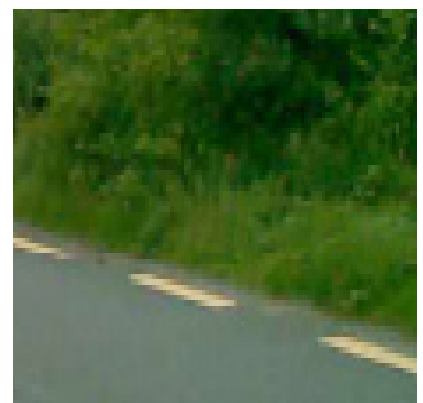
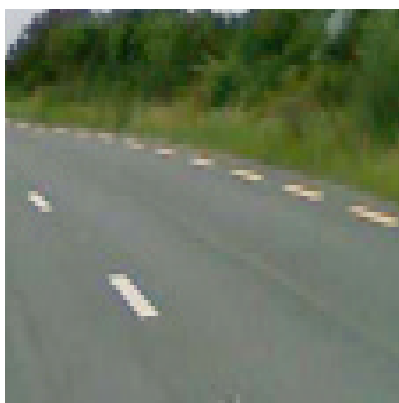
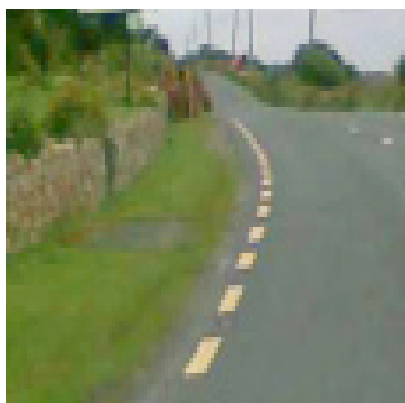
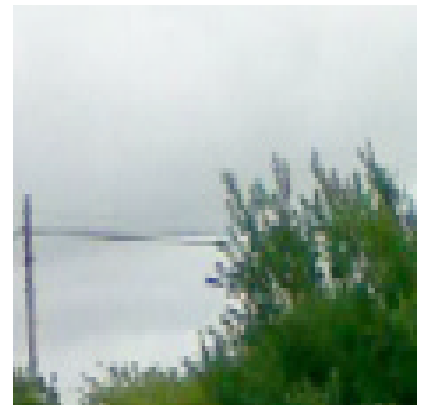
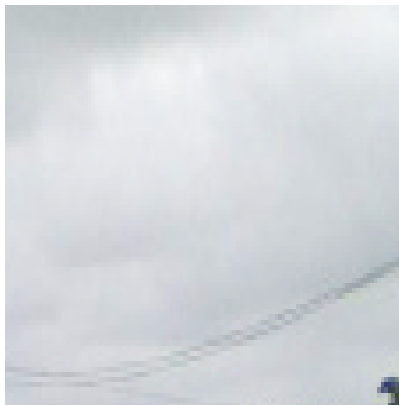
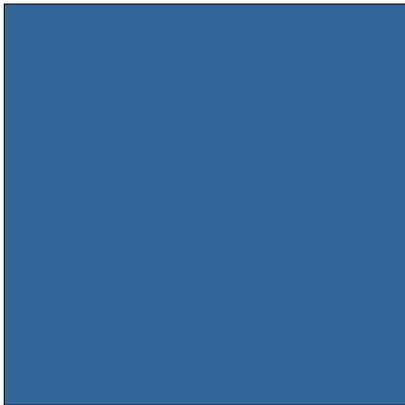
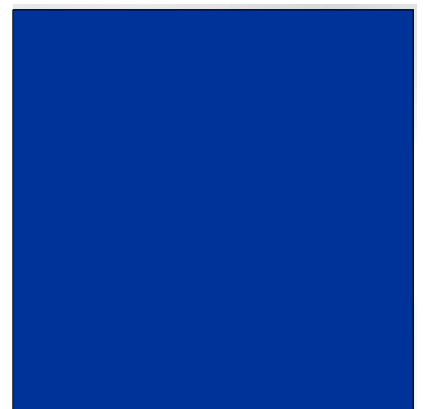


National Secondary Roads Needs Study

Network Options Report

South East Region





NATIONAL SECONDARY ROAD NEEDS STUDY

Network Options Report South East Region

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TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	BACKGROUND	1
1.2	NATIONAL ROAD NETWORK	1
1.3	ROLE OF NATIONAL SECONDARY ROAD NETWORK	2
1.4	CROSS SECTION FOR NSR IMPROVEMENT	7
1.5	NSR INVESTMENT REQUIREMENTS	10
1.6	WHY INVEST IN NATIONAL SECONDARY ROADS?	10
1.7	NATIONAL SECONDARY ROAD NEEDS STUDY	10
1.8	STRUCTURE AND CONTENTS OF THE REPORT	11
2	BASELINE ASSESSMENT	13
2.1	AVAILABLE DATA	13
2.2	PERFORMANCE INDICATORS	13
2.3	KEY STATISTICS	14
2.4	ROUTE QUALITY INDEX	22
2.5	RESULTS - BASELINE ASSESSMENT OF EACH ROUTE	30
3	OBJECTIVES OF STUDY	39
3.1	NEED FOR AND OBJECTIVES OF INTERVENTION	39
3.2	POLICY CONTEXT	39
3.3	NETWORK DEFINITION	42
3.4	THE NEED FOR A TRANSPORT INTERVENTION	45
3.5	SMART CORRIDOR OBJECTIVES AND THE OUTPUT OF THE ASSESSMENT OF NEED	49
4	APPRAISAL AND PRIORITISATION METHODOLOGY	51
4.1	APPRAISAL PROCESS	51
4.2	APPLICATION TO THE NSRNS	52
4.3	INTERNATIONAL CASE STUDIES	52
4.4	METHODS OF MULTI-CRITERIA ANALYSIS (MCA)	55
4.5	METHODOLOGY	56
4.6	THE NEED FOR AND OBJECTIVES OF AN INTERVENTION	57
4.7	SCENARIO DEFINITION	58
4.8	ASSESSMENT OF IMPACTS	59
4.9	SCORING	64
4.10	PRIORITISATION	70
5	OPTION IDENTIFICATION	73
5.1	INTRODUCTION	73
5.2	OPTION GENERATION	73
5.3	OPTION SIFTING	77
5.4	SUMMARY OF OPTIONS IDENTIFIED FOR NSR NETWORK	77

6	COST ESTIMATION	82
6.1	INTRODUCTION	82
6.2	METHODOLOGY	82
6.3	ARCHAEOLOGY	85
6.4	PLANNING, DESIGN AND SUPERVISION	85
6.5	SUMMARY OF COST ESTIMATION METHODOLOGY ADOPTED.....	85
6.6	APPLICATION OF COST MODEL TO TRAFFIC MODEL	87
6.7	MAINTENANCE AND RENEWAL COSTS	91
7	APPRAISAL OF OPTIONS	92
7.1	TRAFFIC MODEL ENHANCEMENTS.....	92
7.2	TRAFFIC MODEL APPLICATION.....	96
7.3	OPTIONS APPRAISED	97
8	RECOMMENDATIONS FOR THE NSR NETWORK.....	226
8.1	APPROACH.....	226
8.2	CHOICE BETWEEN MUTUALLY-EXCLUSIVE OPTIONS	226
8.3	SCHEME RANKINGS	227
8.4	RECOMMENDATIONS	235
8.5	CONCLUSION – EMERGING NSR PROGRAMME	237
9	APPRAISAL OF CYCLING & WALKING.....	243
9.1	POLICY CONTEXT	243
9.2	SCHEMES TO BE APPRAISED.....	243
9.3	FOOTPATH & CYCLEWAY STANDARD	243
9.4	APPRAISAL CRITERIA	245
9.5	MODELLING DEMAND FOR WALKING & CYCLING	247
9.6	APPRAISAL RESULTS	251

LIST OF FIGURES

Figure 1.1: National Road Network	3
Figure 1.2: Typical Single Carriageway Cross Sections	8
Figure 1.3: Typical Dual Carriageway Cross Sections.....	9
Figure 1.4: NSRNS Project Architecture	12
Figure 2.1: Environmental Designated Areas with the NSR network;.....	15
Figure 2.2: CORINE Land cover	16
Figure 2.3: Carriageway Widths of the NSR Network	17
Figure 2.4: International Roughness Index (IRI)	18
Figure 2.5: Urban Speed Zones, Junction Locations and lay-bys on the NSR Network	19

Figure 2.6: National Spatial Strategy	20
Figure 2.7 – Distance Comparison vs GIS Calculation of Degrees of Turn.....	23
Figure 2.8 – Flowchart for Identifying Changes of Route Quality.....	25
Figure 2.9 – Quality Scores at 500m Resolution Grouped into Route Sections of Around 5km.....	26
Figure 2.10 – Example of Route with High Quality Score	28
Figure 2.11 – Aerial View of N67 at Corkscrew Hill	28
Figure 4.1: Scottish Case Study: Strategic Transport Projects Review	53
Figure 4.2: German Case Study: Federal Transport Infrastructure Plan	54
Figure 4.3: Overview of common methods for MCA	56
Figure 4.4: Scoring Function for Accident Reduction.....	66
Figure 5.1: Video Screen Shot of Narrow Bridge on N73 between the N72 and Kildorrery	75
Figure 6.1: Plot of Existing RQI Score vs Total Cost to Improve to Indicated Standard.....	87
Figure 6.2: Plot of Existing RQI Score vs Total Construction Cost to improve to Type 3	88
Figure 6.3: Plot of Existing RQI Score vs Total Land Cost to improve to Type 3	88
Figure 6.4: Plot of Existing RQI Score vs Total Archaeology Cost to improve to Type 3	89
Figure 6.5: Plot of Existing RQI Score vs Total Construction Cost to improve to Type 2	89
Figure 6.6: Plot of Existing RQI Score vs Total Land Cost to improve to Type 2	90
Figure 6.7: Plot of Existing RQI Score vs Total Archaeology Cost to improve to Type 2	90
Figure 7.1: Additional Road Network in Northern Ireland.....	92
Figure 7.2: Speed-Flow Curves for Rural NSR Sections	95
Figure 7.3: Type 1 Single Carriageway Options	99
Figure 7.4: Type 2 Single Carriageway Options	100
Figure 7.5: Type 3 Single Carriageway Options	101
Figure 7.6: Type 1 Dual Carriageway Option	102
Figure 7.7: Type 2 Dual Carriageway Option	103
Figure 7.8: Type 3 Dual Carriageway Option	104
Figure 8.1: National Secondary Road Options.....	239
Figure 8.2: MCA Score	240
Figure 8.3: Priority 1 MCA Score greater than 5.2	241
Figure 8.4: MCA Score Less than or Equal to 5.2.....	242

Figure 9.1: Type 2 and 3 Single Carriageway with Cycleway Cross Sections.....	244
Figure 9.2: Proposed Long-Distance Cycle Routes	250
Figure 9.3: Cycleway Schemes with MCA score greater than 5.2.....	255

LIST OF TABLES

Table 1.1: National Secondary Roads.....	4
Table 1.2 Recommended Rural Road Layouts	7
Table 2.1: Width Less than 3m.....	21
Table 2.1: Quality Scores at Route Level.....	29
Table 3.1: Function of the National Secondary Road Network and Criteria for Inclusion of Roads in the Network.....	44
Table 3.2: NSR Corridor Sections for Existing NSR	45
Table 3.3: The Appraisal Criteria and the Objectives of Improving the NSR Network.....	49
Table 3.4: Objectives of Improving the NSR and Indicators of Performance.....	50
Table 4.1: Function of the National Secondary Network and Criteria for Inclusion of Roads in the Network	57
Table 4.2: The Appraisal Criteria and the Objectives of Improving the NSR Network.....	58
Table 4.3: Method for Assessing Environment Impacts.....	60
Table 4.4: Method for Assessing Safety Impacts.....	61
Table 4.5: Method for Assessing Economy Impacts	62
Table 4.6: Method for Assessing Accessibility and Social Inclusion Impacts	63
Table 4.7: Method for Assessing Integration Impacts	63
Table 4.8: Scale Definitions.....	65
Table 4.9: Calculation of 'highly positive' thresholds for monetised impacts	66
Table 4.10: Scoring Framework for Environmental Impacts	67
Table 4.11: Criteria for Assessing Impact Significance.....	68
Table 4.12: Scores Attributed to Red Flagged Impacts	69
Table 4.13: Criteria and Sub-criteria Weightings	71
Table 6.1: Normal Construction Cost Estimates from First Principles	83
Table 7.1: Values of Time and Distance used in Generalised Cost Function (Units are Cents)	93

