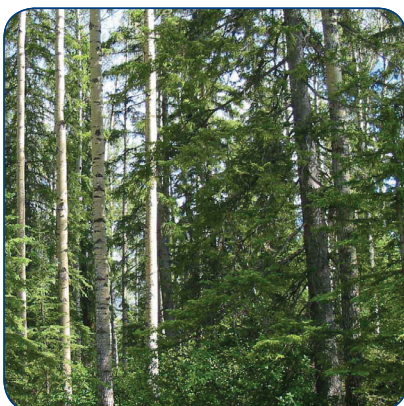


# M28 Cork to Ringaskiddy Project

## Non -Technical Summary

### Volume 1

May 2017





# M28 Cork to Ringaskiddy Project





## Environmental Impact Statement

### Volume 1: Non-Technical Summary

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## TABLE OF CONTENTS

<b>NON TECHNICAL SUMMARY .....</b>	<b>1</b>
<b>1 INTRODUCTION AND OVERVIEW .....</b>	<b>1</b>
1.1 OVERVIEW OF THE PROPOSED M28 ROAD PROJECT.....	1
1.2 REQUIREMENT FOR ENVIRONMENTAL IMPACT STATEMENT AND NATURA IMPACT STATEMENT .....	3
<b>2 NEED AND PROJECT OBJECTIVES.....</b>	<b>4</b>
2.1 POLICY 4	
2.2 ECONOMY .....	5
2.3 SAFETY 5	
2.4 ENVIRONMENT.....	6
2.5 SUSTAINABILITY .....	6
2.6 NEED FOR THE SERVICE AREA.....	6
2.7 PROJECT OBJECTIVES .....	7
<b>3 REASONABLE ALTERNATIVES EXAMINED .....</b>	<b>8</b>
3.1.1 Assessment of Alternative Corridors.....	8
3.1.2 Assessment of Alternatives at a Strategic Level.....	10
3.1.3 Assessment of Alternatives within the existing N28 corridor .....	11
3.1.4 Assessment of Alternatives at Preliminary Route Design Stage .....	14
3.1.5 Assessment of Alternative Sites for a Service Area.....	14
<b>4 DESCRIPTION OF THE PROPOSED ROAD DEVELOPMENT .....</b>	<b>15</b>
4.1 OVERVIEW .....	15
4.2 PERMANENT LAND ACQUISITION .....	16
4.3 CONSTRUCTION .....	16
4.4 COMPATIBILITY OF THE PROPOSED ROAD PROJECT WITH THE PROJECT OBJECTIVES .....	17
<b>5 CONSULTATION .....</b>	<b>19</b>
<b>6 ENVIRONMENTAL ASSESSMENT OF THE PROPOSED ROAD DEVELOPMENT .....</b>	<b>20</b>
6.1 HUMAN HEALTH AND SEVESO .....	20
6.2 TRAFFIC & TRANSPORTATION.....	20
6.3 SOCIO-ECONOMIC & COMMUNITY .....	22
6.4 AGRICULTURE LAND USE .....	23
6.5 HYDROLOGY AND DRAINAGE .....	23
6.6 AQUATIC ECOLOGY .....	24
6.7 SOILS, GEOLOGY AND HYDROGEOLOGY .....	25

6.8 TERRESTRIAL ECOLOGY .....	25
6.9 AIR AND CLIMATIC FACTORS.....	27
6.10 NOISE AND VIBRATION .....	28
6.11 CULTURAL HERITAGE .....	29
6.12 LANDSCAPE AND VISUAL .....	30
6.13 MATERIAL ASSETS.....	31
6.14 INTERACTION AND INTER-RELATIONSHIPS OF IMPACTS .....	31
6.15 SCHEDULE OF ENVIRONMENTAL COMMITMENTS.....	32
6.16 VIEWING THE ENVIRONMENTAL IMPACT STATEMENT .....	32
6.17 SUBMISSION AND ORAL HEARING.....	32
6.18 WHAT HAPPENS NEXT?.....	33
6.19 FURTHER INFORMATION .....	33

## LIST OF FIGURES

Figure 1.1: Proposed M28 Road Project Location .....	2
Figure 3.1: Alternative Corridors.....	9
Figure 3.2: Route Corridor Options along the N28 .....	12
Figure 3.3: Preferred Route Option for Proposed M28 Road Project .....	13

## LIST OF TABLES

Table 2-1: Defined Project Objectives .....	7
Table 3-1: Assessment of Strategic Level Options against Project Objectives .....	10
Table 4-1: Compatibility of the proposed road with the Project Objectives .....	17
Table 6-1: Forecast growth in travel demand.....	21

# NON TECHNICAL SUMMARY

## 1 INTRODUCTION AND OVERVIEW

Cork County Council (CCC), on behalf of the National Roads Authority (NRA), (known for operational purposes as Transport Infrastructure Ireland (TII)) propose to upgrade approximately 12.5km of the N28 National Primary Route from the N28/N40 South Ring Road Bloomfield Interchange to the Port of Cork in Ringaskiddy, together with consequential and ancillary works.

CCC has made a Motorway Scheme, a Protected Road Scheme and a Service Area Scheme, which are being submitted for Approval to An Bord Pleanála under Section 49 of the Roads Act 1993 as amended and will be referred to throughout this report as, the proposed road project or the M28 Road Project.

The Environmental Impact Statement (EIS) for the proposed M28 Road Project is “a statement of the effects, if any, which the proposed development, if carried out, would have on the environment” (EPA, 2015). The consideration and assessment of likely significant effects/impacts and the measures proposed to avoid, reduce and where possible, remedy significant adverse effects/impacts (mitigation measures), are based on the design of the road project as detailed in this EIS. The EIS as presented has been compiled by RPS on behalf of CCC with specialist assessment and reporting provided by a team of specialists (including sub consultants). The EIS contains the following documents:

- Volume 1 - Non Technical Summary
- Volume 2 - Main Text of the EIS
- Volume 3 - Natura Impact Statement
- Volume 4 - Appendices
- Volume 5 - Drawings & Figures

This document forms Volume 1 – Non Technical Summary.

### 1.1 OVERVIEW OF THE PROPOSED M28 ROAD PROJECT

In summary, the proposed M28 Road Project comprises a motorway route from the interchange with the N40 (Bloomfield Interchange) to the R613 Carrigaline to Ringaskiddy Road at Barnahely. From Barnahely, it comprises a single carriageway protected road that will link to the east side of Ringaskiddy village. A proposed Service Area will be located within the Port of Cork lands at Ringaskiddy that will primarily serve as a refuelling and rest area for commercial vehicles. The proposed M28 Road Project will form the TEN-T route to the Port of Cork complex at Ringaskiddy. The location of the proposed road is depicted on **Figure 1.1** below and the layout is shown on **Figure 3.3**.

Figure 1.1: Proposed M28 Road Project Location



## 1.2 REQUIREMENT FOR ENVIRONMENTAL IMPACT STATEMENT AND NATURA IMPACT STATEMENT

Mandatory Environmental Impact Assessment (EIA) is required because the proposed road development includes a motorway and service area (as well as a protected road). The Environmental Impact Statement has been submitted to An Bord Pleanála under Section 51 of the Roads Acts, for which approval is sought.

Concurrently, a Natura Impact Statement (NIS) has been prepared for the purposes of Article 6 of the Habitats Directive and to facilitate the Appropriate Assessment of the project by the Competent Authority. The NIS concluded that with the implementation of best practice and the recommended mitigation measures there will be no potential for direct, indirect or cumulative impacts arising from the proposed M28 Road Project in combination with any other plans or projects. In summary, the integrity of Cork Harbour SPA or the Great Island Channel SAC will not be adversely affected. The NIS is contained within **Volume 3** of the EIS and concludes a finding of no significant effects.

## 2 NEED AND PROJECT OBJECTIVES

The existing N28 is predominantly a single carriageway road and suffers from significant congestion leading to considerable delays and queuing at peak times at certain locations. The road does not have the capacity to cater for current traffic volumes at peak times or future expected increases in traffic.

The need for the proposed M28 Road Project is summarised below under headings of policy, economy, safety, environment and sustainability.

### 2.1 POLICY

The overarching need for the proposed M28 Road Project derives from the requirements of European and National Transportation and Port Access policies and is strongly underpinned in national, regional and local planning policy.

At European level, the N28 is part of the TEN-T core network and it has been identified as a critical part of the road network supporting the core maritime port at Ringaskiddy. TEN-T policy requires that the route to the Port shall be a high quality route and according to European policy<sup>1</sup>, the TEN-T core network shall consist of an express road or motorway that must:-

- Be designed for motor traffic, accessible primarily from interchanges or controlled junctions; and
- Prohibit stopping and parking on the running carriageway.

The existing N28 does not achieve these specified standards and is in need of significant upgrade to satisfy the TEN-T requirements.

At a national level, the National Ports Policy (NPP), published in 2013 represents government policy in respect of the development of maritime trade in Ireland and identifies the Port of Cork as one of only three Ports of National Significance (Tier 1) in Ireland. The *National Development Plan (NDP) 2007-2013* and the *National Spatial Strategy (NSS) (2002-2020)* both recognise the importance of the effective connections to the port and its associated industrial zones (refer to **Section 2.2.1** and **Section 2.2.3** of **Chapter 2: Planning and Policy Context**).

