M11 Gorey to Enniscorthy Scheme

Environmental Impact Statement

Volume 1

Non-Technical Summary

Ryan Hanley WSP

PREAMBLE

Wexford County Council (WCC), as directed by the National Roads Authority (NRA), proposes to realign the N11 national primary road from south of Gorey (Clogh) to south of Enniscorthy (Oilgate). The realigned route will comprise the provision of approximately 26 km of M11 Mainline, with a standard dual motorway carriageway type, along with approximately 1 Km of N11 Mainline, with standard single carriageway type. The proposed M11/N11 Mainline will be located to the east of the existing N11 and will bypass Camolin, Ferns and Enniscorthy. In addition it is proposed to provide approximately 8 km of single carriageway to bypass Enniscorthy to the west by linking the existing N11 to the existing N30. Approximately 4 km of dual carriageway link road will connect the existing N11 / N80 junction north of Enniscorthy to the M11 Mainline.

Comprising four lanes over a stretch of approximately 31 km, and a bridge with a span of approximately 153m in length, the requirement to carry out an Environmental Impact Assessment (EIA) is mandatory for the proposed scheme under Articles 8(a) and 8(b) of the *Roads Regulations, 1994* (the prescribed types of proposed road development prescribed for the purposes of Section 50(1)(a)(iii) of the *Roads Act 1993*) and Second Schedule (Article 25) of the *EC (Environmental Impact Assessment) (Amendment) Regulations, 1999 (S.I. No. 93 of 1999)* (as amended) and under Schedule 6 of the *Planning and Development Regulations, 2001 (S.I. No. 600 of 2001)*.

This Environmental Impact Statement (EIS) considers and assesses the likely environmental impacts of the M11 Gorey to Enniscorthy Scheme (the Proposed Scheme), and has been prepared taking into consideration the guidance included in the National Roads Authority publication *Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2006)*.

For the purposes of the Constraints Study and Route Selection phases, the N11 Enniscorthy Bypass and the N11 Clogh to Enniscorthy Scheme were assessed as separate schemes. Separate Constraints Study and Route Selection reports were prepared as follows:

- N11 Enniscorthy Bypass Constraints Study Report (RHWSP, July 2001)
- N11 Enniscorthy Bypass Route Selection Report (RHWSP, November 2002)
- N11 Clogh to Enniscorthy Constraints Study Report (RHWSP, August 2007)
- N11 Clogh to Enniscorthy Route Selection Report (RHWSP, May 2008)

This EIS follows the preparation of the N11 Enniscorthy Bypass Route Selection Report (RHWSP, November 2002) and the N11 Clogh to Enniscorthy Route Selection Report (RHWSP, May 2008). These route selection reports included a thorough examination of the potential

environmental impacts of various route corridor options, which were chosen after the completion of the relevant constraints studies.

Copies of the EIS are available for examination at the locations detailed in the published newspaper notices.

The EIS is also available to purchase in electronic (PDF) and hardcopy format from:

Wexford County Council Enniscorthy District Office

Old Dublin Road

Enniscorthy

Wexford

Prices are as shown in the published newspaper notices.

Construction of the Proposed Scheme is dependent on approval from An Bord Pleanála (the Board) in relation to this EIS and the statutory land acquisition procedures. It is also subject to the availability of finance and the satisfactory completion of procurement procedures.

Written submissions relating to the likely environmental effects of the Proposed Scheme may be made to the Board prior to the date specified in the published newspaper notices.

The written submissions, together with any representations made at any Oral Hearing, will be considered by the Board before making its decision on whether or not to approve the Proposed Scheme (with or without modifications). The Board's decision will be published in one or more newspapers circulating in the area. It will include, where appropriate, particulars of any modification to the Proposed Scheme.

The M11 Gorey to Enniscorthy Scheme EIS consists of four volumes as described below. This structure is laid out in the preface of each volume for clarity.

Volume 1 - Non-Technical Summary

A non-technical summary of the information contained within Volume 2. This is a separate and self-contained document.

Volume 2 – Main Text

This volume deals with the likely environmental impacts of the Proposed Scheme including the mainline, ancillary roads and road realignments arising from the proposed scheme. Information on the design of the scheme including a description of the traffic and alternatives considered is also included. This volume contains the substantial text of the EIS and various drawings, maps and data used in preparing the submission.

Volume 3 – Appendices

Relevant detailed specialist technical information, data and reports are contained in this volume.

Volume 4 - Figures

Relevant figures are contained in this volume.

ACKNOWLEDGEMENTS

This Environmental Impact Statement has been prepared by Ryan Hanley WSP Ltd. in conjunction with Scott Cawley Ltd., the project's Environmental Co-ordinators, and with the assistance of staff based at the Tramore House Regional Design Office, and Wexford County Council. A number of environmental sub-consultants have also provided input into this EIS as listed below. Together all of these organisations make up the EIS Project Team, and are referenced as such in this EIS.

Specialist Consultants	EIS Contributions
Scott Cawley Ltd. 27 Lower Baggot Street Dublin 2	Ecology
SLR Consulting CSA House Unit 7 Dundrum Business Park Windy Arbour Dublin 14	Soils and Geology Hydrogeology
Hydroenvironmental Ltd 2 St Mary's Road Galway	Flood Risk Assessment
AWN Consulting Ltd. The Tecpro Building Clonsaugh Industrial Estate Dublin 16	Hydrology Air and Climate Noise and Vibration Waste
Tíros Resources Ltd. Armitage House 10 Hatch Street Lower Dublin 2	Landscape and Visual Impacts
Philip Farrelly & Co. Roof Garden Offices Clarehall Malahide Road Dublin 17	Agriculture
Joyce Environmental Ltd. Unit 5A Ashbourne Town Centre Ashbourne Co. Meath	Socio-economic / Human Beings
Irish Archaeological Consultancy 120b Greenpark Road Bray Co. Wicklow	Archaeological, Architectural and Cultural Heritage Impact.
WSP Group Mountbatten House Basing View Basingstoke Hampshire RG21 4HJ United Kingdom	Traffic and Economics

M11 Gorey to Enniscorthy Scheme

ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1 NON-TECHNICAL SUMMARY

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Note on Stage of Design

The consideration and assessment of likely significant effects/impacts and the measures envisaged to avoid, reduce and where possible remedy significant adverse effects/impacts [mitigation measures] are based on the preliminary design of the scheme as detailed in this Environmental Impact Statement.

The preliminary design and the environmental mitigation measures will be further progressed and refined during the detailed design of the scheme, including the mitigation measures contained in such Approval as may be granted.

The detailed design will seek to develop the preliminary design in a manner such that there is no material change in terms of significant adverse effect on the environment. Opportunities may be identified to further reduce the significance of adverse effect/impact and, in some cases, improve the residual effect/impact.

M11 Gorey to Enniscorthy Scheme

ENVIRONMENTAL IMPACT STATEMENT

VOLUME 2 MAIN TEXT

ABBREVIATIONS

Abbreviation	Definition
AADT	Annual Average Daily Traffic
AAP	Area of Archaeological Potential
AH	Archaeological Heritage
AOD	Above Ordnance Datum
BCR	Benefit to Cost Ratio
BH	Built Heritage
By	Barony
CBA	Cost Benefit Analysis
CH	Chainage
COBA	Cost Benefit Appraisal
cSAC	Candidate Special Area of Conservation
D-AH	Delisted – Archaeological Heritage
DED	District Electoral Division
DEFRA	Department for the Environment , Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DoEHLG	Department of Environment, Heritage and Local Government
Ed.	Electoral District
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERFB	Eastern Regional Fisheries Board
ESB	Electricity Supply Board
EU	European Union

Abbreviation	Definition
HCV	Heavy Commecial Vehicles
HGV	Heavy Goods Vehicles
HV	Heavy Vehicles
Hz	Hertz
JTC	Junction Turning Count
Km	Kilometre
Km/h	Kilometres per hour
KV	Kilovolt
LOS	Level of Service
LV	Light vehicles
m^3	Metres cubed
mm	Millimetres
MCC	Manual Classified Count
Mm/s	Millimetres per second
NSS	National Spatial Strategy
NB	North Bound
NDP	National Development Plan
NHA	Natural Heritage Areas
No.	Number
NO_2	Nitrgoen Oxide
NPV	Net Present Value
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NRNS	National Road Needs Study
OCE	Option Comparison Estimate
OPW	Office of Public Works
OS	Ordnance Survey
OSi	Ordnance Survey Ireland

Abbreviation	Definition
PM	Post Meridiem
PM_{10}	Particulate Matter
pNHA	Proposed Natural Heritage Area
PPP	Public Private Partnership
Proposed Scheme	M11 Gorey to Enniscorthy Scheme
PVB	Present Value of Benefits
PVC	Present Value of Costs
RHWSP	Ryan Hanley WSP Ltd
RMP	Record of Monuments and Places
RSI	Road Side Interview
RSR	Route Selection Report
SAC	Special Areas of Conservation
SATURN	Simulation and Assignment of Traffic to Urban Road Networks
SPA	Special Protection Area
TAG	Transport Analysis Guidance
TD	Technical Directive
UK	United Kingdom
VAT	Value Added Tax
VOC	Value of Costs
WCC	Wexford County Council

FIGURE NTS.1

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1.0 INTRODUCTION

The aim of the Environmental Impact Assessment (EIA) process is to identify and predict (for a given proposed development) any impacts of consequence; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the impacts; and to provide an input into the decision making and planning process. It is the intention of Wexford County Council to ascertain the potential impact that the proposed M11 Gorey to Enniscrothy Scheme (Proposed Scheme) will have upon the study area, and to explore mitigating circumstances, so as to protect and enhance the environment to its fullest potential.

An informal scoping process was conducted to establish the range and aspects of the environment to be considered within this EIS. This process was conducted by Ryan Hanley WSP Ltd. (RHWSP), Scott Cawley Ltd., Wexford County Council, and where relevant the various specialist environmental sub-consultants on the EIS Project Team. The results of this scoping process were produced in a report entitled *M11 Gorey to Enniscorthy Realignment Scheme EIS Scoping Report for an Environmental Impact Statement (Scott Cawley, March 2009)* a copy of which is provided in Appendix 1.1 in Volume 3 of this EIS.

In accordance with the requirements of the legislation this EIS describes the likely significant effects, direct, indirect, cumulative and interactive, on the environment by reference to potential impacts on[1]: -

(i) Socio-economic Impact;
(ii) Agriculture;
(iii) Material Assets;
(iv) Ecology;
(v) Soils and Geology;
(vi) Hydrology and Hydrogeology
(vii) Air and Climate;
(viii) Noise and Vibration;
(ix) Landscape and Visual Character;
(x) Archaeology, Cultural and Architectural Heritage;
(xi) Waste Management; and
(xii) The inter-relationship between the above factors.

Table 1.1 below summarises the findings of the initial scoping process. As is indicated by Table 1.1, it was decided that there could be a potential positive or negative impact with respect to

[1] Some of the listed topics are not specifically required under legislation. They are however included in this EIS as they are considered standard aspects of EIAs and are required in accordance with best international practice and relevant guidelines on EIAs.

most aspects of the environment. In this regard the EIS will fully assess the socio-economic, agriculture, material assets, ecology, soils & geology, hydrology and hydrogeology, air and climate, noise and vibration, landscape and visual character, archaeology, cultural and architectural heritage, and waste management elements of the environment.

Upon determining the preliminary potential impacts, the project team has endeavoured to mitigate, ameliorate, reduce or remove these impacts through the consultation and EIS preparation stage.

Table 1.1 Graphic Representation of Findings from Preliminary Scoping Exercise – Potential Impacts Associated with the Proposed Scheme

	No Development	Construction Phase	Operational Phase
Socio-economic	×××	×××	✓✓✓
Agriculture	-	×××	×
Material Assets - Properties	-	×××	×
Material Assets - Infrastructure	-	×××	-
Ecology	-	×××	×××
Soil & Geology	-	××	×
Hydrology and Hydrogeology	-	×××	×××
Air and Climate	××	×	✓✓
Noise and Vibration	-	×	×
Landscape	-	×	××
Archaeology, cultural and architectural heritage	-	×××	×
Waste Management	-	××	×

Key:

×	Slight Negative Impact	✓	Slight Positive Impact
××	Moderate Negative Impact	✓✓	Moderate Positive Impact
×××	Significant Negative Impact	✓✓✓	Significant Positive Impact
-	Neutral		

2.0 OUTLINE OF MAIN ALTERNATIVES

This chapter provides an outline of the main alternatives considered for the Proposed Scheme, outlining how the informal route selection process has evolved to the Proposed Scheme described and assessed in this EIS.

2.1 BRIEF HISTORY OF PROPOSED SCHEME

Major road development projects, such as the M11 Gorey to Enniscorthy Scheme, are progressed in an informal phased approach having due regard to the NRA's Project Management Guidelines (NRA, 2000). Within these guidelines, the phases include:- Phase 2 (Constraints Study); Phase 3 (Route Selection); and Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Report/ Statement).

The M11 Gorey to Enniscorthy Scheme was progressed through the initial phases of the informal route selection process, up to Phase 3, as two separate projects, namely:-

(i) N11 Enniscorthy Bypass – between 1999 and 2002; and

(ii) N11 Clogh to Enniscorthy Scheme – between 2007 and 2008.

The NRA confirmed in May 2008 that the N11 Enniscorthy Bypass and the N11 Clogh to Enniscorthy Scheme were to be taken through to the completion of Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Statement) as a single project. Refer to Figure NTS.1 - Proposed Scheme Location Plan.

2.2 INFORMAL ROUTE SELECTION

2.2.1 Phase 2 (Constraints Study)

Constraints studies were undertaken for the two individual projects in 2001 and 2007 respectively. In the interim, from 2001 to 2009, the physical constraints identified during these periods have not changed significantly.

When work on the N11 Clogh to Enniscorthy Scheme constraints study phase began the issue of how the N11 Clogh to Enniscorthy Scheme should connect to the N11 Enniscorthy Bypass was considered. The study area for the realignment of the existing N11 as part of the N11 Clogh to Enniscorthy Scheme was, therefore, chosen so as to include the northern section of the N11 Enniscorthy Bypass proposed N11 mainline, from the tie-in with the existing N11 in Ballynahallin to the proposed junction of the N11 mainline with the existing R744 in Tomnafunshoge.