Table 8.1: Preferred Options for Each Route Length ordered by Route Number – Rural Schemes	228
Table 8.2: Preferred Options Ordered by Route Number – Bypass Schemes	233
Table 8.3: Recommended Priority 1 Schemes in South East Region Ordered by Route Number	235
Table 8.4: Possible Relief Roads for Consideration as Major Projects in South East Region – Ordered by Route Number	236
Table 8.5: Priority 2 Schemes in South East Region Ordered by Route Number	237
Table 9.1: Example of Comparative Appraisal with and without Footpath / Cycleway	246
Table 9.2: Regression Models Used	248
Table 9.3: Schemes Reassessed with Walking and Cycling Facilities ordered by Route Number	252
Table 9.4: Additional 16 Schemes with MCA Score >5.2 as a result of the Provision of Walking and Cycling Facilities – ordered by Route Number	253
Table 9.5: Schemes with MCA Score >5.2 including those with Walking and Cycling Facilities in South East Region ordered by Route Number	254

APPENDICES

APPENDIX A – Lane Widths, Skid Resistance, IRI Data summaries for NSR

APPENDIX B – Illustration of Problems and Illustration of Possible Solutions

APPENDIX C – Scheme Sheets and PABS for Cycling and Walking Options

Abbreviations

AADT	=	Annual Average Daily Traffic
BCR	=	Benefit Cost Ratio
CAF	=	Common Appraisal Framework
CBA	=	Cost Benefit Analysis
CIF	=	Construction Industry Federation
COBA	=	A cost benefit analysis software programme
CRTN	=	Calculation of Road Traffic Noise
DCRGA	=	Department of Community, Rural and Gaeltacht Affairs
DMRB	=	Design Manual for Roads and Bridges
DoT	=	Department of Transport
DfT	=	Department for Transport (UK)
DETR	=	Department of the Environment, Transport and the Regions (UK)
EFT	=	Emission Factor Toolkit
END	=	Environmental Noise Directive
EPA	=	Environment Protection Agency
ESRI	=	Economic and Social Research Institute
EU	=	European Union
FTE	=	Full-time Equivalent
GIS	=	Geographic Information System
GDA	=	Greater Dublin Area
HDV	=	Heavy Duty Vehicle
HGV	=	Heavy Goods Vehicle
IAN	=	Interim Advice Note
IEMA	=	Institute of Environmental Management and Assessment
IOA	=	Institute of Acoustics
IRI	=	International Roughness Index
LDV	=	Light Duty Vehicle
km	=	Kilometre
LGV	=	Light Goods Vehicle
MCA	=	Multi-Criteria Analysis
MIU	=	Major Inter-Urban Route
NAEI	=	National Atmospheric Emission Inventory
NAPS	=	National Anti-Poverty Strategy
NDP	=	National Development Plan
NHA	=	Natural Heritage Area
NPR	=	National Primary Route
NPV	=	Net Present Value
NRA	=	National Roads Authority

NSR	=	National Secondary Road
NSRNS	=	National Secondary Road Needs Study
NSS	=	National Spatial Strategy
PABS	=	Programme Assessment Balance Sheet
PAG	=	Project Appraisal Guidelines
PIR	=	Potential Impact Rating
PM	=	Particulate Matter
PV	=	Present Value
PVB	=	Present Value of Benefits
PVC	=	Present Value of Costs
R&D	=	Research and Development
RPG	=	Regional Planning Guidelines
SAC	=	Special Area of Conservation
SEA	=	Strategic Environmental Assessment
SMART	=	Specific, Measurable, Agreed, Realistic and Time-dependent
SPA	=	Special Protection Areas
TUBA	=	A cost benefit analysis software programme
UK	=	United Kingdom
UN	=	United Nations
UNECE	=	United Nations Economic Commission for Europe
UNESCO	=	United Nations Educational, Scientific and Cultural Organisation
Veh	=	Vehicle
WFD	=	Water Framework Directive
WHO	=	World Health Organisation

STRUCTURE OF NETWORK OPTIONS REPORT

The reporting of the network options for the National Secondary Roads Needs Study is divided into five regions namely North, East, South East, South West and West as follows:

North:

Cavan, Donegal, Leitrim, Longford, Monaghan, Sligo and Westmeath

East:

Kildare, Laois, Louth, Meath, Offaly, South Dublin and Wicklow

South East:

Carlow, Kilkenny, Tipperary North, Tipperary South, Waterford and Wexford

South West:

Cork, Kerry and Limerick

West:

Clare, Galway, Mayo and Roscommon

A separate report has been provided for each region, with Chapters 1, 3, 4 and 6 being common in all reports. In addition Sections 2.1 to 2.4, Sections 5.1 to 5.3, Sections 7.1 to 7.2, Sections 8.1 to 8.3 and Sections 9.1 to 9.5 inclusive are common in all reports.

This report deals with the South East Region.

1 INTRODUCTION

1.1 BACKGROUND

Transport infrastructure, including road infrastructure, is an essential input into any modern economy. This is because roads are generally perceived to be a public good, which means they can be used by many producers and consumers at the same time without reducing their usefulness, albeit increased usage may result in lower speeds. Also, improvements in road infrastructure will not only produce direct economic and welfare benefits for individuals and businesses, but they can also produce wider economic benefits or externalities that benefit other individuals and businesses or society as a whole¹.

Transport infrastructure can therefore make a significant contribution to economic growth and competitiveness. Furthermore, experience suggests that recent investment in transport improvements in Ireland has already made a substantial contribution to facilitating economic growth and development.

For example, the Economic and Social Research Institute (ESRI), in its Mid-term Evaluation of the NDP 2000-2006, highlights substantial returns to recent road infrastructure in Ireland. In particular, studies carried out as part of the Mid-term Evaluation suggest an implied realised rate of return for road investment (in terms of additional value added in manufacturing and services) of about 25%². This represents a significant direct positive impact on output, and therefore a positive return.

1.2 NATIONAL ROAD NETWORK

The national road network as indicated in Figure 1.1 comprises approximately 5,450 km of roadway throughout Ireland, which represents some 6% of the entire public road network but carries 46% of the country's traffic. These national roads provide strategic links between cities, towns, ports and airports. The national road network is divided into National Primary routes and National Secondary routes which represent approximately 50.3% and 49.7% of the national road network respectively.

The national primary routes are the routes numbered N1 to N33 and the M50 with the 34 national secondary roads numbered between N51 and N87.

In the last decade, road infrastructure investment has focussed primarily on the National Primary Roads. In contrast to this, little capital expenditure or other work has been devoted to upgrading or renewing the National Secondary Road (NSR) network. The National Roads Authority (NRA) is currently implementing a planning framework programme for the National Primary Roads, including the completion of the Major Inter-Urban Routes (MIUs), in 2010. The MIUs include the national primary routes, N9 to Waterford, N8 to Cork, N7 to Limerick, N4/N6 to Galway and the M1 to the border. As part of the NRA's programme, it has identified the requirements for the national primary network and is currently in the process of either implementing or planning upgrades and improvements for the national primary route network.

The NRA is now proposing to focus its attention on addressing deficiencies in the NSR network. To that end, it commissioned the National Secondary Road Needs Study (NSRNS) to identify an optimal future NSR network, develop and prepare an NSR Network Programme and provide an outline delivery programme which offers value for money.

¹ Externalities are costs or benefits that do not fall on those individuals or organisations, whose choices have caused them, but on other individuals or organisations or on society as a whole. Externalities arise as a side effect of the activities of individuals and organisations, which then have consequences for the wider economy.

² *The Mid-term Evaluation of the National Development Plan and Community Support Framework for Ireland, 2000 to 2006: Final Report to the Department of Finance*, Economic and Social Research Institute, Policy Research Series No. 50, October 2003.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

1.3 ROLE OF NATIONAL SECONDARY ROAD NETWORK

The National Secondary Roads (NSRs) are a key economic asset for Ireland that are necessary to connect our major cities and towns to each other and to the National Primary Roads. The existing NSR network comprises approximately 2,708 km of road on 34 routes throughout Ireland. The national secondary routes indicated in Figure 1.1 are numbered N51 - N56, N58 – N63, N65 – N78 and N80 - N87 with the terminal and intermediate destinations for each route identified in Table 1.1.

The NSRs provide a hierarchical level of network connectivity between regional centres and to/from National Primary Roads. The network also provides for accessibility to areas of the country that have high amenity or tourism value or suffer from higher levels of social exclusion due to their peripheral location (e.g. routes such as the N56, N59, N67, N70 and N86). For the most part, however, the routes can be considered predominantly rural and inter-urban, and NSRs are generally defined by the following criteria:

- medium length through and semi-through routes;
- carrying medium to heavy volumes of traffic, with an annual average daily traffic (AADT) of over 2,000 vehicles;
- serving as connecting roads between principal towns;
- serving medium to large geographical regions;
- forming extensions to the National Primary Roads;
- linking National Primary Roads together to form a network.

The NSR network is thus an essential piece of national public infrastructure. It interacts with the National Primary Roads to facilitate the movement of strategic traffic throughout the island of Ireland, and it facilitates access and safety and sustains national development.

Preparation of the National Spatial Strategy (NSS) gave the NSRs a new significance as key routes linking Gateways to Hubs, other county towns and their hinterlands. Hence a variety of subsequent official reports and strategies, including Transport 21 and the National Development Plan (NDP), highlighted various NSRs as priority investments. The review of the NSS currently underway is also giving greater emphasis to the regional dimension of balanced spatial development, and the NSRs have a key role in helping all regions reach their potential.

However, in investment terms, the NSRs have in practice been going through a period of relative neglect. In particular, the NDP 2000-2006 placed welcome emphasis on upgrading the National Primary Roads (especially the Major Inter-Urban Routes) as well as non-national roads, but involved relatively little investment in the NSRs.

It is therefore now timely to re-focus on the NSRs as a key linking component in Ireland's road network as a whole. Recognising this, the Economic and Social Research Institute (ESRI) Ex-Ante Evaluation of the NDP 2007-2013 recommended that “a specific and comprehensive programme of National Secondary (Road) improvement should be included in the next National Development Plan”³. (see box below)

“The National Secondary (Road) network is a critical component in the overall road infrastructure, and is particularly important in serving and connecting the smaller market towns to one another and to the bigger centres served by the National Primary (Road) network. It will play an important role in developing the National Spatial Strategy. We recommend that a specific and comprehensive programme of National Secondary (Road) improvements should be included in the next National Development Plan, together with the analysis underlying project selection and prioritisation. This should take account of the needs of the National Spatial Strategy”.