Cork County and City Council have prepared a joint submission to the National Planning Framework entitled "*Cork 2050 Realising the Full Potential (March 2017)*". This document sets out various strategies for the comprehensive and evidence based approach to the future development of Cork. The Transport Strategy within this submission recognises the need for the M28 to connect Ringaskiddy Port to the N40 which is of national importance.

The proposed M28 Road Project is identified in the recent *Building on Recovery: Infrastructure and Capital Investment 2016-2021* published by the Department of Public Expenditure and Reform which sets out the Government's framework for infrastructure investment up to 2021. One of the priorities of the Plan is "*targeting the improvement of specific road segments where there is a clear economic*

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<sup>1</sup> **REGULATION (EU) No 1315/2013, Chapters II and III, Articles 17 and 39**



*justification*” and specifically makes provisions for the proposed road project (refer to **Section 2.2.2** of **Chapter 2: Planning and Policy Context**).

The need for the proposed M28 Road Project is also supported by policy as set out in the following documents: *Department of Transport – Statement of Strategy 2016 to 2019, Investing in our Transport Future: Strategic Framework for Investment in Land Transport* (2015); the *National Spatial Strategy 2002 to 2020* (2002); *Our Sustainable Future: A Framework for Sustainable Development* (2020); *Smarter Travel – A Sustainable Transport Future, New Transport Policy for Ireland, 2009 - 2020* (2009); *Cork 2050 Realising the Full Potential* (March 2017); *Building on Recovery: Infrastructure and Capital Investment 2016-2021* .

At a regional and local level, the *CDP 2014-2020* supports development of the road infrastructure including the N28 as a project critical to the delivery of planned development. The *draft Ballincollig-Carrigaline Municipal District Local Area Plan*, which is due to be adopted in August 2017, also supports the proposed road development as an important catalyst for the economic development of Cork and the South West region.

The policy basis for the need for the proposed M28 Road Project is set out in detail in the EIS **Chapter 2: Planning and Policy Context** of the EIS in **Volume 2**.

## 2.2 ECONOMY

The proposed M28 Road Project will provide a high quality road for strategic port traffic and other users, with capacity to cater for future demand to support growth of the Strategic Employment Areas, Port of Cork, IMERC and tourism potential. This will improve the competitiveness and efficiency of the economy both locally in the Ringaskiddy Peninsula, regionally and nationally. The proposed M28 Road Project enables the relocation of port activities and related uses from the City Docklands and Tivoli to new sustainable locations in the harbour, which is considered integral to both the expansion of the Port of Cork and the planned redevelopment of the City Docklands (*Regional Planning Guidelines for the South West Region 2010 – 2022*).

The proposed road project is a critical factor in maintaining and increasing the creation of employment opportunities and for the future development of the Cork Region.

The economic arguments for prioritising investment into the upgrade of the N28 route as a key infrastructural corridor of international as well as national, regional and local importance are provided in the EIS **Chapter 1: Introduction and Need for the Proposed Road Development**.

## 2.3 SAFETY

A significant number of potential road safety and capacity issues have been identified with the existing N28. The proposed M28 Road Project will result in:

- Improved road safety, reduced number of road collisions and associated injuries/fatalities in the N28 Corridor;
- Improved transport infrastructure for local traffic and non-motorised road users by removing traffic volumes from the existing N28;

- Improved access to both the local and national network, which will improve accessibility to work, education and other activities; and
- Improved overall emergency response in the Ringaskiddy area.

Key elements of the proposed road project that will deliver safety improvements are described in **Chapter 1: Introduction and Need for the Proposed Road Development**, **Chapter 3: Description of the Proposed Road Development** and **Chapter 5: Traffic and Transportation**.

## 2.4 ENVIRONMENT

The proposed M28 Road Project will result in:

- Increased road network capacity and improved travel conditions for both local and strategic traffic;
- Improved road safety;
- Overall net reduction in the number of properties that will be exposed to air and noise emissions;
- Reduced community severance at Shanbally and Ringaskiddy villages;
- Improved travelling environment on the existing N28; and
- Improved access to the local and national network which will improve accessibility to work, education and other activities.

## 2.5 SUSTAINABILITY

The upgrading of this route is required not only to protect the economic viability of the corridor but also in support of the sustainability of the wider Cork region. The removal of large volumes of traffic from the existing N28, as a result of the proposed M28 Road Project, will facilitate and encourage the use of the existing N28 for alternative sustainable transport modes including cycling and walking, with the added potential that the N28 would form part of a green-route. The provision of this high quality link from the Port of Cork and the pharmaceutical industries at Ringaskiddy to the national road network represents the most sustainable way to cater for freight and commercial traffic.

Key elements of the M28 Road Project that will deliver or facilitate the policy of sustainable and smarter travel are detailed in the EIS in **Chapter 3: Description of the Proposed Road Development** and **Chapter 5: Traffic and Transportation**.

## 2.6 NEED FOR THE SERVICE AREA

To comply with EU Directives and Regulations, it is necessary to provide safe and accessible facilities where drivers can take necessary rest periods. Key policy and planning documents relating to the requirements for a service area on the core national road network are included in the “Trans-European Transport Network”; Regulation No 1315/2013, “TII (NRA) Service Area Policy” and the “Spatial Planning and National Roads” guidelines.

With the upgrade of the N28, the proposed M28 road will by-pass the current fuel station situated on Carr's Hill. From Cork to Ringaskiddy there will be no direct fuelling area on the M28.

The proposed Service Area at Ringaskiddy will provide users with safe rest, food, fuel and toilet facilities and will contribute to meeting the requirements of European and National policy documents and guidelines.

## 2.7 PROJECT OBJECTIVES

The project objectives are driven by the need to improve the current constraints associated with the existing N28 (including congestion, noise, safety issues) and to meet the TEN-T requirements. Predicted traffic growth between now and the future design year of 2035 will exacerbate these existing issues if not addressed. The proposed project objectives are outlined in **Table 2.1** below:

**Table 2-1: Defined Project Objectives**

	Objective
<b>Environmental</b>	To facilitate a reduction in the traffic-related impact of the existing N28 on the human environment in the communities through which the road passes; and To minimise the impact of any improvement works on nearby environmentally sensitive sites.
<b>Safety</b>	To improve road safety by reducing the number of road collisions and associated injuries/fatalities in the N28 Corridor.
<b>Economy</b>	To facilitate the strategic development at the Port of Cork facilities at Ringaskiddy by improving access for port-related traffic along the N28 corridor; To reduce peak hour congestion and travel delays in the N28 corridor, at an investment cost that offers good value for money; and To facilitate general economic development within the Cork Gateway and Ringaskiddy Strategic Employment Area by improving journey time reliability on the N28 corridor at an investment cost that offers good value for money.
<b>Accessibility and Social Inclusion</b>	To facilitate improved accessibility to the Ringaskiddy peninsula and associated employment opportunities for cyclists and other vulnerable road users; and To return to communities along the route such as Shanbally, easier and safer access to their local facilities by the removal of strategic and through traffic from their environment.
<b>Integration</b>	To support the <i>National Ports Policy (NPP) (2013)</i> and <i>Trans-European Network – Transport (TEN-T)</i> policy by creating a High-Quality Route from the Port at Ringaskiddy to the N40 South Ring Road.

The project design seeks to achieve these objectives while also ensuring that environmental impacts are minimised, it seeks to provide sustainable transport modes, such as pedestrian and cyclist facilities and connectivity to the Cork region. As can be seen above, the design and improvement works not only comprise specific traffic related improvements, but also include the consideration of additional sustainable transport modes including pedestrian and cyclist facilities.

## 3 REASONABLE ALTERNATIVES EXAMINED

A number of alternatives were examined for the proposed project at various stages of project development including:

- Alternative Corridor Assessment;
- Strategic Alternatives including:
  - Do-Nothing/Do minimum;
  - Traffic Management Alternative (TMA); and
  - Major Investment Option.
- Route corridor options;
- Junction strategy/layout options; and
- Service Area locations.