2.2.2 Phase 3 (Route Selection)

<u>N11 Enniscorthy Bypass</u>

Consideration was given to route corridor options passing generally to the west as well as to the east of Enniscorthy. The identification of specific constraints within the study area for the N11 Enniscorthy Bypass allowed for the development of four, initial route corridor options, referred to

as the Blue, Green, Gold and Red Routes. As the route selection phase progressed it became apparent that none of these initial four route corridor option adequately fulfilled the project objectives on their own. A fifth route corridor option was therefore developed, the Purple Route, which is a combination of sections of the Green, Red and Gold Routes.

The findings of the route selection phase are presented in the N11 Enniscorthy Bypass Route Selection Report (RHWSP, November 2002) and are outlined below.

The ranking of the five route corridor options in order of preference, taking into consideration likely environmental effects, is included in Table 2.2.1.

Table 2.2.1 Summary of Environmental Assessment Rankings

Preference	1	2	3	4	5
Land Use	Green	Gold	Purple	Blue	Red
Geology	Purple	Green	Blue	Gold	Red
Hydrology / Hydrogeology	Purple	Green	Gold	Red	Blue
Geotechnics	Purple	Green	Red	Gold	Blue
Air Quality	Gold	Purple	Green	Red	Blue
Noise	Green	Gold	Purple	Red	Blue
Landscape	Green	Purple	Gold	Blue	Red
Archaeological Architectural & Cultural Heritage	Green	Gold	Red	Blue	Purple
Ecological	Purple	Green	Blue	Gold	Red
Overall Preference	**Green**	**Purple**	**Gold**	**Blue / Red**	

From an environmental effects perspective, it was considered there was little to no overall discernable difference between the Purple Route and the Green Route. In terms of satisfying the project objectives, the five route corridor options were also assessed to determine order of preference with respect to engineering, economic and traffic criteria. For each of these criteria it was concluded the Purple Route performed the best.

The Preferred Route (Purple Route), taken forward to be developed further during Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Statement), comprised a:-

(i) Proposed N11 mainline located to the east of Enniscorthy connecting the existing N11 in Ballynahallin, approximately 4.0 km north of Enniscorthy, to the existing N11 in Scurlocksbush, approximately 6 km south of Enniscorthy; and

(ii) Proposed N30 mainline located to the west of Enniscorthy connecting the existing N11 (and existing N80) in Ballynahallin, approximately 4.0 km north of Enniscorthy, to the existing N30 in Templescoby.

N11 Clogh to Enniscorthy Scheme

The identification of specific constraints within the study area for the N11 Clogh to Enniscorthy Scheme allowed for the development of six, initial route corridor options. Three of these were located predominantly to the west of the existing N11, and are referred to as the Orange, Magenta and Gold Routes. The remaining three located predominantly to the east of the existing N11, and are referred to as the Cyan, Red and Yellow Routes. As the route selection phase progressed a seventh route corridor option was identified and assessed, referred to as the Blue Route. The Blue Route was developed primarily to assess a route corridor option located to the east of the existing N11, which was considered may minimise the likely effects on the surrounding landscape and in particular minimise the likely visual effects with respect to Carrigroe Hill.

The findings of the assessments outlined above are presented in the N11 Clough to Enniscorthy Scheme Route Selection Report (RHWSP, May 2008) and are outlined below.

When identifying route corridor options for the realignment of the existing N11 as part of the N11 Clogh to Enniscorthy Scheme, one of the major influences was where the proposed route corridors would tie back into the national road network. At the northern end of the study area the route corridor options needed to tie into the existing N11 Arklow / Gorey Bypass. At the southern end of the study area the Preferred Route for the proposed N11 Enniscorthy Bypass needed to be taken into account. The seven route corridor options assessed included a number of alternative tie-in options at both the northern and the southern extents of the N11 Clogh to Enniscorthy Scheme.

Determining the optimum location for the connection between the proposed N11 mainline and the existing N80 was also an important consideration. For the Red, Cyan, Yellow and Blue Routes, this connection is achieved via a proposed section of link road, referred to as the N80 Link Road. Various N80 Link Road route corridor options were developed. The preferred location for the N80 Link Road was determined to one that follows a similar line to that taken by the Preferred Route for the N11 Enniscorthy Bypass but crosses the River Slaney further to the south, in order to lessen its likely effects on the ecology and archaeology in this area. This preferred N80 Link Road route corridor option connection was therefore incorporated into the Red, Cyan, Yellow and Blue Routes.

The ranking of the seven route corridor options in order of preference, taking into consideration likely environmental effects, is included in Table 2.2.2.

Table 2.2.2 Summary of Environmental Assessment Rankings

Preference	1	2	3	4	5	6	7
Socio-economic	Cyan	Gold	Cyan / Orange		Blue	Yellow	Magenta
Agriculture	Gold	Cyan	Blue	Orange	Red	Magenta	Yellow
Ecology	Yellow	Blue / Cyan		Red	Magenta	Gold / Orange	
Hydrology	Cyan	Red	Blue	Magenta	Orange	Yellow	Gold
Hydro-Geology	Yellow	Cyan	Magenta	Orange	Gold	Blue	Red
Soils & Geology	Blue / Cyan / Yellow			Gold / Orange / Magenta / Red			
Archaeology	Red	Magenta	Cyan	Yellow	Blue	Orange	Gold
Landscape	Gold	Red	Blue	Cyan / Yellow		Orange	Magenta
Air & Climate	Blue / Cyan / Red / Yellow				Orange	Magenta	Gold
Noise	Cyan	Yellow	Orange	Blue	Magenta	Red	Gold
Overall Preference	**Cyan**	**Blue**	**Yellow**	**Red**	**Magenta / Orange**		**Gold**

In terms of satisfying the project objectives, the five route corridor options were also assessed to determine order of preference with respect to engineering, economic and traffic criteria. The overall conclusion was, on balance the Cyan Route performed the best on the basis that it was considered the most preferable from an environmental and economic perspective, was ranked jointly most preferable from a traffic perspective and was second most preferable from an engineering perspective.

The Preferred Route (Cyan Route) taken forward to be developed further during Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Statement) comprised a:-

(i) Proposed N11 mainline located to the east of the existing N11, and to the east of the towns of Camolin and Ferns, connecting the existing N11 in Clogh to the N11 Enniscorthy Bypass proposed N11 mainline in Tomnafunshoge; and

(ii) Proposed N80 Link Road located to the north of Enniscorthy connecting the existing N11 (and existing N80) in Ballynahallin to the Proposed N11 mainline in Ballydawmore.

2.2.3 Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Statement)

Phase 3 (Route Selection) of the informal route selection process for the M11 Gorey to Enniscorthy Scheme concluded with the identification of the preferred routes for the N11 Mainline, N80 Link Road and the N30 Mainline.

The route for the proposed N11 Mainline was influenced by the:-

(i) Overall likely environmental effects;

(ii) Likely effects on ecologically designated sites and other sites of environmental interest;

(iii) Strategic traffic that would be attracted to the proposed route;

(iv) Tie-in with the proposed N80 Link Road;

(v) Tie-in with the existing N11 Arklow – Gorey Bypass;

(vi) Dublin – Wexford railway;

(vii) Avoidance of unnecessary demolitions, severance and landtake;

(viii) ESBi 110 kV overhead power lines and associated pylons;

(ix) Locations of existing landfill / waste disposal areas;

(x) Topography;

(xi) Tie-in with the existing N11 to the south of Enniscorthy;

(xii) Availability of a corridor to continue the route southwards should this be required in the future;

(xiii) Local road and watercourse crossings.

The route for the proposed N80 Link Road was influenced by:-

(i) Overall likely environmental effects and in particular the location of the River Slaney crossing and the impact on the River Slaney cSAC / pNHA;

(ii) Likely effects on ecologically designated sites and other sites of environmental interest;

(iii) Strategic traffic that would be attracted to the proposed route;

(iv) Tie-in with the proposed N11 Mainline;

(v) Avoidance of unnecessary demolitions, severance and landtake;

(vi) Topography;

(vii) Dublin – Wexford railway;

(viii) Local road and watercourse crossings.

The route for the proposed N30 Mainline was influenced by:-

(i) Overall likely environmental effects;

(ii) Likely effects on ecologically designated sites and other sites of environmental interest;

(iii) Strategic traffic that would be attracted to the proposed route;

(iv) Tie-in with the existing N80 and proposed N80 Link Road;

(v) Avoidance of unnecessary demolitions, severance and landtake;

(vi) Topography;

(vii) Crossing of the River Urrin;

(viii) Local road and watercourse crossings.

During Phase 4 (Preliminary Design / Land Acquisition Procedures / Environmental Impact Statement) these preferred routes continued to be developed. This development included identifying and considering various alternative design elements as an integral part of the progression from the preferred routes to the Proposed Scheme as described and assessed in this EIS. These alternative designs formed part of the iterative process during which the preliminary design of the various elements that make up the Proposed Scheme, such as the environmental mitigation measures and the horizontal and vertical alignments, were developed, assessed and revised. In this way a close correlation was established between the environmental and engineering elements of the preliminary design.

The Proposed Scheme is a balance between environmental, engineering and economic factors. The Proposed Scheme was designed to have overall the least feasible impact on ecologically designated sites and other sites of environmental interest. In other words, it was developed in such a way that avoidance of ecologically designated sites and other sites of environmental interest and properties were primary project objectives that had to be balanced against engineering and economic constraints.

The proposed location of the River Slaney crossing is at an optimum location, which accommodates the N80 Link Road crossing the River Slaney at right angles. In this way the length of the crossing is minimised, which in turn minimises the impact on a number of areas of high ecological value.

3.0 DESCRIPTION OF THE PROPOSED SCHEME

3.1 INTRODUCTION

The consideration and assessment of likely significant effects/impacts and the strategy proposed to avoid, reduce and where possible remedy significant adverse effects/impacts (mitigation measures) are based on the preliminary design of the Proposed Scheme as detailed in this Environmental Impact Statement.

The preliminary design and the environmental mitigation measures may be further enhanced and

refined by the Contractor during the detailed design of the Proposed Scheme, including the mitigation measures contained in such Approval as may be granted. This may result in some changes to the preliminary design as published in this EIS.

The detailed design will seek to develop the preliminary design in a manner such that there is no material change in terms of significant adverse effect on the environment. Opportunities may be identified to further reduce the significance of adverse effect/impact and, in some cases, improve the residual effect/impact.

Stringent contract requirements will ensure that the detailed design, including environmental mitigation measures, will be of the required quality and that through the construction process the detailed design will be translated into the final product.

3.2 OVERVIEW OF THE SCHEME

The proposed M11 Gorey to Enniscorthy Scheme (refer to Figure NTS.2) comprises the construction of three new sections of road, which will form part of the National Road network, namely:-

(i) M11/N11 Mainline, which will connect the existing N11 in Clogh at the north, approximately 19 kilometres north-east of Enniscorthy, to the existing N11 in Scurlocksbush at the south, approximately 7km south of Enniscorthy;

(ii) N80 Link Road, which will connect the existing N11 and existing N80 in Ballynahallin at its eastern end to the M11 Mainline in Ballydawmore to the west; and

(iii) N30 Mainline, which will connect the existing N11 and existing N80 in Clavass to the north to the existing N30 in Templescoby to the south.

A summary of technical information about the proposed M11 Gorey to Enniscorthy Scheme is included in Table 3.2.1, Table 3.3.1 and Table 3.4.1.

Table 3.2.1: Summary of Technical Information for Proposed Scheme

Length of proposed M11/N11 Mainline	27.2 Km
Length of proposed N80 Link Road	4.2 Km
Length of proposed N30 Mainline	8.2 Km
Length of proposed Access Roads	15.0 Km
Length of National Primary Road realignments	0.8 Km
Length of National Secondary Road realignments	0 Km
Length of Regional Road realignments	4.1 Km
Length of Local Road realignments	7.0 Km
Number of road structures (1)	42
Number of combined river / rail / road structures (2)	1
Number of rail structures	1
Number of watercourse structures	43

Note: (1) For proposed junctions, Side Roads and Access Roads.

(2) Structure over the River Slaney / Dublin-Wexford Railway / Local Road L-2020.

(3) All lengths shown are approximate.

Table 3.3.1: Carriageway Design Criteria for the Proposed Scheme

Section of Proposed Scheme	**Carriageway Type**	**Design Speed Km/h**
M11 Mainline - Motorway	Standard Dual Motorway (D2M)	120
N11 Mainline – Non-Motorway	Type 3 Dual Carriageway (2+1)	100
N80 Link Road	Type 2 Dual Carriageway (2+2)	100
N30 Mainline	Standard Single (S2)	100
National Primary Road	Standard Single (S2)	100
National Secondary Road	Standard Single (S2)	100
Regional Road	Reduced Single (S2)	85
Local Road	Single	Varies(1) 60, 70 or 85

Note: (1) Reflects the layout of the existing road in the region of the realignment.

Table 3.4.1: Major Junctions on the Proposed National Routes

Name of Junction	Type
M11/N11 Mainline:	
Frankfort Junction	Grade separated, dumbbell layout
Ballydawmore Junction	Grade separated, two bridge roundabout
Scurlocksbush Roundabout	At grade roundabout
N80 Link Road:	
Clavass Junction	At grade, dumbbell layout
N30 Mainline:	
Milehouse Roundabout	At grade roundabout
Templescoby Roundabout	At grade roundabout
Existing N11 / R772:	
Ballinclay Roundabout	At grade roundabout

3.3 STRUCTURES

Structures will be required to carry the Proposed Scheme over or under the existing and proposed features and infrastructure. The structures included within the preliminary design, as described and assessed in this EIS, are described in Table 3.5.1.

Table 3.5.1: Structures on the Proposed Scheme

Ref.	Chainage (m)	Description
M11/N11 Mainline:		
M11-AS-G1	1,400	Existing access structure to be extended. The extension will have minimum clear dimensions of 4.0m wide by 4.5m high
M11-G-CXT	1,440	Existing culvert for unnamed watercourse to be extended.
M11-AS- G2	1,500	Existing access structure to be extended. The extension will have minimum clear dimensions of 5.0m wide by 4.5m high
M11-S1	1,800	Structure forming part of Frankfort Junction
M11-AS1	2,270	Access structure, suitable for agricultural vehicle and livestock use
M11-AS2		Not used
M11-C-01	2,550	Culvert for unnamed watercourse
M11-AS3	2,960	Access structure, suitable for agricultural vehicle and livestock use
M11-S2	3,100	Structure for Local Road L-1027
M11-S3	3,250	Structure for Dublin-Wexford Railway (Ballygullen)

Table 3.5.1: Structures on the Proposed Scheme (Cont.)

