RINGASKIDDY PORT REDEVELOPMENT

NON TECHNICAL SUMMARY

Co-financed by the European Union
Trans-European Transport Network (TEN-T)

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1.0 INTRODUCTION AND CONSULTATION

The Port of Cork has appointed a team of specialist consultants to compile an Environmental Impact Statement (EIS) of their redevelopment proposals at Ringaskiddy.

Strategic infrastructure provisions contained within the Planning and Development (Strategic Infrastructure) Act 2006 (the 2006 Act) came into effect on 31st January 2007. This Act, amending the Planning and Development Act 2000 (the 2000 Act) provides generally for certain planning applications relating to specified private and public strategic infrastructure developments to be made directly to An Bord Pleanála as opposed to the relevant local planning authority.

Through direct correspondence with An Bord Pleanála, this planning application was determined as Strategic Infrastructure development.

The Ringaskiddy Port Redevelopment project arises from a strategic need identified by Port of Cork. The process of consultation has enabled Port of Cork to gauge opinions on general development options for the Port and facilitated differing perspectives to be taken into account in the initial stages of the development proposal. The consultation processes have helped to shape the proposal now being presented to An Bord Pleanála.

Building on the consultation carried out during the process to develop the Port of Cork Strategic Development Plan Review in 2010, Port of Cork has carried out further extensive consultation on the project in the course of developing the proposal. Consultation has taken place with various statutory and non-statutory bodies in preparing the EIS and this has facilitated changes to be made during the design stage of the redevelopment to take account of comments, and suggestions arising from the consultation process.

A pre-application statutory consultation process was held with An Bord Pleanála relating to the proposed redevelopment. This occurred over a series of five pre-application consultation meetings between 2011 and 2014 on dates listed below:

- 20th December 2011
- 18th April 2012
- 6th June 2013
- 25th July 2013
- 13th February 2014

Following on from that process, An Bord Pleanála decided that the proposed redevelopment would be strategic infrastructure within the scope of the scope of paragraphs 37A(2)(a) and (b) of the 2000 Act and accordingly any application for permission for the proposed development must therefore be made directly to An Bord Pleanála under section 37E of the Act.

A significant level of consultation has taken place with statutory consultees and relevant bodies as part of the development of the Ringaskiddy Port Redevelopment proposals. Prior to the designation by An Bord Pleánala of the project as strategic infrastructure a scoping exercise was carried out with a wide range of prescribed bodies and organisations. These consultations have informed the nature of the development application.

A programme of public consultation concerning the Ringaskiddy Port Redevelopment project was undertaken in April 2013 and February 2014 to seek the views of the wider public on the proposal.

The consultation process involved;

- Briefings with local public representatives on the proposal;
- Provision of up to date project information on the Port of Cork website: www.portofcork.ie
- The publication of public notices in local newspapers

The purpose of the public consultation exercise was to inform people of the redevelopment proposals, record their views and ensure that they are aware of the opportunities available to them to participate in the development assessment process.
The redevelopment proposals advanced in the Ringaskiddy Port Redevelopment project reflect the significant levels of consultation that have taken place since 2010 on the future of the Port.

2.0 NEED FOR THE SCHEME AND ALTERNATIVES

Need for the Scheme

The provision of effective, efficient and competitive port facilities is essential to the economic vitality of the country and the South West Region. Ports are essential infrastructure and government policy is to ensure that infrastructure and port services are provided in time to meet changing market demands. Government policy is also to require port companies to fund all of their infrastructure and operational requirements from their own resources.

The trade which uses the Port of Cork is vital to the stability and future growth of the economy in the South West Region. The Port of Cork is also a vital contributor to the nation economy and European infrastructure network. The Port is identified as one of Ireland’s 3 core ports which will form part of a unified transport network around Europe (known as TEN-T). The Port must remain competitive and respond to future economic demands to help sustain the regional and national economy; and to provide a strong link to Europe.

A report on the economic impact of the Ringaskiddy Port Redevelopment has been prepared by Indecon International Economic Consultants. The Indecon Report shows that the Port of Cork plays a key role in the development of both the Cork City region and the wider Irish economy. By facilitating the movement of goods to and from the UK and Continental Europe, the Port also plays an important role in the development of the EU’s Internal Market. The Indecon Report emphasises that as a small open economy, Ireland is critically dependent on external trade to support its development. In summary, the Indecon Report estimates the value of trade through the port was €13.9 billion in 2012. It is estimated that this trade supported over 172,000 full-time equivalent jobs across the regional and national economy.

Commercial ships are increasingly becoming larger to improve the efficiency and sustainability of sea freight. To maintain its competitiveness, it is essential that the Port responds to future growth requirements and shipping trends towards larger vessels. The Port of Cork must relocate from the Upper Harbour because the depth of the water channel and width of the river at Tivoli cannot deal with larger vessels and it is logistically difficult to deal with more than 1 container vessel at a time. There are a number of physical constraints at the Tivoli site which mean that it is not possible to redevelop the existing container facility to accommodate larger ships. These constraints are:

- Quay lengths are not sufficiently large enough to accommodate more than one large vessel at a time. The overall maximum combined length of container vessels that can be handled effectively at one time is 240m. As shipping trends continue to change the Tivoli container quay will become more unsuitable, with increased delays and consequential loss of competitiveness inevitable.
- The maintained depth in the approach channel to Tivoli is 6.5m, which means that only vessels with a draft of less than 6m can navigate without restriction. Depth can never be increased due to the presence of the Jack Lynch tunnel.
- Depth alongside at Tivoli is 6.9m Chart Datum in the eastern berth and 8.8m Chart Datum in the western berth. Depending on the height of tide at low water, drafts at the eastern berth can be limited to approximately 6.3 metres. The trend is towards vessels with a draft in excess of 7 metres and a vessel at this draft could not lie afloat at all stages of the tide in the eastern berth.
- The turning circle at Tivoli is 160m in diameter, which allows vessels of up to 154m to turn. The turning circle cannot be increased as it is bounded on the north side by the quayside and on the south side by the Marina. Plate 2.1 shows a container vessel 151 metres in length turning at Tivoli. A vessel of this size always requires a tug to berth at Tivoli, because it has to swing in the channel. If the Port of Cork cannot respond to changes in ship length and draft the Port will become uncompetitive and ultimately lose business to other Ports.
Increased freight has an associated increase in demand for back-up lands, both in terms of immediate storage and in terms of developing the ability to locate distribution activities close to the port site. The trend in port logistical operations is to provide land banks adjacent to port facilities to promote these benefits, which cannot be adequately achieved in the Upper Harbour locations.

The relocation of Port activities from the Upper Harbour, including City Quays, is also necessary to allow the redevelopment of the Docklands and Tivoli for residential and employment uses. The City needs these lands to achieve its population growth targets and spatial planning objectives for the Region. The Port of Cork must release the value of lands in the Upper Harbour to fund their infrastructural and operational requirements from their own funds, in line with Government policy.

**Alternatives**

Various alternatives have been considered in the course of preparing plans for the proposed redevelopment.

The doing nothing option has been ruled out as a failure to construct new deep water container berthing facilities to address the ongoing trend towards larger container vessels would place the Port of Cork at an operational and competitive disadvantage relative to other large ports. Likewise a failure to provide an extension to the existing Deepwater Berth (DWB) at Ringaskiddy will impact the Port of Cork’s ability to service the needs of the bulks sector and will inevitably lead to further operational difficulties due to berth congestion.

Alternatives have been considered in the context of the operational requirements of the port in establishing facilities to meet projected needs and the physical characteristics of alternative locations. This process has been informed by previous work undertaken during the preparation of the Port of Corks Strategic Development Plan Review 2010.

Greenfield sites outside of Cork Harbour have been considered but such locations were deemed to be unsuitable for a number of reasons including:

- The generally unsuitable nature and topography of the coastline in the immediate vicinity of Cork
Any areas not comprising unsuitable coastline are generally associated with residential or leisure use or have environmental/amenity value.

Sites outside Cork Harbour would be exposed to frequent and aggressive storm action during winter months and would require substantial engineering works in order to protect a commercial harbour from expected sea and weather conditions.

Such sites would be distant from other Port of Cork facilities.

Such areas would be increasingly distant from the areas and customers currently serviced by Port of Cork trade.

General lack of adequate road access to coastal locations.

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General lack of adequate road access to coastal locations.

Other existing port facilities were also considered but investigations have concluded that there are no existing ports within the south/south-western geographical sector of Ireland that could realistically meet all of the requirements for the Port of Cork’s relocation of existing and future trade in terms of physical capacity and access, customer’s needs and access to markets, commercial considerations and transport and sustainability.

Sites within Cork Harbour were considered in two phases. Initially a long list of potential locations was identified that might meet fundamental criteria for the development of suitable port facilities.

- Marino Point A (including Foaty Channel)
- Marino Point B (including Jetty and former IFI site)
- Cork Dockyard
- Ringaskiddy West including lands to the west of the existing DWB and the ADM Jetty
- Ringaskiddy East comprising the east side of Ringaskiddy Basin and lands adjacent to Ringaskiddy Ferry Terminal
- Adjacent Hawlbownline Island
- Cuskinny Bay
- Whitegate / East Channel
- Curlane Bank
- Dogsnose Bank
- Aghada / East Channel

These sites were assessed with reference to a range of criteria which included:

- Physical Suitability
- Navigational Suitability
- Port Operations
- Road Transport
- Rail Transport
- Environmental Impacts including Ecology
- Planning Issues
- Cost

From this assessment a shortlist of the five most suitable sites for each mode of trade was identified.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Containers</th>
<th>Bulk Solids/General Cargo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marino Point B</td>
<td>ADM</td>
</tr>
<tr>
<td>2</td>
<td>Adjacent Ringaskiddy Ferry Terminal</td>
<td>Adjacent Ringaskiddy Ferry Terminal</td>
</tr>
<tr>
<td>3</td>
<td>East Side Ringaskiddy Basin</td>
<td>Marino Point B</td>
</tr>
<tr>
<td>4</td>
<td>Dogsnose Bank</td>
<td>East Side Ringaskiddy Basin</td>
</tr>
<tr>
<td>5</td>
<td>ADM</td>
<td>Dogsnose Bank</td>
</tr>
</tbody>
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Subsequently a more detailed assessment of the short listed sites was undertaken and included the following main actions;
• Identification of the key features of the various trades which will need to be accommodated
• Preparation of conceptual development plans for how the anticipated future trade might be accommodated at the various sites either individually or together
• Consideration of the sites under various assessment criteria

Based on a review and comparison of the shortlisted sites within Cork Harbour it was concluded that the primary location for the relocation of port activities from the upper harbour should be Ringaskiddy. This location is already associated with considerable port activity and port related development would be consistent with the Cork County Development Plan and Local and Regional Planning and Transportation policy objectives. Consolidation at this location will have considerable benefits in terms of port operations and the relocation of both containers and bulks to this location will minimise the need to rely on more than one major road upgrade scheme. It was further concluded that within this location a new dedicated container terminal would best be located at Ringaskiddy East on port lands adjacent to the Ringaskiddy Ferry Terminal with bulks and general cargo operations primarily being located at the Ringaskiddy West adjacent the existing DWB and ADM Jetty.

Having identified the sites within this location to accommodate container and bulks trade consideration was also given to what alternatives might be considered in the context of the facility layout and boundaries.