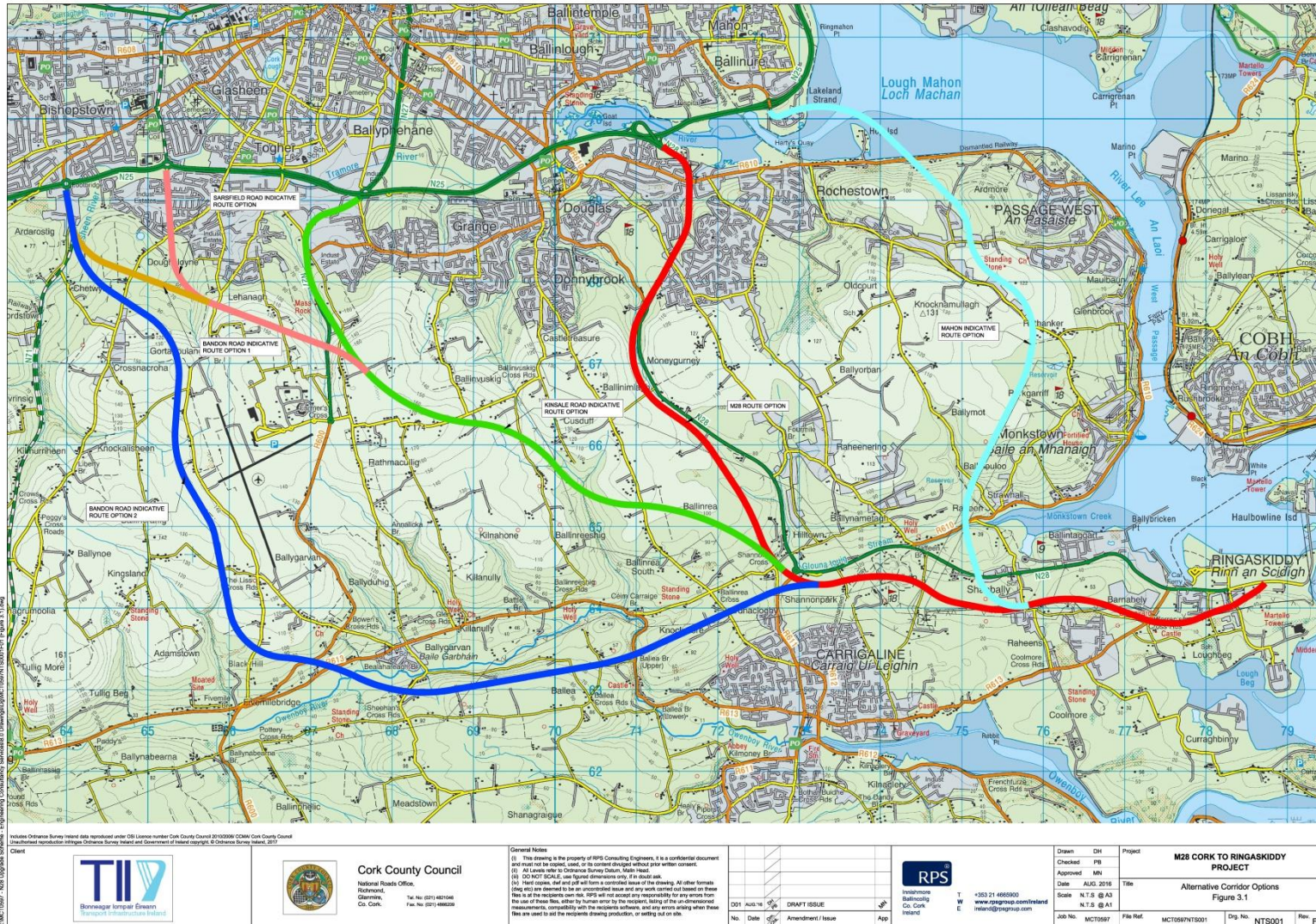
### 3.1.1 Assessment of Alternative Corridors

The study team considered a number of alternative corridors to the N28 as outlined in **Figure 3.1** below, including the following options:

- Upgrade from Kinsale Road Interchange to Shannonpark;
- Upgrade from Sarsfield Road Interchange to Shannonpark;
- Two options to upgrade from the Bandon Road Interchange to Shannonpark; and
- Upgrade from Mahon Interchange to Shanbally.

Analysis of traffic modelling indicates that a significant amount of traffic generated would remain on the existing N28 should an alternative corridor be developed, therefore congestion and adverse noise impacts similar to those currently being experienced would still remain and exacerbate. The assessment of the alternative corridors found that the proposal to upgrade within the existing N28 corridor best meets the project objectives in relation to environment, economy, safety, accessibility & social inclusion and integration.

Figure 3.1: Alternative Corridors



### 3.1.2 Assessment of Alternatives at a Strategic Level

At a strategic level, the following alternatives were considered and assessed against the defined project objectives:

**Table 3-1: Assessment of Strategic Level Options against Project Objectives**

Option	Description	Summary of assessment against project objectives
<b>Do-Nothing/Do-Minimum</b>	<p><b>Do-Nothing Option</b> - Assumes no other investment in the transport network other than regular maintenance during the study period.</p> <p><b>Do-Minimum Option</b> is the 'Do-Nothing' option plus any transportation improvements in the study area that are committed to or planned.</p>	<p><b>Accessibility &amp; Social Inclusion:</b> Will not improve access to employment centres on the Ringaskiddy peninsula and will not provide safer access for local communities.</p> <p><b>Integration:</b> Does not integrate with national and European policy.</p> <p><b>Environment:</b> Does not resolve existing traffic and noise issues.</p> <p><b>Economy:</b> Does not cater for existing and future development of IDA lands, Strategic Employment Area in Ringaskiddy, Port of Cork, future housing and will not result in improved travel times.</p> <p><b>Safety:</b> Will only provide for localised safety improvements.</p>
<b>Traffic Management Alternative</b>	<p>Comprises measures such as:-</p> <p>The removal of bottlenecks through targeted local investment;</p> <p>Local road safety improvements;</p> <p>Fiscal or Traffic Control measures to manage traffic demand; and</p> <p>Public Transport Priority, capacity and/or public transport services</p>	<p><b>Accessibility &amp; Social Inclusion:</b> Will not achieve objectives of improving access to employment centres on the Ringaskiddy peninsula and safer access for local communities.</p> <p><b>Integration:</b> Does not integrate with national and European policy.</p> <p><b>Environment:</b> Preferred in terms of avoiding impacts to natural resources. However, will not reduce air emissions and noise associated with existing and future traffic congestion.</p> <p><b>Economy:</b> Limited capacity to cater for existing and future growth and development of IDA lands, Strategic Employment Area in Ringaskiddy, Port of Cork, Housing etc.</p> <p><b>Safety:</b> Will only provide for minor/local safety improvements.</p>
<b>Major Investment Option</b>	<p>Upgrading within the existing N28 Corridor</p>	<p><b>Accessibility and Social Inclusion:</b> Will remove significant traffic volumes from the existing N28 and reduce severance in villages such as Shanbally and Ringaskiddy. Provides benefits for pedestrians and cyclists by providing a safer N28.</p> <p><b>Integration:</b> Meets the requirements of European, national and local Policy.</p> <p><b>Environment:</b> Overall net reduction in exposure to air and noise and improved employment opportunities. There are some negative impacts to landscape and local ecological resources which would be expected from any project of this nature.</p> <p><b>Economy:</b> Significant transportation time savings and benefits.</p> <p><b>Safety:</b> Significant improvement to safety.</p>

The assessment of the three strategic options indicated that a Major Investment Option of upgrading within the existing N28 corridor was the preferred option.

### 3.1.3 Assessment of Alternatives within the existing N28 corridor

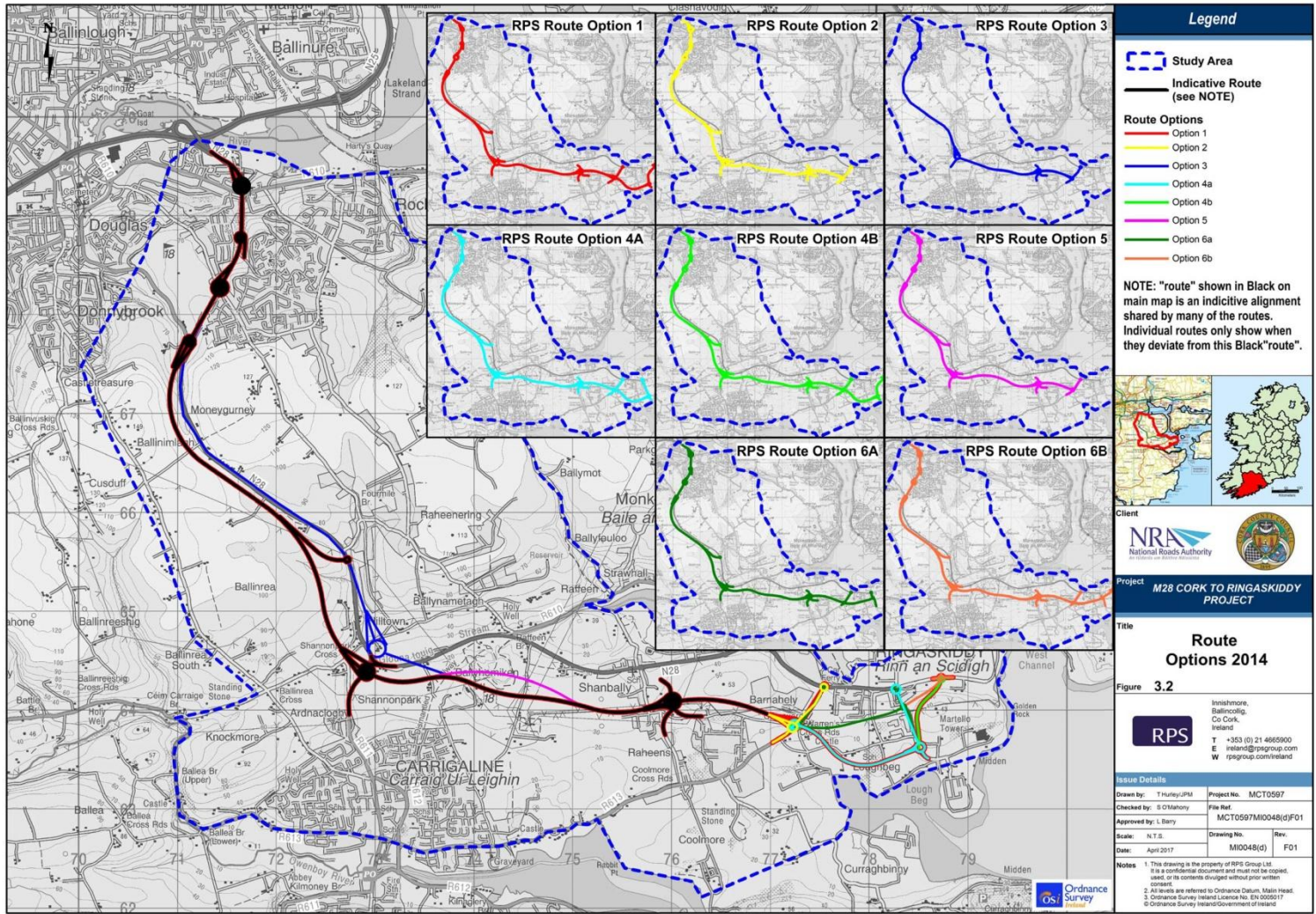
Cork County Council (CCC) and their agents had, between 2004 and 2007, developed an improvement scheme to upgrade the N28 between Bloomfield Interchange and Ringaskiddy Village to emerging preferred route corridor stage. Following a period of postponement, work was reinitiated on the M28 Cork to Ringaskiddy Project in 2013.