Ref.	Chainage (m)	Description
M11-C-02	3,350	Culvert for Bracken River
M11-AS4	3,400	Access structure, suitable for agricultural vehicle and livestock use
M11-S4	4,880	Structure for Local Road L-5092
M11-AS5		Not used
M11-C-03A	6,310	Culvert for tributary of the Bracken River
M11-C-03B	6,310	Culvert for tributary of the Bracken River
M11-C-03C	6,310	Culvert for tributary of the Bracken River
M11-S5	7,590	Structure for Local Road L-5093
M11-S6	8,370	Structure for Local Road L-5096
M11-AS6	9,240	Access structure, suitable for agricultural vehicle and livestock use
M11-C-04	9,300	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-C-05	9,350	Culvert for tributary of the Tinnacross Stream
M11-AS7		Not used
M11-C-06	10,250	Culvert for unnamed watercourse
M11-AS8	10,280	Access structure, suitable for agricultural vehicle and livestock use
M11-S7	11,500	Structure for Local Road L-1023
M11-AS9		Not used
M11-C-07	12,320	Culvert for tributary of the Tinnacross Stream
M11-AS10	12,710	Access structure, suitable for agricultural vehicle and livestock use
M11-AS11		Not used
M11-C-08	13,140	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-AS12		Not used
M11-C-09	13,350	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-AS13		Not used
M11-C-10A	14,220	Culvert for tributary of the Tinnacross Stream
M11-C-10B	14,220	Culvert for tributary of the Tinnacross Stream
M11-AS14	14,320	Access structure, suitable for agricultural vehicle and livestock use
M11-S8	14,480	Structure for local Road L-2011

Table 3.5.1: Structures on the Proposed Scheme (Cont.)

Ref.	Chainage (m)	Description
M11-C-11	14,700	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-AS15		Not used
M11-C-12	15,110	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-AS16	15,460	Access structure, suitable for agricultural vehicle and livestock use
M11-C-13	15,520	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-C-14	15,540	Culvert for unnamed watercourse
M11-AS17	15,580	Access structure, suitable for agricultural vehicle and livestock use
M11-AS18	16,030	Access structure, suitable for agricultural vehicle and livestock use
M11-C-15	16,130	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-C-16		Not used
M11-AS19		Not used
M11-AS20		Not used
M11-C-17	16,750	Culvert for the Tinnacross Stream, which will be a bottomless culvert
M11-S9	17,370	Structure for Local Road L-2021
M11-C-18	18,400	Culvert for the Ballydawmore Stream, which will include light ports between the M11 Mainline and associated Ballydawmore Junction Slip Roads
M11-S10a	18,480	Structure forming part of Ballydawmore Junction
M11-S10b	18,570	Structure forming part of Ballydawmore Junction
M11-C-19	19,540	Culvert for tributary of the Corbally Stream
M11-S11	19,680	Structure for Local Road L-2024
M11-AS21		Not used
M11-C-20	20,380	Culvert for the Corbally Stream, which will be a bottomless culvert.
M11-AS22	20,400	Access structure, suitable for agricultural vehicle and livestock use
M11-S12	21,270	Structure for R744
M11-C-21	21,700	Culvert for tributary of the Corbally Stream.
M11-S13	22,300	Structure for Local Road L-6055
M11-C-22	22,750	Culvert for tributary of the Drumgold Stream.

Table 3.5.1: Structures on the Proposed Scheme (Cont.)

Ref.	Chainage (m)	Description
M11-C-23	23,290	Culvert for the Drumgold Stream.
M11-C-24	24,100	Culvert for tributary of the Drumgold Stream.
M11-S14	24,900	Structure for Local Road L-2040
M11-AS23	25,790	Access structure, suitable for agricultural vehicle and livestock use
M11-C-25	25,870	Culvert for tributary of the Monroe Stream.
M11-S15	26,600	Structure for Local Road L-6048
M11-C-26	26,550	Culvert for the Monroe Stream.
M11-C-27	26,680	Culvert for the Monroe Stream.
N11-C-28	27,140	Culvert for tributary of the Monroe Stream.
M11/N11-AS24	28,000	Access structure under existing N11 north-west of the Scurlocksbush Roundabout, suitable for livestock use
N80 Link Road:		
N80-AS1	1,220	Access structure, suitable for agricultural vehicle and livestock use
N80-AS2	1,680	Access structure, suitable for agricultural vehicle and livestock use
N80-C-01	1,690	Culvert for the Kilcannon Stream.
N80-AS3	1,700	Access structure, suitable for agricultural vehicle and livestock use
N80-AS4	2,080	Access structure, suitable for agricultural vehicle and livestock use
-	2,550 to 2,700	Series of flood relief culverts across River Slaney flood plain
N80-S1	2,800	Structure for River Slaney, Dublin – Wexford Railway (Ballynabarney) and Local Road L-2020.
N80-C-02	3,740	Culvert for tributary of the Ballydawmore Stream.
N80-C-03	3,885	Culvert for tributary of the Ballydawmore Stream.
N80-AS5	3,900	Access structure, suitable for agricultural vehicle and livestock use
N80-C-04	4,105	Culvert for tributary of the Ballydawmore Stream.
N30 Mainline:		
N30-C-01	530	Culvert for the Clavass Stream.
N30-S1	1,390	Structure for Local Road L-2015
N30-C-02	1,450	Culvert for the Clavass Stream.
N30-C-03	2,150	Culvert for tributary of the Hollyfort Stream.

Table 3.5.1: Structures on the Proposed Scheme (Cont.)

Ref.	Chainage (m)	Description
N30-C-04	2,550	Culvert for tributary of the Hollyfort Stream.
N30-S2	2,950	Structure for Local Road L-2014, will include a segregated access suitable for livestock use
N30-AS1		Not used
N30-C-05	3,290	Culvert for the Hollyfort Stream.
N30-AS2		Not used
N30-S3	3,890	Structure for Local Road L-2012
N30-C-06	5,100	Culvert for Pullinstown Stream, which will be a bottomless culvert
N30-S4	5,360	Structure for Local Road L-6125
N30-C-07	6,310	Culvert for River Urrin tributary
N30-S5	6,310	Structure for Local Road L-2030
N30-C-08	6,370	Culvert for tributary of the River Urrin
N30-S6	6,520	Structure for River Urrin, which will accommodate a 3m wide access suitable for livestock use on the southern bank of the River Urrin.
N30-S7	6,940	Structure for Local Road L-6122
N30-C-09	7,230	Culvert for tributary of the River Urrin
N30-S8	7,820	Structure for Old N30
Retaining Walls:		
-	N80:3,800	Northern verge of N80 Link Road
-	N30:4,750	Southern verge of Realigned R702
-	N30:6,300	Eastern verge of N30 Mainline

Note: All chainages shown are approximate

River Slaney Structure

A structure with a main, central span of approximately 70m and two side spans, each of approximately 42m, is the option chosen to cross over the River Slaney. The span arrangement avoids the River Slaney and its banks and provides for a clear span over the Slaney River Valley candidate Special Area of Conservation (cSAC). It also facilitates uninterrupted flow of flood waters immediately adjacent to the western (right) bank of the river channel.

On the western approach to this structure is an earthworks embankment, which takes the N80 Link Road over an area of the River Slaney flood plain. Included within this embankment will be a series of flood relief culverts, evenly spaced over the remaining width of the flood plain. These culverts, together with the structure side span on the western bank of the river channel, will

facilitate the continued migration of flood waters along the important right conveying overbank, across the full width of the River Slaney flood plain.

3.4 SIDE ROADS

Local Road L-6052 in Roperstown will be permanently severed.

The permanent realignments, including re-routings, and proposed lengths of Side Roads are summarised in Table 3.6.1.

Table 3.6.1: Existing Road Realignments

Ballinclay Roundabout:	
North of roundabout – R772	No realignment
East of roundabout – N11	No realignment
West of roundabout – N11	No realignment
Frankfort Junction:	
N11 Arklow / Gorey Bypass	Realignment of the existing N11 dual carriageway from approximate chainage N11:820m to facilitate the M11/N11 Mainline and Frankfurt Junction.
Ballydawmore Junction:	
	No existing roads affected
Scurlocksbush Roundabout:	
North of roundabout – N11	Realignment of existing N11 to facilitate Scurlocksbush Roundabout (0.16 Km)
South of roundabout – N11	Realignment of existing N11 to facilitate Scurlocksbush Roundabout (0.17 Km)
Clavass Junction – North Dumb-bell Roundabout:	
North of roundabout – N11	No realignment
West of roundabout – N80	No realignment
South of roundabout – N11	Realignment of existing N11 to facilitate Clavass Junction (0.05 Km).
Clavass Junction – South Dumb-bell Roundabout:	
North of roundabout – N11	Included in description above
West of roundabout – Old Dublin Road	Realignment of existing Old Dublin Road to facilitate Clavass Junction (0.1 Km).
South of roundabout – N11	Realignment of existing N11 to facilitate Clavass Junction (0.22 Km).
Milehouse Roundabout:	
West of roundabout - R702	Realignment of existing R702 to facilitate Milehouse Roundabout (0.25 km).
East of roundabout - R702	Realignment of existing R702 to facilitate Milehouse Roundabout (0.50 km).

Table 3.6.1: Existing Road Realignments (Cont.)

Templescoby Roundabout:	
West of roundabout – N30	Realignment of existing N30 to facilitate Templescoby Roundabout (0.11 Km).
East of roundabout – N30	Realignment of existing N30 to facilitate Templescoby Roundabout (0.11 Km).
Local Roads	
L-1027 (Ballygullen)	Realignment to structure M11-S3 (0.06 Km).
L-5092 (Ballyeden)	Realignment to structure M11-S4 (0.23 Km).
L-5093 (Ballymore)	Realignment to structure M11-S5 (0.19 Km).
L-5096 (Rockspring)	Re-routed to Local Road L-5093 (0.84 Km).
L-1023 (Ballycarrigeen Lower)	Realignment to structure M11-S7 (0.44 Km).
L-2011 (Tinnacross)	Realignment to structure M11-S8 (0.26 Km).
L-20211 (Crane)	Realignment to structure M11-S9 (0.26 Km).
Unclassified road between L-2024 (Ballydawmore) and L-2021 (Crane)	Re-routed to Local Road L-2021 (0.58 Km).
L-2024 (Corbally)	Realignment to structure M11-S11 (0.23 Km).
Proposed Side Road	R744 Link Road connecting the Regional Road R744 in Tomnafunshoge to the Ballydawmore Junction (2.7 Km).
R744 (Tomnafusnshoge)	Realignment of R744 in the region of the Tomnafunshoge Roundabout and structure M11-S12 (0.60 Km).
L-2025 (Tomnafunshoge)	Realignment to junction with R744 (0.18Km).
L-6055 (Drumgold)	Realignment to structure M11-S13 (0.55 Km).
L-2040 (Knockrathkyle)	Realignment to structure M11-S14 (0.47 Km).
L-6047 (Knockrathkyle)	Re-routed to Local Road L-2040 (0.26 Km).
L-6048 (Glentiege)	Realignment to structure M11-S15 (0.21 Km).
L-2020 (Ballynabarny)	Realignment to structure N80-S1 (0.12 Km).
L-2015 (Coolnahorna)	Realignment to structure N30-S1 (0.31 Km).
L2014 (Ballyorril)	Realignment of to structure N30-S2 (0.31 Km).
L-2012 (Killalligan North)	Realignment to structure N30-S3 (0.35 Km).
L-6125 (Bessmount / Monart East)	Realignment to structure N30-S4 (0.24 Km).
L-2030 (Bessmount)	Realignment to structure N30-S5 (0.11 Km).
L-6122 (Templescoby)	Realignment to structure N30-S7 (0.41Km).
L-6121 (Dunsinane)	Re-routed to Local Road L-6122 (0.29Km).
Old N30 (Dunsinane)	Realignment to structure N30-S8 (0.54 Km)

Note: all lengths shown are approximate.

3.5 ACCESS ROADS

Proposed Access Roads will be required to minimise severance of agricultural lands and to provide access to balancing ponds and/or bypass interceptors for maintenance purposes. The major Access Roads included within the preliminary design are described in Table 3.7.1.

Table 3.7.1 Major Access Roads

Ref.	Chainage (m) (1)	Approximate Length (m)
M11/N11 Mainline:		
M11-AR1	1,470	300m
M11-AR2	1,530	70m
M11-AR3	2,050	370m
M11-AR4	2,920	100m
M11-AR5	3,100	200m
M11-AR6	3,400	140m
M11-AR7	4,720	170m
M11-AR8	4,900	360m
M11-AR9	5,200	220m
M11-AR10	9,150	260m
M11-AR11	10,280	480m
M11-AR12	10,280	480m
M11-AR13 (2)	11,230	250m
M11-AR14	12,550	230m
M11-AR15	12,560	170m
M11-AR16	14,120	220m
M11-AR17	14,500	160m
M11-AR18	15,970	70m
M11-AR19	16,290	70m
M11-AR20	17,060	320m
M11-AR21	17,360	580m
M11-AR22	17,800	200m
M11-AR23	19,160	470m
M11-AR24	20,180	200m
M11-AR25	20,900	70m
M11-AR26	22,250	620m

Table 3.7.1 Major Access Roads (Cont.)

Ref.	Chainage (m) (1)	Approximate Length (m)
M11-AR27	25,790	140m
M11-AR28	26,430	160m
M11-AR29	26,660	450m
N11-AR30	27,880	120m
N11-AR31	28,030	110m
N80 Link Road:		
N80-AR1	0	450m
N80-AR2	1,200	190m
N80-AR3	1,500	300m
N80-AR4	1,680	90m
N80-AR5	1,700	70m
N80-AR6	2,080	120m
N80-AR7	2,830	70m
N80-AR8	3,700	180m
N80-AR9	4,050	270m
N30 Mainline:		
N30-AR1	50	70m
N30-AR2	350	100m
N30-AR3	350	70m
N30-AR4	1,380	90m
N30-AR5	2,800	170m
N30-AR6	3,500	400m
N30-AR7	4,420	110m
N30-AR8	4,700	170m
N30-AR9	4,700	100m
N30-AR10	4,800	190m
N30-AR11	6,000	90m
N30-AR12	6,050	50m
N30-AR13	6,230	80m
N30-AR14	6,300	50m

Note: (1) Approximate start of Access Road described as a chainage on the adjacent proposed national route for ease of reference.

