approach required |
| CIE | 2nd November 2009 (GHC) | Meeting with CIE relating to integrated approach to development |
| CIE/GHC/Galway City Council | 18th November 2009 | Integrated approach to docklands and CIE development, steering group to commence forum |
| Prof. Alex Krieger & Prof. Richard Peiser | 23rd – 25th November 2009 (GHC) | Development of Docklands including Proposed Harbour, Vision Lands & C.I.E. |
| Prof. Noel Wilkins National University of Ireland Galway | 27th November 2009 (GHC) | New Harbour Development – brief on the proposed development by Captain Brian Sheridan |
| Prof. Louhglin Kealy | 4th December 2009 | Coordination of Integrated Approach to City Docklands Planning between CIE, GHC & GCC |
| CIE/GHC/GCC | 9th December 2009 | Integrated City Docklands Planning |

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| City Manager & City Council Consultation Group | 9th December 2009 | New Harbour Planning |
| CIE/GHC/Prof. L. Kealy – Workshop No. 1 | 7th January 2010 | Integrated approach to docklands and CIE development, framework workshop |
| CIE/GHC/Prof. L. Kealy – Workshop No. 2 | 20th January 2010 | Integrated approach to docklands and CIE development, framework workshop |
| Galway Transportation Unit | 22nd January 2010 | Meeting re model, modal shift, EIS requirements |
| City Manager | 26th January 2010 | Integrated approach to docklands and CIE development – progress meeting |
| City Council Consultation Group | 26th January 2010 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Western Regional Fisheries Board | 1st February 2010 | Meeting to discuss New Harbour – requirements to be included for study in the EIS and Salmon Tracking |
| Councillor Catherine Conneely | 24th February 2010 | Meeting re Integrated approach to harbour development and harbour proposals |
| NPWS | 12th March 2010 | Meeting re Appropriate Assessment |
| City Manager | 7th April 2010 | Integrated approach to docklands and CIE development – progress meeting |
| City Council Consultation Group | 16th August 2010 | Meeting with city manager and council directors of services re planning, traffic and agreement of phases of development |
| Galway Transportation Unit | 11th November 2010 | Meeting re model and EIS requirements |
| **Presentations** | | |
| Galway City Council | 10th October 2006 | A vision group, chaired by Mr. John Killeen, presented their vision proposal of Galway's dockland regeneration to Galway City Council. For this regeneration to take place, the current docks need to be relocated, as proposed.<br><br>There was generally a positive response to the docklands regeneration and a motion of broad support was passed. Issues raised are being addressed in this EIS. |
| Galway City Development Board | 8th December 2006 | A vision group, chaired by Mr. John Killeen, presented their vision proposal of Galway's dockland regeneration to The Galway City Development Board.<br><br>There was generally a positive response from members of the board, to the docklands regeneration and a motion of broad support was passed. Issues raised are being addressed in this EIS. |

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| Galway Chamber of Commerce | 11th December 2006 | A seminar on Galway's Dockland Development took place with presentations by John Killeen, Harbourmaster Captain Brian Sheridan and John Concannon of Fáilte Ireland.<br><br>Many issues were raised along with suggestions for alternative locations and units that should be included in the project. However, there was generally a positive response and issues raised are being addressed in this EIS. |
| The Department of Communications, Energy & Natural Resources | 31st July 2007 | The Department of the Marine gave a presentation on what was proposed for Rossaveal. A land use study group from Rossaveal |
| GIF Gateway Innovation Fund | 29th August 2007 | Details of vision road discussed |
| Galway Harbour Board | 31st August 2007 | A presentation on the evolution of the proposed development |
| Michael Sheedy Rail Procurement Agency | 19th September 2007 | A discussion of the proposed development vision road and how a future light rail service could be incorporated. |
| Michael West & Liam Meagher, Iarnród Éireann | 19th September 2007 | A discussion on proposed under pass for the vision road. |
| Inshore Fishermen | 21st September 2007 | Discussion on progress of proposed development and how it might impact. |
| The Department of Communications, Energy & Natural Resources | 2nd October 2007 | TOBIN gave a presentation on the proposed development to representatives from The Dept of The Marine who propose to develop a pier at Rossaveal |
| The Minister for Transport | 16th November 2007 | Tobin Consultaning Engineerings gave a presentation to the Minister outlining the describing the proposed project, the need for the development and the transportation issues relating to the proposed development. |
| Galway City Community Forum | 4th December 2007 | TOBIN Consultancy Engineers gave a presentation on the proposed harbour development to the Galway City Community Forum at their Annual General Meeting. The forum comprises of some 180 Galway City associations and groups inc. residents committees, sporting clubs, charities etc. |
| Network Group | 6th February 2008 | Presentation made my Galway Harbour Company to the Galway network group. |
| Minister Eamon Ó Cuív: Minister for Community, Rural and Gaeltacht Afairs | 19th May 2008 | Presentation made by Tobin Consulting Engineers to giving an overview of the New Harbour, Galway project. |
| Galway Chamber Traffic and Transportation Forum | 20th May 2008 | Presentation made by Brian Sheridan at the first meeting of the Galway Chamber Traffic and Transportation Forum. |
| Galway City Active Retirement Association | 20th June 2008 | Presentation on the New Harbour, Galway to the Galway City Active Retirement Association at the bridge centre, St. Mary's Road |
| Galway Chamber of Commerce | 2nd Sept 2008 | Captain Brian Sheridan gave a presentation to the Galway Chamber of Commerce giving an overview of the latest plans for the New Harbour Galway. |