The route selection process as carried out up to 2013 was reviewed and eight route corridor options were identified, as shown on **Figure 3.2**.

In accordance with the government's Common Appraisal Framework for transport schemes, these eight route corridor options were assessed in detail under five core criteria: Accessibility & Social Inclusion, Integration, Environment, Economy and Safety.

The assessment included looking at local variations in three areas, one area between Carr's Hill and Shannonpark; one area at Ballyhemiken; and the final area at Ringaskiddy. The results of the appraisal concluded that the Core Route (Option 2) using the localised quarry alternative at Ballyhemiken (from Option 5) and extending to Ringaskiddy using Option 6b was the least constrained option and was the best fit to meet the project objectives. The outcome from the route selection process, the preferred route corridor, was brought forward to the route design stage and outcome of this is shown on **Figure 3.3**.

Figure 3.2: Route Corridor Options along the N28





**Figure 3.3: Preferred Route Option for Proposed M28 Road Project**



### 3.1.4 Assessment of Alternatives at Preliminary Route Design Stage

Following the emergence of the preferred route corridor option and consultation with the public, various junction strategies and design layouts were assessed at the northern section near Carr's Hill, at Shannonpark and at Old Post Office Road in the southern section. All options were assessed under the following headings; local traffic impact, economy, safety, environment, accessibility & social inclusion and integration. The proposed M28 Road Project as presented in **Figure 3.3** represents the best balance of road safety, social, environmental and economic issues, while achieving the scheme objectives. A summary of the option assessment undertaken for the various junctions is presented in **Chapter 4: Outline of Alternatives**.

### 3.1.5 Assessment of Alternative Sites for a Service Area

A number of options were assessed along the proposed road for the inclusion of a Service Area. The primary objective of the service area is to provide fuel and rest facilities on a 24-hour basis for commercial vehicles. A Service Area Site Options Assessment was carried out to determine the best location to facilitate the proposed Service Area. Site options were considered with regard to environmental constraints and engineering criteria and the preferred site was selected on the basis that it best serves its purpose with the least environmental impact. The site that emerged as the most suitable for the proposed Service was the Port Option (SA3). This site complies with TII policy for the provision of services for vehicles travelling long distances. Its location within the Port will primarily serve those travelling to and from the Port of Cork itself and minimise local use, thus limiting any increase in short local trips.

Details of all alternatives assessed are provided in the EIS **Chapter 4: Outline of Alternatives**.

## 4 DESCRIPTION OF THE PROPOSED ROAD DEVELOPMENT

### 4.1 OVERVIEW

The proposed M28 Road Project will consist of the construction, operation and maintenance of 10.9 kilometres of dual carriageway motorway from the N40 Bloomfield Interchange to Barnahely, 1.5 kilometres of single carriageway protected<sup>2</sup> road from Barnahely to the eastern side of Ringaskiddy and a Service Area at the Port of Cork facility at Ringaskiddy together with ancillary and consequential works.

An overview is shown on **Figure 3.3** and comprises;

- 10.9km of mainline motorway from Bloomfield to Barnahely;
- 1.5km of mainline single carriageway protected road from Barnahely to east of Ringaskiddy;
- 4.8km of new and realigned regional and local roads;
- 2.2km of accommodation works tracks;
- 1 full grade-separated interchange at Carr's Hill with associated roundabouts, slip roads and widening of the existing underbridge at Carr's Hill;
- 3 partial grade-separated interchanges at Bloomfield/Rochestown Road, Shannonpark and Shanbally, with associated roundabouts and slip roads, including 2 new underbridges, existing bridge at Rochestown retained as part of the scheme;
- 3 at-grade roundabouts at Barnahely, Loughbeg and eastern Port of Cork entrance;
- Provision of a M28 to N40 westbound link road and improvement of the westbound merge from the M28 to the N40;
- Removal of the existing sub-standard northbound on-ramp at Maryborough Hill;
- Upgrading of the existing sub-standard off-ramp to Mount Oval;
- 4 new road underbridges to allow the proposed M28 to pass over existing roads;
- 1 underbridge widening at Carr's Hill;
- 2 shared use pedestrian and cyclist underpasses, one at Carr's Hill and one at Old Post Office Road;
- Demolition of the existing Maryborough Hill overbridge and construction of a replacement overbridge at the same location. This overbridge will take Maryborough Hill over the widened M28 below;
- Various other structures including large retaining walls and stream culverts;
- Traffic signalised control to be implemented at key junctions on Rochestown Road, including the replacement of the Rochestown Road roundabout with a signalised junction, signalling of the merge to the M28 and signalling of the Clarke's Hill junction;
- Local road improvements and parallel access roads, etc;
- Accommodation works and farm accesses as required;
- Provision for footpaths and cycle facilities;
- Relocation of high voltage electricity pylons at Shanbally;
- Drainage system, including attenuated outfalls, watercourse culverts and realignments;
- Landscaping and environmental mitigation measures; and

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<sup>2</sup>No access points other than designated junctions will be permitted to this road.

- A Service Area for commercial vehicles including amenity building, fuel facilities, parking etc. within the Port of Cork lands at Ringaskiddy.

## 4.2 PERMANENT LAND ACQUISITION

The provision of the M28 Road Project requires the acquisition of land for the construction and operation of the development. The area of land required is determined by a number of related parameters including:

- Road construction;
- Construction of verges, embankments, cuttings, utilities, footpaths, roundabouts, drainage realignments, drainage facilities, structures, landscaping, deposit areas, accommodation roads, work space, boundary treatment, maintenance strip and ancillary road construction and operation requirements;
- Accommodation and access roads;
- Acquisition of severed plots; and
- Ecological, landscaping and noise mitigation requirements.

Approximately 142 hectares of land is included in the Motorway, Protected Road and Service Area schemes and is considered necessary for its construction and operation.

## 4.3 CONSTRUCTION

It is expected the construction of the proposed road project will take approximately 30-36 months. During this period there will be beneficial impacts on the local economy as a result of employment and the use of local materials and facilities. There will however, be localised temporary disruption on local communities resulting from the construction of the road. These impacts will be of a short-term duration over the construction period and will often be localised. To reduce impacts, the works will be carried out in compliance with best practice guidelines and mitigation measures for the construction phase as set out in this EIS, NIS and any Approval/Consent as may be granted.

The preparation of the Construction Traffic Management Plan will include measures to ensure that construction related traffic will not contribute to the existing peak hour traffic congestion problems. There will be a requirement that construction related traffic will be restricted from entering the local road network during the AM (07.45-09.00) and PM (17.00-18.00) commuter peak periods.

The Contractor will be required to complete an Environmental Operating Plan (EOP) in accordance with NRA Guidelines on Environmental Operating Plans. The EOP will set out the contractor's approach to managing environmental issues associated with the construction of the road and provide a documented account of the implementation of the environmental commitments set out in the EIS, NIS and any measures by way of conditions or restrictions in any Approval/Consent as may be granted.

The EOP will:-

- Incorporate all Environmental Commitments/Mitigation measures set out in this EIS and any other conditions/restrictions attached to approval as may be granted by statutory bodies (i.e. NPWS).
- Incorporate any relevant conditions/restrictions as may be imposed through the statutory approval of/consent for the proposed road development;
- Provide a method of documenting compliance with these Environmental Commitments/Mitigation measures;
- List all relevant environmental legislation requirements and provide a method of documenting compliance with these requirements; and
- Outline methods by which construction works will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

#### 4.4 COMPATIBILITY OF THE PROPOSED ROAD PROJECT WITH THE PROJECT OBJECTIVES

An assessment of the proposed development and its compatibility with the projects defined objectives is outlined in **Table 4.1** below.