(2) Also serves as an Emergency Access Link.

(3) All chainages are approximate.

3.6 DRAINAGE

The road drainage systems for the proposed national routes will comprise either:- a sealed drainage system; an open drainage system; or a combination of the two. Sealed drainage systems include systems such as kerbs and gullies and surface water channels, which direct surface water into sealed carrier drains which in turn direct the water to an outfall location. Open drainage systems are ones in which the surface water passes over the edge of the paved area and is either intercepted by a filter drain located at the back of the verge or by an interceptor ditch located at the base of an embankment. The filter drain or interceptor ditch directs the intercepted water to an outfall location.

At outfall locations, the proposed road drainage systems for the national routes will flow via petrol / oil bypass interceptors into balancing ponds before discharging into watercourses.

Road carriageway runoff from Side Roads affected by the Proposed Scheme will generally be connected into the existing road drainage systems.

3.7 LIGHTING

Traffic route lighting will be provided on the proposed national routes in the region of grade separated and at grade junctions, and at the Dublin – Wexford railway structure in Ballygullen.

The lighting will be provided by energy-efficient high pressure sodium lanterns (SONP-T) of up to 250 Watts each, mounted on galvanised steel lighting columns up to a maximum of 12m high above finished road level. All lanterns will be of the fully cut-off, flat glass type to minimise light spill and ensure that light is concentrated on the road surface.

3.8 CONSTRUCTION ACTIVITIES

Timing of the Works

It is proposed that the procurement process for the construction of the M11 Gorey to Enniscorthy Scheme will either be by Design and Build or as part of a Public Private Partnership (PPP) project. Subject to the satisfactory completion of the statutory procedures, the availability of finance and the programming requirements of the successful Contractor it is anticipated that main construction works will begin on site during 2011. The overall construction period for the Proposed Scheme is anticipated to be in the region of 2½ years.

Working Hours

Site working hours will vary depending on seasons and weather conditions.

Normal hours of work are anticipated to be Monday to Friday 07:00 to 19:00 hours and Saturday 08:00 to 16:30 hours. However works outside of these hours, including Sundays, may be necessary in certain circumstances and this will require specific permission. The exception to

this is any construction activity required in respect of emergency works.

Site Preparation Works

The site boundary will be fenced. Site access points will be constructed to provide access for construction vehicles from the existing road network. This will involve some works adjacent to existing roads and may require temporary traffic diversions.

Bulk Earthworks

Preliminary ground investigations were carried out along the line of the Proposed Scheme during 2006 and 2008 in order to obtain site specific information along the Proposed Scheme, to feed into the preliminary design of the Proposed Scheme. Preliminary earthworks details and quantities have been developed based on the vertical alignments forming part of the preliminary design, as described in this EIS, and taking into consideration the results of these preliminary site investigations. The preliminary design earthworks quantities have been determined based on cut materials generally being incorporated into the works.

The estimated earthworks cut/fill volumes comprise a total gross volume of cut for the preliminary design of approximately 5.28Mm^3 and a total gross volume of fill of approximately 5.52Mm^3. These preliminary earthworks quantities are considered to be a reasonable indication of the quantities of materials that may arise if the preliminary design were to be built. Ultimately, the detailed design will be undertaken and finalised by the Contractor. The detailed design and the materials that are present during construction will, therefore, determine the actual quantities.

Concrete Materials

Concrete will be required throughout the construction period, with demand being the greatest during the construction of structures. Concrete will be sourced from local suppliers or batched on site.

Road Pavement Materials

Bituminous based and other road pavement materials will be required throughout the construction period. Demand will be greatest during the latter end of construction. IBituminous based and other road pavement materials will be sourced from local suppliers or batched on site.

Construction Traffic

The main materials that may be transported to / from site on public roads are considered to be the concrete to be used in the structures and road pavement and earthworks materials.

There are a limited number of points where construction traffic can access the site from National and / or Regional roads. There are also key physical constraints that will delay the establishment of continuous routes within the extents of the site, examples of which are the River Slaney, the River Urrin and the Dublin – Wexford railway. Taking this into account, generally the routes the

Contractor will be permitted to use during construction include the following National, Regional and Local Roads:-

(i) N11;

(ii) N80;

(iii) N30;

(iv) Old N30;

(v) R744;

(vi) R702; and

(vii) L-1023, from Ferns to The Harrow.

Access along other sections of the existing road network may be required for certain delivery activities.

The maximum daily volume of construction traffic that is estimated may use the surrounding existing road network is 692 vehicle movements per day. Generally, the majority of these traffic movements will be on the national and regional road network. An estimated maximum of 200 construction vehicle movements per day may use the L-1023 between Ferns and The Harrow.

The construction traffic will be using the existing road network for a limited period of time.

4.0 TRAFFIC

The forecast annual average daily traffic (AADT) figures used in the EIS are presented in Table 4.1 below for the Opening Year of 2013 and Design Year of 2028 respectively.

Table 4.1: Traffic Flow Projections (NRA plus Additional Growth)

Ref.	Link Description	Forecast AADT Flows in Opening Year 2013		Forecast AADT Flows in Design Year 2028	
		Do-Nothing	Do-Something	Do-Nothing	Do-Something
1	M11 Mainline Frankfort to Ballydawmore	n/a	11,162	n/a	14,081
2	M11 Mainline Ballydawmore to Tomnafunshoge	n/a	18,098	n/a	22,811
3	M11 Mainline Tomnafunshoge to Scurlocksbush	n/a	16,834	n/a	21,198
4	N80 Link Road	n/a	14,627	n/a	18,498

Table 4.1: Traffic Flow Projections (NRA plus Additional Growth) (Cont.)

Ref.	Link Description	Forecast AADT Flows in Opening Year 2013		Forecast AADT Flows in Design Year 2028	
		Do-Nothing	Do-Something	Do-Nothing	Do-Something
5	N30 Mainline Clavass to Milehouse	n/a	5,789	n/a	7,250
6	N30 Mainline Milehouse to Templescoby	n/a	4,919	n/a	6,322
7	Existing N11 Arklow / Gorey Bypass	15,899	18,516	19,632	23,291
8	Existing N11 Frankfort to Ballinclay	15,899	7,343	19,632	9,210
9	Existing N11 Ballinclay to Camolin	15,899	7,343	18,019	9,211
10	Existing N11 Camolin to Ferns	14,994	6,566	16,685	8,225
11	Existing N11 Ferns to Scarawalsh	15,574	7,517	17,010	9,408
12	Existing N11 Scarwalsh to Enniscorthy	20,180	2,958	21,581	3,736
13	Existing N11 Enniscorthy to Scurlocksbush	20,307	4,652	23,738	5,870
14	Existing N11 Scurlocksbush to Oilgate	18,567	16,449	23,738	27,080
15	Existing N80 Scarawalsh	10,996	10,765	13,243	14,415
16	Existing R702 west of Milehouse	7,088	6,601	8,782	8,921
17	Existing R702 east of Milehouse	7,088	5,406	8,782	6,902
18	Existing N30 west of Templescoby	8,468	8,538	10,348	10,707
19	Existing N30 east of Templescoby	8,468	4,385	10,348	4,385
20	Existing R744 west of Tomnafunshoge	4,594	3,921	5,278	4,861
21	Existing R744 east of Tomnafunshoge	4,594	4,772	5,278	5,893
22	Existing R741 south of N11 Arklow / Gorey Bypass	13,059	10,024	16,101	12,407

5.0 SOCIO-ECONOMIC IMPACT ASSESSMENT

5.1 ECONOMIC ACTIVITY - INDUSTRY, BUSINESS AND TOURISM

The National Spatial Strategy (NSS) and the National Road Needs Study (1998) sets out the service level objectives for national roads in Ireland for Ireland and the basis for which all areas of the country will have the opportunity to develop to their potential within a national spatial framework for the period up to 2020. The Euroroute01, The Wexford County Development Plan 2007-2013, the Enniscorthy Town & Environs Plan 2008-2014, and the Draft Ferns Local Area Plan 2009-2015 set out regional and local policies regarding the strategies for growth and the development of road infrastructure.

The national, regional and local development plans and policies clearly support the delivery of the Proposed Scheme. The expected benefits include continued development of Wexford as a strategically located medium sized hub that supports and is supported by the Waterford gateway and reaches out to wider rural areas of the region. It is expected that this network will provide a platform for balanced development throughout the region. Enniscorthy has been targeted as a town in County Wexford which provides a good basis for populations and services, which will attract investment and employment activities additional to those that need to be located in or near a gateway. This will be complemented by the long-term objective of developing an integrated sustainable transport system. Traffic has become a major issue in Enniscorthy town and environs (including Ferns and Camolin). Reduced traffic congestion in these towns due to a reduction in through-traffic, which has no destination in the towns and is a major contributor to existing congestion, is expected to improve the environmental quality of Enniscorthy, Ferns and Camolin towns and environs. The lack of parking facilities, in particular for coaches, needs to be addressed as part of a broader development strategy, to support the development of Enniscorthy town and environs as a tourist destination.

5.1.1 Employment

Between 2002 and 2006, Enniscorthy registered strong growth in the employment categories of Agriculture, forestry and fishing growth of 9%; Manufacturing industries; Construction growth of 46%; and hotel and restaurants; and Real estate, renting and business activities.

Notably between 2002 and 2006, Enniscorthy registered weaker growth in the following activities: Transport, storage and communications (although Wexford county contains a number of storage facility based businesses, in the medium term, this could be an area of growth which is linked to the development of Rosslare port); Banking and Financial Services; Health and Social Work; and other community, social and personal service activities.

Using data derived from the Census 2006 (see Table 5.4 in Chapter 5 of Volume 2 in this EIS), the unemployment rate (i.e. having lost or given up a previous job and looking for first regular job) for County Wexford was 5.9%. This is higher than the 2006 unemployment rate for the State, which was 5.3% although the figures indicate that trends in employment status in County Wexford are comparable with national trends. The unemployment rate in Ferns at the time of the 2006 Census was approximately 6.3%. This represents a higher level than the State average. The unemployment rate in Camolin (Kilcomb) was approximately 5%. The unemployment rate in Enniscorthy was 9.2%, which is significantly higher than the national and Wexford data. These figures represent a snap shot for 2006. It should be noted here that with the current economic downturn, an increase in the unemployment rate will occur as industries and services contract due to the reduction in demand for related goods and services. The increase in unemployment is likely to affect all employment categories across the region.

5.1.2 Settlement and Population Distribution and Trends

The main towns in proximity to the Proposed Scheme, which include Wexford, Enniscorthy, Gorey, Ferns and Camolin have all experienced varying levels of population growth in recent years. Most of these towns have attracted high levels of new residential development over recent years. However, the NSS notes that care must be taken to ensure that the continued expansion of these urban areas is regulated to ensure that community, social and retail developments keep pace with recent rapid phases of mainly residential development. The population of Enniscorthy town decreased by 13.9% since 2002, reflecting the national trend to movement out of the inner urban areas to environs and outskirts of towns.[2] Camolin has seen a significant increase in population and Ferns a slight decrease. Ferns and Camolin are regarded as strategic growth areas within the settlement hierarchy which play important roles as service / retail / residential centres. The NSS recognises that these towns need to be developed in a way that respects their existing character while at the same time strengthening their role as local service centres.

The designation in the NSS of Enniscorthy as a moderate growth town within the south east region necessitates the improvement of links to and from Enniscorthy for all trip purposes by all modes of transport. It is vital that links with Dublin, Waterford and Wexford and surrounding areas are maximised not only to attract business development in the town but also to provide for leisure and other trips to and from the surrounding area.

A key component of the settlement strategy for County Wexford for the Development Plan period 2007 - 2013 and beyond, is to encourage population growth to locate in existing towns and villages that have the necessary social, community and physical infrastructure. This strategy

[2] See Enniscorthy Town and Environs Plan 2008-2014

aims to deliver a range of house types, facilities, infrastructure and amenities and an efficient transport system. The settlement strategy is divided into a number of hierarchical layers that have been chosen to reinforce the policy objectives of the National Spatial Strategy.

5.1.3 Land Use (including education, health, sports, recreation, amenity and other community activities)

The setting within which the Proposed Scheme lies is by and large of a rural nature, although includes the substantial population centres of Enniscorthy, Ferns and Camolin. Others features in the area are the Dublin - Wexford railway which for the most part runs parallel to the existing N11, and three major watercourses (the River Slaney and River Bann which are both designated for wildlife protection as well as the River Urrin). All of these watercourses are important fisheries and are linked to the tourism and recreation product of the area.

The main towns and villages within close proximity to the Proposed Scheme include Enniscorthy, Ferns and Camolin, with smaller settlements in Clogh and Boolavogue. Within the general area there are a number of institutions related to education, health, sports, recreation, amenity and other community services. These are mainly concentrated within the centres of Enniscorthy, Ferns, Camolin, Clogh and Boolavogue. There are additionally a significant number of businesses and institutions with educational, health, sport, recreational, amenity and community interest in Enniscorthy town itself.

5.1.4 Traffic and Transport

In line with the State, Wexford County, Enniscorthy, Wexford, Ferns and Camolin, travel is predominately by private vehicle. Public transport also plays a role, albeit significantly less when compared to private vehicles, in particular for Enniscorthy, Wexford. A significant proportion (higher than the State) of people in Enniscorthy, Wexford and Wexford County travel to work between 1 and 4 km. This combined with travel using private transport; suggests there is a heavy reliance on private transport for short distance travel, i.e. to and from community amenities, shops etc.

Enniscorthy, Ferns and Camolin at present are bisected by the Euroroute 01 and they suffer from the effects of heavy traffic flows including heavy goods vehicles and trips to Rosslare port. The centre of Enniscorthy is currently reaching saturation, despite alternative ways through the town, for example to the west through Carley's Bridge. Comparing traffic flows for 2006 with predicted traffic flows for the Proposed Scheme show this pattern worsening, as more vehicles are trying to travel on the already saturated network.