ESRI, Ex-ante Evaluation of the National Development Plan 2007-2013

³ Ex-ante Evaluation of the Investment Priorities for the National Development Plan 2007-2013, Economic and Social Research Institute, Policy Research Series No. 59, October 2006.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

LEGEND

- National Secondary Road
- National Primary Road
- Motorway
- New Alignment
- City/Town

Table 1.1: National Secondary Roads

National Route No.	Terminal Destinations	Intermediate Destinations	Terminal Destinations	Approx Length (km)	AADT Range	AADTs at Notable Points
N 51	DELVIN	NAVAN	DROGHEDA	54	6,000-8,500	10,500 in Navan
N 52	NENAGH	TULLAMORE MULLINGAR	DUNDALK	203	4,000-8,000	11,500 in Birr 11,500 in Tullamore 12,200 in Kells 12,500 in Mullingar 22,000 in Dundalk
N 53	CASTLEBLANEY DERRY		DUNDALK	18	5,100-7,200	11,000 in Dundalk
N 54	MONAGHAN		CAVAN	35	3,500-6,000	13,500 in Monaghan
N 55	ATHLONE		CAVAN	79	2,500-8,600	13,000 in Athlone 11,400 in Cavan
N 56	DONEGAL	KILLYBEGS GLENTIES DUNFANAGHY	LETTERKENNY	156	2,800-8,600	11,200 in Donegal Town 8,600 near Letterkenny
N 58	FOXFORD		BEALLAVARY CASTLEBAR	11	3,100-4,200	-
N 59	SLIGO	BALLINA WESTPORT CLIFDEN	GALWAY	297	1,000-7,700	30,000 in Galway
N 60	CASTLEBAR		ROSCOMMON	92	2,600-6,700	8,300 at Castlebar 8,200 at Castlereagh 7,100 at Roscommon
N 61	BOYLE	ROSCOMMON	ATHLONE SLIGO	75	2,700-6,200	8,000 at Roscommon
N 62	ATHLONE	BIRR ROSCREAH THURLES	CASHEL	95	2,900-7,000	12,000 in Templemore 9,000 around Roscrea

National Route No.	Terminal Destinations	Intermediate Destinations	Terminal Destinations	Approx Length (km)	AADT Range	AADTs at Notable Points
N 63	GALWAY	ROSCOMMON	LONGFORD	95	1,700-8,200	8,300 around Roscrea
N 65	GALWAY		BORRISOKANE	53	1,800-4,900	
N 66	GORT		LOUGHREA	27	3,600	
N 67	GALWAY	ENNISTIMON KILKEE	KILRUSH	129	1,000-4,800	5,300 at Kiltrush
N 68	KILRUSH		ENNIS	41	4,400-5,100	7,800 near Ennis
N 69	TRALEE	LISTOWEL FOYNES	LIMERICK	101	2,700-7,600	15,000 in Tralee 11,500 in Listowel 26,000 in Limerick
N 70	TRALEE	CAHERSIVEEN KILORGLIN	KENMARE	143	1,100-8,200	7,400 in Tralee
N 71	KILLARNEY	SKIBBEREEN	CORK	189	1,200- 17,000	18,600 in Killarney 7,800 in Bantry 11,700 in Skibbereen 10,500 in Clonakilty 17,000 in Bandon 32,000 in Cork
N 72	KILLORGLIN	KILLARNEY	DUNGARVAN	166	1,800-8,200	10,800 in Killarney 13,600 in Malloy
N 73	MALLOW		MITCHELSTOWN	34	2,900-5,600	
N 74	TIPPERARY		CASHEL	20	3,300-4,900	
N 75	THURLES		DUBLIN, CORK	8	2,600	
N 76	CLONMEL		KILKENNY	44	4,100-8,900	13,800 at Kilkenny

National Route No.	Terminal Destinations	Intermediate Destinations	Terminal Destinations	Approx Length (km)	AADT Range	AADTs at Notable Points
N 77	KILKENNY		PORTLAOISE	27	4,800-5,600	19,300 at Kilkenny 15,500/9,600 Exiting Kilkenny
N 78	KILKENNY	ATHY	NAAS	62	2,200-7,400	6,500 at Castlecomer 12,800 at Athy
N 80	ATHLONE	PORTLAOISE CARLOW TULLAMORE	ENNISCORTHY	137	3,700-8,900	13,700 at Carlow 11,000-30,000 at Portlaoise 6,900 at Mountmellick 11,300 at Tullamore
N 81	DUBLIN	BLESSINGTON	ENNISCORTHY	86	1,700- 11,700	15,700 at Blessington 18,400 at M50
N 82	TALLAGHT		RATHCOOLE	3	1,000-6,500	
N 83	TUAM	BALLYHAUNIS	CHARLESTOWN	45	2,300-9,700	7,200 in Tuam
N 84	GALWAY		CASTLEBAR	74	2,500-4,400	16,000 in Galway 11,000 in Ballinrobe
N 85	ENNIS		ENNISTIMON	32	4,100-5,800	13,600 near Ennis
N 86	TRALEE		DINGLE	50	3,200	6,800 in Tralee
N 87	BELTURBET		SWANLINBAR	28		

1.4 CROSS SECTION FOR NSR IMPROVEMENT

Analysis of NRA traffic count data indicates that the NSR routes typically cater for traffic volumes in the range of 1,000 to 10,000 veh/day AADT. It is acknowledged, however that where routes form part of the road infrastructure in and around built up areas that higher AADT traffic volumes will apply. Typically these urban/semi-urban parts of the network would carry between 8,000 to 20,000 veh/day AADT.

For the most part, the current National Secondary Road network consists of a network of predominantly rural single carriageways. According to the available data, the geometric layout of the existing network varies considerably and the NSRNS will as a minimum result in the recommendation to upgrade key strategic parts of the network.

The NRA DMRB defines a number of cross sections for national roads and has recently introduced a Type 3 single carriageway cross section for use on low traffic volume roads which will be considered for use on the NSR network. The recommended rural road layouts as defined in the IAN 01/09 are summarised in Table 1.2 and illustrated in Figures 1.2 and 1.3.

Design Speed	Type of Road	Capacity (AADT) for Level of Service D	Edge Treatment
85	Type 3 Single (6.0m) Carriageway S2	5,000	0.5m hard strips
100	Type 2 Single (7.0m) Carriageway S2	8,600	0.5m hard strips
100	Type 1 Single (7.3m) Carriageway S2	11,600	2.5m hard shoulders
100	Type 3 Dual (7.0m + 3.5m) Primarily for retro fit projects	14,000	1.0m hard strips
120	Type 2 Dual Dual * 2 Lane Carriageways (2 x 7.0m)	20,000	0.5m hard strips
120	Type 1 Dual Dual 2 Lane Carriageways (2 x 7.0m)	38,100	2.5m hard shoulders
120	Standard Motorway 2 Lane (7.0m) (D2M)	44,100	2.5m hard shoulders
120	Wide Motorway 2 Lane (7.5m) (D2M)	55,500	3m hard shoulders

Table 1.2 Recommended Rural Road Layouts

Source: NRA DMRB Design Standard TD 9/07 and Interim Advice Note IAN 01/09

The current default national speed limit for national roads is 100kph and much of the NSR network will be currently operating under this speed limit. The full application of the DMRB standards for a design speed of 100kph to road improvements could result in extensive realignment schemes that could not be justified on environmental and economic grounds because many of the lower traffic volumes on some of the NSRs. Many of these routes are located in rugged, scenic and sensitive terrain and implementation of the full DMRB standards would therefore result in excessively high alignment standards and cause significant negative impacts on the surrounding areas. It is therefore proposed that the minimum acceptable standard for the NSR network would be defined by the Type 3 Single Carriageway to IAN 01/09 and criteria to be achieved for a Design Speed of 85kph as set out in NRA TD 9/07.

Introduction

Baseline

Objectives

Methodology

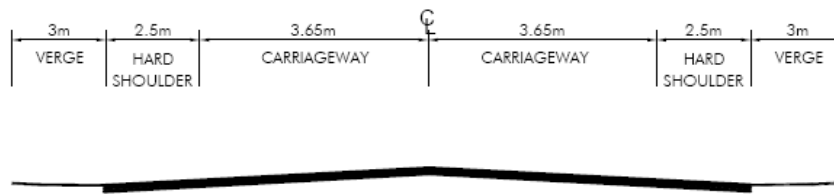
Option Identification

Costing

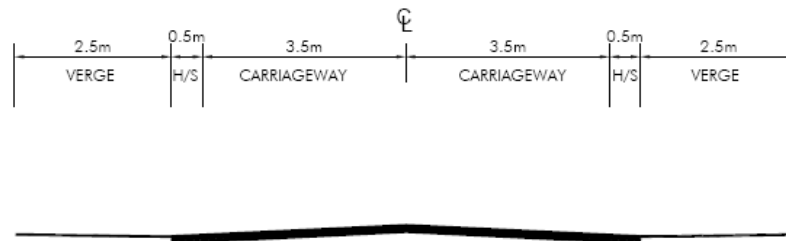
Option Appraisal

Recommendations

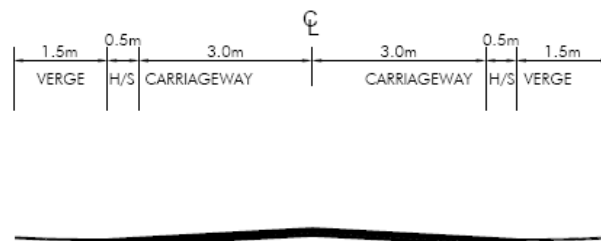
Cycling & walking

Figure 1.2: Typical Single Carriageway Cross Sections

Type 1 Single Carriageway Cross Section

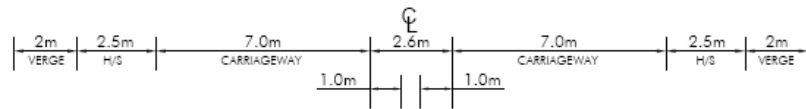
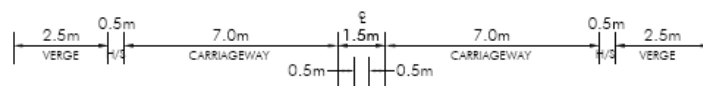


Type 2 Single Carriageway Cross Section



Type 3 Single Carriageway Cross Section

Figure 1.2

Figure 1.3: Typical Dual Carriageway Cross SectionsType 1 Dual Carriageway Cross SectionType 2 Dual Carriageway Cross SectionType 3 Dual Carriageway Cross Section**Figure 1.3**

1.5 NSR INVESTMENT REQUIREMENTS

As far back as 1998, the National Road Needs Study⁴ identified serious deficiencies in the national road network and identified improvements needed to bring the network in Ireland up to Level of Service D.

The National Road Needs Study implementation programme began by including the principal objectives in the National Development Plan (NDP) 2000-2006 and in Transport 21, and this has been extended in the NDP 2007-2013. Between 2000 and 2010, major capital expenditure was provided for the National Primary Roads including the development of the MIUs, completed in 2010.

However, relatively little finance has been provided for the NSR network, and the conditions and safety on this network are likely to deteriorate unless improvement works are implemented. To achieve the maximum value for money from the capital expenditure on the MIUs, the remainder of the National Road Needs Study's "road map" needs to be provided, which includes the improvement needs on the NSRs. To date, the majority of the works for the NSR network identified in the National Road Needs Study have not been implemented.

With increasing traffic levels operating on a sub-standard network, set against the high performance effects of the MIUs and improvements to the other National Primary Roads, there is a risk that the accident rates on the NSRs will increase, with potentially a greater number of fatalities. This will be accentuated by the higher levels of traffic, operating at higher speeds, which access a poor NSR network, after experiencing a much higher level of service provided on the National Primary Roads.

1.6 WHY INVEST IN NATIONAL SECONDARY ROADS?

The current economic climate has put a very serious strain on the public finances. However, there are still a number of very strong arguments to be made for the NSR Network Programme, including:

- the continuing need to address Ireland's infrastructure deficit, which will help to maximise Ireland's ability to make the most of an upturn in economic growth when it arrives;
- the critical role played by the NSRs as a "link" within Ireland's overall road infrastructure;
- the relative under-investment in NSRs in recent NDPs, as this lack of investment reduces gains from recent improvements in National Primary Roads and local roads;
- reductions in transport costs, including freight costs, which will help to improve national competitiveness;
- extremely competitive construction pricing, which has arisen from the economic downturn and which offers significant savings compared to costs in recent years;
- the role played by an improved road network in supporting other necessary improvements, such as in regional public transport and the movement of goods and freight.

1.7 NATIONAL SECONDARY ROAD NEEDS STUDY

As previously stated the National Roads Authority (NRA) is currently implementing a planning framework programme for the National Primary Roads, including the completion of the Major Inter-Urban Routes (MIUs), in 2010; The NRA is proposing to focus its attention on addressing deficiencies in the NSR network. To that end, it has commissioned a National Secondary Road Needs Study (NSRNS).

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

⁴ *National Road Needs Study*, Report Prepared by MC O'Sullivan & Co Ltd and Scetauroute on behalf of the National Roads Authority, July 1998.

The NSRNS will therefore identify NSR routes, or sections of a route, suitable for investment to a higher design standard. As much of the NSR network does not meet the Type 3 design standard, it was anticipated at the start of the study that a significant component of the proposed investment programme would be to recommend an upgrade to this 'low volume' standard. Routes recommended for investment to this low volume design standard will form part of the proposed NRA National Secondary Road Projects. For some national secondary routes the highest single carriageway design standard (Type 1) may be recommended. It is envisaged that such routes, as well as possible bypasses, would be taken forward as part of the NRA major projects under a different investment programme. Upgrades to a Type 2 standard could form part of either basket of projects. Where it is considered undesirable for either environmental or economic reasons to upgrade a national secondary route, such a route may still be considered for investment under the NRA's road safety programme and will also still be subject to routine maintenance under the NRA's maintenance programme.