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| Galway Oyster Festival | 27th Sept 2008 | Brian Sheridan presented the proposed New Harbour, along with other Galway tourisim developments Galway to an audience of 600 people. |
| Society of Chartered Surveyors | 20th October 2008 | Captain Brian Sheridan gave a presentation to the Society of Chartered Surveyors giving details of the latest plans for the New Harbour Galway. |
| County Manager & Mr. John Morgan | 10th November 2008 | Presentation on planning of new harbour |
| Project Review Day | 17th April 2009 | Project Review day at Ardilaun hotel re viability of proposed harbour plan |
| An Taoiseach Brian Cowen | 24th April 2009 | Presentation re Volvo race at LDIG offices |
| Waterford Institute of Technology | 15th September 2009 (GHC) | Captain Brian Sheridan briefed 25 architectural students on the proposed new harbour. |
| St. Mary's College Galway | 7th October 2009 (GHC) | New Harbour Development – brief on the proposed development to 20 students by Captain Brian Sheridan |
| Open House Seminar | 17th October 2009 (GHC) | Centre Pier Ideas Competition |
| Oireachtas Sub Committee on Transport | 21st October 2009 | Port Plans and Harbour Operations |
| Mr. Jim Fennell Galway Mayo Institute of Technology | 29th October 2009 (GHC) | Captain Brian Sheridan brief on the proposed new harbour and road proposals. |
| Dominican Convent | 29th October 2009 (GHC) | Presentation to 20 students on New Harbour and Docklands Development by Captain Brian Sheridan |
| National University of Ireland Galway Students | 2nd November 2009 | Presentation on proposed harbour plans to 100 students |
| Vocation Education Committee – CEO Mr. Brendan O Callaran | 6th November 2009 (GHC) | Port Plans and Establishment of Sailing School on Lough Atalia |
| Galway City Council | 9th November 2009 (GHC) | Presentation to City Hall<br>• New Harbour plan<br>• Vision Lands Proposal<br>• Road Proposals<br><br>Framework queried<br><br>Vote to endorse plans by city councillors. |
| Members of the Oireachtas | 25th January 2010 (GHC) | Presentation to Oireachtas<br>New Harbour plan |
| Irish Hotels Federation | 27th January 2010 (GHC) | Presentation to Irish Hotels<br>New Harbour plan & Vision Lands |
| Transition Year – Dominican College, Taylor's Hill | 2nd February 2010 (GHC) | Presentation re<br>New Harbour plan |
| Chamber of Commerce | 2nd February 2010 (GHC) | Presentation to Irish Hotels<br>New Harbour plan & Vision Lands |

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| Darc Space Exhibition | 24th April 2010 (GHC) | Presentation re New Harbour plan |
| Galway Harbour Company Employees | 26th April 2010 (GHC) | Presentation re New Harbour plan & Vision Lands |
| Marine Institute | 2nd March 2010 | Presentation re New Harbour plan & Vision Lands |
| Website online | 2nd March 2010 | Galway Harbour Company website online detailing new harbour proposals |
| Revised Website Details go live online | 30th September 2010 | Galway Harbour Company website online detailing latest new harbour proposals |
| Galway 2040 seminar | 5th November 2010 (GHC) | Galway Harbour Company presents the Docklands proposal to the seminar at GMIT |

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