5.1.5 Road Safety

Between 1996 / 2004, 77 accidents – an average of 8.6 per year – have been recorded for the general area with 50 of these being on the existing N11 national primary route between Clogh and Enniscorthy. These 50 accidents have included: 7 fatalities, 11 serious accidents; and 32 accidents involving minor injuries.

There were also a considerable number of accidents at the existing N11 junction with existing N80, prior to the construction of the new roundabout that opened to traffic in August 2008. This section of road has seen one fatal, four serious and ten minor accidents in the nine-year period between 1996 and 2004.

The Ferns urban area is another hot spot for accidents. Within Ferns there have been a number of minor accidents throughout the town. There has been one fatal accident within the town. There have been four fatalities on the southern approach to Ferns along the N11. Five serious accidents have been recorded along the non-national routes approaching Ferns.

5.1.6 Features of Environmental, Cultural and Heritage Value

County Wexford has a wide variety of environmental assets and resources. The details of these resources are not presented in detail here as they have been comprehensively covered in specific chapters throughout this EIS.

5.2 IMPACTS OF THE PROPOSED SCHEME

It is inevitable that a major realignment scheme such as this will have some level of environmental impact. As long as the detailed mitigation measures outlined in this chapter and set out in the various chapters of this EIS are adequately implemented any such impacts will be minimised as far as possible and are predicted to have various impact levels as outlined in the various chapters of this EIS.

The direct construction related impacts include severance and the loss of agricultural lands and other properties. The construction of the Proposed Scheme will have potential to impact on some lands, which are identified as being of special value or sensitivity in terms of their ecology, landscape and / or water quality.

The construction phase of the Proposed Scheme will have potential to give rise to inconveniences to adjacent residences, business, landowners and road users. A number of community resources and services are located in close proximity to the Proposed Scheme and in the general area (e.g. schools, churches, petrol station, shops and residential areas). Such inconveniences may include noise, dust, visual intrusion, temporary diversions, disruption in services and traffic congestion / delays. Dust-generating activities and additional emissions from congestion and working vehicles during the construction stage could lead to a temporary

reduction in air quality locally. These impacts are fully assessed in Chapters 12 (Air and Climate), Chapter 13 (Noise and Vibration), Chapter 14 (Landscape and Visual) of this EIS with appropriate mitigation measures recommended where necessary.

There may be small impacts on local population numbers and patterns as some workers may relocate to the area for the purposes of construction related employment. In terms of potential positive impacts, the construction phase will give rise to local employment and create business for building suppliers and related industries for the duration of the Proposed Scheme. This may have a small temporary positive impact for local employment lasting for the duration of the construction stage.

The Proposed Scheme will improve safety and access on a major strategic transport corridor for the south east region for all road users and will also result in the more efficient movement of vehicles, people and goods in the region. Overall the Proposed Scheme is predicted to have a major positive impact on the local community, employment and enterprise.

The Proposed Scheme will alter the routing of traffic, and thus some businesses currently served by existing N11, N80 and N30 through traffic and some which profit indirectly from passing trade, will see a reduction in custom and trade in the towns to be bypassed. This has been mitigated as far as feasible by providing appropriate access from the Proposed Scheme to the town centres, so traders, suppliers and customers will still be able to access these businesses. In most cases it can be assumed that the economic activity will simply be taken up elsewhere and the overall net effect to the regional or national economy is likely to be neutral.

Some properties will experience an increase in noise and vibration nuisance however this number will be far exceeded by the numbers of properties which will experience a significant positive impact as a result of the re-routing of traffic out of existing urban populated centres. Furthermore any such impacts on properties which will be affected by the Proposed Scheme will be mitigated through specific measures as identified throughout this EIS so that impacts are reduced to within industry standard levels.

Similarly, some properties will experience unavoidable severance and loss of lands. Any such impacts have been minimised as far as feasible, through the careful development of the Proposed Scheme through the planning phases. For any unavoidable impacts of this nature landowners will be compensated through the Compulsory Purchase Order process.

Overall any residual impacts, either construction or operation related, which will remain after the implementation of mitigation measures, are far outweighed by the significant positive impacts which the Proposed Scheme will bring to the south east region.

Efficient road infrastructure and transport policy (including appropriate signage, lighting, landscaping and tourist information services) will complement the development of the

regional tourism product. This will be reinforced by the continued growth of the Rosslare Europort, the development of Wexford as a hub, and the implementation of the local and regional development and local area plans. In the long run this will compensate for any short-term negative economic impact on local businesses which are served by through traffic on the existing N11 national primary route.

In the long run, improved road safety, reduced congestion and air / noise pollution in Enniscorthy, Ferns and Camolin will result in calmer and safer urban environments, improving the quality of life for residents and visitors in these towns. This will improve the environment of the towns for the local residents and visitors that are attracted to the area for heritage, culture and local amenities.

5.3 PROPOSED MITIGATION MEASURES

In order to ensure the identified impacts are reduced as far as feasible the following mitigation measures are proposed:

- Local businesses and residents will be informed, in advance by the successful Contractor, of the date of commencement of the main construction works and will be provided with information on the intended construction programme.
- Information will also be provided, in advance by the successful Contractor, on any alternative access / traffic management arrangements, disruption in services and the like. Any such proposals will be well managed by the successful Contractor and appropriate measures will be undertaken so as to minimise disruption to the local communities.
- A Traffic Management Plan, which will be included within the Environmental Operating Plan, will be produced and implemented by the successful Contractor prior to construction works commencing. The planning, design, implementation and maintenance of traffic management measures will be the responsibility of the successful Contractor and will be undertaken in compliance with the requirements of the any relevant authorities including the Gardaí.
- In order to minimise impacts to adjacent lands, fencing will be erected to clearly delineate the Lands Made Available to the successful Contractor. Works will not extend outside of the lands made available to the successful Contractor without prior written agreement of the Local Planning Authority (Wexford County Council) and / or relevant landowners / occupiers.
- Many of the mitigation measures outlined in the various chapters of this EIS also relate to socio-economic impacts and are therefore not repeated here. In order to minimise impacts on environmental resources and features of socio-economic interest, all of the

mitigation measures proposed within this EIS, particularly those relating to construction control measures (e.g. control of surface water and dust, maintenance of accesses leading to, from or crossing the Proposed Scheme, maintaining the lands made available and working site free from mud, debris or other hazardous substances etc. during construction operations) will be fully implemented by the successful Contractor.

- The successful Contractor will implement an Environmental Operating Plan as per the *Guidelines for the Creation, Implementation and Maintenance of an Environmental Operation Plan* (NRA, 2006), which will contain all mitigation measures contained in this EIS.
- Regular monitoring of construction works will be performed to ensure environmental impacts are minimised. Once complete, the road will be maintained in good repair. This will be the responsibility of the PPP Company and / or the Road Authority.

6.0 AGRICUTURAL IMPACT ASSESSMENT

Philip Farrelly & Company carried out an agricultural impact assessment on the construction of the M11 Gorey to Enniscorthy Realignment Scheme. The assessment was carried out during in 2007 and 2008. The Proposed Scheme will directly impact on 109 farms, consisting of 71 farms on the N11 Mainline, 9 on the N80 Link Road and 29 farms on the N30.

The area to be removed from agricultural production is approximately 460 Ha. The topography is generally flat to undulating. Tillage and grassland are the primary land uses in the area.

On the M11 / N11 Mainline the overall impact will be major on 23 farms, moderate on 33 farms, minor on 13 farms and not significant on 2 farms. On the N80 Mainline the overall impact will be major on 3 farms, moderate on 5 farms and minor on 1 farm. On the N30 Mainline the overall impact will be major on 8 farms, moderate on 10 farms, minor on 9 farms and not significant on 2 farms.

Severance will occur on of the affected farms and access will be required to severed areas on each of the scheme sections. Farmyard facilities will be affected on two holdings on the Proposed Scheme.

Following recommended mitigation relating to severance, the residual impact on the M11 / N11 Mainline will be major on 12 farms, moderate on 42 farms, minor on 15 farms and not

significant on 2 farms. On the N80 Link Road the residual impact will be major on 1 farm, moderate on 7 farms and minor on 1 farm. On the N30 Mainline the residual impact will be major on 5 farms, moderate on 13 farms, minor on 9 farms and not significant on 2 farms.

The main impacts on agricultural activity during the construction phase of the new road will be:

- Construction noise
- Dust
- Restricted access to severed land parcels
- Disturbance of drainage systems
- Disturbance of services

In each case mitigation measures are possible, which will minimise the impact of the above.

The impacts of this scheme upon agriculture, while significant to the individual farmer, are not significant on a county or national level.

7.0 MATERIAL ASSETS IMPACT ASSESSMENT - PROPERTY

Philip Farrelly & Company carried out an impact assessment on the material asset – Non Agricultural Properties affected by the construction of the N11 Gorey to Enniscorthy Realignment Scheme. The assessment was carried out during in 2008 and 2009. The proposed development consists of N11/M11 Mainline, N80 Link Road and N30 Mainline. The N11/M11 Mainline will directly impact on 24 properties. The N80 will impact on 1 property and the N30 Mainline will impact on 22 properties.

Of the properties affected on the scheme, 2 are commercial properties with the remainder residential properties. The residential properties consist of ‘’one off’’ houses located along the local county and regional roads.

The N11 / M11 Mainline will result in the acquisition of a partially constructed residential property. The N30 Mainline will result in the acquisition and demolition of two residential properties. One of these residential properties has an adjoining commercial property which will also be acquired.

In most cases the impact on properties will be confined to acquisition of public roadway while in other cases access to properties will be impacted upon.

Mitigation in most cases will include monetary compensatory measures for the loss of land, buildings and other injurious affection and will be agreed as part of the land acquisition procedures for the Proposed Scheme. Where access is impacted, access will be reinstated, or where this is not feasible alternative access will be provided.

The NRA code of practice Guide to Process and Code of Practice for National Road Projects Planning and Acquisition of Property for National Roads will be adhered to with respect to all land potentially impacted by the construction of the scheme**.**

8.0 MATERIAL ASSETS IMPACT ASSESSMENT - INFRASTRUCTURE

The Proposed Scheme was assessed for its likely effects on the existing railway and major utilities that it crosses, generally using mapping and photography of the study area.

Railway

The proposed national routes intersect the single track Dublin –Wexford railway in:

(i) Ballygullen, at approximate chainage M11:3,250m, and

(ii) Ballynabarny, at approximate chainage N80:2,800m.

There will be associated construction and operational impacts on the existing railway at both of these crossing locations. Both such impacts will be minimised via compliance with the requirements of Iarnród Éireann and the Railway Safety Commission.

Electricity Lines

The electricity lines that may be effected by the Proposed Scheme range from low voltage lines (less than 38kV) up to 110KV ESB Lines. The M11 Mainline crosses the:

(i) Crane to Arklow 110kV ESB line route at two locations, at approximate chainages M11:12,000m in Carrigeen and M11:17,130m in Crane; and

(ii) Crane to Wexford 110kV ESB line route at three locations, at approximate chainages M11:17,400m in Crane, M11:19,345m in Ballydawmore and M11:20,890m in Tomnafunshoge.

The N80 Link Road crosses the Crane to Enniscorthy 38kV ESB line route at approximate chainage N80:1,550m in Ballynahallin. There are also a number of low voltage line routes crossed by the proposed national routes.

Any impacts on these ESB Lines from the Proposed Scheme are likely to occur during the construction phase. The likely impacts are not considered to be significant as diversions will be relatively straight forward for a competent contractor to undertake.

Water and Foul Sewer Lines

The proposed national routes cross existing watermain routes at 4 locations. There is one sewage / foul pipe route crossed by the Proposed Scheme.

It is considered that the principle impact on the existing watermain and foul sewer routes crossed by the Proposed Scheme will be during the construction phase. Any potential impacts will be minimised during construction as standard operating procedures will be adhered to.

Telecommunication Lines

The proposed national routes cross Eircom line routes at approximately 26 locations. Of these locations, 3 are crossings involving fibre optic cables, which are located on the:

(i) M11 Mainline at approximate chainage M11:28,050m;

(ii) N80 Link Road at approximate chainage N80:2,840 m; and

(iii) N30 Mainline at approximate chainage N30:6,300m.

A Vodafone telephone mast is located in the vicinity of the N11 Mainline in Scurlocksbush at the following approximate grid reference; E299488, N133620.

Any impacts on these telecommunication lines from the Proposed Scheme are likely to occur during the construction phase and the application of standard procedures during the construction phase will ensure that any likely impacts are minimised.

9.0 ECOLGOCIAL IMPACT ASSESSMENT

The existing ecology of the area was surveyed and evaluated and the impacts of the Proposed Scheme on the existing ecology were then assessed. Measures were taken in both the design and mitigation stages to reduce impacts to terrestrial and aquatic ecology.

The main habitats present in the vicinity of the Proposed Scheme are various types of agricultural land, woodland, hedgerows, scrub, wet grassland and watercourses. These were of varying conservation value. In addition the area supports a range of terrestrial and aquatic fauna species including Bats, Badgers and Barn Owl. Many of the watercourses support protected species such as Otter, Kingfisher, Atlantic Salmon, Brook, Sea and River Lamprey and Freshwater Pearl Mussel. Some of these species are protected at an international level. The Proposed Scheme crossed the River Slaney candidate Special Area of Conservation (cSAC).

The impacts to the existing ecology that it was considered may potentially arise as a result of the Proposed Scheme include construction related impacts such as disturbance, injury and / or loss of individuals, loss of habitat and pollution and siltation of watercourses from watercourse crossing construction. Impacts that may arise as a result of operation of the Proposed Scheme include habitat fragmentation and collision mortality.

The design of the scheme incorporated measures to reduce impacts to terrestrial and aquatic ecology and consultation with the National Parks and Wildlife Service (NPWS) and Eastern Region Fisheries Board (ERFB) was undertaken. Comments received from these

organisations were incorporated where possible in the design and mitigation of the Proposed Scheme.

Design measure sto reduce impacts to ecology include the inclusion of a clear span bridge at the Slaney River crossing point to avoid impacts to the River Slaney cSAC in this location, increased culvert heights to allow for Bat passage under scheme and to increase light to facilitate fish passage, use of bottomless culverts on all important Salmonid streams, provision of Badger underpasses with suitable planting in areas where no access underpasses are to be constructed, planting to encourage Badgers and Bats to 'safe' crossing points, planting of verges to discourage Barn Owls from foraging along the Proposed Scheme and use of balancing ponds, with wetland species planting and silt interceptors to avoid decreases to watercourse water quality at outfall locations from surface run-off.