The principal output from the NSRNS is a prioritised list of routes for investment under the proposed National Secondary Road projects, as well as a set of routes to be considered in other NRA programmes (i.e. maintenance, safety or major projects).

Figure 1.4 sets out a schematic diagram illustrating the scope of the NSRNS. It sets out the framework within which the various elements of the study were undertaken. The subsequent chapters in this report will provide an overview of the various elements.

1.8 STRUCTURE AND CONTENTS OF THE REPORT

This report has the following structure:

- Chapter 2 presents a summary of the baseline assessment of the NSR network in the South East Region.
- Chapter 3 briefly describes the rationale and objectives of the study.
- Chapter 4 describes the methodology developed for the multi-criteria appraisal process, and it presents the criteria that will be used to assess the network definition and the performance of each of the routes.
- Chapter 5 summarises the option generation and option sifting stages of the option identification process for the South East Region.
- Chapter 6 summarises the cost estimation methodology.
- Chapter 7 presents the appraisal of options for the NSR network in the South East Region with summary descriptions of the options appraised and results on individual project appraisal balance sheets under the appraisal criteria (environment, safety, economy, accessibility and social inclusion and integration).
- Chapter 8 presents the results of the prioritisation and the recommendations for improvements to the NSR network for the South East Region.
- Chapter 9 presents the appraisal of options which include cycling and walking facilities, with summary descriptions of the options appraised.

Introduction

Baseline

Objectives

Methodology

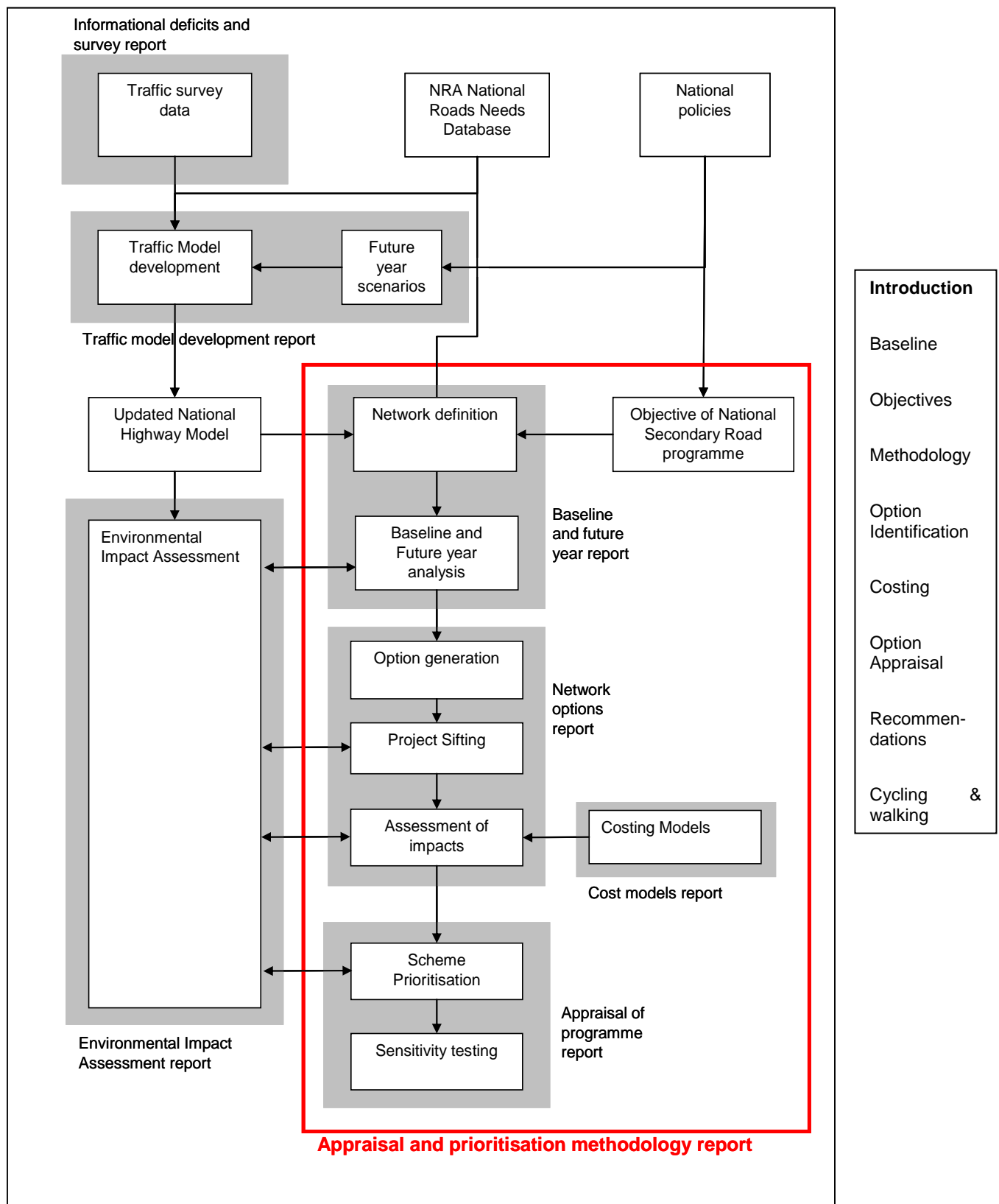
Option
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Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

Figure 1.4: NSRNS Project Architecture

2 BASELINE ASSESSMENT

Existing available data from a number of sources was used to establish background information and statistics describing the existing condition of each individual route in the NSR network. This formed a firm foundation for the later stages of the project.

2.1 AVAILABLE DATA

The data used comprised primarily GIS datasets available from NRA, Ordnance Survey Ireland and third parties.

The NRA GIS datasets used to generate statistics for the individual national secondary routes were the road network, urban speed zones, junction locations, lay-bys, international roughness index (IRI), sightlines 2003 and width.

The 2003 traffic data was used as an indicator of the appropriate road cross section standard to be considered for the route.

The Ordnance Survey Ireland Datasets were used to generate mapping and statistics for analysis and included boundaries, coverage, ortho photography and vector data.

The Third Party Datasets used to generate mapping and statistics for analysis were the Environmental Designations and Heritage Data (NPWS Data), spatial datasets for NHAs, SACs, SPAs, SMRs (Sites and Monuments Records), accident data for the period 1990 to 2006 from NRA and RSA (Road Safety Authority) and AnPost GeoDirectory.

As part of the baseline assessment figures were generated for each of the individual National Secondary Routes to display and analyse the GIS information mentioned above:

- Environmental Designated Areas – containing locations of Special Protection Areas (SPAs), Natural Heritage Areas (NHAs) and Special Area of Conservation (SACs).
- International Roughness Index (IRI) – showing locations along the routes where the IRI is ≥ 4 and < 5 , and also > 5 .
- Urban Speed Zones, Junctions and Lay-bys – containing locations of urban speed zones, junctions and lay-bys.
- Width Analysis (2004) – showing 2004 carriageway width data.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.2 PERFORMANCE INDICATORS

The background information for each of the individual routes was reviewed with reference to a number of factors, which helped to establish the strategic importance of the individual route.

Factors such as geographical information and the routes linkage with National Spatial Strategy gateways or hubs were identified in addition to the route's position relative to National Primary Routes. Onward connectivity to major cities and towns was also described with linkage to ports and airports noted as well as linkage to routes in Northern Ireland. Linkage to peripheral areas and areas of touristic importance were also outlined.

The indicative 2003 traffic data along each route was reviewed and future traffic volumes including HCV traffic content were broadly assessed in order to establish an indicative outline of the volumes and type of traffic carried by each route.

After the background information was outlined the individual routes were assessed by analysing particular indicators to establish an indication of route performance. The indicators representing the performance of each route in achieving the objectives outlined in Chapter 3 were assessed

for each route and summarised in the Baseline Report⁵. The analysis of the individual routes was based on the mapping and statistics generated from the GIS datasets and other information and included the following:

- In order to assess the condition of the existing network, each route was described in relation to its existing cross sections and lane widths and locations of substandard lane width were identified relative to the national standard lane widths of 3m, 3.5m and 3.75m.
- Sight distance information was described relative to the various sight distance bands associated with 85kph and 100kph design speed standards. An overall route description was given in relation to sight distances including the percentage of the route below the desirable minimum for both 85kph and 100kph design standards. In addition the percentage of the route achieving Full Overtaking Sight Distance (FOSD) was reported, though this analysis did not take account of junction proliferation and so only provided a guide to the performance of the route under this criterion. Sections of routes and corridors with relatively low sight distance values were also identified.
- Junction proliferation was assessed and the overall number of junctions, as well as the number of junctions per kilometre was outlined. Considering the rural nature of many of the routes a breakdown of junction proliferation was given for the sections of the route outside of the urban speed limit zones.
- The quality of road surface was described with reference to the pavement condition indicator. This was the IRI indicator (International Roughness Index) with a cause for concern being values greater than 4.

These indicators were utilised to assess the physical condition of each route which was collated to conclude if there were problems associated with the route.

A summary of the baseline information for the NSR network is included in Figures 2.1 to 2.6 and in Appendix A.

Figure 2.1: Environmental Designated Areas with the NSR network

Figure 2.2: CORINE Land cover

Figure 2.3: Carriageway Widths of the NSR Network

Figure 2.4: International Roughness Index (IRI)

Figure 2.5: Urban Speed Zones, Junction Locations and lay-bys on the NSR Network

Figure 2.6: National Spatial Strategy

In addition the drawings providing an illustration of problems and possible solutions as identified in the Baseline Report are provided in Appendix B.

2.3 KEY STATISTICS

This section provides summary details on the carriageway width, junction spacing, pavement condition, and route quality of the NSR network. More detailed tables are provided in Appendix A.

Introduction

Baseline

Objectives

Methodology

Option
Identification

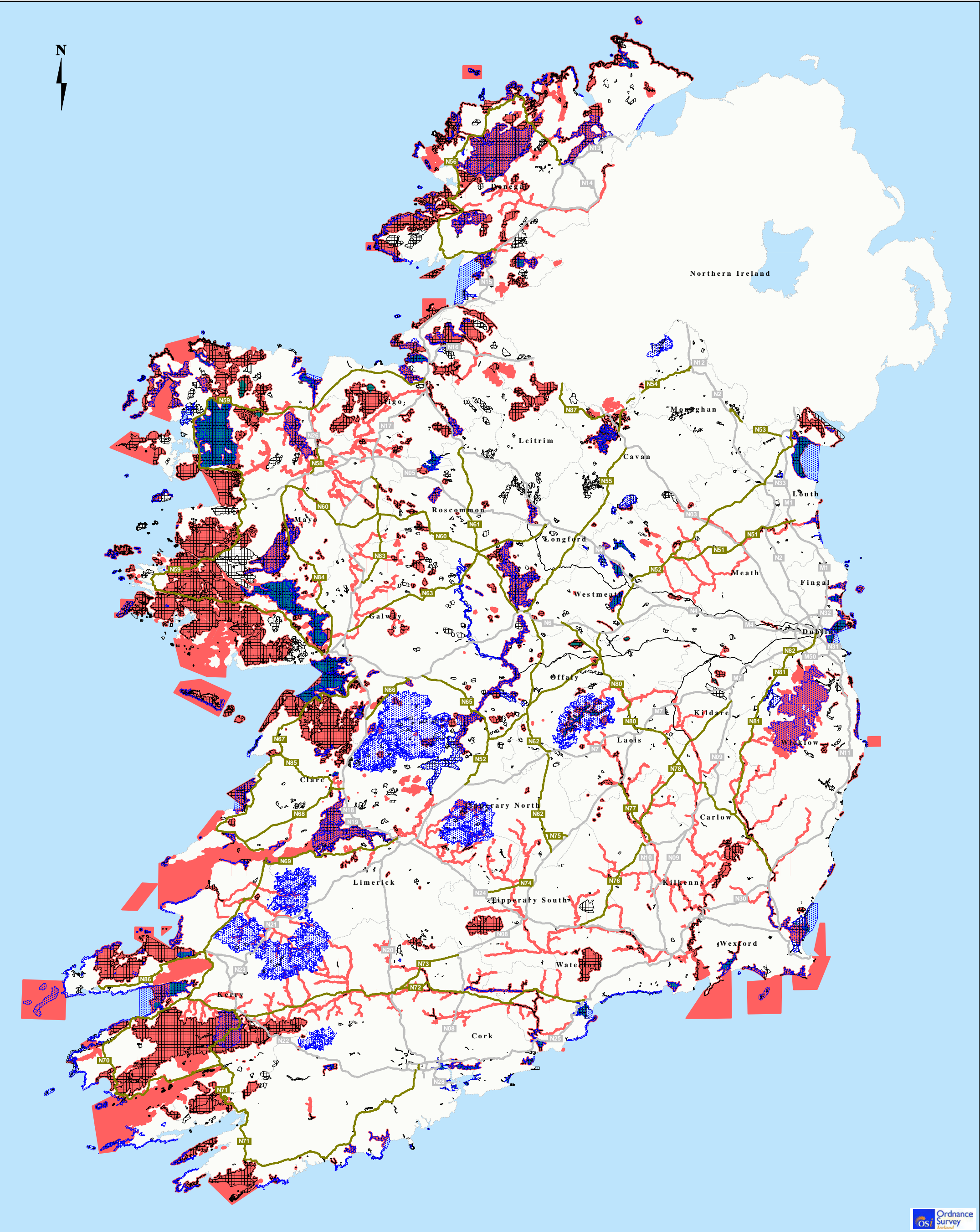
Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