At all stages throughout the development of the proposed works, where appropriate, consideration was given to alternatives in terms of both physical layout and port operations. Key aspects and conclusions included;

• Berth locations and alignment are heavily influenced by the existing land configuration, bathymetry, access to the navigable water and the need to maintain access to existing berths and there is no realistic alternative to those positions proposed.
• The container terminal boundary/ arrangement is largely defined by the extent of existing lands and established activities and as such limited alternatives are available
• Retention of Ringaskiddy Pier for public use is not practical. An alternative location for enhanced replacement facilities has been identified at Paddy’s Point.
• Various options for the arrangement of the port access junction at the N28 were investigated and a signal junction identified as the most appropriate solution.
• The development of additional bulk cargo facilities can only practically be provided at Ringaskiddy West as a linear extension of the existing DWB.
• Various methods of handling containers in the container yard were considered and the use of rubber tyred gantry cranes was identified as most suitable allowing accommodation of the anticipated throughput on the limited area available and being consistent with existing container operations on the Deepwater Berth providing for optimisation in maintenance, servicing and spares.
• Various options for the handling of bulk materials on the existing DWB including the proposed extension have been reviewed. The use of closed conveyor systems have been considered however there are a number of constraints to the implementation of this type of handling system including difficulties in servicing multiple receivers, physical constraints at some receiver facilities and the need to maintain a multi-purpose berth operation at this location. Given these constraints it is the intention of the Port of Cork that the current method of handling cargoes be continued and extended to service the proposed berth extension. The Port will continue to adopt best practice and will actively review with the receiving companies what other measures might be implemented to control release of dust during unloading operations.
3.0 PROJECT DESCRIPTION

3.1 Introduction
This Chapter of the EIS describes the main components of the proposed redevelopment works at Ringaskiddy, Co Cork. Consideration is also given to construction activities associated with the works and operation and maintenance of the completed facilities. The proposed redevelopment is primarily located on or immediately adjacent to existing port lands in the vicinity of the existing port facilities at Ringaskiddy.

3.2 Proposed Development Works
The proposed redevelopment works comprise the following main construction elements;

**Ringaskiddy East (Container Berths and Multi-purpose Berth (CB/(MPB))**
- A new 314m Container Berth 1/ Multipurpose Berth that will be capable of accommodating vessels carrying a range of different cargoes including containers, freight and general cargoes
- An additional 200m Container Berth 2
- Surfacing of existing port lands to provide operational areas
- Dredging of the seabed to a level of -13.0 m Chart Datum
- Demolition of existing link-span
- Installation of link-span comprising a floating pontoon and access bridge
- Installation of container handling cranes and terminal transport equipment
- Maintenance building, administrative buildings and entrance kiosks
- Ancillary car parking, lighting and fencing

**Ringaskiddy West (Deepwater Berth Extension)**
- A new 182m extension to the existing DWB which will comprise a filled quay structure extending no further seaward than the edge of the existing DWB
- Dredging works to varying levels to facilitate navigational access to the new facilities
- Lighting

**Road Improvements**
- Improvements to the external road entrance into the Ringaskiddy Deepwater Terminal and to Ringaskiddy West
- Improvements to the internal link road between Ringaskiddy East and Ringaskiddy West
- Road improvement works within the existing harbour lands at Ringaskiddy East
- Improvements to internal road network at Ringaskiddy East to facilitate future access to the N28
- Lighting and fencing

**Paddy’s Point Amenity Area**
- Construction of a new public pier, slipway and boarding platform
- New planting and landscaping to provide public amenity area
- Boat storage, lighting and fencing

Figure 3.1 illustrates the complete extent of the proposed redevelopment works.

3.2.1 Ringaskiddy East

3.2.1.1 Proposed Port Operations
The proposed general arrangement at Ringaskiddy East is shown in Figure 3.2. Port operations will comprise three potential modes;

* Lift on Lift off (LoLo) *
LoLo operations will involve the loading/unloading of containers from vessels and temporary storage on the site before onward transport by road.
In a typical import cycle the Ship to Shore Gantry Crane (SSG) cranes are used to lift the containers from vessels berthing alongside the new quays. The cranes then place the containers onto trailers/tractor units which transport the containers to the onsite container stacks. Electrically operated Rubber Tyred Gantry (RTG) cranes are used for the handling of containers in the main stacks. These cranes lift the containers into the stack and at a later time facilitate onward transport of the containers by transferring to road going Heavy Goods Vehicles (HGVs). In an export cycle the above mentioned process is reversed.

Each container stack is orientated perpendicular to the CB/MPB and is 7 containers in width with a vehicle lane being provided beneath the RTG's. In the early stages of use harbour mobile cranes may also be used for ship unloading. Containers will be stacked at an approximate height of 5 containers high, equivalent to 12.8m.

At the end of each main stack is a gantry where refrigerated containers, otherwise known as reefer, can be powered and stored. Hazardous container storage facilities are accommodated within the main stacks.

**General Cargo Operations**
The general cargo area will initially be used to accommodate general break bulk and project cargoes. Materials will generally be stored in the open and no storage buildings are proposed. Generally the maximum height of stored materials will be approximately 5.5m.

Cargo will generally be lifted from vessels using a mobile harbour crane or SSG and will then either be placed directly into the storage area or will be placed on the quayside for onward movement and stacking by internal port equipment such as reach stackers.

**Roll on Roll off (RoRo) Operations**
The RoRo ramp, once installed will be used to allow direct access by freight HGV traffic to vessels with suitable vehicle loading ramps. Freight traffic may comprise two different types;

Unaccompanied - in this mode the freight trailers are transported on and off the vessel by dedicated port transport tractor units. The trailers are then stored in the port area where they are subsequently collected by road going lorries.

Accompanied – in this mode each trailer on the vessel is accompanied by a road going freight tractor unit. On disembarkation these vehicle will drive directly onto the public road network without being temporarily stored in the port area. During embarkation such vehicles will marshal at the port shortly before the vessel is due to depart.

**3.2.1.2 Quay Structures**
Container Berth 1 will be constructed along the western edge of the existing area of reclaimed land. The quay has been positioned to provide adequate width of berth slot without impinging on the existing deepwater basin navigable space. Provision is also given to the construction of a landing area and linkspan in order to accommodate RoRo freight operations.

An additional berth is provided as an extension to the Container Berth 1 and is aligned to coincide with the shape of the existing reclaimed land. This second quay will be primarily used for port container traffic.

The new berthing facilities will comprise a concrete deck surface supported on steel/concrete piles. It is anticipated that the new quay wall will comprise a vertical steel wall tied to a sheet piled anchor wall. The main wall will likely comprise a combi-wall form of construction which involves the installation of intermittent tubular steel piles with traditional steel piles infilling between the main piles although other forms of construction such as open piled, or a combination of open piled and closed structures could be used.

The berthing face to the quay structure will be formed by the installation of a reinforced concrete capping beam which will also be used to support the seaward leg of the main quayside container
handling SSG cranes. The concrete capping beam will extend to approximately Mean Low Water Springs (MLWS) and will provide a smooth berthing face.

Plate 3.1 illustrates a Combi-wall form of quay construction.

Plate 3.1  Example of Combi-wall Under Construction

The quay will be provided with collection facilities for surface water which will be discharged to sea after passing through an oil and silt interceptor. The quay will also be provided with necessary services including power outlets, lighting and water.

Quay construction may be undertaken either by traditional construction contract or on a design and build basis where the contractor undertakes the final detailed design within certain parameters/requirements specified by Port of Cork.

3.2.1.3 Reclamation Works

The proposed Container Terminal area is largely located on existing reclaimed lands and new reclamation as part of these works will be limited to a small area (0.5ha) immediately behind the quay walls. It is anticipated that suitable fill material will be imported from local land sources.

3.2.1.4 Demolition

Internal roads improvement works will require the removal of the existing ferry terminal No 2 link span which is no longer in use.

3.2.1.5 Dredging

Dredging works will be carried out to -13.0m Chart Datum adjacent to the new quay structures to provide sufficient water depths for vessels at all stages of the tide.

Bed conditions comprise uncompacted silts overlying gravel, clay and limestone depending on location. Dredging will be required in all materials including bedrock.

The soft overlying silt material is unsuitable for use in the works and therefore this will be removed, either by backhoe or trailing suction hopper dredger, and disposed of at a sea disposal site. The quantity involved is in the order of 90,000m³. The disposal of the dredged material will require application for a Dumping at Sea Permit from the Environmental Protection Agency, which is subject to a separate consenting process.

Bedrock and other hard strata will most likely be removed by a combination of drilling and blasting, and / or the use of use of mechanical plant working from a floating or jack-up barge. Typical floating plant is illustrated in Plate 3.2. Dredged rock and other suitable material will be re-used in the reclamation works. The total volume of rock to be removed is anticipated to be in the order of
47,000m³. Further detailed site investigations will be carried out prior to dredging to confirm the precise volume of rock to be removed.

### 3.2.1.6 Surfacing
The container terminal area will be surfaced using a combination of concrete slabs and bituminous surfacing or block paving for trafficked areas. A series of piled concrete runway beams will be installed along the edges of each container stack in order to provide lanes along which the RTG cranes can operate. The general cargo / RoRo storage area will generally be surfaced using bituminous surfacing.

### 3.2.1.7 Linkspan
The CB/MPB will be provided with a floating linkspan to facilitate RoRo traffic. The linkspan will comprise a floating pontoon of steel construction which will rise and fall with variations in tidal level, maintaining a constant freeboard above water level. Vehicular access to the linkspan pontoon will be via a ramp structure the upper end of which will be fixed to the quay structure with the lower end resting on the pontoon. A linkspan pontoon arrangement is illustrated in Plate 3.3.

![Plate 3.2 Mechanical Excavator on Floating Plant](image)

![Plate 3.3 Typical Linkspan](image)

### 3.2.1.8 Container Terminal Buildings
A total of 3 new structures will be provided within the development area, as follows:

- Two new portacabin offices will house port administration staff, welfare facilities and other ancillary activities. Each office is likely to comprise a small two storey building of pre-
fabricated construction, approximately 5.15m high x 3.80m wide x 12.2m long. Staff car parking will be provided immediately adjacent to the administration building

- A maintenance building will also be provided for the maintenance and repair of terminal equipment and other port infrastructure. The size of this building is approximately 7.82m high x 18.2m wide x 20.5m long
- Security kiosks and associated canopies will be provided at the entrance and exit gates.

The location and size of these buildings are illustrated on the planning application drawings.

### 3.2.1.9 Services and Security
The Container Terminal will be provided with the following services and security features.

#### Foul and Storm Water Drainage
Separate foul and storm drainage systems will be installed within the development sites.

Port of Cork has been actively consulting with Cork County Council with respect to the Council’s proposal to upgrade the existing sewer systems and to install a new pumping station in Ringaskiddy as part of the Lower Harbour Main Drainage Scheme. The latest feedback from these consultations is that the Lower Harbour Main Drainage Scheme will be completed by the end of 2015.

Given that the proposed construction works for the Ringaskiddy Port Redevelopment project are scheduled to commence in 2016, with a view to having the new facilities operational in 2018, it is intended that foul sewage from the proposed buildings (maintenance building and new portacabin offices) will be discharged directly into the upgraded Council sewer system. It is also anticipated that foul drainage from existing port facilities will be diverted to the new system.

Should the proposed sewer upgrade works not proceed as intended or occur beyond the timescales indicated, then the Port of Cork will install a new package treatment works on the site in order to dispose of sewage from the proposed redevelopment. The plant will treat to a standard approved by Cork County Council of 30 mg/l SS and 20 mg/l BOD prior to discharge to a soakaway.

Storm water runoff from the site will be collected in a dedicated storm water drainage system. The storm water drainage system will collect rainwater incident upon the site for discharge to the harbour waters via a series of silt traps and oil interceptors.

#### Mechanical and Electrical Services
The proposed lighting for the general working areas will comprise high mast lighting, details of which will be subject to detailed design. Roadway lighting will comprise standard road lighting columns and lights. Lighting will be designed to provide an average lighting level of 20 Lux for roadways, 50-100 Lux for quayside areas and 30-50 Lux for storage and circulation areas.

Due to operational reasons the container stacking and quay working areas will not be provided with lighting masts. These areas will be illuminated by working lights fitted to the various cranes working in the terminal area which illuminate the area in the immediate vicinity of the particular crane. Illumination levels in the working area under the cranes will be 100-200 Lux.

The lighting will be designed to prevent direct glare into surrounding properties and illumination of the night sky.

Power supply will be by connection to the local electricity grid system.

Water supply will be by connection to the local mains system.

#### Fencing and Security
Palisade fencing will be provided around the entire landward perimeter of the Container Terminal to comply with the requirements of the International Ship and Port facility Security Code (ISPS). Security gates will be positioned at the entrance and exit of the main CB/MPB terminal. CCTV cameras will be installed within the CB/MPB.
Safety Equipment
All quayside areas will be provided with mooring bollards, ladders and safety chains in accordance with the requirements of BS6349 Code of Practice for Maritime Structures.