**Table 4-1: Compatibility of the proposed road with the Project Objectives**

	Objective	Compatibility with Objectives
Environmental	<p>To facilitate a reduction in the traffic-related impact of the existing N28 on the human environment in the communities through which the road passes;</p> <p>To minimise the impact of any improvement works on nearby environmentally sensitive sites.</p>	<p>Overall a net decrease in the impact of road traffic noise on properties after the construction of the road project.</p> <p>No significant indirect or direct impacts predicted to Natura 2000 sites, nationally protected sites cultural heritage sites, geological heritage sites etc.</p>
Safety	<p>To improve road safety by reducing the number of road collisions and associated injuries/fatalities in the N28 Corridor</p>	<p>Improves road safety with a predicted reduction in the number of road collisions and associated injuries/fatalities.</p> <p>Improves safety along the existing roads and at junctions/accesses.</p> <p>Improves safety by separating local traffic movements from strategic traffic.</p>
Economy	<p>To facilitate the strategic development at the Port of Cork facilities at Ringaskiddy by improving access for port-related traffic along the N28 corridor;</p> <p>To reduce peak hour congestion and travel delays in the N28 corridor, at an investment cost that offers good value for money; and</p>	<p>Provides high quality road for strategic port traffic and other users with capacity to cater for future demand to support growth of the Strategic Employment Areas, Port of Cork, IMERC and tourism potential.</p> <p>Improves the competitiveness and</p>

	Objective	Compatibility with Objectives
	To facilitate general economic development within the Cork Gateway and Ringaskiddy Strategic Employment Area by improving journey time reliability on the N28 corridor at an investment cost that offers good value for money.	<p>efficiency of the economy both locally in the Ringaskiddy Peninsula and nationally.</p> <p>Reduces peak hour congestion and travel delays on the N28 Corridor at an investment cost that offers value for money.</p>
Accessibility and Social Inclusion	<p>To facilitate improved accessibility to the Ringaskiddy peninsula and associated employment opportunities for cyclists and other vulnerable road users; and</p> <p>To return to communities along the route such as Shanbally, easier and safer access to their local facilities by the removal of strategic and through traffic from their environment.</p>	<p>Significant reduction of traffic volumes on the existing N28 provides the opportunity for improved walking and cycling facilities along this corridor.</p> <p>Facilitates sustainable transport, i.e., local Greenway initiatives and removing traffic from the existing N28.</p> <p>Improves access to both the local and national network which will improve accessibility to work, education and other activities.</p> <p>Traffic reduction in the villages of Shanbally and Ringaskiddy will ensure safer and easier access to local facilities.</p> <p>Provides high quality access to Strategic Employment Area.</p> <p>Improves the overall emergency response in the Ringaskiddy area (Seveso Report, RPS, 2017).</p>
Integration	To support the <i>National Ports Policy (NPP) (2013) and Trans-European Network – Transport (TEN-T)</i> policy by creating a High-Quality Route from the Port at Ringaskiddy to the N40 South Ring Road.	<p>TEN-T requirements for route protection, prohibition and design for motor traffic are achieved by motorway status.</p> <p>Proposed road complies with European, National, Regional and Local Plans.</p>

## 5 CONSULTATION

Consultation is an important component of the overall project development process. The project team has a responsibility to ensure that members of the public and all interested organisations have the opportunity to provide feedback on the project at all key stages in order to inform and strengthen the project's decision-making process.

The general public, interested parties and statutory and non-statutory bodies have been involved in the development of the proposed M28 Road Project as part of non-statutory consultation at key stages, including:

- Non-statutory public consultation on the Preferred Route Corridor, December 2014;
- Informal consultation with statutory and non-statutory organisations on the EIA Scoping Report, March 2015;
- Non-statutory public consultation on the Carr's Hill Interchange and associated works, November 2015;
- Non-statutory public consultation on the Preferred Route Alignment and Junction Strategy for the M28 Cork to Ringaskiddy Motorway Project, April 2016;
- Informal consultation with statutory and non-statutory organisations on the Health Study Scoping Statement, February 2017;
- Informal pre-planning meetings with An Bord Pleanála;
- Ongoing informal consultation with stakeholders (including the Inland Fisheries Ireland, National Parks and Wildlife Service, utility providers); and
- Public Display of Preferred Route for the M28 Cork to Ringaskiddy Project, April 2017.

All feedback received during these consultations, as well as other meetings that took place with the design engineers, the environmental consultants and various statutory bodies, landowners, resident groups and interested parties throughout the process has been reviewed by the project team and taken into consideration in the development of the M28 Road Project and this EIS. Details of all non-statutory consultation are provided in the EIS **Chapter 6: Non-Statutory Consultation**.

## 6 ENVIRONMENTAL ASSESSMENT OF THE PROPOSED ROAD DEVELOPMENT

The design of the proposed M28 Cork to Ringaskiddy Project has been developed through an iterative process that in the first instance sought to avoid impact on the environment. Where avoidance was not possible every effort was made to minimise the environment impacts. The proposed road project has been evaluated by a team of specialist contributors who have considered the existing environment of the study area and have assessed in detail the potential effects of the project. Where potential environmental impacts are identified, mitigation measures have been included in the proposals to further reduce the potential environmental impacts.

A brief summary of each specialist examination is provided below. For a more detailed consideration of the studies the reader is referred to the EIS (**Volume 2**).

### 6.1 HUMAN HEALTH AND SEVESO

A health study was undertaken to draw from, supplement and interpret the findings of the technical assessments within the EIS. A review of the EIS demonstrates that the proposed project is designed to address existing hazards, offering a net reduction in community exposure from emissions to air and noise and improving road safety over and above what can be achieved through the alternative of no change to the road. In addition, the proposed road project seeks to address congestion, improve connectivity between residential and employment areas and supporting sustainable development.

An assessment of the likely significant effect of the proposed development on the COMAH<sup>3</sup> (Seveso sites) network was also undertaken to ensure the proposed road did not pose a risk to existing facilities in the area. The report concluded that at the operational stage, the proposed new infrastructure will have no direct impact on the COMAH establishments in the area and will not alter the risk profile of these operations. The reduced travel time on the proposed M28 will facilitate a faster response time for emergency medical services from Cork University Hospital and/or additional fire services if required from Ballincollig. As a result, the new infrastructure will improve the overall emergency response in the Ringaskiddy area and have a net slight positive impact in the area.

### 6.2 TRAFFIC & TRANSPORTATION

A detailed traffic and transportation study has been undertaken for the M28 Road Project using the most up to date SATURN transportation models for the Cork region. The study draws on previous work including the N40 Demand Management Study, Douglas LUTS, Port of Cork Traffic modelling and the N28 Sustainable Transport Study.

There are existing peak hour traffic problems in the local road network. The N40 South Ring Road is busy in both directions in the morning and evening peak periods. The N28 also experiences traffic peaks in both directions in both peak hours. This is primarily due to travel to and from the established residential areas of Douglas/Rochestown/Passage West and Carrigaline travelling to and from employment areas in the City/Little Island and in the Ringaskiddy peninsula. Traffic from the

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<sup>3</sup> Control of Major Accident Hazards (COMAH)



wider Cork region also travels to and from the employment areas in Ringaskiddy. Local trips, e.g, school runs also add to the travel demand in the morning peak. The result of this demand is frequent congestion and delay on the N40, N28 and the local road network in Douglas/Rochestown and Carrigaline.

To model the traffic patterns on the existing road network, standard methods of calibration and validation have been applied based on measured traffic counts and journey times. The peak periods are modelled as 3 individual hours to capture the reality of the existing situation where the morning peak typically extends for 2.5 hours between 07.00 and 10.00 and the evening peak similarly extends some 2.5 hours over the period 16.00 to 19.00. The model also includes for inter-peak hours to fully model the typical traffic patterns over a typical day.

Bottlenecks on the existing N28 include the northbound merge from Rochestown Road, northbound merge from Maryborough Hill, Shannonpark Roundabout and the mini roundabout in Shanbally. The local road network in Douglas/Rochestown also suffers congestion with particular bottlenecks occurring at the merge/diverge junction on Rochestown Road, Clarke’s Hill, Fingerpost roundabout and on Maryborough Hill. Within Carrigaline there are also local constraints leading to congestion at local junctions.

Constraints on the N40 primarily consist of disruption resulting from traffic merging and diverging to and from a number of key interchanges including Mahon Interchange, Douglas slip roads and Kinsale Road Interchange. The existing Dunkettle Interchange is also a considerable bottleneck.

Traffic modelling for the project includes forecasts of future traffic demand. Models are developed for Do Minimum and Do Scheme scenarios for a notional year of opening of 2020 and horizon year of 2035. Traffic growth is considered based on TII Project Appraisal Guidelines for the region, distributed in accordance with the land use planning policy in the Carrigaline Electoral Area Local Area Plan.

The forecast growth in travel demand (Relative to Base Year 2014) is summarised in the following **Table 6.1**.

**Table 6-1: Forecast growth in travel demand**

Growth Scenario	2020	2035
Low	7.3%	17.7%
Medium	9.9%	26.0%
High	11.2%	29.8%

In relation to port generated trade related traffic, HGV trips were assessed based on the predictions carried out by the Port of Cork in relation to the recently approved development proposal at Ringaskiddy. An upper trade growth scenario was applied to the high growth scenario, an average trade growth scenario was applied to the medium growth scenario and a no additional development scenario was applied to the low growth scenario.

Without the proposed road in place, traffic demand continues to grow based on the predicted forecast scenarios. Congestion and delay increase in the peak periods, which typically continue to lengthen. In particular, peak period traffic congestion is predicted to increase on the N40, the northern section of the N28 and the local road network in Douglas/Rochestown.

With the implementation of the proposed M28 Road Project, there will be a significant improvement in the traffic capacity in the M28 corridor together with rearranged access provisions through the proposed Carr's Hill interchange. The principal impact is to divert considerable traffic volumes to the proposed road, providing considerable relief to the existing N28 between Carr's Hill and Ringaskiddy. This has a significant positive impact, particularly for the communities that reside in Shanbally and Ringaskiddy. Other north-south routes including Donnybrook Hill, Moneygourney Road and the L6477 are also predicted to be significantly relieved as traffic reassigns to the proposed motorway.