Mitigation measures that will be used to further reduce or remove impacts on ecology include following best practice guidelines to avoid disturbance/ loss of individuals of nesting birds, Badgers, Bats during clearance of terrestrial habitats. These mitigation measures include pre-construction mammal surveys, timing of construction work to avoid sensitive periods and temporary or permanent exclusion of roosts or setts where these may be disturbed. In addition, best practice guidelines for the crossing of watercourses will be followed to avoid disturbance to spawning fish, Otter and Kingfisher. Measures will also be taken to reduce the spread of invasive species along watercourses as a result of construction work. Culverts will be designed according to best practice guidelines, to ensure that factors such as the slope and flow through the culverts facilitate fish passage. Baffles will be used where necessary to maintain minimum water heights through the culverts and these will be notched to allow for Lamprey passage. All culverts will have mammal ledges to allow mammals such as Otters and Badgers to cross under the Proposed Scheme. Measures to prevent bank erosion downstream of a culvert have been specified for one tributary which is upstream of the River Bann. This is to prevent impacts of silt run-off on Freshwater Pearl Mussel in the River Bann.

The measures described above will reduce potential impacts of the Proposed Scheme on ecology. Many potential impacts were removed but where probable negative impacts remain, these residual impacts are considered to be significant at the Local level only.

10.0 SOILS AND GEOLOGY IMPACT ASSESSMENT

Soil takes thousands of years to evolve and is essentially a non-renewable resource. Soil performs many vital functions, the most important of which include supporting production of food

and other biomass (forestry, biofuels etc.) and controlling the flow of rainfall to streams and groundwater bodies.

Available soil maps indicate that with the exception of the Macamore Clay near the northern end, soils along the Proposed Scheme are derived from non-limestone rock and/or non-lime subsoils. The Macamore Clay is derived from lime rich mud deposited on land from the former sea bed. Although soils are indicated to be relatively deep over much of the Proposed Scheme, they do have variable drainage characteristics and alternate between well drained and poorly drained.

Subsoil maps indicate that a variety of subsoils occur along the Proposed Scheme, principally alluvium (along floor of river valleys), stoney glacial till and sand/gravel (both derived from the underlying sandstone and shale bedrock) and clayey glacial till (derived from mud from the former sea bed).

Bedrock geology maps indicate that the Proposed Scheme is underlain by a variety of rock types, including strong, hard volcanic rocks and weaker, clay rich slates and siltstones.

There are no quarries, mines, landfills or waste permit sites along or immediately adjacent to the Proposed Scheme, nor are there any sites of geological heritage value. A former Local Authority landfill facility is located approximately 400m to 500m west of the N11 Mainline in Tomnafunshoge townland.

The most significant direct impact of the construction and operation of the Proposed Scheme on soils and geology is the loss of existing agricultural land and the underlying soil resource. The loss of the productive soil resource will be permanent and irreversible. In order to minimise the extent of soil loss arising from the scheme, soil will be excavated and stockpiled, pending re-use and re-establishment within the scheme. Insofar as practicable, soil cover will be placed along embankment and cutting side slopes, along carriageway verges, on screening mounds and at landscaping areas.

Although small pockets of filled ground were encountered at a few locations along the Proposed Scheme, much of it appears to comprise inert construction and demolition waste and there is no evidence to suggest that any of it is contaminated. There will be no impact arising from the excavation, transport, handling or re-use of these soils where they are encountered along the Proposed Scheme.

The Proposed Scheme will result in large scale excavations into the underlying subsoil and bedrock in many areas, creating new exposures. These exposures can facilitate deeper insight and understanding of the origin and nature of the underlying geological strata and are therefore likely to be of some geological heritage value.

There are a number of potential impacts on soil and geology associated with the construction phase of the Proposed Scheme, principally arising from the excavation, handling, storage,

processing and transport of earthworks materials. These impacts arise directly as a result of on-site excavation, embankment construction and landscaping activities.

Where soils and/or subsoils are disturbed, excavated and/or stored for re-use during construction, they are prone to erosion by surface water run-off. In addition, *in-situ* subsoils may be compacted by earthmoving machinery, reducing their ability to store water. This in turn could lead to increased run-off and soil erosion and discharge of sediment laden surface water run-off to local streams and watercourses. In order to minimise soil erosion, a number of measures will be implemented during the construction phase of the Proposed Scheme including diversion of surface water run-off to settlement ponds, construction of cut-off ditches to prevent surface water run-off from entering excavations and placing stone over bare soil, particularly in the vicinity of watercourses, to prevent rutting by site traffic.

Some of soft, compressible soils encountered along the Proposed Scheme may require excavation and removal. It is anticipated that these soils will be re-used within the Proposed Scheme and that there is unlikely to be a requirement to transfer them to off-site waste disposal or recovery facilities. Where necessary, the handling and transfer of excess soil will be undertaken in accordance with the Waste Management Acts and Regulations 1996-2008.

The storage and handling of fuels and lubricants for plant and machinery and of non-hazardous or hazardous liquid and solid wastes during the construction phase of the Proposed Scheme increases the potential risk of localised soil contamination arising as a result of an accident, spill or leak. Measures will be implemented to reduce the risk of soil contamination arising as a result of spills or leakages during the construction phase including amongst other measures, storage of chemicals and fuels on bunded concrete surfaces, provision of spill kits at sensitive areas.

Assuming active management of surface water run-off and the handling of fuels, lubricants and wastes during the construction phase of the Proposed Scheme are in accordance with established best practice, the potential for soil erosion and soil contamination will be minimised and the overall environmental impact on soils and geology will be imperceptible.

After the road has opened, the loss of soil cover, the compaction of the underlying subsoil and the sealing of the ground surface could lead to an increase in soil erosion along the Proposed Scheme as a result of an increase in the volume and rate of surface water run-off. The potential for soil erosion will be minimised by installing drainage control systems and re-establishing vegetation on all bare or exposed soil surfaces.

Assuming positive drainage control measures are established during the operational phase of the Proposed Scheme and that vegetation cover is re-established, there should be no further long-term impacts on soils and geology.

11.0 WATER QUALITY, HYDROLOGICAL AND HYDROGEOLOGICAL IMPACT ASSESSMENT

The main hydrological features in the vicinity of the proposed scheme are the River Slaney and River Bann (N11 Mainline). The main tributaries of the River Slaney in the vicinity of the N11 Mainline are the Tinnacross Stream and River Bann. The River Boro confluence with the River Slaney is approximately 2 km to the west of the N11 Mainline.The streams that flow through and in the vicinity of Clogh are within the catchment area for the Owenavorragh River.

The N80 Link Road, the N11 Mainline and the N30 Mainline are all within the catchment of the River Slaney. The River Slaney / River Urrin confluence is approximately 3km to the west of the proposed N30 Mainline route.

A review of the baseline water quality of the above watercourses was carried out by referring to EPA water quality databases. In addition, AWN collected water samples for chemical analysis from watercourses at a number of locations along or in the vicinity of the proposed scheme in order to establish the baseline water quality. Based on the available information, water quality in water bodies in the vicinity of the proposed scheme was generally found to be satisfactory.

Reference to the GSI National Draft Bedrock Aquifer Map indicates that the N11 Mainline is underlain by a Regionally Important Aquifer (Rf) within fissured bedrock. The bedrock aquifer underlying the southern part of the N11 Mainline has been classified by the GSI as a Poor Aquifer (Pl), which is generally unproductive except for local zones. No sand or gravel aquifers have been mapped for the study area based on information obtained from the GSI groundwater database.

Reference to the GSI National Draft Bedrock Aquifer Map indicates that the M80 Link Road is underlain by a Regionally Important Aquifer (Rf). No sand or gravel aquifers have been mapped for the N80 Link Road based on information obtained from the GSI groundwater database.

The major bedrock aquifer underlying the N30 Mainline has been classified by the GSI as a Regionally Important Aquifer (Rf).

No groundwater source protection zones, which are zones defined by the GSI within which development is limited in order to protect groundwater from potential pollution, were identified along the proposed scheme.

Aquifer vulnerability has been classed as extreme along some sections of the proposed scheme. In general, the area has not been fully mapped by the GSI in terms of groundwater vulnerability.

Potential impacts from the construction phase of the proposed scheme may arise from surface water runoff from the excavations entering nearby watercourses or accidental spillages of materials such as fuel oils or lubricating hydrocarbons, which have the potential to pollute.

A range of mitigation measures will be put in place during the construction phase including collection and attenuation of any water collecting in excavations or generated by dewatering operations, bunded areas, designated refuelling areas, spill kits, spill training, double skinned fuel tanks and hazardous waste storage areas, to ensure the impacts associated with the construction phase are minimal.

Potential impacts to the water environment during the operational phase largely relate to the release of silt laden water and hydrocarbons water from surface water into surrounding water courses in the event that the balancing ponds and hydrocarbon interceptors are not properly maintained. These structures will be adequately maintained in order to protect the quality of surrounding water courses and the underlying groundwater.

12.0 AIR AND CLIMATE IMPACT ASSESSMENT

12.1 INTRODUCTION

The air quality impact assessment investigated the local and regional impacts associated with the Proposed Scheme. The local air quality assessment involved determing the impact on pollutant concentrations at properties close to the Proposed Scheme. The regional air quality assessment (including climate) involved determining the impact of increased vehicle emissions on a regional and national scale.

12.2 LOCAL AIR QUALITY ASSESSMENT

The local air quality assessment was conducted for the following pollutants: nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and benzene. Pollutant levels were compared to their ambient limit values as set out in the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002) and EU Directive 2008/50/EC.

The assessment of the receiving environment consisted of a baseline air monitoring survey and an assessment of long term monitoring carried out by the Environmental Protection Agency (EPA). The baseline survey measured roadside and rural background levels of these pollutants in the region of the Proposed Scheme. Monitoring of nitrogen dioxide (NO_2) was carried out using passive diffusion tubes sited at twelve locations close to N11/M11 Mainline, two locations close to the N80 Link Road and four locations close to the N30 Mainline. Benzene monitoring was carried out using diffusion tubes at five locations close to N11/M11 Mainline, one location

close to the N80 Link Road and two locations close to the N30 Mainline. Monitoring along the existing N11 was conducted for both NO_2 and benzene in Ferns, Camolin and Enniscorthy. Baseline monitoring for PM_{10} and $PM_{2.5}$ was carried out at two background locations close to the N11/M11 Mainline.

Based on the baseline monitoring results and an analysis of representative long-term EPA monitoring data, the current air quality in the vicinity of the Proposed Scheme is presently below the ambient air quality standards for NO_2, benzene, PM_{10} and $PM_{2.5}$.

The operational impact of the Proposed Scheme was assessed using the DMRB screening model, which is a recommended screening model for assessing the impact of road traffic emissions on air quality. The inputs to the air dispersion model consist of information on road layouts, receptor locations, annual average daily traffic movements (AADT), annual average traffic speeds and background concentrations. Ambient pollutant concentrations for the "do minimum" and "do something" scenarios were predicted at 37 worst-case assessment locations close to the Proposed Scheme.

The results of the dispersion modelling assessment show that concentrations of CO, benzene, PM_{10}, $PM_{2.5}$ and NO_2 in the region of the proposed road during the opening year (2013) and design year (2028) are below the ambient air quality standards. The worst-case impact of the N11/M11 Mainline, the N80 Link Road and the N30 Mainline is to increase pollutant levels by 1.5% - 6.5% of the relevant limit values. Based on the National Roads Authority (NRA) air quality assessment criteria, the impact of the Proposed Scheme on levels of CO, benzene, PM_{10}, and $PM_{2.5}$ is negligible at all 37 assessment locations. The impact on levels of NO_2 is slight adverse at three locations and negligible at the remaining 34 assessment locations. In summary, although some increases in the maximum pollutant concentrations may occur at nearby properties, the resulting pollutant levels will be significantly lower than the limit values.

The impact of nitrogen oxides (i.e. NO_x) emissions resulting from the proposed road development at the Slaney River SAC was also assessed. Dispersion modelling and prediction was carried out using the DMRB screening model and the methodology of the NRA. The results show that predicted annual average NO_x level at the Slaney River SAC is below the limit value of 30 $\mu g/m^3$ for both the "do nothing" and "do something" scenarios in 2013 and 2028. The maximum predicted NO_2 dry deposition rate reaches only 7% of the critical load for inland and surface water habitats.

12.3 REGIONAL AIR QUALITY ASSESSMENT

The regional air quality assessment investigated the impact of the Proposed Scheme on national emissions of the following pollutants: nitrogen oxides (NO_x), volatile organic compounds (VOCs)

and carbon dioxide (CO_2). Emissions of these pollutants were investigated using the DMRB screening model.

With regard to NO_x and VOCs, results indicate that the impact of the proposed road on national emission levels is negligible. For the assessment year 2013, the predicted impact of the Proposed Scheme is to increase NO_x levels by 0.0719% of the NO_x emissions ceiling and increase VOC levels by 0.0041% of the VOC emissions ceiling to be complied with in 2010. For the assessment year 2028, the predicted impact of the Proposed Scheme is to increase NO_x levels by 0.0927% of the NO_x emissions ceiling and increase VOC levels by 0.0087% of the VOC emissions ceiling to be complied with in 2010.

With regard to CO_2 emissions and climate impacts, the assessment results show the impact of the proposed road will be to increase CO_2 emissions by 0.0253% (in 2013) and 0.0396% (in 2028) of Ireland's 2008-2012 Kyoto target. Thus, the impact of the proposed road development on national greenhouse gas emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol.

13.0 NOISE IMPACT ASSESSMENT

Planning Permission is currently being sought for the construction of the Clough to Oilgate scheme which includes a two bypasses of Enniscorthy: via the N11 towards the south and via the N30 towards the west

The existing noise climate has been surveyed and has been found to be typical of a rural area. Prevailing noise levels are predominantly due to road traffic along the existing local roads and agricultural activity. At locations near the existing N11 and N30, the noise level is governed by traffic on these routes.

When considering a development of this nature, the potential noise & vibration impact on the surroundings must be considered for each of two distinct stages: the short term impact of the construction phase and the longer term impact of the operational phase.