Fire hydrants will be provided at regular intervals in all working and storage areas.

Navigation
In order to accommodate the proposed works there will be some amendments to the existing navigation markers which shall be carried out in conjunction with the Harbour Master. The relevant changes are illustrated on the planning application drawings.

Navigation simulations have been carried out by Port of Cork pilots and personnel from the Harbour Masters department to confirm the proposed quay can be accessed in a safe and efficient manner.

3.2.2 Ringaskiddy West - Deepwater Berth Extension
The proposed general arrangement at the new DWB extension is illustrated in Figure 3.3.

3.2.2.1 Proposed Port Operations
The new berth extension will be primarily used for the importation of bulk materials such as animal feeds and fertilisers, and general cargoes.

Port operations on this new berth will be similar to those currently carried out on the existing DWB. Harbour mobile cranes will be used for cargo handling with loose bulk materials being lifted using a grab bucket and deposited via hoppers into awaiting lorries. The materials will then be transferred into bulk stores situated in the existing hinterland areas.

The imported goods are stored until such time when collection is arranged and lorries distribute the cargoes using the local and national road networks. Depending on demand for a particular cargo, there will also be times when the imported materials will be deposited directly onto lorries waiting nearby the quayside for distribution.

Handling of general cargo and specialist project cargoes will be carried out by harbour Mobile Cranes, on the quayside from where they will be transferred to the port hinterland using reach stackers and / or terminal transport vehicles.

3.2.2.2 Quay Structures
The length of the new extension is 182m. Given the proximity of existing commercial sites it is anticipated that a closed form of structure will be most appropriate at this location, however final design solutions could comprise a combination of closed and open piled forms of structure.

3.2.2.3 Reclamation Works
Approximately 0.8ha of new land will be created as part of the works. The vast majority of the material arising from the proposed dredging works will be unsuitable for use in the reclamation works and as such it is anticipated that suitable fill material will need to be imported from local quarried sources.

3.2.2.4 Dredging
Dredging works will be carried out to -13.4m Chart Datum at the new berth slot in order to maintain a consistent water depth with the existing DWB. The approach to the berths will be dredged to -11.75m Chart Datum.

Bed conditions are similar to that in Ringaskiddy East however rock levels are deeper which will mean that no rock dredging will be required as part of the proposed dredging works. Dredging to the required depths will therefore either be by backhoe or trailing suction hopper dredger, and disposed of at a sea disposal site. Again, the disposal of the dredged material will require application for a Dumping at Sea Permit from the Environmental Protection Agency. Excavation of approximately 215,000m³ of material is estimated.

3.2.2.5 Services and Security
The new DWB will be provided with services and drainage similar to that used on the existing berth. All drainage will be connected to the existing drainage system on the DWB.
3.2.3 Road Improvements
New road improvement works are proposed in order to provide better access to Ringaskiddy East and West.

A new signalised access is proposed at the western connection to the N28 (at the junction of the N28 and R613) which will act as the main entrance to the port in the short term.

In the longer term it is anticipated that a new eastern connection to the N28 will be provided at the eastern side of Ringaskiddy village. Internal road improvements to facilitate connection to such a new junction are included in the scope of works.

A new internal port link road is proposed which will connect Ringaskiddy East and Ringaskiddy West. Some limited reclamation and new revetments are required to accommodate the new access road as it passes behind the existing ferry berth. A left hand turning lane will also be provided from the N28 which will form the new access to the DWB.

In the event that the new N28 terminates at the R613 (Barnahely) then the western connection to the N28 will continue to act as the main port entrance in the longer term. Should this be the case then this junction will be expanded as indicated on the planning application drawings. The main upgrade in this case is the addition of 2 further lanes to the internal port link road. Both options for the western entrance are illustrated on the planning application drawings. It is anticipated that the final N28 route details will be confirmed prior to commencement of the Ringaskiddy Port Redevelopment by Cork County Council thus allowing final determination of entrance details prior to construction.

The arrangement of the proposed road improvements are illustrated in Figure 3.4 which is contained within EIS Volume II.

3.2.4 Amenity Area at Paddy’s Point
The existing Ringaskiddy Pier will be retained in use by Port of Cork however public access will not be possible given that it will coincide with the entrance and exit gates to the Container Terminal. It is therefore proposed that a replacement pier and slipway will be constructed on Port lands at Paddy’s Point. The proposed general arrangement of the new facility is illustrated in Figure 3.5 The pier and slipway will comprise concrete decks on concrete or tubular steel piles.

An amenity area will be provided adjacent to the pier providing parking and associated amenity facilities such as:

- New planting and landscaping to provide new public amenity area
- New pedestrian circulation routes
- Boat Storage

The construction of the amenity area will include some reclamation on the foreshore using imported fill which will be protected at the edges by rock armoured revetments.

3.3 Terminal Operations Equipment
The details and approximate dimensions of the types of equipment anticipated to be used in port operations associated with the proposed works are described in the following sections. Precise dimensions will vary from manufacturer to manufacturer and final dimensions will only be determined when the supplier of the equipment has been identified. Dimensions considered in preparation of this EIS are based on typical dimensions of equipment currently available in the marketplace.

Equipment may be installed in a number of phases up to those numbers indicated on the planning application drawings.

3.3.1 Ringaskiddy East
The Container Terminal will be provided with various items of equipment for the handling and movement of containers and other cargo.
A list of probable terminal equipment is listed below.

- Ship to Shore Gantry Cranes - 2 nr
- Rubber Tyred Gantry Cranes - 6 nr
- Harbour Mobile Cranes - 1 nr
- Terminal Tractors - 12 nr
- Reach Stackers - 2 nr

3.3.1.1 Ship to Shore Gantry Cranes
SSG cranes as illustrated in Plate 3.4 are used to transfer containers to and from ships and are located on the quayside. The final size of cranes will be determined by the terminal operator however the maximum size anticipated would have the capacity to service vessels up to 13 containers in width. Although maximum overall heights/dimensions for a crane of this capacity are summarised in Table 3.2, the final dimensions may be smaller.

Table 3.2 Typical Ship to Shore Crane Dimensions

<table>
<thead>
<tr>
<th>Height to underside Jib (m)</th>
<th>Height to Apex (m)</th>
<th>Overall height with Jib raised (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx 37m</td>
<td>Approx 65.5m</td>
<td>Approx 89m</td>
</tr>
</tbody>
</table>

Plate 3.4 Typical Rail Mounted Ship to Shore Crane

3.3.1.2 Rubber Tyred Gantry Cranes
Electrically powered RTG cranes are generally of short span and in this case are anticipated to accommodate 7 containers and a vehicle lane between the legs. A typical height for this type of crane would be in the order of 23m.

Typical photographs of RTG yard cranes are illustrated in Plates 3.5 and 3.6.
3.3.1.3 Yard Transport

Terminal Tractors
Containers will generally be transported to and from the stack using terminal tractors. These are basically similar to a normal HGV tractor unit. A typical unit is illustrated in Plate 3.7.
Plate 3.7 Typical Terminal Tractor

Reach Stacker
Reach stackers are front lifting items of equipment which use telescopic arms to place containers at height in stacks. This type of equipment will be used in the CB/MPB area to handle containers. They will also be used in the main container terminal to move and handle empty containers. A typical unit is illustrated in Plate 3.8.

Plate 3.8 Typical Reach Stacker

3.3.2 Ringaskiddy West – Extension to Deepwater Berth
Operations at the DWB extension will be similar to those currently undertaken on the existing DWB.

Ship to shore operations will be undertaken by harbour Mobile Cranes with cargo being transferred to mobile hoppers discharging into HGV’s for transport to onsite storage facilities or directly offsite.

A typical harbour mobile crane is illustrated in Plate 3.9.
3.4 Phased Implementation

The various elements of infrastructure proposed may be implemented in a single construction or alternatively they may be implemented in a number of phases as a result of trade demands, port operational requirements and funding.

It is anticipated that a phased implementation is likely to comprise three main elements as listed below and illustrated in Figure 3.6.

**Phase 1** – Ringaskiddy East comprising:
(a) Improvements to existing port entrance adjacent to existing DWB entrance
(b) Pier, slipway and amenity area at Paddy's Point
(c) Elements of internal road improvements to facilitate access to Ringaskiddy East
(d) Construction of the CB/MPB and associated container storage and handling areas
(e) Additional Internal Roads to facilitate connection to new N28, when constructed, at eastern end of port complex / Ringaskiddy Village

**Phase 2** – Ringaskiddy West comprising the extension to the existing DWB

**Phase 3** – Ringaskiddy East comprising additional quay wall and floating linkspan to accommodate RoRo traffic at the CB/MPB. This facility will not be brought into commission for accompanied RoRo freight traffic until the new N28 is in place and operational.

3.5 Construction Activities

3.5.1 Programme

As indicated in section 3.4 the construction of the proposed works may be undertaken in a number of phases. It is estimated that the construction period for Ringaskiddy East will be approximately 24 months.

Construction of the DWB extension at Ringaskiddy West is anticipated to require approximately 11 months. It is not anticipated that this element will be constructed concurrently with Ringaskiddy East.
3.5.2 Temporary Site Compound
An area will be required for the establishment of the Contractor’s site compound. The site compound will be used for the Contractor’s site office accommodation and facilities and will include an area for temporary storage of construction materials.

At Ringaskiddy East the extent of the site is such that the contractor will be able to establish facilities within the immediate site area. Should further areas be required then the existing freight compound could be made available.

At Ringaskiddy West an area for a site compound will be made available in the area immediately behind the proposed works / existing DWB as indicated in Figure 3.7.

3.5.3 Site Access
Existing port operations will continue as normal during the construction period.

Suitable traffic management and other systems will be put in place as required to minimise disruption to existing activities during the construction period. These will include:

- Upgrade of the existing DWB entrance prior to major construction works being undertaken.
- Segregation of entrances
- Suitable restrictions on timing of deliveries to avoid peak traffic periods
- Preparation of a detailed traffic management plan for the construction phase

3.5.4 Pollution Control
Pollution control measures will be put in place during the construction period as described in Chapter 13 of the EIS.

3.5.6 Site Safety
The works will be subject to the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations, 2013. All aspects of design construction will be reviewed with regard to health and safety and a risk assessment will be carried out. A project supervisor (design phase) will be appointed to produce a pre-tender Health and Safety Plan for the project. The principal contractor will be responsible for the control and co-ordination of health and safety during the works and will be appointed as the project supervisor (construction stage).

3.5.7 Waste Disposal
 Contractors working on site during the works will be responsible for the collection, control and disposal of all wastes generated by the works. An indication of the types of waste likely to be generated by the works and the most appropriate method of disposal are presented in Table 3.3.

Table 3.3 Typical Wastes Generated by the Construction Works

<table>
<thead>
<tr>
<th>Activity</th>
<th>Waste Generated</th>
<th>Disposal/Treatment Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Construction Waste</td>
<td>Waste oils</td>
<td>Collected by waste recycling contractor.</td>
</tr>
<tr>
<td></td>
<td>Other waste</td>
<td>Collected in skips for disposal by licensed waste contractor.</td>
</tr>
<tr>
<td>General Office/Messing</td>
<td>Paper, packaging, canteen etc.</td>
<td>Collected in covered skips/large bins for disposal by a licensed waste contractor.</td>
</tr>
<tr>
<td>Temporary Site Toilets</td>
<td>Sewage</td>
<td>Emptied under contract for disposal at an appropriate facility.</td>
</tr>
</tbody>
</table>
3.6 Operational Activities

3.6.1 Maintenance
When construction work has been completed, the quays and revetments will require little by way of maintenance.

Although some siltation may occur in the new dredged areas the water depth is such that this is unlikely to cause any significant problem in the short term. Any maintenance dredging which may be required in the longer term will be carried out as part of the Port of Cork's regular maintenance dredging programme. The material generated would likely be disposed of at sea at a licensed disposal site agreed in accordance with Port of Cork's maintenance dredging licence.