⁵ Baseline Report



Title		Project	Issue Details			
Figure 2.1 - Environmental Designated Sites		National Secondary Road Needs Study	Drawn by:	S. Khan	Project No.	MDT0436
			Checked by:	JM. Lejeune	File Ref.	
			Approved by:	A. Grady	MDT0436M0004A02	
			Scale:	1: 650,000 @ A1	Drawing No.	Rev.
			Date:	14/03/2011	M0004	A02
<div>LEGEND:</div> <div><div><div><div><div></div></div><div>Natural Heritage Area (NHAs and pHNAs)</div></div><div><div><div></div></div><div>Special Area of Conservation (SAC)</div></div><div><div><div></div></div><div>Special Protection Area (SPA)</div></div><div><div><div></div></div><div>Ramsar Areas</div></div><div><div><div></div></div><div>National Secondary Road</div></div></div><div><div>NOTE:</div><div>Natural Heritage Area (NHAs and pHNAs), Special Area of Conservation (SAC) and Special Protection Area (SPA) boundaries are downloaded from the National Parks and Wildlife Service (NPWS) website.</div><div>The data on the website is last updated on 31st May 2010.</div></div></div>		<div><div><div><div><div></div><div>NRA</div><div>National Roads Authority</div><div>An tArdánas um Búifhne Náisiúnta</div></div></div><div><div><div></div><div>RPS</div></div><div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div><div><div>T +353 (0)1 2884499 F +353 (0)1 2835676 E ireland@rpsgroup.com W rpsgroup.com/ireland</div></div></div></div></div></div>	<div>Notes</div> <div><div>1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.</div><div>2. All levels are referred to Ordnance Datum, Malin Head.</div><div>3. Ordnance Survey Ireland Licence EN 0005011 ©Copyright Government of Ireland.</div></div>			



Title		Project	Issue Details		
Figure 2.2 - CORINE Landcover (2006)		National Secondary Road Needs Study	Drawn by: S. Khan	Project No. MDT0436	
			Checked by: JM. Lejeune	File Ref.	
			Approved by: A. Grady	MDT0436Mi0008A02	
			Scale: 1: 650,000 @ A1	Drawing No.	Rev.
LEGEND:		Date: 14/03/2011		Mi0008	A02
<div><div><div>1 - Artificial Surface</div><div>Urban fabric Industrial, commercial and transport units Mine, dump and construction sites Artificial, non-agricultural vegetated areas</div></div><div><div>2 - Agricultural Areas</div><div>Arable land Permanent crops Pastures Heterogeneous agricultural areas</div></div><div><div>3 - Forest and Semi - Natural Areas</div><div>Forests Scrub and/or herbaceous vegetation associations Open spaces with little or no vegetation</div></div><div><div>4 - Wetlands</div><div>Inland wetlands Maritime wetland</div></div><div><div>5 - Water Bodies</div><div>Marine waters Inland waters</div></div></div>		<div><div><div><div>NRA</div><div>National Roads Authority</div><div>An tArdraon Bóthraí Náisiúnta</div></div><div><div>RPS</div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div></div><div><div>T +353 (0)1 2884499 F +353 (0)1 2835676 E ireland@rpsgroup.com W rpsgroup.com/ireland</div></div></div></div>		<div>Notes</div> <div>1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.</div> <div>2. All levels are referred to Ordnance Datum, Malin Head.</div> <div>3. Ordnance Survey Ireland Licence EN 0005011</div> <div>©Copyright Government of Ireland.</div>	



Title		Project		Issue Details			
Figure 2.3 - Carriageway Width (2004)		National Secondary Road Needs Study		Drawn by:	S. Khan	Project No.	MDT0436
				Checked by:	JM. Lejeune	File Ref.	
				Approved by:	A. Grady	MDT0436MI0010A01	
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2.75m to 3m
Less than 2.75m



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Title		Project	Issue Details		
Figure 2.4 - International Roughness Index (IRI)		National Secondary Road Needs Study	Drawn by: S. Khan	Project No. MDT0436	
			Checked by: JM. Lejeune	File Ref.	
			Approved by: A. Grady	MDT0436MI0012A02	
			Scale: 1: 650,000 @ A1	Drawing No.	Rev.
LEGEND:		<div><div></div>< 4</div> <div><div></div>>= 4 and < 5</div> <div><div></div>> 5</div>	Date: 14/03/2011		MI0012A02
			Notes 1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent. 2. All levels are referred to Ordnance Datum, Malin Head. 3. Ordnance Survey Ireland Licence EN 0005011 ©Copyright Government of Ireland.		

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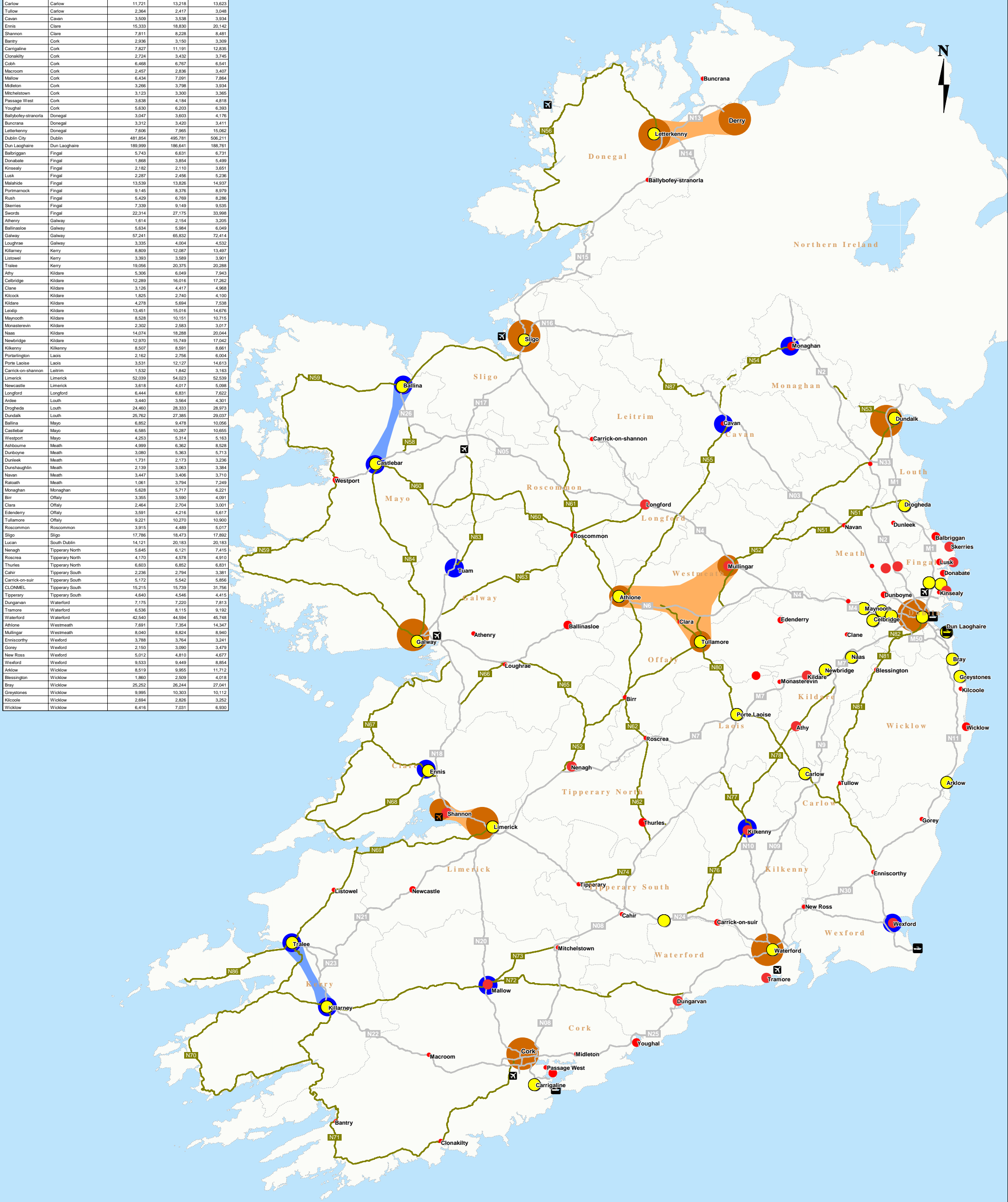
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Title		Project		Issue Details					
Figure 2.5 - Urban Speed Zones, Junctions and Laybyes		National Secondary Road Needs Study		Drawn by:	S. Khan	Project No.	MDT0436		
				Checked by:	JM. Lejeune	File Ref.			
				Approved by:	A. Grady	MDT0436Mi0011A01			
LEGEND:		<div></div> <div>Urban Speed Zone</div> <div></div> <div>Junction Location</div> <div></div> <div>Laybyes</div>		<div><div>NRA National Roads Authority <small>An tUdarda um Bóithre Náisiúnta</small></div><div>RPS</div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div><div>T +353 (0)1 2884499 F +353 (0)1 2835676 E ireland@rpsgroup.com W rpsgroup.com/ireland</div></div>		Scale:	1: 650,000 @ A1	Drawing No.	Rev.
						Date:	28/10/2010	Mi0011	A01
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Town Name	County Name	Population 1996	Population 2002	Population 2006
Carlow	Carlow	11,721	13,218	13,623
Tullow	Carlow	2,364	2,417	3,048
Cavan	Cavan	3,509	3,538	3,934
Ennis	Clare	15,333	18,830	20,142
Shannon	Clare	7,811	8,228	8,481
Bantry	Cork	2,936	3,150	3,309
Carrigaline	Cork	7,827	11,191	12,835
Clonakilty	Cork	2,724	3,432	3,745
Cobh	Cork	6,468	6,767	6,541
Macroom	Cork	2,457	2,836	3,407
Mallow	Cork	6,434	7,091	7,864
Midleton	Cork	3,266	3,798	3,934
Michelstown	Cork	3,123	3,300	3,365
Passage West	Cork	3,638	4,184	4,818
Youghal	Cork	5,630	6,203	6,393
Ballybofey-stranorla	Donegal	3,047	3,803	4,176
Buncrana	Donegal	3,312	3,420	3,411
Letterkenny	Donegal	7,606	7,965	15,062
Dublin City	Dublin	481,854	495,781	506,211
Dun Laoghaire	Dun Laoghaire	189,999	186,641	188,761
Balbriggan	Fingal	5,743	6,631	6,731
Donabate	Fingal	1,868	3,854	5,499
Kinesaly	Fingal	2,182	2,110	3,651
Lusk	Fingal	2,287	2,456	5,236
Malahide	Fingal	13,539	13,826	14,937
Portmarnock	Fingal	9,145	8,376	8,979
Rush	Fingal	5,429	6,769	8,286
Skerries	Fingal	7,339	9,149	9,535
Swords	Fingal	22,314	27,175	33,988
Athlone	Galway	1,614	2,154	3,205
Ballinasloe	Galway	5,634	5,984	6,049
Galway	Galway	57,241	65,832	72,414
Loughras	Galway	3,335	4,004	4,532
Killarney	Kerry	8,809	12,087	13,497
Listowel	Kerry	3,393	3,589	3,901
Tralee	Kerry	19,056	20,375	20,288
Athy	Kildare	5,306	6,049	7,943
Celbridge	Kildare	12,289	16,016	17,262
Clane	Kildare	3,126	4,417	4,968
Kilcock	Kildare	1,825	2,740	4,100
Kildare	Kildare	4,278	5,694	7,538
Leixlip	Kildare	13,451	15,016	14,676
Maynooth	Kildare	8,528	10,151	10,715
Monasteravin	Kildare	2,302	2,583	3,017
Naas	Kildare	14,074	18,288	20,044
Newbridge	Kildare	12,970	15,749	17,042
Kilkenny	Kilkenny	8,507	8,591	8,861
Portlaoise	Laois	2,162	2,756	6,004
Porte Laioise	Laois	3,531	12,127	14,613
Carrick-on-shannon	Leitrim	1,532	1,942	3,163
Limerick	Limerick	52,039	54,023	52,539
Newcastle	Limerick	3,618	4,017	5,098
Longford	Longford	6,444	6,831	7,622
Ardee	Louth	3,440	3,564	4,301
Drogheda	Louth	24,460	28,333	28,973
Dundalk	Louth	25,762	27,385	29,037
Ballina	Mayo	6,852	9,478	10,066
Castlebar	Mayo	6,585	10,287	10,655
Westport	Mayo	4,253	5,314	5,163
Ashbourne	Meath	4,999	6,362	8,528
Dunboyne	Meath	3,080	5,363	5,713
Dunree	Meath	1,731	2,173	3,236
Dunshaughlin	Meath	2,139	3,063	3,384
Navan	Meath	3,447	3,406	3,710
Ratoath	Meath	1,061	3,794	7,249
Monaghan	Monaghan	5,628	5,717	6,221
Birr	Offaly	3,355	3,590	4,091
Clara	Offaly	2,464	2,704	3,001
Edenderry	Offaly	3,591	4,216	5,617
Tullamore	Offaly	9,221	10,270	10,900
Roscommon	Roscommon	3,915	4,489	5,017
Sligo	Sligo	17,786	18,473	17,892
Lucan	South Dublin	14,121	20,183	20,183
Nenagh	Tipperary North	5,645	6,121	7,415
Roscrea	Tipperary North	4,170	4,578	4,910
Thurles	Tipperary North	6,603	6,852	6,831
Cahir	Tipperary South	2,236	2,794	3,361
Carrick-on-suir	Tipperary South	5,172	6,542	5,856
CLOMEL	Tipperary South	15,215	15,739	31,756
Tipperary	Tipperary South	4,640	4,546	4,415
Dunganan	Waterford	7,175	7,220	7,813
Tramore	Waterford	6,536	8,115	9,192
Waterford	Waterford	42,540	44,594	45,748
Athlone	Westmeath	7,691	7,354	14,347
Mullingar	Westmeath	8,040	8,824	8,940
Enniscorthy	Wexford	3,788	3,764	3,241
Gorey	Wexford	2,150	3,090	3,479
New Ross	Wexford	5,012	4,810	4,677
Wexford	Wexford	9,533	9,449	8,854
Arklow	Wicklow	8,519	9,955	11,712
Blessington	Wicklow	1,860	2,509	4,018
Bray	Wicklow	25,252	26,244	27,041
Greystones	Wicklow	9,995	10,303	10,112
Kilcoole	Wicklow	2,694	2,826	3,252
Wicklow	Wicklow	6,416	7,031	6,930