At the northern end of the scheme, the impact of the road is more complex. In the peak periods, traffic chooses routes using the M28 junction on Rochestown Road, Carr's Hill Interchange or routes through Douglas via Douglas Road or via South Douglas Road to access to and from the area. Even though the local road network remains extremely busy, there is an overall improvement in the network performance. The traffic analysis predicts there will be overall increases in traffic demand to and from Carr's Hill Interchange with increased daily traffic flows predicted on the R609, Garryduff Road, Clarke's Hill (south of Mount Oval village) and on Maryborough Hill (north of the proposed road). Other routes in the area including Rochestown Road, Clarke's Hill (north of Mount Oval) and Maryborough Hill (adjacent to Broadale) are predicted to have a decrease in daily flows. In all cases the indicative link capacity in the area can cater for the predicted traffic demand. The key local junctions will continue to be over capacity in the peak periods. The impact in the Douglas village area is predicted to be negligible.

The proposed road increases transport efficiency through improved capacity and the removal of bottlenecks, benefits freight transport and facilitates the implementation of alternative transport modes. In particular the existing N28 can be developed to support and encourage walking and cycling after the road project is implemented. Public transport is also facilitated by increased road capacity by providing greater journey time certainty, encouraging greater use of alternative transport modes to the car. The proposed road does not sever existing transport routes and it also facilitates the development of sustainable schemes such as the Carrigaline Monkstown Greenway.

### **6.3 SOCIO-ECONOMIC & COMMUNITY**

There will be significant positive effects in terms of employment as a result of the estimated 400 direct construction jobs generated during the construction phase of the project. This will have knock on positive effects for the local economy and communities given the construction stage capital value of the project and associated indirect jobs generated as a result. Some businesses along the route may experience levels of diminution/severance as a result of the proposed road project, however the existing roads will remain open to traffic and much of the hinterland passing trade will remain.

There will be unavoidable short term and localised impacts on the resident, working and visiting community during the construction phase of the proposed project including increased levels of noise and dust associated with the construction process, visual impacts and some diversions and delays to road users along the route. These impacts will be minimised through careful planning and application of the mitigations measures set out in the EIS including the requirement to prepare various traffic, noise and dust management plans prior to and during the construction stage.

In terms of land take there will not be a substantial loss of land within the northern section of the route as the existing N28 will be widened at this location. Within the central and southern part of the route, greenfield lands will however be acquired to facilitate the proposed M28 Road Project. In total four properties will be included within the CPO, two of which will be demolished, to facilitate the road project. Loss of land and property will be addressed through agreements between Cork County Council and relevant land and property owners and/or statutory compensation. While the proposed M28 Cork to Ringaskiddy Project will have both positive and negative impacts on resident, working and visiting communities, the impacts will be predominantly positive in the long term due to reduced journey times, improved accessibility and access to sustainable modes of transport. Increased accessibility to and from the Ringaskiddy area will make the zoned lands within this area more attractive to investors, likely resulting in increased employment opportunities within the area, which would support the role of Ringaskiddy as a Strategic Employment Area. There is also potential for significant growth within Cork City as a result of the relocation of the Port of Cork to Ringaskiddy Port once the road is in place, leading to a significant positive indirect long term impact.

## 6.4 AGRICULTURE LAND USE

The proposed road project will be constructed along the existing route and across agricultural lands and will cause a level of disturbance to these farms. The project team have been in discussions with landowners and have, where possible, identified issues and concerns that these landowners may have. Based on these discussions and design constraints the project team have, where practicable, minimised the landtake and degree of severance affecting each farm. Other potential impacts affecting soil compaction, drainage, noise and dust have been considered and assessed in the main EIS and appropriate mitigation measures outlined.

The proposed road will not have a significant impact on agriculture from a national or regional perspective. It will have an impact from a local perspective due to loss of agricultural land. However, the proposed scheme, once mitigated by accommodation works will have a permanent residual impact on 33 landowners with varying degrees of significance.

While accommodation works will mitigate many residual impacts, not all can be mitigated in this manner and the remainder will be addressed by way of statutory compensation.

## 6.5 HYDROLOGY AND DRAINAGE

The works will involve the construction of a new surface water drainage system for the proposed road including new outfalls to existing watercourses, existing surface water drainage networks and discharge to the foreshore. Furthermore, the proposed road project will cross a number of local watercourses, necessitating stream realignments, new culvert crossings and extensions to existing culverts.

The proposed stream diversions, culverts, surface water drainage network, and catchment run-off interceptors have been designed, in accordance with TII design standards, so as to minimise the potential impact on the receiving watercourses.

The proposals will result in an increase in impermeable surfacing which has the potential to increase the rate of run-off to receiving watercourses. In addition, routine run-off may contain pollutants that can have an adverse impact on water quality within the receiving watercourses. The proposed

surface water drainage system has been designed to provide attenuation storage and reduce the rate of discharge to the greenfield run-off rate. It is also proposed to provide treatment to ensure that run-off is of an acceptable quality prior to discharge. Emergency spill containment is incorporated into the design to mitigate against any potential negative impact on receiving watercourses as a result of an accidental spillage along the proposed road or at the Service Area.

As a result of the treatment and attenuation measures incorporated the assessment concluded that the proposals will not cause deterioration in water quality within the receiving watercourses.

## 6.6 AQUATIC ECOLOGY

The proposed M28 Road Project will intersect three local streams, the Woodbrook, the Donnybrook and the Glounatouig necessitating stream realignments, new culvert crossings and extensions to existing culverts. The proposed project is also located within a 15km radius of sensitive sites designated for nature conservation under the EU Habitats and Birds Directives, the Great Island Channel Special Area of Conservation (SAC) and the Cork Harbour Special Protection Area (SPA), and four sites designated as proposed Natural Heritage Areas (pNHAs) under the Wildlife (Amendment) Act 2000.

To identify the potential effects of the proposed M28 Road Project on the streams and designated sites (Ecological Receptors (ER)), an assessment of aquatic ecology was carried out. The assessment incorporated a desktop and walkover study, a field survey of baseline aquatic ecology. Potential impacts on the ERs were subsequently identified and appropriate measures to mitigate impacts were developed.

The most significant potential impacts of the proposed M28 Road Project on aquatic ERs is pollution from suspended solids and other pollutants such as fuels, lubricants, hydraulic fluids, anti-freeze, concrete etc. during both the construction phase (*via* run-off; instream works; pumped discharges) and operational phase (*via* run-off; pumped-discharges). Other impacts include the obstruction of upstream movement of fish due to the construction or upgrade of new and existing culverts, or temporary and permanent stream diversions; habitat loss and disturbance to invertebrate species where permanent or temporary stream diversions are required; and, changes in hydrology including flow velocities (peak and minimum) and erosional and depositional patterns.

The road has been designed to avoid potential impacts where possible. Mitigation measures are also proposed to ensure that any potential impacts on aquatic ER from sedimentation, pollution, stream diversions or culverting during both the construction and operational phases are avoided or mitigated. Measures proposed will be undertaken in accordance with the Inland Fisheries Ireland guidance (2016) and TII design standards.

It is anticipated that there will be an overall improvement in water quality in general from the proposed project because there are currently no mitigation measures in place to control run-off from the existing N28. Following construction of the proposed project, the surface water drainage system will reduce the concentrations of pollutants that are routinely found in road run-off and which pose a risk of short-term acute impacts (from dissolved/ soluble pollutants) and/ or long-term chronic impacts (from sediment bound pollutants). All of the potentially significant impacts of the proposed M28 Road Project have been avoided through the design process, or reduced through specified mitigation.

Therefore, with best practice design, which has been built into the proposed M28 Road Project, and the implementation of specified mitigation measures, there will be no significant impacts on aquatic ecology.

## 6.7 SOILS, GEOLOGY AND HYDROGEOLOGY

The existing environment of the proposed M28 Road Project in terms of soils, geology and hydrogeology was analysed using data collected from a desk study review and a site investigation programme. The road is underlain by Devonian Sandstones, Cork Group Sandstones and Mudstones and Carboniferous Limestones and is located predominantly on a Locally Important aquifer (LI). The aquifer vulnerability for the area is classed by the Geological Survey of Ireland (GSI) as extreme to high vulnerability rating over much of the study area. There are no known significant areas of contaminated land within the study area. There is one site of Geological Heritage located within 0.4km of the proposed road, namely, Golden Rock.

Potential impacts during the construction phase may arise from the following activities: earthwork operations, excavation of unconsolidated material, dewatering, uncontrolled discharge of surface water runoff and accidental spillages. Potential impacts during the operational phase may arise from the following: embankment settlement, changes to aquifer vulnerability, development and collapse of karst features, carriageway stormwater runoff, accidental spillages and climate change.

A series of measures have been proposed to mitigate the impacts associated with the above including:

- Sediment erosion prevention techniques and stabilisation techniques;
- Reuse of excavated cuttings and use of local quarry overburden material;
- Provision of bunded areas, spill kits, containment measures and emergency procedures;
- Correct management of surface water run-off through the use of appropriate drainage and attenuation facilities;
- Sealed drainage where required;
- Drainage design to allow for climate change; and
- A groundwater monitoring programme.

With the design of the road and mitigation measures proposed, the residual impacts associated with the proposed M28 Road Project are considered imperceptible.