3.6.2 Pollution Control
Surface water from the main quay and working areas will be collected by a system of drainage channels and gullies. The surface water will be discharged to sea via oil and sludge interceptors to ensure that no pollution is released into the harbour or surrounding waters.

Sewage disposal from the proposed buildings will be by connection to the proposed Lower Harbour Drainage Scheme, or if this is not in place by package treatment works and discharge to a soakaway system.

3.6.3 Waste Disposal from Vessels
Port of Cork operates an Environmental Management System which includes procedures for the disposal of waste from berthed vessels.

All waste to be disposed of from berthed vessels will be handled and disposed by a licensed waste disposal contractor. Waste awaiting disposal will not be permitted to be stored on the quayside.

Discharges from vessels to the harbour waters will not be permitted.

3.7 Construction and Operational Phase Mitigation
Various environmental mitigation measures will be implemented in both the construction and operational phases as detailed in Chapter 17 of the EIS.

4.0 PLANNING POLICY

The planning policy review considers the European, national, regional and local policy context for the proposed expansion of port facilities at Ringaskiddy. It identifies how the proposals are consistent with, and are guided by, formal adopted policy.

The main European policy which impacts on the proposed Ringaskiddy development is the Trans-European Transport Network (TEN-T). The policy aims to transform the existing patchwork of European transport systems (roads, railways, ports, airports and canals) into an efficient and well connection network. The purpose of the policy is to ensure that goods can be transported; and people can travel within Europe more easily, quickly and cheaply and to minimise any negative effects of travel (such as pollution or congestion).

The Port of Cork has been identified as a potentially important link within this European transport network, providing a critical trade connection between continental Europe, Cork and the surrounding region. The European policy highlights the importance of linking sea ports with road and rail if possible, but recognises that in some locations this may not be achievable. The proposals for extension of facilities at Ringaskiddy have been endorsed at a European level, with a grant award of €1.84m to assist the Port of Cork in preparing plans and planning applications for the development of port facilities.

National economic policy, reflected in reports by Forfás and the National Competitiveness Council, emphasises the importance of ensuring that Ireland and its regions have good transport connections to safeguard and grow the country’s economy. Excellent sea port facilities, which are well connected
to an excellent national transport network, are identified as being essential to ensure that Ireland remains competitive within Europe.

It is also recognised that there is an urgent need to provide for an improvement in deep water facilities in Ireland because of the international trend towards larger cargo ships. Ringaskiddy is acknowledged in economic policy documents as having the potential to provide the type of deeper water levels that will be required to accommodate larger ships in the future.

The ‘National Spatial Strategy 2002-2020’ is a policy document aimed at ensuring that social, economic and physical development is distributed effectively throughout Ireland. The strategy aims to ensure future development provides maximum effectiveness for the country and aims to minimise any negative effects of growth on people and communities. A revised policy is due to be issued shortly; in the meantime the current policy provides the main guidance to regional and local planning policy documents.

The National Spatial Strategy designates Cork as one of 5 ‘Gateway’ locations, which are priority areas for the development of social, economic infrastructure and support services at a national scale. The development of excellent infrastructure, including efficient and effective port facilities, is a key priority for all Gateways to support and develop the national economy. In the context of Cork the strategy recognises the need to improve road access to the port.

‘Harnessing Our Ocean Wealth: An Integrated Marine Plan for Ireland’ (IMP July 12) identifies significant potential for economic growth linked to the maritime economy. To help achieve the full potential from the maritime economy, the policy recognises the need for good quality port infrastructure. The policy document includes an objective to support major national seaports in the implementation of their masterplans to provide additional capacity (IMP July 12, p.44).

The ‘2013 National Ports Policy’ (NPP) is a document which sets out the Government’s policy and objectives for Irish ports. The Port of Cork is one of three ‘Ports of National Significance’ (Tier 1). The NPP objectives support the expansion of port capacity and states that Planning Authorities should work with Port companies to help facilitate and guide this development. The NPP also states that the Government supports the core principles of the Port of Cork’s Strategic Development Plan and that the continued commercial development of the Port of Cork is a key national strategic objective. The NPP notes that, while rail freight should be developed where feasible, there is likely to be a continued focus on road freight in Ireland and that the interconnections between the national primary road network and the commercial port network will continue to be of primary importance.

The ‘South West Regional Planning Guidelines 2010-2022’ (2010 RPGs) provides the strategic planning policy context for the South West Region. The 2010 RPGs highlight the strategic economic importance of the relocation of the port from the upper harbour; acknowledge the limitations of the potential of rail freight and states that future port facilities need to be well served by the road network.

The ‘Cork Area Strategic Plan 2001-2020’ is a non-statutory document, which was jointly undertaken by Cork County and Cork City Council to provide a vision and strategy for the development of Cork City and its wider metropolitan area up to 2020. CASP identifies the Port of Cork to be of strategic national importance and supports the relocation and further development of port activities at Ringaskiddy.

The ‘Cork County Development Plan 2009-2015’ (2009 CDP) provides the planning policy context at a county level. The plan is currently being reviewed and a new plan will be adopted in December 2014, a draft of the reviewed plan was issued in December 2013. Both the existing 2009 CDP and the draft plan recognise that the Port of Cork is critical for the economic stability and growth of Cork and the wider region. The plans identify Ringaskiddy as the preferred location for the relocation of certain port and include policy objectives to facilitate the expansion of port facilities at Ringaskiddy; and to support the development of appropriate road transport capacity to ensure the efficient movement of goods vital to the competitiveness and economic welfare of the Cork Region. The draft CDP also recognises that there may be potential to develop rail freight for bulk cargo and accordingly proposes to protect rail freight facilities at the former IFI plant at Marino Point.
The ‘Carrigaline Electoral Area, Local Area Plan 2011’ provides the planning policy and zoning objectives for Ringaskiddy. It includes an objective to facilitate the relocation of the Port of Cork container and bulk goods facilities to Ringaskiddy. The proposed development at Ringaskiddy is located on lands zoned ‘Port Facilities and Port Related Activities’. The zoning objective notes that any development is likely to require a Natura Impact Statement.

The Ringaskiddy Port Redevelopment is consistent with European and national policy objectives, which identify high quality transport infrastructure, including port facilities, as essential for economic growth; maximising Ireland’s ocean wealth; and ensuring competitiveness of Ireland and Europe.

At a European level, the emerging TEN-T recognises the Port of Cork as a future core network port; and significant grant funding has been awarded to progress the Port’s strategic development proposals.

The 2013 National Ports’ Policy (NPP 2013) establishes the policy framework for the development of port facilities in Ireland. It identifies the Port of Cork as one of 3 ‘Tier 1 – Ports of National Significance’ and endorses the principles contained within the Ports 2010 SDP. The NPP 2013 notes that identification of appropriate locations for port expansion should be addressed within spatial planning policy documents.

The 2010 Regional Planning Guidelines (RPGs 2010) highlight the importance of the relocation of the Port to the region’s strategic spatial strategy; acknowledge the limitations of potential rail transport and state that future port facilities need to be well served by the road network.

Spatial Planning Policy (CASP, the 2009 County Development Plan and 2011 Local Area Plans) identify Ringaskiddy as the preferred location for the primary expansion of port activities and the application lands at Ringaskiddy are zoned to provide for the location of the Port of Cork’s container and bulk goods facilities. This objective is reinforced within the draft Cork County Development Plan 2013, which is due to be adopted in December 2014.

5.0 HUMAN BEINGS

The assessment considers impacts on Human Beings related to economic activity; social considerations; use of land and health and safety.

Ringaskiddy village has a population of around 480 people. Large industry and existing Port of Cork activities have a dominate role within the village. The National Maritime College of Ireland is located to the east of the village and University College Cork is developing further marine based research facilities. The community and residential services within Ringaskiddy include a primary school; crèche; church; community centre; small convenience shop; restaurant and public house. Shanbally is a small residential settlement. Community and residential services available in Shanbally include a primary school, church, public house and convenience shop.

There are a number of amenity walks in the locality. Sports clubs in the areas include Shamrock Hurling & GAA Club; Hibernian Soccer Club and Pfizer Sports Club. Ringaskiddy pier is located within the Port of Cork landholding and currently accessible to the public. The pier is well used by local boat owners and boat clubs. Port lands at Ringaskiddy East are currently undeveloped and used as an informal walk.

Cork Harbour is well used for both commercial and leisure activities. Commercial activities include commercial shipping; fishing and water based tourism (cruise ships; boating etc.). Leisure activities include sailing; boating; fishing; bird watching; kayaking and open water swimming. There approximately 1,300 registered moorings within the harbour, 6 of which are located in Ringaskiddy. The main access to the Ringaskiddy moorings is from Ringaskiddy pier and slipway.

A ‘Do-Nothing’ scenario would undermine the competitiveness of the Port of Cork; resulting in negative impacts on the economic vitality of existing businesses with the South West Region, undermining the region’s attractiveness for future investment. A ‘Do-Nothing’ scenario would also have negative
impacts on the potential of the Port of Cork to be connected to the Trans-European Network, with consequential negative impacts on the integration of the South West Region to the rest of Europe.

The Ringaskiddy Port Redevelopment will have a positive impact on economic activity during both construction and operational phases. It is estimated that the construction phase will require a total of 849 Full Time Equivalent (FTE) jobs, as well as having significant indirect economic impacts, which will result in positive impact on economic activity.

During the operational phase the relocation of port trades from the upper harbour will act as a significant catalyst for redevelopment of City Quays and Tivoli sites. The Ringaskiddy Port Redevelopment will allow the Port of Cork to remain competitive within national and international markets, supporting the economic growth of the region. While there will be no immediate increase in direct employment, as trade grows there may be a need to increase direct employment and there will be a related growth in indirect employment. The operational phase of the redevelopment will have a significant, positive, permanent impact on the economic activity of the region.

No negative impacts on economic activity have been identified, therefore no mitigation measures are required.

Potential negative impacts on social considerations are the need to relocate the Sculpture Garden located within Port lands; the loss of access to Ringaskiddy pier and slipway; change of access to existing moorings; and the development of lands at Ringaskiddy East, currently used as an informal walk.

Proposed mitigation measures are:
- Relocation of the Sculpture Garden to another site in Ringaskiddy in consultation with the original artist, which will have a moderate neutral permanent impact.
- Development of Paddy’s Point Amenity Area to the east of Ringaskiddy, including a new pier and slipway which will have a moderate neutral permanent impact.
- The new pier and slipway will be used to access existing moorings. There is a slight increase in distance from the moorings to the new pier and slipway; but parking and boat storage facilities will be improved. On balance it is considered that there will be a negligible negative permanent impact on existing moorings.

The new Paddy’s Point Amenity Area is close to Gobby Beach and will enhance recreation and amenity facilities at the east of the village. The loss of access to the informal walk at Ringaskiddy East will have a moderate negative permanent impact on recreation and amenity.

A ‘Do-Nothing’ scenario would stifle the strategic spatial development objectives for the South West Region, as development of lands at City Quays and Tivoli would be stifled, resulting in a significant, negative, long-term impact on land use.

No negative impacts have been identified in relation to land use therefore no mitigation measures are required.

Port lands at Ringaskiddy are either already in active port use, or a zoned (within the 2011 Carrigaline Electoral Area Local Area Plan) for port uses. The proposed Ringaskiddy redevelopment is an appropriate use of zoned land. In terms of land use the redevelopment proposal will therefore have a positive impact.

No negative impacts have been identified in relation to land use, therefore no mitigation measures are required.

The main health and safety risks arise from construction activities; the operation of plant and machinery; the storage of bulk goods and movement and storage of containers on the port lands. Health and Safety procedures will be followed during construction and operational phases of the redevelopment, therefore no negative impacts were identified and no further mitigation measures required.
6.0 CULTURAL HERITAGE

Cultural Heritage assessment seeks to identify and record the location, nature, and dimensions of any archaeological and architectural features, fabric or artefacts that may be impacted by a development's proposed works, and to make an informed assessment of the possible impacts and mitigation measures arising from a development's proposals.

Assessment of the Ringaskiddy Port Redevelopment has included detailed examination of existing sources and the acquisition of new data arising from site inspections and surveys based on non-intrusive survey and recording above and below the waterline.