Title

Figure 2.6 - National Spatial Strategy

Project

National Secondary Road Needs Study

Issue Details

Drawn by: S. Khan

Checked by: JM. Lejeune

Approved by: A. Grady

Scale: 1: 650,000 @ A1

Date: 28/10/2010

Project No. MDT0436

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Drawing No. M0006

Rev. A01a

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LEGEND:

National Secondary Road

National Primary Road

Gateways

Hubs

Airport

Port

Population 2006

> 10,000

7,000 to 10,000

6,000 to 7,000

5,000 to 6,000

3,000 to 5,000

NRA

National Roads Authority

An tOideirí um Bóithre Náisiúnta

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2.3.1 Carriageway Width and Type

The NSRs comprise a total length of 2,708 km, of which approximately 2,680 km (99%) is two-lane road with the remainder comprising dual carriageway, three lane road and one-way road.

Minimum design standards in the NRA Design Manual for Roads and Bridges (NRA DMRB) require a lane width of 3.0 m and a total carriageway width of 6.0 m for NSRs. On this basis, available information has been reviewed to identify to what extent NSRs currently fail to meet this minimum geometric standard.

The results for each lane on each route are summarised in Figure 2.3 and in Table 2.1. As can be seen, all NSRs – apart from the N75, N76, N78, N80 and N82 – have inadequate carriageway widths on at least 20% of their route length, with the N59, N62, N63, N66, N67, N70, N73, N83 and N87 routes having more than 60% of route length below the minimum standards. In overall terms, therefore, nearly 47% or 1,248 km of the network has a lane width of less than 3.0 m, and therefore fails to meet the minimum geometric standards.

Table 2.1: Width Less than 3m

WIDTH <3m			WIDTH <3m			WIDTH <3m			Introduction
ROAD	Length m	%	ROAD	Length m	%	ROAD	Length m	%	
N51	58,588	53.3%	N63	117,656	62.0%	N75	426	2.4%	Baseline
N52	139,826	35.0%	N65	46,514	57.3%	N76	7,670	8.8%	Objectives
N53	7,270	20.0%	N66	35,999	73.0%	N77	10,999	20.2%	Methodology
N54	15,919	22.4%	N67	208,553	80.6%	N78	15,665	12.6%	Option Identification
N55	72,776	45.9%	N68	45,349	55.5%	N80	44,353	16.0%	Costing
N56	180,127	57.6%	N69	45,255	22.4%	N81	45,217	26.4%	Option Appraisal
N58	9,972	44.2%	N70	224,092	78.5%	N82		0.0%	Recommendations
N59	397,989	66.7%	N71	140,358	36.9%	N83	71,000	78.5%	Cycling & walking
N60	45,292	24.5%	N72	102,989	31.1%	N84	74,674	50.4%	
N61	54,940	32.5%	N73	36,310	64.5%	N85	34,987	54.2%	
N62	85,071	90.5%	N74	10,054	25.0%	N86	66,173	52.0%	
						N87	43,318	77.2%	
						TOTAL	2,495,379	46.8%	

2.3.2 Pavement Condition

The pavement condition datasets provide data on skid resistance (MSSC)⁶ and roughness (IRI)⁷. For the purposes of assessing the skid resistance of the network, the results from two

⁶ MSSC is an acronym for “Mean Summer SCRIM Co-efficient”. It is a measure of the quality of skid resistance provided by the road surface, as measured by a SCRIM (Sideway Force Co-efficient Routine Investigation Machine). The units are dimensionless, essentially providing a friction co-efficient. Higher values of MSSC indicate better skid resistance.

successive years must be used, as data is collected for half the network on alternate years. MSSC requiring intervention is defined as MSSC_40, which shows the percentage below a value of 40. In the original National Road Needs Study, Intervention Level Priority 1 is defined by 50-100% of value below 40.

A summary of the IRI for the NSR network is shown in Figure 2.4 and the numbers in bold in Table A.2 in Appendix A represent Intervention Level Priority 1. This Table indicates that 461 km, or 17% of the network, is at Intervention Level Priority 1.

In terms of roughness, IRIs have also been measured for the network, with an IRI level higher than 4.0 representing a need for intervention. Table A.3 in Appendix A summarises the length of each NSR that has an IRI higher than 4.0. In total, this amounts to some 949 km, or approximately 35% of the total NSR network.

2.3.3 Junction Spacing

A total of 3,673 junctions have been identified on the NSR network, with junction spacing ranging from 1.05 to 6.69 junctions per km, giving an average spacing of 1.5 junctions per km. The number of junctions per NSR and frequency are presented in Table A.4 in Appendix A with Figure 2.5 showing the urban speed zones, junctions and lay-bys on the NSR network.

2.4 ROUTE QUALITY INDEX

The great majority of the NSR traffic model network is rural single-carriageway road. Of 2,708km of NSR in the NRA dataset, 2,680 km (99%) is two-lane road, with the remainder comprising dual carriageway, three lane road and one-way road. Based on the national traffic model network, approximately 14% can be considered urban.

For the purpose of assessing the case for upgrading different sections of National Secondary route, it was necessary to establish a route quality index, so as to distinguish between sections of existing higher or lower route quality, so as to quantify the impacts of improving any given section to a particular standard.

The original VISUM traffic model network had a single speed-flow curve allocated to all rural NSR links, implying that every link is of the same quality. This was considered to be a critical weakness for the purposes of this study.

The issue was addressed by establishing route quality information using the NRA GIS datasets, and linking this to the traffic model network, splitting model links at the points where there is a significant change in route quality. A set of speed-flow curves were then defined corresponding to the different quality scores.

The method used for this process can be described in terms of a number of sub-tasks:

- Bringing together into a single GIS layer relevant road quality attributes from the NRA database
- Dividing the rural NSR network into appropriate “stretches” – building blocks or units of length at which to calculate a route quality index
- Calculating an overall road quality score for each stretch of the network
- Using this information to decide where to split the NSR traffic model network into sections of different overall route quality

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

⁷ IRI is an acronym for “International Roughness Index”. This is a measure of the quality of the road, measured in units of metres or kilometres. Higher values of IRI indicate poorer quality road.

- Splitting the traffic model links at these locations, so as to establish an updated NSR traffic model road network, and attaching to each resulting link of the model a quality score
- Allocating an appropriate speed-flow curve to each link, to reflect its route quality score

Sections 2.4.1 to 2.4.5 set out in more detail the method adopted.

2.4.1 Road Quality Attributes

The starting point was the “road widths” layer of the NRA database. This GIS dataset represents the NSR network as around 37,000 one-directional sections, each with an average length of approximately 150m. It has four route quality attribute variables namely:

- Carriageway width
- Shoulder width
- Verge width
- Footpath width

The hilliness was estimated from a Digital Terrain Model of the island of Ireland. To each section was attached the estimated maximum and minimum height above sea level, with the difference between the two used as the estimate of the carriageway rise/fall over the length of the section.

Bendiness was estimated by comparing the length of the section with the crow fly distance between the two ends. Each section is a GIS polyline object, so the degrees of turn at each intermediate “shape point” can be calculated directly from the X and Y co-ordinates of the preceding and subsequent shape points. This was done for a sample of points; the results are shown in Figure 2.7.

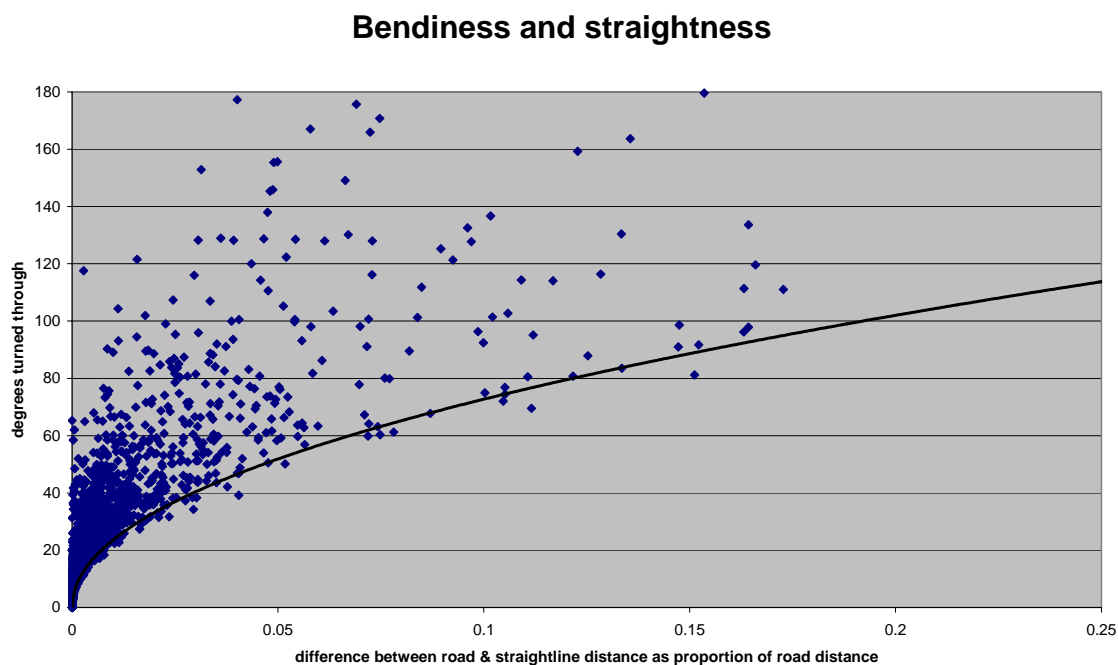


Figure 2.7 – Distance Comparison vs GIS Calculation of Degrees of Turn

Some apparently very straight links had a high calculated bendiness, and links with the same apparent straightness could have greatly varying bendiness figures. This variation is to do with the density of points and the precision of their location when geocoding the data originally - such variation is in many cases at too fine a resolution to affect driver behaviour.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

In order to estimate the effective bendiness of each link, the lower envelope of the points on this graph was approximated by the equation

$$\text{Degrees turned through} = 250 \times \sqrt{(\text{length} - \text{crow fly})/\text{length}}$$

This equation was used to estimate the degrees turned through for each section.