## 6.8 TERRESTRIAL ECOLOGY

An assessment of the proposed M28 Road Project on the ecology of the road footprint and its associated Zone of Influence (ZoI) was undertaken in accordance with the National Roads Authority's *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2 (NRA, 2009)*. A Natura Impact Statement has also been prepared to inform the Appropriate Assessment to be undertaken by the competent authority in relation to this proposed development and is available as a separate publication in **Volume 3**. Specific surveys for targeted plant community groups, birds and mammals including bats were conducted during the optimum seasons for the habitats and species. The surveys were carried out in accordance with best practice and in compliance with the NRA's

*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2009).*

The principal objectives of the terrestrial ecology assessment are as follows:

- Complete a desk study and all necessary field surveys to obtain relevant terrestrial and ecological data for the Zol of the proposed works;
- Identify and describe sites of known or potential ecological interest; and
- Assess the significance of the likely significant impacts of the proposed M28 Road Project on each of these environmental aspects.

The ecological features and receptors within the project Zol were assessed by means of a desk study of literature pertinent to the site and surrounding area, consultation with statutory bodies and field surveys of the site.

The proposed M28 Road Project is not located within the footprint of any site designated for nature conservation. However, the project supports connectivity with two European sites through watercourses draining the project footprint, Cork Harbour SPA (Site Code: 004030) and Great Island Channel SAC (Site Code: 001058).

A total of twenty one Key Ecological Receptors (KERs) were recorded within the study area. Potential impact on these receptors have been identified and described in detail in **Chapter 12 Terrestrial Ecology**. Mitigation measures for both the construction phase and the operational phase of the proposed M28 Road Project have been developed, in conjunction with the other environmental and engineering specialists, and have been incorporated in the Schedule of Commitments for the proposed development. A Habitat and Species Management Plan has been developed for this project to provide detailed proposals for the implementation of the mitigation measures proposed. In addition, an Outline Invasive Species Management Plan has been prepared to address the management, control and eradication of invasive species within the project Zol.

The Natura Impact Statement concluded that, with the implementation of best practice and the recommended mitigation measures there will be no potential for direct, indirect or cumulative impacts arising from the proposed M28 Road Project in combination with any other plans or projects on the integrity of any European sites.

The proposed M28 Road Project will however potentially impact upon 3 KERs which are considered of conservation importance (1 at County level, 1 at Local Importance (higher value) and 1 at Local Importance - receptor level). The impact is considered significant to these three receptors at a Local and County level mainly due to habitat loss, species disturbance and abandonment and habitat fragmentation. Elsewhere along the route corridor, the ecological impacts on terrestrial habitats are not considered significant. A list of likely residual impacts for the project is as follows:-

- Net loss of 0.7ha and fragmentation of semi-natural woodland habitat associated with Donnybrook Wood and stream;
- Loss of treeline habitat for use as nesting habitat by Buzzard; and
- Temporary disturbance of Peregrine Falcon nesting habitat, temporary disturbance of semi-natural grassland and pennyroyal populations within land take line at Raffeen Quarry.

Temporary disturbance to avifaunal and invertebrate species associated with wetland habitat and net loss of 0.63ha from wetland habitat under the footprint of the proposed road project.

Residual impacts associated with the operational phase of the proposed M28 Road Project will be mitigated through the implementation of mitigation and design measures during the project's construction phase. These will include retention and attenuation of road drainage, the continued functioning of mammal mitigation measures (including mammal proof fencing) and the establishment and maturation of landscape measures along the proposed road project.

Robust and functioning surface water drainage system that includes the regulation and retention of suspended solids and hydrocarbons draining the Service Areas hard standing areas will ensure no residual impacts will occur from the Service Area.

## 6.9 AIR AND CLIMATIC FACTORS

Baseline air quality data has been derived from site specific monitoring undertaken along the existing and proposed alignments coupled with reference to the EPA *National Air Quality Monitoring Programme*. All concentrations measured during the survey period were well below the limit values for the protection of human health set by the European Union.

A prediction of ground level concentrations of traffic derived pollutants was carried out using the procedures outlined in the NRA Guidelines. Predictions of the main polluting emissions oxides of nitrogen and particulate matter were carried out in this modelling study. Modelling of local impacts has been undertaken for a series of sensitive receptors along the mainline of the proposed road development to allow for assessment and identification of impacts (if any) at each location.

The findings of the air dispersion modelling indicate that predicted pollutant concentrations show uniform spatial and temporal variation in general. Levels of all pollutants are predicted to be well below the statutory limits for the protection of human health under all future scenarios whether the proposed M28 Cork to Ringaskiddy Project is in operation or not.

At the level of changes presented for the proposed M28 alignment coupled with the proposed changes in traffic the predicted air quality impact on local human and ecological receptors is classed as 'negligible'. A number of properties in Section 1 (north of Carr's Hill) and along the offline section of the M28 south of Carr's Hill will experience small changes in levels of traffic derived pollution, albeit at levels well below the limits for the protection of human health. As a consequence, these properties are classed as experiencing a "negligible" air quality impact as a result of the proposed road project.

Conversely, there are a number of properties located along the existing N28 south of Carr's Hill and in the villages of Shanbally and Ringaskiddy that will experience small to moderate decreases in levels of traffic derived pollution, also at levels well below the limits for the protection of human health. As above, these properties are classed as experiencing a "negligible" air quality impact as a result of the proposed road project.

At a national level, the proposed M28 Road Project and associated traffic will result in a change of 4,026 tonnes of greenhouse gases and 9 tonnes of acidifying gases per annum over the existing scheme in 2020. This is regarded as a 'long-term, slight adverse' impact.

The greatest potential impact on air quality during the construction phase of the proposed road development is from construction dust emissions and the potential for nuisance dust. In order to minimise dust emissions during construction, a series of mitigation measures have been prepared and will be included in the Construction Environmental Management Plan (CEMP) for implementation during the construction phase of the project.

The construction of the proposed M28 Road Project, including materials employed (aggregates, asphalt, etc.), material/personnel transport, mobile plant, etc. is predicted to be 54,409 tonnes of greenhouse gases and this will be a permanent slight adverse impact

## 6.10 NOISE AND VIBRATION

**Chapter 14** of the EIS assesses the predicted impacts of the proposed M28 Road Project in terms of its impact from noise and vibration on the surrounding environment. The TII *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* and the Cork Noise Action Plans were used to set design criteria for the proposed road project.

Traffic noise levels at the northern end of the proposed M28 Road Project are currently in excess of 70 dBA  $L_{den}$ . Traffic levels along the existing N28 route are forecast to increase further in the Do Minimum scenario. Scope to reduce noise levels using barriers and low noise surfaces is finite, and a reduction sufficient to achieve the TII Design Goal at all locations is not practicable. To meet the Design Goal would require excessively high barriers, which have structural, visual and safety issues making their implementation unsustainable.

Baseline noise measurements were carried out at representative locations, confirming the existing high noise levels, on the northern section in particular. Noise modelling software was used to predict the impact of the proposed M28 Road Project on 2,982 properties and noise sensitive receptors using the TII approved methodology for the operational phase.

Construction of a project on this scale will require a reasonable compromise between the practical limitations in a construction project, and the need to ensure an acceptable ambient noise level for nearby residents. Additional noise modelling was carried out for the construction phase of the project, which indicated that mitigation will be required during the construction phase.

Weekend and night time working will be necessary for critical works involving road closures i.e. for the bridge works at Maryborough Hill. In addition to this, it is likely there will be need for other works to be carried out at night time and weekends. Except for emergency work, construction activity outside the normal working hours will require the explicit permission of the planning authority. Any approval for night or weekend working will give consideration to the potential disruptive effects there may be on nearby residences and restrictions on noise and other adverse environmental emissions will be conditioned to any approval granted.

Operational phase mitigation measures proposed in this EIS include 2-3m high barriers and low noise surfaces where their use will be effective. The mitigation measures include 37 acoustic barriers/walls along the length of the proposed road. As a result, all properties within 300m of the proposed road mainline will have noise levels reduced to below the Cork Noise Action Plan target of 70 dB(A) in the Do Something scenario. An additional 243 properties, which would have exceeded the TII design goal of 60 dB(A) in the Do Minimum scenario will be below the threshold in the Do Something scenario



(M28 Road Project). Over 300 properties will experience a reduction in predicted noise levels at night.

A small number of properties at the southern end of the proposed road will experience a residual increase in noise levels. The impact as a result of the increase in noise levels at these properties will range from 'Not-Significant' to 'Major'. Overall 243 properties will experience a reduction in noise levels ranging from 'Not-Significant' to 'Major'. The result will be a net decrease in the impact of road traffic noise on properties after the construction of the proposed M28 Road Project.

## 6.11 CULTURAL HERITAGE

The proposed road project will have no direct or indirect impacts on any National Monuments. Only four RMP / SMR sites and one newly identified archaeological site are located within or partly within the land take line. In addition, approximately 16% of the route will be on-line with the existing N28 road, reducing the overall impact on archaeological heritage. There is potential for significant indirect negative impact on Castle Warren medieval tower house and bawn and the nearby medieval church site and burial ground, in Barnahely townland. There is also the potential for indirect significant impacts on three RMP / SMR sites located outside the land take line. Eight specific areas of archaeological potential were identified. There is also archaeological potential where the proposed road traverses six watercourses, nineteen townland boundaries, and a former watercourse. The archaeological status of these sites has yet to be confirmed and, upon more detailed site investigation, some may prove to be non-archaeological in nature. There will be a direct moderate impact on the sites of 31 structures, features, roadways or lanes depicted on the first edition OS map of 1841-2.