Ringaskiddy Port is one of the series of natural havens that populate the edges of Cork Harbour. Archaeological and architectural remains are known from the vicinity around Ringaskiddy Port, but there are no upstanding monuments or remains within the port area, and much of the landscape close by has been developed by industrialization from the 1960s onwards.

Early mapping survives from the 1670s that describe the coastline and general area in some detail. Ring Island, which has been buried under the current reclaimed area of the port, may have had structures built on it in the 1770s, and a windmill and related buildings are recorded there in the early 1900s, but there are no visible remains today as the island has been buried under the reclamation of the East Basin.

There are no known shipwrecking events associated with Ringaskiddy Port, although such records only extend back to the mid-1700s; the possibility remains that earlier activity occurred.

Marine geophysical survey, intertidal assessment and underwater archaeological dive inspection has taken place within the port in 2005, 2006 2012 and 2014, under licence from DAHG, and has considered the present development areas. The work has been non-intrusive in nature and represents substantial new data sets that inform the cultural heritage potential of the development. No features of archaeological significance have been identified in this work.

The four principal elements of the proposed works include construction in Ringaskiddy East, Ringaskiddy West, improvements to the road entrance to the Terminal and provision of a pier and slipway at Paddy’s Point. In all cases, the greatest impact will arise from dredging works. The fact that the landward sides of the development areas within the port are on land reclaimed in the twentieth century suggests it is unlikely that new work will encounter levels of archaeological interest, unless it is intended to excavate to below the depth of reclamation. Any works that extend to below the depth of reclamation would represent excavation into unrecorded levels and would require an archaeological resolution.

Limited reclamation is proposed in Ringaskiddy East for a c. 1.2 ha area to provide a working quay area to facilitate a 314m long CB/MPB quay wall and deck, and a 200m long container berth. This will extend the existing outline and tip of the quay along its northwest side. Any works that require excavation of the seabed deposits will require an archaeological resolution.

Dredging is proposed in Ringaskiddy East and will extend to a level of -13m Chart Datum to the depth of the existing navigation channel. It represents the removal of seabed deposits right along the full western extent of the quay. It is a significant direct permanent impact on the seabed and will require an archaeological resolution.

Reclamation is proposed in Ringaskiddy West to provide a new 182m long extension to the existing DWB, where a filled quay will extend seaward to be in line with the edge of the existing berth. The affected area measures approximately 0.8 ha in size.

Dredging is proposed in the Ringaskiddy West. The dredging will extend the width of the 182m long extension of the existing DWB, and will reach seawards along the length of the ADM Jetty. Dredging will extend to -13.4m Chart Datum at the new berth, and to -11.75m Chart Datum on the approach to the berths, to facilitate navigational access to the new facilities. The dredging represents the removal of seabed deposits down to the depth of the existing navigation channel. It is a significant direct permanent impact on the seabed and will require an archaeological resolution.
Reclamation is proposed to the east as Paddy’s Point Amenity Area, where it is proposed to develop a Public Slipway.

Reclamation is proposed for the internal link road between Ringaskiddy East and West to provide a safe and appropriately scaled access junction to the existing N28. The work will include construction of an embankment on land reclaimed between the No. 2 ramp dolphins and the existing quayside. Any works that require excavation of the seabed deposits will require an archaeological resolution. The road network will be tied into the N28 at the junction with the R613. At this location, the works will run alongside the stone-built boundary wall of the former Prospect Villa site, and the wall will be impacted directly in part.

No potential impacts are identified at this moment during the operational phase as it is anticipated that the archaeological environment will have been resolved during the construction phase.

In the event that archaeologically significant material is discovered in the course of the construction phase that cannot be fully resolved, a process of such measures may be identified. The road works will extend to tie into the existing road network outside the Port. Archaeological monitoring of such tie-in locations is anticipated.

Prior to construction, a small area of seabed previously not inspected as a result of a design change, shall be subject to updated inspection survey.

No further archaeological mitigation is identified prior to development works proceeding.

The area of impact on the Prospect Villa boundary wall will be recorded archaeologically in advance of its destruction, which will be monitored archaeologically.

The principal recommendation of the cultural heritage assessment for the wider scheme is that archaeological monitoring is conducted by a suitably qualified and experienced maritime archaeological licensed by DAHG. The monitoring should extend to include all seabed and intertidal/foreshore disturbances associated with the development. Licence applications take a minimum of three weeks to process through the Department, and advance planning is required to ensure that the necessary permits are in place before site works commence.

A number of additional archaeological management recommendations are made, to ensure an efficient resolution in accordance with principles of best practice.

Archaeological recommendations are subject to the approval of the National Monuments Section at DAHG.

7.0 LANDSCAPE AND VISUAL

The Ringaskiddy Port Redevelopment is located within a landscape character area identified as Estuarine Harbour-based Industrial and Maritime Landscape Character Area. This landscape character area has been identified as having a low sensitivity to change. Recently the erection of wind turbines has altered the landscape character of the Cork Harbour at Ringaskiddy and the wind turbines are visible over a wide area and are the tallest features in the landscape. During construction the predicted magnitude of landscape resource change will be low and the significance of landscape impact will be slight adverse due to limited change in landscape resource as the existing site already consists of port facilities that are a feature of this landscape. At the operational stage such uses are consistent with the character of this landscape and while there will be a larger facility at the site, this is a robust and constantly changing landscape. When landscape impacts are assessed during the operational phase there will be slight/moderate adverse.

As with all the settlements located around the Harbour there are large areas of Ringaskiddy that will not have views of the proposal due to intervening vegetation and buildings but due to the terraced nature of the settlement there will be direct views from a number of properties on the northern side of the built form. While the existing port facilities including ships and cranes and traffic are features of
these existing views, there will be new features visible particularly the cranes and containers. Overall the predicted significance of visual impact is predicted as substantial adverse for the residential properties at Ringaskiddy who will have a view.

There are significant areas of open water located between Monkstown and the proposed site and the existing port facilities at Ringaskiddy are also a feature of the views from properties as are the cranes and other port facilities at Rushbrooke. Overall the predicted significance of visual impact is predicted as moderate adverse for the residential properties at Monkstown with a view.

The distance of the proposals from Cobh combined with the presence of existing port facilities and ships will significantly offset potential visual impacts. Overall the predicted significance of visual impact is predicted as slight/moderate adverse for the residential properties at Cobh who have a view.

The majority of properties at Blackpoint and Whitepoint will not have a view of the proposals and it is from a limited number of properties that front onto the shore that will have potential views. The proposals will occupy a small portion of the panoramic view up and down the Harbour. Overall the predicted significance of visual impact is predicted as substantial adverse for the limited number of residential properties at Blackpoint and Whitepoint who have a view.

A total of 18 viewpoints supported with photomontages have been assessed and only one viewpoint at Whitepoint Drive has been predicted to have significant visual impacts.

A range of mitigation measures have been proposed.

In summary the broader landscape character area and visual context around Ringaskiddy Port has the capacity to absorb a redevelopment of this scale in landscape and visual terms.

8.0 TRAFFIC AND TRANSPORTATION

The principal access route to the Port of Cork facilities at Ringaskiddy is the N28 national road which connects the Port to the wider National Road Network via the Bloomfield Interchange on the N40 (South Ring Road). There are some infrastructure upgrades proposed within this network (which have been assumed for traffic modelling purposes), including proposed upgrades to the N28 (assumed to be in place in 2023) and to Dunkettle Interchange (assumed to be in place by 2020). The N28 and N40 currently experience congestion in the AM and PM peaks at locations such as Shanbally, Shannonpark, Carrs Hill, Mahon Interchange, Kinsale Roundabout and at Dunkettle Interchange which creates queuing in the Jack Lynch Tunnel during these peak trafficked times. These traffic issues will remain during the peak periods until the Dunkettle Interchange and the N28 Upgrades are delivered. However, outside of the AM and PM peaks there is significantly more road capacity available on the N40 and N28 to cater for increases in traffic.

Two forecast year scenarios are tested through the Port of Cork Strategic Transport Model (PoCSTM) including a 2018 Do Minimum (no redevelopment) and Do Something (with redevelopment) and a 2033 Do Minimum (no redevelopment) and Do Something (with redevelopment). In the 2018 scenarios it is assumed that there are no changes to the existing infrastructure. However, in the 2033 scenarios it is assumed that the Dunkettle Interchange is upgraded and that the full N28 Upgrade is in place between Bloomfield Interchange and east of Ringaskiddy village. In terms of the demand for travel, the ‘Do Minimum’ scenarios assume, for Ringaskiddy and the other port sites at Tivoli and City Quays, some additional growth over existing levels, however there will be some reduction in activity over time due to trade diverting to other ports as Port of Cork becomes less competitive because of its inability to accommodate larger vessels which offer economy of scale.

For the ‘Do Something’ scenarios, traffic is generated by three phases as follows:

- Phase 1 development – an increase in LoLo, General Cargo and Trade Cars
- Phase 2 development – an increase in Bulk operations
- Phase 3 development – an increase in RoRo operations (Phase 3, the new RoRo facility will not be operational until after the N28 Upgrade is in place, therefore it is only assumed to be operational in 2033).
The traffic impact of the proposed redevelopment is assessed using key performance indicators that measure journey times on key routes, traffic diversion, and volume of capacity at key junctions. The traffic impact assessment for the operational phase of the redevelopment shows that, in 2018, there is a traffic impact of major significance in the AM and PM peaks requiring mitigation. The proposed mitigation measure is reduce Port HGV traffic volumes to Do Minimum levels during the AM (07.45-09.00) and PM (17.00-18.00) commuter peak periods by introducing the Ringaskiddy Mobility Management Plan (RMMP) to manage freight generated by the Port during these periods until the opening of the N28 Upgrade. The management of freight will include utilising the available road capacity outside the peak periods to accommodate the movement of Port HGVs to and from Ringaskiddy. Following the introduction of mitigation, in 2018 during the operational phase of the proposed redevelopment there will be no residual traffic impacts of major significance.

In 2033, with the N28 upgrade in place, there are no traffic impacts of major significance due to the proposed redevelopment for both the AM and PM peaks.

During the construction phase of the proposed redevelopment, there are traffic impacts of major significance in the AM and PM peaks requiring mitigation. The will be a requirement, for the contractor responsible for the construction works, to reduce the number of construction traffic vehicles entering the road network during the AM (07.45-09.00) and PM (17.00-18.00) commuter peak periods to 12 and 14 respectively. Furthermore, construction vehicles will use the strategic road network to access the site i.e. using the N28 and N40. In addition Construction vehicles will be restricted from using local roads or unsuitable roads on grounds of safety. Following the introduction of mitigation, in 2017 during the construction phase, of the proposed redevelopment there will be no residual traffic impacts of major significance.

Ringaskiddy Mobility Management Plan (RMMP)
The RMMP is an innovative and forward looking sustainable management process which the Port of Cork are committed to delivering to manage its freight and cargo operations and to control how HGV traffic generated by the Port, accesses the strategic road network, in advance of the delivery of the N28 Upgrade.

The RMMP is structured on the basis of international best practice. It enables the Port to develop in a sustainable way, and it will provide a mechanism for managing freight traffic on the road network, including restricting freight during peak traffic in the intervening period from 2018 to 2023 (or until such a time that the N28 Upgrade is in place). Following the opening of the N28 Upgrade (assumed to be in 2023) the need to restrict HGVs generated by the proposed redevelopment during the AM and PM Peaks will be removed as the N28 Upgrade will increase the capacity of the road network serving the Ringaskiddy area significantly. However the implementation of the freight management and control system will continue as will the operation of the RMMP to support the efficient operation of the Port of Cork in Ringaskiddy well into the future.

It should be noted that the proposed redevelopment is not dependant on the N28 Upgrade for the early years of its operation (i.e. from 2018 to 2023). The RMMP will allow the Port to control HGVs entering the road network during the AM and PM commuter peaks however it will impose operational and logistical difficulties for the Port to continue to restrict HGV traffic during the AM and PM Peaks, particularly beyond 2023. This is due to the ever greater number of HGVs that would be required to be distributed into the Inter Peak period particularly as Port operations continue to grow. The N28 Upgrade would, therefore, provide significant benefits to the proposed redevelopment and to the wider Ringaskiddy area in general.