When piloting the method on a single route corridor, visual inspection showed a number of outliers in the data – single sections of very high or low quality – which could distort the results unless removed. Some of these outliers were due to inaccurate lengths in the original data giving spuriously high bendiness values. The length of each section was recalculated to remove these errors.

2.4.2 Network Simplification

The initial road network taken from the NRA database consisted of separate data for the two directions of travel. Typical section length was of the order of 150m, with some sections very short (around 10m) and some substantially longer (around 2500m).

Each section came with “chainage” values, giving distance of each end of the section from the start of the route corridor.

In order to improve the suitability of this network:

- Sections subject to 50kph or 60kph speed limits were removed – these will be modelled separately using appropriate urban speed-flow curves;
- Chainage values were recalculated, so that corresponding sections in the two directions have comparable chainage values (if this is not done, one-way systems in urban areas can result in the two halves of the carriageway being allocated to different stretches of road)
- Sections were grouped together to give stretches with a minimum section length of around 500m. Each stretch was given the average width values of its constituent sections, weighted by length. Each stretch was allocated the total metres rise and fall and the total degrees turned through of its constituent sections.

Bendiness was capped at a maximum of 360 degrees of turn per kilometre, in order to limit the impact of a single band on what would otherwise be a fairly straight section of road.

Carriageway width was capped at 5m, on the basis that values beyond this were likely to be due to turning lanes or other localised features which have limited impact on overall speeds.

2.4.3 Calculation of Road Quality

The COBA speed-flow curve for rural single-carriageway roads was used as the best available information on the relative impact of different aspects of road quality on journey speeds. This formula, based on UK research, gives the free-flow speed on such links as a function of seven attributes:

- Carriageway width
- Shoulder width
- Verge width
- Visibility
- Hilliness
- Bendiness
- Number of junctions

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

A simplified version of the COBA formula was used, as follows:

Route Quality Index = 72.7

- .091 x bendiness (degrees per km)
- .007 x hilliness (metres rise/fall per km)
- .00063 x bendiness x hilliness
- + 1.8 x carriageway width (metres)
- + .99 x shoulder width (metres)
- + .3 x footpath & verge width (metres)

The speed of traffic may depend not only on route quality, but also on other factors such as speed limit, traffic flow, percentage of slow or heavy vehicles, and pavement condition. Nevertheless, for rural links, this index was expected to be strongly correlated with free-flow speed, and this was borne out by subsequent analysis.

This formula was applied to each section, to give a quality score for each 500m stretch of each route in the NSR network.

2.4.4 Identifying Points of Change of Route Quality

In order to avoid the need to model the network at 500m resolution, a spreadsheet-based method was developed to identify points of significant change in route quality. This spreadsheet process worked on the 500m stretches imported from the NRA database in a GIS.

The logic is summarised in Figure 2.8, with the following paragraphs explaining each step in more detail.

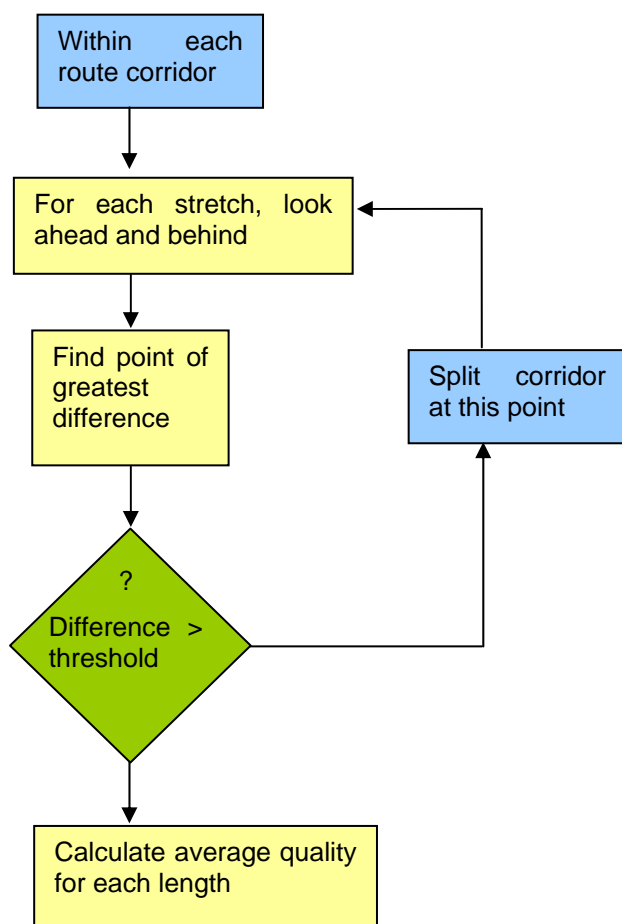


Figure 2.8 – Flowchart for Identifying Changes of Route Quality

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

For each stretch, the spreadsheet “looks ahead” to calculate a length-weighted average quality score for that stretch and the stretches ahead (stopping at a previous split-point or a total of 10 stretches or a distance of 3.3 km, whichever comes first). Similarly it “looks behind” to calculate the average quality score for the stretches in the other direction.

Where this difference between the quality ahead and the quality behind is greatest, that is considered the best place to split the route corridor into two links.

If the difference is greater than a given threshold figure, then the split is considered worthwhile. Once the user accepts the split, the spreadsheet finds the new best place to split a link into two. If the difference is less than the chosen threshold, then the process has gone far enough. The average quality score for each link is exported from the spreadsheet back into the GIS.

The method has three parameters which can be adjusted to fine-tune the result. The values used in this study were:

- Unit length of assessment sections – 500m, so as to smooth out the data without too much loss of information
- Minimum Search Distance - the extent of looking ahead and behind – 3.33km – this value was derived by trial-and-error as a compromise between paying too much or too little attention to changes in width over a short distance
- Stopping criterion – quality scores of the two resulting sections differ by less than 1.0. This value for terminating the process was selected on the grounds that with this level of difference in quality scores it starts to become likely that the two sections will be represented in the model by the same speed-flow curve, i.e. further splitting of links has no benefit to the model.

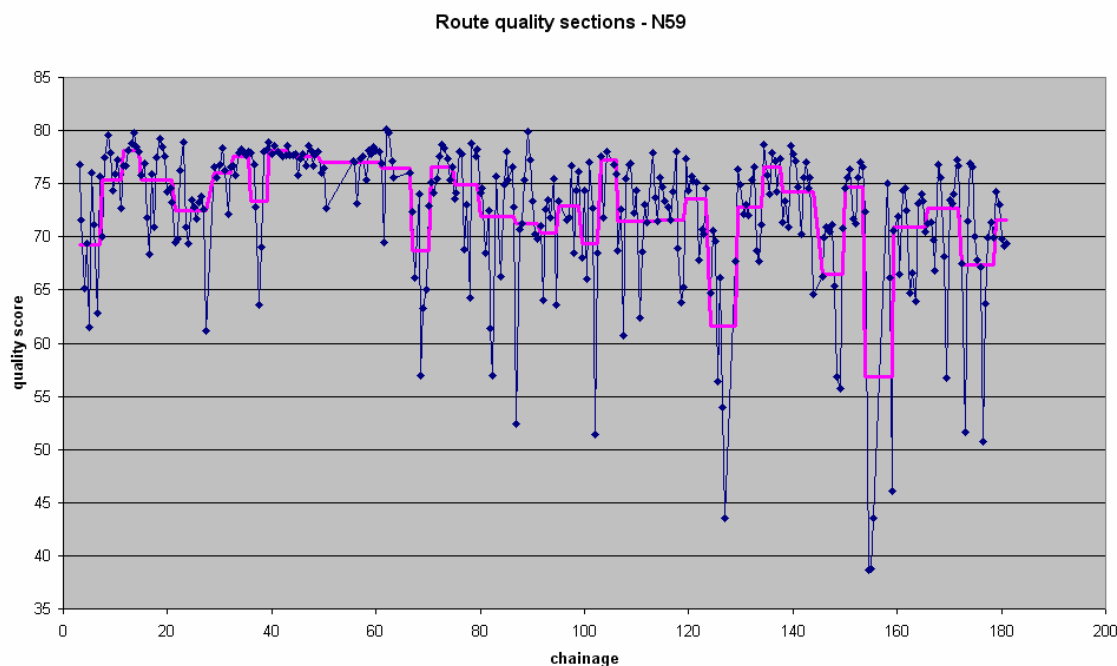


Figure 2.9 – Quality Scores at 500m Resolution Grouped into Route Sections of Around 5km

Figure 2.9 shows how the quality scores at 500m resolution (blue) are smoothed out to give resulting links (pink) with different average quality scores.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.4.5 Splitting Traffic Model Links

The national traffic model network is in node-link format, with attribute information for each direction. Splitting a link requires:

- Creation of a new node object with unique identifier
- Replacement of the existing link object with the two new link objects
- That the new links have appropriate A-node and B-node values
- That the new links have the correct length
- That the new links inherit all other attribute data from the replaced link

The OmniTrans software has a function to do all this automatically as part of an on-screen editing session. The most efficient way to do the splitting of the traffic model network at the points identified was by:

- importing a background layer to OmniTrans, showing the desired links in different colours labelled with their quality scores;
- adding a route quality attribute field to all links;
- manually viewing each NSR corridor in turn from one end to the other,
 - splitting existing traffic model links where there is no existing node within a threshold distance (200m) of the indicated split point, and otherwise letting the existing node stand for the indicated point at which quality changes.
 - editing the network to populate the quality attribute field for each NSR link in turn.

The resulting improved traffic model has the rural NSR network split into links, each with an estimated Route Quality Index value.

In the final version, this Index has a maximum value of 810 for the highest quality roads - wide, straight, flat, with good visibility. An example of a Route with high quality score is indicated in Figure 2.10 below.



Figure 2.10 – Example of Route with High Quality Score

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

The lowest quality section is Corkscrew Hill on the N67 in north Clare - a steep, narrow road with hairpin bends indicated in Figure 2.11; this has a score of 380, although this is an extreme case.

Around 2% of the links in the network have scores below 500; the median score is 735.

Table 2.1 provides a summary of the resulting maximum, minimum and average quality index scores at route level. Note that these scores apply only to the rural single-carriageway sections of each route, and relate to the base year (2006) traffic model network. They therefore do not reflect recent improvement schemes. Scores have been banded, with the lowest band having a value of 450.

The highest-quality routes are the N75 and N53; with the lowest quality routes being the N70 and N71.



Figure 2.11 – Aerial View of N67 at Corkscrew Hill

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

Table 2.1: Quality Scores at Route Level

route	max RQI score	min RQI score	average RQI score
N75	780	780	780
N53	795	765	779
N61	795	720	768
N78	795	720	763
N60	795	705	762
N62	780	720	762
N76	810	720	762
N80	810	675	761
N84	795	690	761
N68	780	735	758
N63	810	690	753
N66	765	705	747
N55	780	660	745
N69	780	675	745
N54	780	705	743
N72	795	630	742
N73	780	705	741
N83	780	705	740
N77	795	690	736
N65	780	675	735
N52	810	630	732
N81	780	660	728
N58	750	705	725
N74	750	705	725
N51	795	675	724
N85	750	675	718
N59	780	550	715
N87	720	660	696
N67	780	450	694
N86	765	550	693
N56	795	450	689
N71	810	450	675
N70	765	450	673

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.5 RESULTS - BASELINE ASSESSMENT OF EACH ROUTE

The following section provides a brief description and summary of the baseline assessment for each NSR route wholly or partially in the South East Region. The drawings in Appendix B provide an illustration of the problems on the NSR network and the possible options identified at the Baseline Assessment Stage.