Subject to good working practice during the construction phase and not exceeding any limits proposed within the EIS, it is anticipated that construction noise and vibration can generally be managed to within acceptable limits.

The noise impact of the road has been assessed in accordance with the Guidelines for treatment of Noise and Vibration in National Road Schemes. A number of mitigation measures have been proposed to ensure that noise emissions comply with the criteria in this document.

14.0 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Landscape Context

Landscape impact may be defined as changes in the physical landscape, which may give rise to changes in its character and how it is experienced. Visual impact comprises the change in the composition of available views from dwellings and public areas resulting from a proposed scheme. This chapter of the Environmental Impact Statement provides an assessment of the landscape and visual impact of the M11 Gorey to Enniscorthy Realignment Scheme.

Land use in the area through which the Proposed Scheme runs is predominantly cultivated land and pastoral farming. Commercial use is present at Enniscorthy and within settlements at Camolin, Ferns and along the existing M11 corridor. Rural settlement and farmyards are visible throughout the study area. Nature conservation interest includes riparian habitat along the River Slaney, field ponds, areas of woodland, pasture and hedgerows (refer to Chapter 8 (Ecology) of this EIS for details). Elements of cultural heritage include numerous historic buildings and structures within the environs of Enniscorthy and the 1798 battlefield at and around Vinegar Hill (refer to Chapter 15 (Archaeology, Cultural and Architectural Heritage) of this EIS for details). A backdrop to the study area is provided by the Backstairs Mountains to the west, by Carrigroe Hill and Oulert Hill to the east.

At a more local scale the landscape generally exhibits undulating topography with a pattern of open fields enclosed by hedges of varied vegetation composition. There are pockets of woodland and landscape planting associated with rural settlement, both historic and modern. Local roads are a feature throughout the landscape. These roads are generally small scale and lined by hedgerows and/or embankments with a strong rural character. Outside of the existing N11 corridor and Enniscorthy, Camolin and Ferns, the majority of the landscape within the study area is tranquil and is perceived as peaceful

The lands within the study area are largely taken up by agricultural grassland, tilled land and arable land that are not identified as having high ecological value, but that contribute to the overall countryside character. Overall the combination of landscape features suggests a Grade 2- very attractive landscape that would be moderate to very sensitive to development.

The Wexford County Development Plan 2007-2013, Landscape Character Assessment divides the County into character areas on the basis of distinctive landscape character, and identifies policy objectives for the landscape management of these character areas. The Proposed Scheme is located within two character areas; Policy Area 1 – Uplands and Policy Area 2 – Lowlands. The Lowland Area (as it relates to the proposed scheme) is further divided into Policy Area 2 – Lowlands and Policy Area 2 - Slaney Valley.

Landscape Mitigation

Landscape plans have been prepared for the Proposed Scheme as part of the mitigation of landscape and visual impacts. The landscape proposals include planting to provide screening in specific locations and also to help integrate the Proposed Scheme into the existing landform and patterns in the local landscape.

The proposed planting concept includes the application of three main plant mix types; hedgerows, dense shrub/woodland planting and a species rich grassland mix. Proposed hedges are located where existing hedgerows are currently prevalent in the landscape and/or where a row of screening planting is required. In general, a 2.5 metres width of space is allocated to allow for robust and diverse hedgerow planting. Shrub/woodland planting is proposed to provide screening, in particular where a dense band of trees is required to screen lighting such as at new junctions and to help integrate the Proposed Scheme into existing vegetation patterns. The shrub/woodland planting is also proposed, often in conjunction with species rich grassland, to provide driver interest along long stretches of road cutting and to soften the impact of high cuttings and embankments along the length of the Proposed Scheme. Measures to carefully grade the embankments and cutting along the proposed route with the proposed planting will integrate these into the existing local landforms, landscape pattern and character.

Proposed planting also takes account of ecological mitigation requirements and cultural heritage protection as detailed in the relevant Chapters of the EIS. It is anticipated that the final landscaping proposals will be detailed in close consultation with an ecologist to ensure planting will achieve anticipated screening, maximum benefits to landscape character and mitigation of impacts on ecological values. Continuation of this comprehensive approach to landscape mitigation through to detailed design and project completion is essential.

Ecological impacts are discussed in detail at Chapter 9 of this EIS. Areas where badger underpasses are proposed are to be planted to provide appropriate cover for the badgers (and other mammals) to move through. New culverts and stream diversions are to be re-planted to return each area to as close to original condition as possible, integrating the new section back into the old alignments. Local road upgrades include provision for replanting vegetation to match existing roadside treatment such as hedgerows and tree lines in recognition of the importance of this roadside vegetation as habitat for species moving through the rural landscape. Proposed planting along the N30, N80 and N11 mainline also enables severed field boundary vegetation to be re-connected with new connections made possible for wildlife (such as bats for example) to move through the landscape.

Noise related impacts are discussed in detail at Chapter 13 of this EIS. It is recognised that the noise barriers have potential in themselves to create a visual impact, therefore landscaping is proposed to soften views to the barriers where they are visible from private property.

Storm water attenuation ponds are proposed intermittently along the length of the Proposed Scheme. The ponds are to be constructed to appear naturalistic in the landscape with shallow slopes to surrounding bunds and planting to help integrate the new landforms into the existing landscape character.

Lighting is proposed at the primary junctions along the N30 Mainline, the N80 Link Road and the N11 Mainline. The entire length of the Proposed Scheme will not be lit. Where possible, shrub/woodland mix planting is proposed in dense bands or thickets in and around the major junctions to enable maturing trees to reduce the degree of light spill into the wider landscape. Full cut off high pressure sodium lamps are proposed to minimise light spill and the impacts of lighting visible at night. The minimum height of light standards possible in each situation are also used. The lighting proposed will be the minimum necessary for road safety.

Proposed overpasses and underpasses at local road junctions are to be planted to screen cuttings and embankments and help integrate earthworks and structures into the existing landscape.

A detailed account of this comprehensive approach to the landscape mitigation is provided within Chapter 14 of the EIS with a full set of Landscape Masterplans included in Volume 4 of the EIS in Figure 14.3.

Visual Impact

A set of Tables at Volume 3 of the EIS in Appendix 14.2 details visual impact along the length of the Proposed Scheme. Mapping of the visual impact at Opening Year (i.e a 'worst case scenario' of visual impact before mitigation planting has established and in winter months) can be found in Volume 4 of the EIS in Figure 14.3. The Table below (extracted from Chapter 14) provides a summary of the overall visual impact.

Table 14.3 Summary of Visual Impact on Dwellings and Commercial Buildings.

Impact	**Winter** **Opening Year 2013**	**Summer** **Design Year 2028**
Substantial beneficial change		
Moderate beneficial change		
Slight beneficial change		
No overall change/neutral	352	515
Slight adverse change	157	68
Moderate adverse change	74	13
Substantial adverse change	14	1
Total	597	597

At opening year it is predicted that there is a range of visual impact with most visual receptors having no views to the Proposed Scheme or a neutral impact score. There are, however a relatively high number of slight adverse impacts where the Proposed Scheme will cause a barely perceptible deterioration in the existing view. These impacts are generally where views to the scheme include a narrow field of view, views from secondary elevations, views filtered by existing vegetation, limited by topography or where the road surface and associated traffic will be out of view within a minimum of 4m depth cutting. A combination of these factors is often common in the slightly impacted views. Moderate adverse effects were also recorded at opening year with a small number of substantial visual impacts where the Proposed Scheme will cause a significant deterioration in the existing view.

Visual impact at design year is predicted to be significantly reduced, primarily as a result of maturing vegetation planted as part of the construction process specifically to mitigate landscape and visual impact (refer to EIS Volume 4 Figure 14.3 Landscape Masterplans). In particular the 'slight' visual impacts have a high potential to be effectively screened by planting as it matures, often eliminating views to the Proposed Scheme and associated traffic. The Proposed Scheme will, after 15 years, become screened in most areas by maturing planting, reducing the slight, moderate and substantial impacts of opening year. Visual impacts will be reduced in some instances to none while in others the planting will soften visual impact to bring the impact down but not completely eliminating the deterioration in view. Planting is some instances may change the composition in a view, with a greater degree of vegetation visible where previously there may have been more open fields in the view. It is considered that the proposed planting, while at times changing elements in a particular view, will help maintain the character of the landscape in a wider context.

Plant density, species types and exact location of trees so as to achieve the best results in regard to screening with landscaping, will need to be finalised as part of the ongoing detailing of the Proposed Scheme. The linear nature of the Proposed Scheme enables planting along the road corridor to not only screen individual views but also often appear in keeping with linear roadside and hedgerow vegetation patterns in views of the wider landscape. Detailed landscape design proposals will also ensure the comprehensive approach to landscaping treatment, (combining mitigation of: ecological impact, cultural heritage impact, landscape character impact and visual impact), results in high quality, sustainable and attractive landscape treatment along the road corridor.

The overall visual impact of the scheme is, on balance, considered slightly negative to neutral. While there will be a number of individual properties with ongoing visual impact, this must be balanced with the much greater number with slight or no visual impact.

Landscape Impact

Localised adverse effects on landscape character are primarily associated with areas of lengthy and high embankment that will appear at odds with existing topography. The tranquillity of areas not currently affected by the existing N11 and busy local roads will also be degraded by the Proposed Scheme. The Slaney River crossing will have a moderate impact due to the scale of the proposed approach embankments and the bridge, however ecological values will be well protected through used of a single span structure. Removal of trees and hedgerows will be well mitigated through extensive, varied planting along the entire length of the scheme with particular emphasis on mimicking existing vegetation patterns.

The linear nature of a road enables new roadside landscape planting to play a significant role in mitigating the impact of the Proposed Scheme. Woodland/shrub planting and hedgerow planting along the road corridor will help integrate the road into the existing strong linear patterns of the field boundary and local road hedgerows and vegetation patterns. Proposed landscape treatment will also (in the medium to long term) soften the impact of cut and embankment slopes in areas of more gently rolling or flat landscape. The impact on landscape character across the study area as a whole is considered on balance to be slight to moderately adverse.

15.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE IMPACT ASSESSMENT

Irish Archaeological Consultancy Ltd has prepared this report on behalf of Scott Cawley and Associates for Wexford County Council, to study the impact, if any, on the archaeological, architectural and cultural heritage resource of a the proposed N11 Gorey to Enniscorthy Realignment Scheme, the N80 Link Road and the N30 Enniscorthy Bypass. These schemes have a combined length of 40km (OS Sheets 11, 16, 19, 20, 25, 26).

A total of 168 sites of archaeological, architectural or Cultural Heritage significance have been identified within the receiving environment of the three proposed routes during the course of this assessment. Of these sites 92 have been identified in association with the proposed N11 Mainline, with 24 identified in association with the N80 Link Road and 52 in association with the N30 Enniscorthy Bypass.

Of these 92 sites identified within the receiving environment of the N11 Gorey to Enniscorthy Road Scheme, 6 have been designated as Archaeological Heritage (AH) sites, and are recorded as RMP sites. These sites and the designated zone of archaeological potential that surrounds them receive statutory protection under the National Monuments Act. None of these sites or their designated RMP constraint will be directly impacted on by the proposed scheme. The closest recorded monument to this scheme is AH 14, the RMP constraint area of which is located immediately adjacent to the proposed land take. Furthermore, there are no National Monuments

within the receiving environment of the N11 Gorey to Enniscorthy Road Scheme and none of the listed sites are further protected with a Preservation Order.

A further 36 sites have been identified within the receiving environment of the N11 Gorey to Enniscorthy Road Scheme as Areas of Archaeological Potential (AAP). Of these, 38 townland boundary crossings have been identified along with 26 stream or river crossings. Some of these are within one site designation as quite often streams and rivers form a townland boundary. The water courses have been designated AAPs due to the fact that a water supply often makes an area more desirable for human habitation and the water courses themselves may preserve archaeological artefacts such as worked wood, leather and organic environmental information. These artefacts are not typically found within the terrestrial archaeological record as water tables are often not high enough to preserve such items. The small watercourses that will be crossed by the proposed scheme will be subject to culverting.

A total of 17 Sites of Archaeological Potential have also been identified within the receiving environment of the proposed N11 Gorey to Enniscorthy Road Scheme. These consist of a variety of potential site types including the sites of former post medieval settlements, which were identified through the analysis of the historic OS map editions. The most significant site that was recorded is SAP 4, which consists of a holy well and possible bullaun stone located within the townland of Mountgeorge. This site is located 46m from the proposed land take of this route.

A total of 33 Built Heritage sites were also identified within the receiving environment of the proposed N11 Gorey to Enniscorthy Road Scheme. These consist of a variety of structures, including country houses, bridges, cottages and vernacular properties. There are two Protected Structures located within the receiving environment of this route. These consist of BH 6, a former school house located 108m from the proposed land take and BH 12, a garden folly located 174m from the proposed land take. A further 10 properties (including the two Protected Structures) are listed within the draft National Inventory of Architectural Heritage for County Wexford. None of these properties will be directly impacted on by the proposed route. Four former demesne landscapes associated with the houses of Ballinclay, Rockspring, Summerville and Mountgeorge were also identified, the later of which has now been demolished. The route will have a direct impact on these landscapes.

A total of 5 Cultural Heritage sites have also been identified along the extent of this route. These consist of more ephemeral sites or sites of a more recent origin. These include two areas associated with the 1798 Rebellion and two modern road side memorials.

Of the 24 sites identified in association with the N80 Link Road 8 have been designated as Archaeological Heritage (AH) sites, and are recorded as RMP sites. None of these sites or their designated RMP constraint will be impacted on by the proposed scheme. The closest recorded

monument to this scheme is AH 5, the RMP constraint area of which is located 33m from the proposed land take. Furthermore, there are no National Monuments within the receiving environment of the N80 Link Road and none of the listed sites are further protected with a Preservation Order.

A further 4 sites have been identified within the receiving environment of the N80 Link Road as Areas of Archaeological Potential (AAP). A total of 2 townland boundaries have been identified, along with 3 stream or river crossings and one riverine environment. Some of these are within one site designation as quite often streams and rivers form a townland boundary. The small watercourses that will be crossed by the proposed scheme will be subject to culverting. The route will also cross the River Slaney, but this will be by means of a single span bridge structure and as such the bed of the river will not be impacted on.