A key aspect of the success of the RMMP will be monitoring of HGV volumes generated by the Port from its operation in Ringaskiddy. Annual monitoring and evaluation will ensure the continued success of the RMMP. This process will involve consultation with hauliers, freight forwarders and line agents and other stakeholders such as Cork County Council, Cork City Council, the National Roads Authority, the National Transport Authority and the local community. The results of this monitoring will be evaluated and the RMMP will be updated if required.
Benefit Provided by the N28 Upgrade
The provision of the N28 Upgrade will have significant benefits in terms of reducing traffic congestion along the existing N28 and for accessing the Ringaskiddy area. Further sensitivity assessments are undertaken using the PoCSTM, including a 2023 traffic modelled scenario to evaluate the impact on the surrounding strategic road network with the proposed redevelopment, with and without the N28 Upgrade in place. For the purposes of this EIS, it is assumed that the N28 Upgrade will be opened by 2023 and the 2023 traffic modelled scenario determines the benefits the N28 Upgrade will have on Port traffic, the existing N28 and to the requirements of the RMMP in terms of freight management during the AM and PM peaks from 2018 up to the opening of the N28 Upgrade. Traffic modelling indicates that, following the opening of the N28 Upgrade by 2023, journey times to the Ringaskiddy area will improve dramatically and that there will be a complete removal of congestion at locations such as Shanbally and Shannonpark, with average daily traffic levels reducing by over 60% at these locations. Furthermore, all strategic HGV traffic generated by the Port and other facilities in Ringaskiddy will use the N28 Upgrade.

Overall Conclusion
The traffic impact assessment on the proposed redevelopment of Ringaskiddy Port clearly shows that congestion during the AM and PM peak commuter periods is the key issue for traffic operating along the existing N28. There is significantly more road capacity available outside these peak trafficked periods particularly in the Inter-Peak period between 09.00 and 17.00. In the intervening period between 2018 and 2023 (i.e. before the delivery of the N28 Upgrade which is assumed to be opened in 2023) the Port of Cork will use the RMMP to reduce freight movements generated by the Port at Ringaskiddy to Do Minimum levels during these AM and PM peaks. The RMMP provides the means for the Port of Cork to operate Phases 1 and 2 of the proposed Ringaskiddy redevelopment without impacting on traffic congestion during peak periods by restricting HGV traffic during the AM and PM Peaks until the N28 upgrade is in place.

With the RMMP measures to manage freight during the AM and PM peaks coupled with the commitment not to make Phase 3 operational until the N28 Upgrade is open, the residual traffic impact will be insignificant.

The RMMP will also enable the Port to adapt to changing circumstance in an efficient and planned manner particularly with regard to the management of HGV traffic levels generated by the redevelopment well into the future. Importantly, the RMMP provides a sustainable means for the Port of Cork to grow by maximising the efficient use of the road infrastructure serving Ringaskiddy Port (and its other Port sites). Importantly, the RMMP supports the National Ports Policy in the context of ensuring efficient hinterland connections which are critically important to any Ports’ ability to facilitate large volumes of trade.

Finally, the traffic impact assessment shows that the N28 Upgrade will have a significant beneficial impact on the long term movement of Port HGVs from Ringaskiddy and that the residual impacts of proposed redevelopment will be insignificant in terms of traffic impact post N28 Upgrade. The N28 Upgrade also provides significant benefits to the surrounding area in terms of improved accessibility to the area and in terms of significantly reducing traffic levels at locations such as Shanbally and Shannonpark.

9.0 NOISE AND VIBRATION
A Noise and Vibration assessment was completed to determine the likely noise and vibration impacts from the proposed redevelopment at the nearest noise sensitive receptors. This assessment included an appraisal of the likely noise and vibration impacts from the construction phase, an assessment of the operational phase road traffic noise resulting from the proposed redevelopment and an analysis of operational noise associated with the proposed redevelopment.

As part of the Noise and Vibration assessment, a detailed baseline noise monitoring survey was completed at a representative number of properties to determine the noise environment in the vicinity of the proposed redevelopment. This baseline noise monitoring survey was used as a basis for determining the likely noise impact associated with the proposed redevelopment. Noise surveys were
also completed in relation to ferry and container vessel activities at the existing Port to provide further reference information for completing the noise impact assessment.

The Noise and Vibration assessment was completed with reference to a range of relevant Irish and international noise and vibration guidance documents.

During the construction phase, there is potential for noise levels to be elevated during the daytime period at some locations during certain stages of the construction process. Worst-case construction noise levels from the proposed redevelopment will be within standard noise threshold limits outlined in the relevant noise guidance documents. Noise mitigation measures are included in the EIS to ensure that construction noise impacts are reduced to the lowest possible levels.

There will be no significant noise impact associated with traffic flow changes as a result of the construction or operational phases of the proposed redevelopment. The majority of traffic flow increases associated with the proposed development will result in minor increases in traffic noise (i.e. less than 1dB) and in a small number of cases, more moderate traffic flow increases will result in traffic noise increases in the range of 1-3dB. These changes will not result in any audible increase in traffic noise levels at any of the nearest noise sensitive receptors.

There will be construction phase activities associated with the proposed redevelopment that have the potential to generate vibration impacts, most prominently the piling works required as part of the construction phase. The relative distance of the piling activities from the nearest sensitive properties will ensure that there is no significant vibration impact at these properties.

During the operational phase, the activities from the proposed redevelopment have the potential to elevate noise levels at the noise sensitive properties if worst-case activities are taking place at the Port and if no mitigation measures are in place. The noise and vibration assessment has outlined a range of mitigation measures to reduce noise impacts associated with the proposed redevelopment, including extensive noise barriers and the use of alternative quieter alarm systems. Some of these measures (e.g. the use of alternative alarm systems for plant) have the potential to generate improvements in the noise environment at the Deepwater Berth as compared with the existing scenario.

With the implementation of the noise mitigation measures detailed in this Chapter, the proposed redevelopment will result in a noise environment that is generally similar to the noise environment that currently exists at noise sensitive receptors in the vicinity of the Ringaskiddy Port. There is the potential for elevation in the noise levels at the nearest receptors in Ringaskiddy and Whitepoint / Blackpoint for periods of time when worst-case night-time activities are taking place at the redeveloped Port, however noise measurements taken during the unloading of the Maersk vessel illustrate that these worst-case night-time scenarios will not be any noisier than any existing night-time activities that are currently taking place at the DWB. Furthermore, the installation of an alternative alarm system for existing and proposed mobile plant will result in a significant improvement in terms of the perception of noise from the Port at night as compared to the existing scenario.

10.0  AIR QUALITY AND CLIMATE

The impact of the Ringaskiddy Port Redevelopment on air quality and climate including airborne pollutants and dust emissions during Construction and in the Operational Phase has been assessed.

The main existing sources of pollution in the area around Ringaskiddy Port are from road traffic, shipping traffic, space heating, industrial emissions, residential emissions and fugitive emissions from fuel/gas storage. Existing Port operations including shipping emissions (both docked emissions and at sea emissions) and land operations (cranes, trucks, etc.) will also give rise to combustion emissions. These emissions are dependent on the fuel employed, the size of the vessel and the duration of the operations.

Sources of nuisance dust in the area include bulk cargo unloading operations at the existing deepwater berth and bulk grain storage facilities at Ringaskiddy West. There are also bulk grain warehouses located to the east along the N28 east of Ringaskiddy Village Main Street. Depending on
operational conditions and prevailing wind conditions, these sources have the potential to impact on
nuisance dust levels in the area.

Cork County Council carried out ambient air quality monitoring at Old Station Road and Heatherton
Park. The Old Station Road site is located on the South side of the river Lee near City Hall, about
500m from the Cork city centre. The site is operated by Cork City Council. Monitoring is done using
continuous monitors for sulphur dioxide, nitrogen oxides, carbon monoxide and ozone. Continuous
samples are also taken for particulates (PM10), benzene and lead. Baseline monitoring was carried
out at selected locations near to the proposed port redevelopment for Nitrogen Dioxide, Particulates
(PM10) and Benzene. All levels recorded were well under any Irish threshold level.

The proposed port redevelopment has the potential to generate both dust/particulate and odours
during the construction phase and air emissions from vessels in port and associated HGV movement
during the operational phase.

Construction emissions likely to arise during construction have been modelled. The models indicate
that such emissions will be within acceptable levels. Dust and odour emissions will however be subject
to measurement and control during the construction phase.

Bulk grain operations and associate potential release of fugitive dusts have been addressed through a
multitude of best practice measures and handling protocols adopted by the Port of Cork. Existing
codes of conduct and operational procedures adopted by the Port of Corks will be applied to the
Ringaskiddy Port Redevelopment.

Air Pollutant levels are within European Air Quality limits and will remain so during both construction
and operation phases. Dust monitoring is carried out at three site boundary locations as part of an on-
going monitoring programme. All levels recorded are within the Environmental Protection Agency Best
Practice Limit for dust deposition. There will be no significant air quality impact resulting from the
project.

11.0 SOILS AND GEOLOGY

The assessment of soils, geology and hydrogeology was based on a desk study of publicly available
information such as geological maps, historical borehole logs and historical maps.

The Desk Study identified that the site is underlain by fill material, sands, silts and gravels and
limestone bedrock.

The groundwater beneath the site is classified as being locally important. There are currently no
groundwater abstraction wells within a 1km radius of the site and therefore there will be no impact
upon drinking water supplies as a result of the development.

The proposed redevelopment will not have any substantial, negative impacts on the soils, geology and
hydrogeology of the area providing all recommended mitigation measures are adopted and put in
place.

12.0 COASTAL PROCESSES

The potential changes in coastal processes that could arise from the Ringaskiddy Port Redevelopment
were established through the use of numerical modelling. The modelling was divided into the two main
areas of flow regime and sediment transport. The coastal process models were set up and calibrated
for the existing Port layout to provide a baseline for comparison with the proposed redevelopment
once constructed. The models were also used to quantify the impact of the proposed development
during the construction phase due to dredging.

The model of the estuary extends from Cork City to Roberts Cove in the south and has detailed
regions in the vicinity of the redevelopment and also in locations with rapidly varying water depth. This
meant the model was sufficient for the simulation of the coastal processes and the dredging activity associated with the proposed development.

The model simulations were undertaken for the existing Port layout and then rerun for the Port with the proposed redevelopment. Any changes in the coastal process regime were identified and quantified in order that the extent and nature of the impact of the proposed development could be clearly identified. The models were verified by comparison of tidal height across the model domain with tide gauge network data and by comparison with recorded current meter readings collected specifically for this EIS by Irish Hydrodata.

The proposed jetty at the Paddy's Point amenity area has been designed to provide ease of landing as strong tidal currents were a concern. The modelling demonstrated the sheltered nature of the berthing provided by the angle of the structure. Within Ringaskiddy Basin the existing circulatory current is increased slightly, typically by less 10%, however the changes in current speed are directly attributed to change in water depth due to dredging rather than any change to the flow regime.

The changes in flows are limited to the vicinity of the redevelopment with reduced peak currents in the lee of the structures with localised increases where the flow is redirected further offshore around the structures. The velocities experienced are within the range of those currently seen but are relocated due to the construction. For locations within the main channels surrounding the redevelopment there is no discernible difference in tidal currents. Because the surrounding area is unaffected it can be surmised that the flooding currently experienced within Cork City would neither be positively or negatively influenced by the proposed redevelopment.

The average, or residual, tidal currents were also assessed to establish the impacts on sediment transport. In the wider domain the form of the sediment transport processes remain the same, with circulatory currents within Ringaskiddy Basin and easterly transport along the port. At Paddy's Point, where the new pier and slipway is proposed, the accretion which is currently experienced to the east of the existing Ringaskiddy pier and slipway is expected to increase marginally. The reduced currents will allow easier access to the amenities site and as a result sediment transport will be reduced either side of the proposed pier and slipway.