A geophysical survey will be undertaken to assess all greenfield lands within the proposed road development, and in particular the sites or areas of potential identified during the archaeological assessment. This will be followed by a detailed programme of archaeological testing. A wade survey will also be undertaken at active watercourses. These works will identify any previously unknown buried remains. All archaeological features and sites that will be directly impacted will be preserved by record (partial or full).

Only one cultural heritage site is located in proximity to the proposed road development, a mid-20th century grotto. Fencing will protect the site during construction and appropriate screening will be put in place to reduce any visual intrusion on the site.

There will be no direct impacts on any protected structures and a significant negative indirect impact was identified in relation to only one, Castle Warren (the remains of a late 18th century country house, incorporating the medieval tower house and bawn). The proposed road project traverses the former Castle Warren demesne and directly impacts upon a section of surviving demesne boundary wall. A moderate negative visual impact was identified in relation to the only other protected structure in the vicinity (a Martello Tower) and for one structure listed in the NIAH (Ring House), both in Ringaskiddy. The proposed road traverses eight former demesnes, but with the exception of Castle Warren, there will be either no predicted impact or an imperceptible indirect impact. A moderate negative visual impact was identified where the proposed road project traverses the grounds of a pre-1840s house. There will also be a moderate negative physical impact on six undesignated sites of built heritage interest, and a slight negative visual impact on two pre-1840s farm complexes, both of which are still in use.

A photographic record and written description will be undertaken where sites of built heritage interest, or sections thereof, are physically impacted. In the case of a pre-1840s house in Maryborough townland, which will be removed, the recording will include a measured survey. A section of the early 20<sup>th</sup> century railway line in Ballyhemiken townland will be recorded by a suitably qualified archaeologist. Appropriate screening will be put in place to mitigate the visual impacts identified.

Vibration monitors will be installed in the grounds of Castle Warren prior to commencement of works, with alerts to identify any undue level of vibration at the structure during the construction phase. With the implementation of the mitigation measures listed in the EIS there are no predicted residual impacts on archaeological, architectural or cultural heritage assets.

## 6.12 LANDSCAPE AND VISUAL

The proposed M28 Road Project is located within a number of landscape character areas identified as Undulating Agricultural Patchwork Landscape; the Harbour Edge Town Centre & Undulating Residential Townscape; and Estuarine Harbour Based Industrial & Maritime Landscape. The proposed road project has been predicted to have the following landscape effects; Undulating Agricultural Patchwork Landscape Moderate to Major and significant within 1km and Negligible to Minor and not significant beyond 1km; the Harbour Edge Town Centre & Undulating Residential Townscape Moderate and not significant; and Estuarine Harbour Based Industrial & Maritime Landscape Negligible to Minor and not significant. During construction of the proposed M28 Road Project, the predicted magnitude of landscape resource change will be low and the significance of landscape impact will be Minor to Moderate adverse. On completion of the proposed Specific Landscape Measures the predicted landscape effects will be reduced during the operation stage.

The Zone of Theoretical Visibility has been established for the proposed M28 Road Project to allow any potential areas of significant visual impact to be identified. Actual visual impacts from within the ZTV have been predicted by site survey and assessment.

A total of 16 viewpoints have been assessed and 11 viewpoints have been predicted to have significant visual impacts largely due to the proximity of the viewpoints to the proposals. Following implementation of the SLM measures the predicted visual effects on viewpoints will be reduced for all views but remain significant for 4 viewpoints due to the proximity of views.

An assessment of Cork County Development Plan has predicted that there will be no significant landscape or visual effects for any relevant landscape policy and designations in the Plan.

A detailed visual impact assessment for residential properties in proximity to the proposed M28 Road Project has been completed. Before mitigation a total of 67 properties are predicted to have Major to Substantial impact; 193 properties are predicted to have a moderate to major adverse impact; 364 properties are predicted to have a minor to moderate adverse impact; 294 properties are predicted to have a Minor impact; and 100 properties are predicted to have no impact. Following completion of the proposed SLM measures the visual impacts are reduced as follows; 0 properties are predicted to have a Major to Substantial impact; 67 properties are predicted to have a Moderate to Major impact; 192 properties are predicted to have a minor to moderate impact; 365 properties are predicted to have a Minor impact; and 394 properties are predicted to have no impact. Significant visual impacts will remain for some properties that are located in close proximity.

## 6.13 MATERIAL ASSETS

This assessment considers the anticipated types of waste and the impacts of same associated with both the construction and operation of the proposed road project. Waste will be generated during the construction phase as a result of:

- Excavated Materials/Demolished Structures;
- Pile Arising's ;
- Surplus Materials ;
- Import of Material ; and
- General Waste Management.

Waste management will incorporate the principles of the Waste Hierarchy. The *Southern Region Waste Management Plan 2015-2021* sets a target of 70% reuse, recycling and materials recovery rate of non-soil and stone construction and demolition waste to be achieved by 2020. It will be a requirement of the Contractor to achieve this target during the construction stage.

Where acceptable, materials will be reused for landscaping, however where the waste generated is not reusable, it will be sent to an appropriate recovery facility. The Contractor will ensure that the facility to which waste is brought is licensed/permitted in compliance with the Waste Management Act (as amended).

A project Construction and Demolition Plan will be prepared for the provision of waste management during the construction phase of the proposed development. The Plan will have regard to best practice guidelines including the *TII guidelines for the Management of Waste from National Roads Construction Projects (Revision 1, 12 November 2014)*.

The impacts associated with the proposed development after adherence to the mitigation measures during construction phase are slight to imperceptible. The main potential impacts from the operational phase of the proposed development are likely to arise from road maintenance, verge cleaning, and green waste from landscape maintenance and wastes generated through littering.

Management of wastes arising during the operational phase of the proposed development will be the responsibility of the council or contractors appointed by the council to provide waste management and landscaping services.

## 6.14 INTERACTION AND INTER-RELATIONSHIPS OF IMPACTS

The significant interactions and inter dependencies between environmental factors were taken into consideration as part of the individual environmental assessments. Cumulative effects associated with the proposed road and other projects within the study area were also assessed and no significant impacts were identified.

## 6.15 SCHEDULE OF ENVIRONMENTAL COMMITMENTS

A summary of the mitigation and monitoring measures as set out in the EIS and NIS are summarised in **Chapter 19: Summary of Mitigation Measures** of the EIS.

## 6.16 VIEWING THE ENVIRONMENTAL IMPACT STATEMENT

A copy of the Environmental Impact Statement (EIS) and the Natura Impact Statement (NIS) for the M28 Cork to Ringaskiddy Project are available to view at the following locations:

- Cork National Road Design Office, Glanmire;
- County Hall, Carrigrohane Road;
- Douglas Library, Douglas Village Shopping Centre;
- Cork County Council Area Office, Carrigaline; and
- The National Maritime College of Ireland, Ringaskiddy.

The documents are also available to view or download on the scheme website at [www.n28cork-ringaskiddy.com](http://www.n28cork-ringaskiddy.com)

The EIS can be purchased on CD for €5 or in hard copy as follows:

- Volume 1 - Non Technical Summary €10
- Volume 2 - Main Text €200
- Volume 3 - NIS €35
- Volume 4 - Appendices €215
- Volume 5 - Drawings €70

For copies, please contact the Project Office - [national.roads@corkrdo.ie](mailto:national.roads@corkrdo.ie)

## 6.17 SUBMISSION AND ORAL HEARING

An application for approval has been made for the M28 Cork to Ringaskiddy Project, including the Motorway Scheme, Protected Road Scheme and Service Area Scheme, under Section 49 and Section 51 of the Roads Acts 1993-2015.

The application to An Bord Pleanála (ABP) under Section 61 of the Roads Acts is also for consent for proposed development pursuant to Part XAB of the Planning and Development Acts 2000-2016 for which a Natura Impact Statement (NIS) has been prepared.

The EIS, NIS and the maps and schedules associated with the statutory Schemes will be on display in the offices of the local authority for a period of not less than 6 weeks following publication.

Formal written submissions may be made at that time to ABP. Advertisements with respect to the application for approval will provide details of closing dates for submissions.

ABP must consider the EIS, NIS and any submissions made before making a decision on whether to grant approval to the M28 Cork to Ringaskiddy Project. ABP may conduct an oral hearing and/or may seek additional information as part of the statutory processes. Where an oral hearing is held ABP must consider the report and any recommendations of the Inspector holding the oral hearing.

ABP may approve the Motorway Scheme, Protected Road Scheme and Service Area Scheme with or without modifications or any part thereof.

## 6.18 WHAT HAPPENS NEXT?

Subject to ABP approval and availability of funding, the scheme then advances to land purchase, detailed design, the procurement of a contractor and ultimately the construction phase.

Construction may include a number of contracts in advance of the main construction contract for the scheme, such as diversion of existing services, site investigations, archaeological investigations, hedge clearance and fencing. It is estimated that the main construction contract will take at least 3 years.

## 6.19 FURTHER INFORMATION

To find out more about the M28 Cork to Ringaskiddy Project visit the project website at [www.n28cork-ringaskiddy.com](http://www.n28cork-ringaskiddy.com), or contact the project team by email at [info@corkrdo.ie](mailto:info@corkrdo.ie)

To find out more about how to make a submission or for information on the oral hearing, please contact An Bord Pleanála:

- By Phone: (01) 858 8100 or LoCall 1890 275 175
- By Email: [bord@pleanala.ie](mailto:bord@pleanala.ie)
- By Post: An Bord Pleanála, 64 Marlborough Street, Dublin 1.
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