A total of 7 Sites of Archaeological Potential have also been identified within the receiving environment of the proposed N80 Link Road. These consist of a variety of potential site types including the sites of former post medieval settlements, which were identified through the analysis of the historic OS map editions.

A total of 5 Built Heritage sites were also identified within the receiving environment of the proposed N80 Link Road. These consist of a variety of structures, including country houses, bridges, cottages and vernacular properties. There are no Protected Structures located within the receiving environment of this route. However a total of 2 properties are listed within the draft National Inventory of Architectural Heritage for County Wexford. None of these properties will be directly impacted on by the proposed route.

One Cultural Heritage site was identified at the northern end of this route. This consists of a modern road side memorial.

Of the 52 sites identified in association with the N30 Enniscorthy Bypass, 6 have been designated as Archaeological Heritage (AH) sites, and are recorded as RMP sites. None of these sites or their designated RMP constraint will be impacted on by the proposed scheme. The closest recorded monument to this scheme is AH 16, the RMP constraint area of which is located 50m from the proposed land take. Furthermore, there are no National Monuments within the receiving environment of the N30 Enniscorthy Bypass and none of the listed sites are further protected with a Preservation Order.

A further 14 sites have been identified within the receiving environment of the N30 Enniscorthy Bypass as Areas of Archaeological Potential (AAP). A total of 12 townland boundaries have been identified, along with 6 stream or river crossings and one riverine environment. Some of these are within one site designation as quite often streams and rivers form a townland boundary. The

small watercourses that will be crossed by the proposed scheme will be subject to culverting. The route will also cross the River Urrin, but this will be by means of a single span bridge structure and as such the bed of the river will not be impacted on.

A total of 15 Sites of Archaeological Potential have also been identified within the receiving environment of the proposed N30 Enniscorthy Bypass. These consist of a variety of potential site types including the sites of former post medieval settlements, which were identified through the analysis of the historic OS map editions.

A total of 18 Built Heritage sites were also identified within the receiving environment of the proposed N30 Enniscorthy Bypass. These consist of a variety of structures, including country houses, bridges, cottages and vernacular properties. There are no Protected Structures located within the receiving environment of this route. However a total of 5 properties are listed within the draft National Inventory of Architectural Heritage for County Wexford. None of these properties will be directly impacted on by the proposed route. The route will also directly impact on part of the former demesne landscape associated with Monart House. The house itself still survives but it located outside of the receiving environment of the proposed route.

No Cultural Heritage sites were identified within the receiving environment of this proposed scheme.

The design development of the Proposed Schemes has endeavored to minimise the impact on the archaeological, architectural and cultural heritage resource wherever possible. Where it has not been possible to avoid adverse impacts, mitigation measures have been proposed, as discussed below. Mitigation measures, both at pre-construction and construction phases, will be undertaken in compliance with national policy guidance and statutory provisions for the protection of the archaeological and cultural heritage, including the following:

- National Monuments Acts 1930-2004
- Code of Practice (2000) between the National Roads Authority and Department of Arts, Heritage, Gaeltacht & the Islands
- Framework & Principles for the Protection of the Archaeological Heritage (1999). Department of Arts, Heritage, Gaeltacht & the Islands
- Policy & Guidelines on Archaeological Excavation (1999). Department of Arts, Heritage, Gaeltacht & the Islands
- Architectural Heritage Protection, Guidelines for Planning Authorities (2001). Department of Arts, Heritage, Gaeltacht & the Islands

All archaeological works will be undertaken in accordance with directions issued by the Minister for Environment Heritage & Local Government under the supervision of the Project Archaeologist. Proposed mitigation measures are presented as recommendations as they are subjected to the approval of Department of the Environment, Heritage and Local Government.

As part of a non-intrusive program of archaeological investigations specific geophysical survey work is recommended along selected sections of the Proposed Schemes to aid in interpreting the archaeological landscape. This will take place in advance of a program of intrusive archaeological investigation. This is recommended in two locations, at AAP 14 and AAP 23.

Underwater inspection is recommended for water bodies that will be significantly impacted upon by the Proposed Schemes. Underwater Inspection and Survey is recommended for sites AAP 4, AAP 14, AAP 15, AAP 16, AAP 18, AAP 19, AAP 21, AAP 22, AAP 24, AAP 26, AAP 27, AAP 28, AAP 29, AAP 30, AAP 31, AAP 32, AAP 33, AAP 34, AAP 36, AAP 37, AAP 38, AAP 39, AAP 40, AAP 41, AAP 42, AAP 44, AAP 45, AAP 49, SAP 4, SAP 35.

A written and photographic record is recommended for all townland boundaries along with a number of archaeological and built heritage sites. This will consist of a photographic record for each site, including its landscape context with a description of the site/building or composition of the townland boundary. This is recommended for sites AH 14, AH 5, AH 7, AH 9, AH 10, AH 16, AH 17, BH 2, BH 3, BH 6, BH 8, BH 9, BH 13, BH 14, BH 15, BH 17, BH 18, BH 19, BH 21, BH 24, BH 31, BH 33, BH 35, BH 36, BH 38, BH 39, BH 41, BH 42, BH 43, BH 44, BH 51, CH 2, CH 6 and SAP 13 and for the 5 former demesne landscapes to be directly impacted on. For BH 7, the written and photographic record should include a floor plan of the structure.

It is also recommended that a full measured written and photographic record of the three memorial stones (CH 3, 4 & 5) be made prior to the commencement of construction of the Proposed Schemes. These can then be dismantled and stored safely before being reconstructed in consultation with the relatives of the deceased.

If this scheme is approved by *An Bord Pleanala* it is the intention of Wexford County Council to apply to the Minister for Environment Heritage and Local Government for directions, under Sect. 14A (2) of the National Monuments Acts 1930 to 2004, for all archaeological works on this scheme. The following works are recommended:

It is recommended that archaeological test trenching be carried out along the path of the Proposed Schemes by a licence eligible archaeologist, prior to the construction phase. This should be undertaken in order to locate sites of archaeological significance in advance of construction. Test trenching is recommended for all Areas of Archaeological Potential and Sites of Archaeological Potential located within proposed CPO of the road schemes as well as at site

BH 15, BH 25 and site CH 6. Mitigation strategies can then be adopted to deal with such findings in advance of construction, thereby helping to minimise delays during the construction phase. Such mitigation strategies can involve preservation by record of the archaeological deposits (archaeological excavation) or preservation *in situ*.

Mitigation measures at construction phase will be undertaken in compliance with national policy guidance and statutory provisions for the protection of the archaeological and cultural heritage. This may include archaeological monitoring of the topsoil stripping if deemed appropriate following assessment of the pre-construction investigations.

Discovery of Archaeological Material In the event of potential archaeological deposits being uncovered during the construction phase, initial assessment will determine the nature, extent and significance of the archaeology present. As a result of the assessment, decisions on the most appropriate mitigation strategy will be taken with the approval of the DoEHLG. Section 23 of the National Monuments Acts 1930 (as amended) provide that finding of an archaeological object must be reported to the Director of the National Museum or the *Garda Siochana* within 96 hours of discovery.

Fencing and protection of any archaeological sites may be necessary once discovered and during their excavation. No works are anticipated outside the land acquisition boundary. However, in the exceptional event of any construction activity taking place outside of the land acquisition boundary and in the vicinity of particular sites (due to their close proximity), it is recommended that the sites are fenced off and protected during construction phase.

During the construction phase it is recommended that permanent screening be erected in order to preserve the setting of BH 3.

If all recommended mitigation measures are followed then there will be no residual impact on the archaeological, architectural and cultural heritage resource in and within the immediate vicinity of the Proposed Schemes.

The mitigation measures recommended above would also function as a monitoring system to allow the further continuing assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures as archaeological investigations continue.

16.0 WASTE IMPACT ASSESSMENT

This aspect of the EIS provides an assessment of the impacts arising from the generation of waste materials during the construction phase of the Proposed Scheme.

The baseline assessments involved a review of desktop information. Typical waste data was obtained from the EPA. An extensive document review was completed to assist in identifying current and future requirements for waste management in infrastructure projects. Statutory Instruments, Local Authority Plans and National Policies and Strategies were also reviewed.

In terms of waste management, the receiving environment is characterised by construction and demolition (C&D) waste collection services provided by private waste contractors.

It is anticipated that during the construction works, solid waste will be generated during this construction period and there may also be waste generated in the future by on-going maintenance of the Proposed Scheme.

Waste streams that will be generated during the construction phase, include soil and bedrock, concrete, asphalt, timber, metals, packaging, chemicals, oils and municipal waste. Demolition waste will be generated as a number of existing structures will be demolished and will include concrete, metals, plaster, asphalt, cement, insulation materials, wood, slates/tiles and may contain installations such as electrical wiring, gas reticulation systems and telecommunications.

Significant volumes of subsoil and bedrock will be excavated to accommodate the construction of the Proposed Scheme. The estimated earthworks (cut/fill volumes) comprise a total gross volume of cut for the preliminary design of approximately 5.28Mm^3 and a total gross volume of fill of approximately 5.52Mm^3, including an estimated 0.24Mm^3 of imported capping. Therefore it is predicted that all waste soil or bedrock generated will be reused on site.

The construction phase of the Proposed Scheme will produce wastes during preparation and excavation, laying the road and; services. All wastes will have a European Waste Code (EWC).

The potential impacts of the Proposed Scheme, in relation to construction and demolition waste are that, should a C&D WMP (Construction and Demolition Waste Management Plan) not be implemented, the target recycling rates outlined in the Southeast Waste Management Plan of 82%, by 2013, may not be achieved.

In addition, if waste is not managed and stored correctly on site, this may lead to litter issues. In addition, poor management of waste may result in water and ground pollution on the site or adjacent to the site.

Fuels and hydraulic oils/lubricants that will be stored on the site for machinery and construction vehicles along with oils and lubricants can be classed as hazardous and may lead to soil and/or water contamination if released into the ground.

Some waste mixtures at the construction phase can often contain hazardous substances. Often, this material cannot be segregated in recyclable elements and therefore it may require disposal at an appropriate site. There are a number of structures to be demolished to facilitate construction of the Proposed Scheme. There may be potentially hazardous substances/materials

present, which need to be identified and, if present, removed and disposed of appropriately in order to prevent soil and/or water contamination.

There are potential waste issues that may arise during the operational phase, including litter from fly tipping and repairs/maintenance of the roads and ancillary items, such as lighting etc. It is important to note however, that these potential impacts are not unique to this road scheme, but common to all roads.

The potential impacts outlined above may occur on any or all of the routes and therefore the cumulative impact of poor waste management for the overall Proposed Scheme is that low levels of recycling and/or reuse of materials will occur.

All current and applicable waste management legislation will be applied and adhered to. Waste contractors that are engaged to transport waste off-site will comply with the provisions of the Waste Management Acts 1996 – 2008 and associated Regulations. A collection permit to transport waste must be held by the relevant contractor which is issued by the Local Authority and waste receiving facilities must also be appropriately licensed or permitted for the waste that it is receiving.

On-site segregation of all waste materials will occur at source into appropriate categories including, topsoil, sub-soil, rock, asphalt/tar and tar products, metals and dry recyclables.

Uncontaminated excavated material (made ground, sub-soil, etc) will be re-used on site in preference to importation of fill from off-site. Suspected contaminated material will be assessed and classified and if contaminated soil is present will be removed from the site.

All waste leaving site will be recycled where possible, with the exception of those waste streams where appropriate recycling facilities are currently not available. All waste leaving the site will be recorded and copies of relevant documentation maintained.

There will be temporary construction compounds during the construction phase; each will have a dedicated Waste Storage Area (WSA) for construction waste generated. Receptacles/skips or bays will be provided for each recyclable material.

Demolition procedures must be followed to ensure that optimum recycling and/or reuse of materials is achieved. Demolition work will be carried out in stages to ensure segregation of recyclable and salvageable materials.

During the operational phase, litter management will be carried out along the route in accordance with Local Authority policy. For maintenance and repair work, all maintenance teams involved will take all wastes generated on site back to their compounds to be placed in appropriate waste receptacles designated for recycling, reuse or disposal, or directly to an appropriately permitted or licensed waste facility. No waste will be left at the site of the repair or maintenance.

Following provision of appropriate receptacles for all waste streams generated by the construction phase, the onsite segregation of the waste, and correct waste management procedures during maintenance and repair works, the residual impact will be imperceptible.

Monitoring of construction waste generated throughout the construction phase will be carried out by the contractor to ensure that correct and diligent segregation of waste streams is carried out and a high level of recycling/reuse is being achieved. Monitoring of all receiving waste facilities and waste collection vehicles must also be carried out to ensure that legal compliance is being achieved.

17.0 INTER-RELATIONSHIPS

In addition to assessing potentially significant adverse impacts on human beings, fauna, flora, soil, water, air, climate, landscape, material assets and the cultural heritage, the inter-relationship between these factors has been taken into account as part of the EIS scoping and assessment process.

18.0 SCHEDULE OF ENVIRONMENTAL COMMITMENTS

A chapter summarising the environmental commitments proposed for the M11 Gorey to Enniscorthy Scheme has been included in the Environmental Impact Statement (EIS). The purpose of these environmental commitments is to mitigate or ameliorate potentially significant adverse impacts that have been identified in each chapter of the EIS.

19.0 INSPECTION AND PURCHASING THE EIS

Copies of the EIS are available for examination at the locations detailed in the published newspaper notices.

The EIS is also available to purchase in electronic (PDF) and hardcopy format from:

Wexford County Council Enniscorthy District Office
Old Dublin Road
Enniscorthy
Wexford

Prices are as shown in the published newspaper notices.

20.0 NEXT STEPS

Construction of the Proposed Scheme is dependent on approval from An Bord Pleanála (the Board) in relation to this EIS and the statutory land acquisition procedures. It is also subject to the availability of finance and the satisfactory completion of procurement procedures.

Written submissions relating to the environmental effects of the Proposed Scheme may be made to the Board prior to the date specified in the published newspaper notices.

The written submissions, together with any representations made at the Oral Hearing, will be considered by the Board before making its decision on whether or not to approve the Proposed Scheme (with or without modifications). The Board's decision will be published in one or more newspapers circulating in the area. It will include, where appropriate, particulars of any modification to the Proposed Scheme.

FIGURE NTS.2