There will be very little change in current beyond the redevelopment and therefore sediment transport will remain unchanged. The only localised changes are in the immediate vicinity of the pier and slipway at Paddy's Point and maintenance dredging within Ringaskiddy Basin would remain at the current scale and frequency.

Sediment modelling was carried out relating to the dredging plumes and subsequent sedimentation during the capital dredging proposed at Ringaskiddy East and West. Previous studies had highlighted the sensitivity of the Monkstown Creek area therefore sediment releases into the water column will be minimised and monitoring will be undertaken to ensure that suspended sediment concentrations due to the dredging operations fall within acceptable levels.

The dredging operations were simulated using the numerical model and implementing the dredging techniques proposed, i.e. the use of a trailing hopper suction dredger at the western site and a backhoe method at the eastern site. The modelling was carried out over the period required to expedite the dredging and included the appropriate sediment releases into the water column in accordance with each dredging means. The sediment was modelled using the grading and settling characteristics of samples collected at each of the dredging sites.

The results of the dredging simulations showed that beyond the immediate vicinity of the operations the resulting sedimentation depths are a fraction of a millimetre, which would not be discernable. The largest proportion of the sediment, mainly sand and coarser material, will be deposited at the dredge site itself and be removed by successive dredging operations. The finer material remains in suspension for longer and is dispersed more widely through the area, however subsequent deposition depths are insubstantial.

As expected the largest suspended sediment concentrations are within the redevelopment site itself as this is where that material is released. The sheltered nature of the site and the presence of the breakwater reduces the excursion into Monkstown Creek and the River Lee. Suspended solids
concentration below 20mg/l would have little significance given the background suspended levels which are known to exist, particularly in relation to silt carried into the Estuary. These levels are not expected to be reached at the northern SPA sites.

The suspended sediment concentration will vary over the course of the dredging operations depending on tidal levels, flows and due to the operations themselves. The Monkstown Creek site experiences maximum values of around 400mg/l but these do not persist for the entire tidal cycle or across the extent of the inlet. The active shellfish beds to the east in Rostellan will remain unaffected by the proposed works. Values of suspended solids are anticipated to remain below 40mg/l for the duration of the dredging operations, with average concentrations being less than half this value. This is typically less than the turbidity experienced in estuaries during storm conditions with increased fluvial flows and would be within the normal range of conditions experienced within shellfish areas.

Examination took place of the Planning History and all relevant proposed activity was considered for potential cumulative impacts. No significant cumulative impacts have been predicted.

In summary, a modelling programme was undertaken to evaluate both the construction and operational phases of the proposed redevelopment at Ringaskiddy; this included tide and sediment transport modelling. The impact of the Ringaskiddy Port Redevelopment was quantified in terms of the changes in current regime for both Ringaskiddy East and West and the additional pier and slipway at Paddy’s Point. The proposed construction will not impact on tidal current regime beyond the immediate vicinity of the redevelopment. A minor increase in maintenance dredging will be required at Paddy’s Point but the general sediment transport regime will remain unchanged.

Sediment plume and deposition modelling was undertaken for dredging during the construction phase at Ringaskiddy West and Ringaskiddy East sites showing minimum levels of deposition outside the immediate vicinity of the dredging envelope. Suspended sediment levels associated with the dredging programme showed that the turbidity levels would be increased within the local area but peaks would only persist for short periods of the tide.

13.0 WATER ENVIRONMENT

Cork Harbour has been designated as a heavily modified water body under Article 4(3) of the Water Framework Directive (WFD). The reason for the designation is due to the port activities and the extensive port development. The designation means that the water quality objectives normally required of a natural coastal water body are not applicable but rather Cork Harbour has been set an objective of good ecological potential and good chemical status in recognition of the fact that it is significantly altered due to the port development. This objective allows the important function of this water body to be retained, while ensuring that the water dependant ecological features are protected or improved as far as possible.

Cork Harbour is currently failing to achieve its water quality objectives due to elevated nutrient levels, chemical pollution (Tributyltins and lead) and the conservation status of the Cork Harbour SPA. As the Port activities do not represent a significant source of nutrients and the chemical monitoring in the Ringaskiddy Basin has demonstrated that the Tributyltins and lead levels are within acceptable limits the chemical failures cannot be attributed to the existing Port activities in Ringaskiddy.

Water Quality

The potential impact of the proposed redevelopment on water quality and the Cork Harbour coastal water body was considered to range from imperceptible to significant/profound. However if the mitigation recommended is fully implemented then the magnitude of the residual impacts affecting water quality are evaluated as negligible and therefore the significance of the impact on the Cork Harbour water body is assessed as imperceptible. In addition a WFD Assessment has been carried out and concluded that the proposed development will not compromise the achievement of the four main objectives of the WFD.

Flood Risk

A flood risk assessment of the proposed redevelopment has been completed and determined the predominant source of flood risk emanates from coastal flooding. Under The Planning System and
Flood Risk Management Planning Guidelines (2009) the proposed redevelopment site is located within Flood Zone C (outside the 0.1% flood extent) and is therefore suitable for all types of development. The proposed redevelopment will not have any impact on the flood risk and is therefore compliant with the Planning System and Flood Risk Management Planning Guidelines (2009).

**Sewage and Storm Water Infrastructure**

The proposed redevelopment will not result in a substantial increase in water demand and it is predicted that the existing water supply to Ringaskiddy will be capable of servicing the redevelopment without causing any disruption to the village’s water supply.

The proposed redevelopment will connect to the new Cork Lower Harbour Main Drainage Scheme and therefore will receive appropriate treatment prior to discharge to coastal waters. Should the proposed sewer upgrade works not proceed as intended or occur beyond the timescales indicated, then the Port of Cork will install a new package treatment works on the site in order to treat sewage from the proposed redevelopment prior to discharge to a soakaway. The impact on receiving water quality will be negligible.

### 14.0 MARINE ECOLOGY

Sampling was undertaken within the inner Ringaskiddy Basin and at Paddy’s Point to assess potential impacts from the proposed redevelopment in each area. These surveys included an intertidal walkover at Ringaskiddy Basin and Paddy’s Point and subtidal video and benthic assessments at Paddy’s Point and the Ringaskiddy Basin.

The communities identified within the Ringaskiddy Basin are also common in Irish waters and common throughout Cork Harbour. The subtidal consists of infralittoral sandy muds with kelp communities present adjacent to the hard benthos along the eastern part of the Ringaskiddy Basin. The hard benthos present along the eastern side of the basin consists of communities typical of sheltered estuarine and marine shores. An intertidal mussel bank is located beneath the existing ADM Jetty.

A number of habitats were identified along the intertidal sections of Paddy’s Point. These include a small, barren shingle beach immediately adjacent to the roadway near Haulbowline Bridge. The hard benthos in the area consists of habitats typical of sheltered marine shores. A large mussel bank is present along the lower intertidal and subtidal stretches at Paddy’s Point. Shallow sub-tidal soft sediment communities consist of infralittoral muddy sands.

The impacts associated with the proposed redevelopment will result in the permanent loss of approximately 3 hectares of intertidal and subtidal communities within the Ringaskiddy Basin. These communities are common throughout Cork Harbour and as such, this impact is considered minor negative overall. The dredging of approximately 8.5 hectares of soft sediment within the Ringaskiddy Basin will result in the temporary loss of the benthic communities within the immediate dredge footprint. Due to the nature of the benthic communities identified in the area, recovery to pre-dredge levels is expected rapidly (within 2 years). No impacts are expected on the Natura 2000 protected areas within Cork Harbour as a result of the dredging activities in Ringaskiddy. Some deposition has been identified for Monkstown Creek, however the levels expected are very small (<0.1mm deposition thickness), and as such no impact is anticipated for the benthic communities present.

The permanent removal of 180m of mixed hard benthos communities will be offset by the creation of 280m of mixed intertidal and subtidal hard benthos on the rock armouring of the new development at Paddy’s Point. This will result in a net-gain in hard benthos for the area. The permanent loss of 0.475 hectares of subtidal benthos in the Paddy’s Point area is considered minor due to the extensive nature of this habitat within the Oyster Bank and across Cork Harbour in general. There will be some change in the residual current in the vicinity of the new pier and slipway at Paddy’s Point, but it is not expected that this change will have an adverse impact on the mussel bank present in the area.

Cork Harbour is the site of a diverse range of resident and migrant estuarine and marine species, numerically dominated by a small range of species both benthic, demersal and pelagic, which are typical for coastal and estuarine sites around Ireland. These are regularly monitored Inland Fisheries Ireland under their WFD transitional waters fish monitoring programme. Prominent species include...
sprat, gobies, mullet, flounder, sand smelt, pipefish, cod and five-bearded rockling wrasse etc. The harbour is the site of a flourishing draft net fishery for salmon and also hosts a small inshore commercial fleet targeting a range of fish and crustacean species including green, brown and velvet crab, shrimp, lobster cod, flatfish etc. Within the Ringaskiddy Basin research trawling revealed a fish community typical mainly of a soft bottom environment dominated by juvenile flatfish, especially plaice, with gobies also frequent. Mobile invertebrates included green crab, swimming crabs, brown shrimp, and palaemon shrimp among others. Cork Harbour is an important site for recreational angling with anglers targeting a diverse range of species from at least 24 recognised angling marks within the harbour, including about 5 in the general vicinity of the proposed development. Depending on the season, targeted species include mackerel, cod, whiting, bass, flounder, dogfish, mullet, thornback ray among others.

The loss of approximately 3 hectares of subtidal and intertidal habitat will result in a negligible adverse impact on wild fish populations. It will not have any adverse impact on either commercial or recreational fishing within the harbour due to the relatively small areas involved in the context of the harbour as a whole. During the construction phase the noise output from the piling operation is not expected to have any adverse impact on either smolts or adult salmon. It is possible that some more sound-sensitive species may be deterred from and area around Ringaskiddy Basin during piling with possible temporary knock-on affect for certain target species. However, it is unlikely to be significant.

An assessment of marine mammals in Cork Harbour was made and the potential impacts of proposed redevelopment of additional port facilities at Ringaskiddy were identified. Cetaceans, in particular harbour porpoise and bottlenose dolphin, as well as harbour seals and grey seals, temporarily using the area will potentially be exposed to the noise produced by pile driving and dredging. Based on existing information and the results of a site visit and survey, it is concluded that the probability of cetaceans using the waters of Ringaskiddy Basin is low, however there is a higher probability of individual seals (grey and harbour seals) occasionally using the Basin waters and precautionary measures are therefore recommended. The risk mitigation measures proposed are based on specific guidance provided by the NPWS on minimising risk to marine mammals from pile driving operations. Mitigation measures during both construction and operational stages are recommended and involve the use of a fully qualified and experienced Marine Mammal Observer. Full reporting on Marine Mammal Observer operations and mitigation undertaken shall be provided to DAHG.

15.0 TERRESTRIAL ECOLOGY AND ORNITHOLOGY

Ecological impact assessment was undertaken, consisting of consultation, a desk study and a wide range of ecological surveys for habitats, mammals and birds. This has been carried out to assess the impact of the Ringaskiddy Port Redevelopment on the terrestrial ecology and ornithology of the study area.

The consultation and desk study revealed that the site is not directly located within any statutory or non-statutory designated sites of nature conservation value. Monkstown Creek proposed Natural Heritage Area is delineated by the ADM Training Wall 60m northwest of the proposed redevelopment. This site is also part of Cork Harbour Special Protection Area (SPA). Great Island Channel Special Area of Conservation (SAC) is located 4.9km to the north. Monkstown Creek is also part of Cork Harbour Ramsar Site; and Cork Harbour Important Bird Area (IBA).

Habitat survey of the proposed redevelopment site was undertaken in May 2012, September 2013 and January 2014. The results of the habitat survey identified thirteen habitats within the proposed redevelopment site; dry calcareous and neutral grasslands; amenity grassland; dry meadow and grassy verges; recolonising bare ground; treelines; scattered trees; scrub; non-native hedgerows; flower beds and borders; sea walls, piers and jetties; and buildings and artificial surfaces.

A terrestrial mammal survey of the proposed redevelopment site was undertaken in May 2012, and January 2014. Survey revealed no evidence of bat roost sites and no significant bat activity within the survey area. Three species of bats including common pipistrelle, soprano pipistrelle and Leisler’s bat were recorded within the proposed redevelopment site. The results of the otter survey identified signs of otter activity along the ADM Training Wall and at the existing ADM Jetty at Ringaskiddy West; along the shoreline south of the existing ADM Jetty; along the shoreline at Ringaskiddy East and along the
shoreline at Paddy’s Point Amenity Area west of Haulbowline Bridge. A likely otter couch or potential otter holt was located at the base of the existing ADM Jetty on its northern side, 35m from the project footprint at the deepwater berth. A second likely couch or potential holt was identified near the National Maritime College of Ireland, 70m from proposed development at Paddy’s Point. The results of the badger survey identified no evidence of badger within the proposed redevelopment site.

Bird surveys of the proposed redevelopment site and wider area included a Breeding Bird Survey, Wintering Wetland Bird Survey, Breeding Wetland Bird Survey and Night-Roosting Cormorant Survey. These surveys were carried out between 2011 and 2014. The results of the Wintering Wetland Bird Survey confirmed a total of eighteen wintering bird species. The proposed redevelopment site is considered to support only a small percentage of the total wintering bird species present within Cork Harbour SPA. On occasions a larger proportion of some species were found within the proposed development site including Cormorant, Grey Heron, Great Black-backed Gull, Black-backed Gull, Lesser Black-backed Gull, Common Gull and Herring Gull. The results of the Night-Roosting Cormorant Survey confirmed nationally important numbers of roosting cormorant at Monkstown Creek. The results of the Breeding Bird Survey confirmed a total of fourteen breeding bird species. The most significant breeding bird species recorded was Common Tern which is a special conservation interest of Cork Harbour SPA. This species was recorded nesting on mooring dolphins within the existing Ringaskiddy Deepwater Berth. The Breeding Wetland Bird Survey focused on recording the foraging activity of Common Terns. The results confirmed that foraging was observed most often in the immediate project area is adjacent to the nest sites at the existing Port and ferry terminal. Very little foraging was observed within the SPA at Monkstown Creek. The terns spend much time foraging further afield also, notably around Haulbowline Island and Blackpoint, and further north in Lough Mahon.

Potential effects of the proposed redevelopment were analysed with regard to natural coastal processes, the existing sediment transport regime, marine ecology features, water quality and noise in addition to terrestrial ecology and ornithology within the EIS. These assessments were fully considered when undertaking impact assessment on ecology and ornithology, including potential effects to Cork Harbour SPA and its qualifying features.

The construction of the proposed redevelopment will result in the direct loss of a number of habitats considered of low or negligible ecological value. There is also potential for pollution impacts during operation. The construction and operation of the proposed redevelopment has the potential to cause disturbance to otter.

The proposed redevelopment has the potential to impact on bird species during construction and operation with the potential for direct and indirect loss of habitat and food resources, visual and noise disturbance, increased predation risk and pollution.

A wide ranging suite of mitigation measures are proposed throughout the EIS to protect the marine and coastal habitats and the species using the study site. Those specifically identified in the chapter on terrestrial ecology and ornithology are listed here.

- A suitably Qualified Ecological Clerk of Works will be appointed prior to the commencement of any works to redevelop Ringaskiddy Port to ensure the mitigation is implemented in the manner for which it is intended and to act as a liaison between Port of Cork and NPWS.
- Landscaping will prioritise the use of native species in keeping with habitats immediately adjacent to the proposed development footprint.
- Construction of the DWB extension shall be screened from the ADM Jetty for otter and wintering birds.
- A pre-construction re-survey of the shoreline will be undertaken by a suitably qualified Ecologist to identify otter activity prior to construction.
- Construction works at the shoreline will be restricted to daytime hours in order to allow otters and other wildlife to forage at dusk, through the night and at dawn.
- Light spill will be minimised during construction and operation through the use of directional lighting and by minimising lighting requirements.
- Vegetation clearance will be undertaken outside of the breeding bird season i.e. it will not take place between 1st March to 31st August.
- Mature trees within the application site will be retained where possible. If any are to be removed they will be felled during the months of September to November inclusive.
- Any ivy-covered trees which require felling will be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape.
- Dredging will not be undertaken between May and August.
- A 4m visual screen will be constructed as part of the works along the northern perimeter of the internal road at the location shown in Planning Drawing 0474-PL-0802. This screen will include predator perching post deterrents.
- The construction of the internal road between the existing security hut and the existing RoRo ramp will not take place between April and August inclusive unless the visual screen is in place before construction works commence.

No significant residual effects upon terrestrial ecology or ornithology are predicted.

### 16.0 INTERACTIONS

Table 16.1 is a matrix table indicating the significant interactions that are likely to occur between the various environmental disciplines with regard to the proposed scheme. Where an asterisk exists in a box in the table, this indicates that a relationship exists between the two environmental areas. The purpose of the table is to allow interaction between various disciplines to be recognised, although the level of interaction will vary in each case. It is assumed in presenting this table that an environmental discipline has a potential inter-relationship both during the construction and operational phases of the scheme. A summary of expected interactions is given in Table 16.2.
Table 16.1: Inter-relationship Matrix – Potential Interaction between Environmental Disciplines

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* Indicates interaction potential.
### Summary of Interactions

<table>
<thead>
<tr>
<th>Interaction With</th>
<th>Interaction</th>
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</thead>
<tbody>
<tr>
<td><strong>Human Beings</strong></td>
<td>Noise &amp; Vibration</td>
</tr>
<tr>
<td></td>
<td>Noise and vibration generated from the construction and operational phases of the redevelopment have the potential to impact upon local population centres. With the proposed mitigation measures in place the noise impacts will be similar to the existing situation.</td>
</tr>
<tr>
<td></td>
<td>Air Quality &amp; Climate</td>
</tr>
<tr>
<td></td>
<td>The construction and operational phases of the development have the potential to generate impacts in terms of air quality upon local population centres; the air quality assessment does not identify any significant impacts however.</td>
</tr>
<tr>
<td></td>
<td>Landscape &amp; Visual</td>
</tr>
<tr>
<td></td>
<td>The proposals have the potential to impact on the landscape and visual resources perceived by human beings.</td>
</tr>
<tr>
<td><strong>Cultural Heritage</strong></td>
<td>Coastal Processes</td>
</tr>
<tr>
<td></td>
<td>Coastal processes considers processes which have potential to impact upon marine archaeology. Assessment has concluded that there will be no impacts upon marine archaeology as a result of the proposal.</td>
</tr>
<tr>
<td><strong>Landscape &amp; Visual</strong></td>
<td>Noise &amp; Vibration</td>
</tr>
<tr>
<td></td>
<td>The use of noise attenuation measures as part of the construction and operational stages has potential implications for the landscape and visual impacts of the proposals. However, due to the nature of mitigation measures no significant visual impacts are predicted.</td>
</tr>
<tr>
<td></td>
<td>Soils, Geology &amp; Contamination</td>
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<td></td>
<td>Any imported soils will be chemically analysed and screened against generic screening values for a commercial end use to ensure that it does not pose a risk to human health.</td>
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<td></td>
<td>Terrestrial Ecology &amp; Ornithology</td>
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<td>Vegetation is an important aspect with respect to providing wildlife corridors. However where mature vegetation will be removed as part of the proposed redevelopment, it will be replaced and overall there will be no significant impact; the landscape architect has liaised with the ecologist regarding plant species.</td>
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<tr>
<td></td>
<td>Traffic &amp; Transportation</td>
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<tr>
<td></td>
<td>Traffic generation has the potential to impact upon the landscape and visual resources however the landscape and visual assessment has predicted that no significant impacts will occur as a result of traffic.</td>
</tr>
<tr>
<td><strong>Traffic &amp; Transportation</strong></td>
<td>Noise &amp; Vibration</td>
</tr>
<tr>
<td></td>
<td>Traffic generation has potential to result in Noise related Impacts. The Noise &amp; Vibration chapter has been prepared in close co-operation with the Traffic Consultant and no significant noise impacts will occur due to traffic generation</td>
</tr>
<tr>
<td></td>
<td>Air Quality &amp; Climate</td>
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<tr>
<td></td>
<td>Traffic generation has potential to impact on Air Quality. The Air Quality chapter has been prepared in close co-operation with the Traffic Consultant and no significant air quality impacts will occur due to traffic generation.</td>
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<td><strong>Noise &amp;</strong></td>
<td>Terrestrial</td>
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|                | Noise from construction and operational phases of the
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<tr>
<td><strong>Vibration</strong></td>
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<tr>
<td>Ecology &amp; Ornithology</td>
<td>Development has potential to impact on the fauna in the vicinity of the</td>
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<td>proposed redevelopment. However, the ecology chapters of the EIS have</td>
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<td>predicted that following suitable mitigation, no significant impacts will</td>
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<td>Consultant and no significant air quality impacts will occur due to traffic</td>
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<td>generation.</td>
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<td>Soils, Geology &amp;</td>
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<td>Terrestrial Ecology &amp;</td>
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<td>through the implementation of suitable mitigation measures no significant</td>
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<td>impacts are predicted.</td>
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<td><strong>Coastal Processes</strong></td>
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<td></td>
<td>There is an inter-relationship between coastal modelling and marine ecology impacts. There has been close co-operation between the designer, ecological and Coastal Modelling consultants and following suitable mitigation measures no significant impacts on marine ecology has been predicted.</td>
</tr>
<tr>
<td><strong>Water Environment</strong></td>
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<td>There is a potential inter-relationship between water quality and coastal processes. However the coastal processes chapter has predicted that there will be no significant impacts.</td>
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<td></td>
<td>Water environment assessment also identifies potential impacts upon the coastal processes which may impact upon the potential for flooding. Assessments have concluded however that the proposal will have no significant impact.</td>
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<tr>
<td><strong>Cultural Heritage</strong></td>
<td>Marine Ecology</td>
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<tr>
<td></td>
<td>The presence of marine archaeology may be impacted upon by coastal processes.</td>
</tr>
<tr>
<td></td>
<td>Assessment has concluded that there will be no impacts upon marine archaeology as a result of the proposal.</td>
</tr>
<tr>
<td><strong>Water Environment</strong></td>
<td>Marine Ecology</td>
</tr>
<tr>
<td></td>
<td>Marine ecology is dependent on water quality. Disruption in water chemistry or sediment levels has potential to impact on local flora and fauna. There has been close co-operation between the designer, water environment and marine ecology consultants. The marine ecology chapter has shown that no significant impacts will occur following implementation of mitigation measures.</td>
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<td><strong>Terrestrial Ecology &amp; Ornithology</strong></td>
<td>Marine Ecology</td>
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<tr>
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<td>There is an inter-relationship between Terrestrial Ecology &amp; Ornithology and marine related ecology impacts. There has been close co-operation between the designer and ecological/ornithological consultants and following suitable mitigation measures no significant impacts have been predicted.</td>
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<td>Interaction With</td>
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<tr>
<td>Terrestrial Ecology &amp; Ornithology</td>
<td>Noise &amp; Vibration: Noise from construction and operational phases of the development has potential to impact on the fauna in the vicinity of the proposed development. However, the ecology chapters of the EIS have predicted that following suitable mitigation, no significant impacts will occur.</td>
</tr>
<tr>
<td></td>
<td>Marine Ecology, Coastal Processes, Contamination and Water Quality: There is an inter-relationship between ecology and marine related ecology and water quality impacts. There has been close co-operation between the designer, coastal modeller and ecological / ornithological / geological / water environment consultants and following suitable mitigation measures no significant residual impacts have been predicted.</td>
</tr>
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<td>Landscape &amp; Visual: Vegetation is an important aspect with respect to providing wildlife corridors. However where mature vegetation will be removed as part of the proposed redevelopment, it will be replaced and overall there will no significant impact; the landscape architect has liaised with the ecologist regarding plant species.</td>
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<td>Soils, Geology &amp; Contamination: Significant earthworks have the potential to impact on nearby watercourse; through the implementation of suitable mitigation measures no significant impacts are predicted.</td>
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