2.5.1 N52 – Dundalk to Nenagh

2.5.1.1 Description

The N52 is 203.393 km long and is situated in counties Louth, Meath, Westmeath, Offaly and Tipperary. The route connects Dundalk to Nenagh via a series of villages and significant towns including Ardee, Kells, Mullingar, Tyrrellspass, Kilbeggan, Tullamore and Birr. The route is a nationally important route providing connectivity from the South West (Nenagh and nearby Limerick) to the North East (Dundalk and the North)

The route is significant with its connection to other national primary and secondary routes. The route connects with the M1 at Dundalk and N2 at Ardee in County Louth, connects with N3 at Kells (and the proposed M3) in County Meath, connects with the N4 at Mullingar and M6 at Tyrrellspass and Kilbeggan in County Westmeath, connects with N7 at Nenagh (and proposed M7) in County Tipperary and connects with the N33 at Ardee in County Louth.

The route also connects with the N51 national secondary at Delvin in County Westmeath, connects to the N80 national secondary at Tullamore and to N62 at Birr in County Offaly and the N65 national secondary at Borrisokane in County Tipperary.

The route is of national strategic importance as part of the National Spatial Strategy in providing connectivity between Dundalk the north east Gateway, Mullingar and Tullamore as two parts of the midlands Gateway (which also comprises Athlone). The route is identified as a National Transport Corridor between Tullamore and Dundalk under the National Spatial Strategy.

2.5.1.2 Existing Condition

The N52 route carries varying levels of traffic, typically from 2,000 AADT to 16,000 AADT with a typical HCV content of less than 5%. A number of historical accident clusters are noted along the route.

The carriageway lane widths are assessed to be < 3m wide for 36% of the route and < 3.5m wide for 60% of the route. There are poor forward visibilities when assessed to the NRA design standards over intermittent sections of the route which indicates some areas of poor alignment and associated lack of overtaking opportunities.

The pavement condition indicators suggest that the existing pavement condition is generally good at present but the pavement condition should be monitored as some 33% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

A number of sections along the N52 have already been upgraded including the N52 Mullingar Bypass, N52 Mullingar to Belvedere, bypasses of Tyrrellstown and Kilbeggan via the M6, N52 Tullamore bypass and N52 Nenagh Bypass. The N52 Kells bypass link road is currently under construction as part of the M3 Clonee to Dunshaughlin Scheme.

The proposed upgrades currently in the planning stage are the Ardee Bypass in County Louth, Carrick Bridge (south end of Mullingar-Belvedere scheme) to Clonfad Road (N6 link road) in County Westmeath and Kilbeggan to Tullamore in Counties Westmeath and Offaly.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

The section of the N52 between Tullamore and Birr has been subject to several pavement improvement schemes and is generally considered to be at an acceptable standard.

The route passes close to a number of relatively small designated areas but overall the route would not be considered to be located in particularly sensitive areas.

2.5.2 N62 – Athlone to Horse and Jockey

2.5.2.1 Description

The N62 is 95.011 km long and is situated in counties Westmeath, Offaly, and Tipperary and connects Athlone to Horse and Jockey (N8) via an inland route passing through a series of villages and towns including Fardrum, Ballynahown, Ferbane, Cloughan, Birr, Sharavogue, Roscrea, Templemore and Thurles. The route is locally important as it serves as a north south midlands route connecting the significant towns of Athlone, Birr, Roscrea and Thurles with Athlone being one part of the Athlone/Mullingar/Tullamore Gateway serving the midlands under the National Spatial Strategy.

The route connects with the N6 national primary Athlone, connects with the N7 national primary at Roscrea and connects with the N8 national primary at Horse and Jockey. The route also connects with the N55 and N61 national secondary routes at Athlone, connects with the N52 national secondary at Birr and the N75 national secondary at Thurles.

2.5.2.2 Existing Condition

The N62 is expected to carry traffic of the order of 6,000 AADT throughout most of its length with the exception of the section between Thurles and Horse and Jockey (M8) where the traffic levels are of the order of 11,000 AADT with a typical HCV content of less than 5%. The route is of mixed quality combining relatively good sections of road with sections of poor alignment. On the poorer sections of the route, particularly between Athlone and Birr, the overtaking opportunities are intermittent and at times constrained by both the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard parts of this route which indicates a lack of quality overtaking opportunities. The accident data suggests accidents regularly occur along the route.

The carriageway lane widths for the N62 are assessed to be < 3m wide for 45% of the route and < 3.5m wide for 70% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present with the worst section being between Athlone and Birr. The pavement condition should be monitored as some 37% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

The route passes close to a number of very small environmentally sensitive areas but overall the N62 is not located in a particularly sensitive area.

2.5.3 N65 –Loughrea to Borrisokane

2.5.3.1 Description

The N65 is 52.744 km long and is situated in counties Galway and Tipperary and connects Loughrea to Borrisokane via an inland route passing through a series of villages and towns including Killimor, Portumna and Carrigahorig.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

The N65 connects via a new link road with the M6 national primary via Loughrea. The route also connects with the N66 national secondary at Loughrea and connects with the N52 national secondary at Borrisokane. The route is locally important as it services commuter traffic into Galway city by linking up with the M6 via Loughrea. The N65 also services the regionally significant towns of Nenagh, Roscrea and Birr by connecting with the N52 at Borrisokane. The N65 is also significant as it crosses the River Shannon at Portumna and is the first crossing point north of Lough Derg. It is also the only national road that crosses the Shannon between Limerick and Athlone.

The route is important from a tourism perspective with the River Shannon crossing at Portumna serving east-west tourist traffic across the Shannon and the River Shannon pleasure craft centre at Portumna.

2.5.3.2 Existing Condition

The N65 route will carry traffic of the order of 5,000 AADT with a typical HCV content of less than 5%. The route is of mixed quality combining relatively short good sections of road with longer sections of poor alignment. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard parts of this route which indicates a lack of overtaking opportunities. The accident data suggests the route is not particularly prone to a high accident occurrence rate.

The carriageway lane widths are assessed to be < 3m wide for 57% of the route and < 3.5m wide for 76% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present but should continue to be monitored as some 34% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

The route passes close to a number of small environmentally sensitive areas but overall the N65 is not located in a particularly sensitive area though it is noted that it crosses the River Shannon which is an SPA and NHA.

2.5.4 N72 –Dungarvan to Killorglin

2.5.4.1 Description

The N72 is 166.127 km long and is situated in counties Waterford, Cork and Kerry and connects the towns of Dungarvan and Killorglin via a series of villages and towns including Cappoquin, Lismore, Fermoy, Castletown Roche, Mallow, Rathmore and Killarney.

The N72 route connects with the N26 national primary at Dungarvan, connects with the N8 national primary at Fermoy, connects with the N20 national primary at Mallow and connects with the N22 and N23 national primary routes at Killarney. The route also connects with the N73 national secondary at Mallow, connects with the N71 national secondary at Killarney and connects with the N70 national secondary at Killorglin.

Both Mallow and Killarney towns are designated as Hubs serving the south under the National Spatial Strategy.

The N72 route forms an important role servicing north county Cork area and therefore the route is of strategic national importance. The route is paralleled by the N22 / N25 Corridor which services Cork City which somewhat diminishes the national importance of the N72.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.5.4.2 Existing Condition

The route is generally expected to carry traffic of the order of 2,000 to 5,000 AADT though this increases on the section between Killarney and Killorglin to circa 12,000 AADT and to circa 8,000 AADT in the vicinity of Mallow. The route has a typical HCV content of less than 5% though this increases to between 5% and 10% in the environs of Mallow. The route is of mixed quality combining relatively good sections of road with sections of poor alignment. On the poorer sections of the route, particularly between Tallowbridge and Fermoy and sections of the route between Killarney and Killorglin the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard sections of this route which indicates a lack of quality overtaking opportunities. The accident data suggests accidents regularly occur along the route.

The route runs parallel to the River Blackwater Basin (SAC) for much of its length.

The pavement condition indicators suggest that the existing pavement condition is moderately poor at present with the worst section being between Fermoy and Mallow and should continue to be monitored as some 51% of the route is indicated to have a minimum of 1 non-compliance in respect of the pavement condition indicators assessed.

The carriageway lane widths are assessed to be < 3m wide for 31% of the route and < 3.5m wide for 66% of the route.

2.5.5 N74 –Tipperary to Cashel

2.5.5.1 Description

The N74 is 20.131 km long and is situated in county Tipperary and provides a link between the towns of Cashel and Tipperary.

The route connects with the M8 national primary route at Cashel and connects with N24 national secondary route at Tipperary.

2.5.5.2 Existing Condition

The route is expected to carry traffic of the order of 6,000 AADT with a typical HCV content of less than 5%. The route is of mixed quality combining relatively good sections of road with sections of poor alignment. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard parts of this route which indicates a lack of quality overtaking opportunities. The accident data suggests accidents regularly occur along the route.

The route crosses the River Suir basin which is an SAC but overall it is not located in a particularly sensitive area.

The carriageway lane widths are assessed to be < 3m wide for 29% of the route and < 3.5m wide for 86% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present but should continue to be monitored as some 31% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.5.6 N75 –Thurles to the Junction with the M8

2.5.6.1 Description

The N75 is 7.777 km long and is situated in county Tipperary and connects Thurles to the recently constructed M8 national primary via a bypass of the village of Twomileborris. The N75 provides a shorter route for traffic travelling from the M8 to Thurles which would otherwise have to continue south to Horse and Jockey and then travel in a northerly direction to Thurles via the N62 which would add approximately 7km to the journey to Thurles. This route along with the N62 may be considered strategically nationally important as the routes form a link between the N7 and M8 national primary routes.

2.5.6.2 Existing Condition

The route is expected to carry traffic of the order of 6,500 AADT with a typical HCV content of less than 5%. The route is short and is reasonable in terms of existing quality. The accident data suggests accidents regularly occur along the route.

The route is not located in a particularly sensitive area.

The carriageway lane widths are assessed to be < 3m wide for 2% of the route and < 3.5m wide for 50% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderate at present and should be monitored as some 55% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

2.5.7 N76 –Clonmel to Kilkenny

2.5.7.1 Description

The N76 is 43.79 km long and is situated in counties Tipperary and Kilkenny and connects Clonmel to Kilkenny city via a series of villages and towns including Ninemilehouse and Callan. The N76 route is used by commuter traffic to access Kilkenny City and to a lesser degree to access Clonmel. The route may be considered strategically important for the volume of commuter traffic it carries daily into Kilkenny city. The route is regionally and locally important as it forms part of the primary route between Clonmel and Kilkenny City, both of which are regionally important.

The N76 route connects with the M8 national primary at Cahir via the N24 national primary at Clonmel. The route also connects with the N9/N10 national primary via the ring road at Kilkenny.

Kilkenny City is a Hub under the National Spatial Strategy.

2.5.7.2 Existing Condition

The N76 route is expected to carry traffic of the order of 5,000 AADT for most of the route except on the approach to Kilkenny city where the traffic levels are of the order of 8,500 AADT with a typical HCV content of less than 5%. The route is of mixed quality combining relatively good sections of road with some sections of poor alignment. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

and/or the vertical alignment. The accident data suggests accidents regularly occur along the route.

The existing section of the route around Callan is of a satisfactory standard. Planned upgrades along this route include the N76 Tennypark to Brownstown scheme.

The route passes over tributaries of both the River Suir and Nore which are designated as SAC but overall the route is not located in a particularly sensitive area.

This carriageway lane widths are assessed to be < 3m wide for 9% of the route and < 3.5m wide for 41% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present but should continue to be monitored as some 42% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

2.5.8 N77 –Kilkenny to Durrow

2.5.8.1 Description

The N77 is 27.175 km long and is situated in counties Kilkenny and Laois and connects Kilkenny city to Durrow via a series of villages and towns including Jenkinstown and Ballyragget. The route serves commuter traffic into Kilkenny city and possibly onwards to Waterford via the N9 and N10 national primary routes. The route may be considered strategically nationally important as it forms a link between the existing N8 national primary route at Durrow and the N9/N10 routes at Kilkenny. The route is regionally and locally important as it forms part of the primary route between Portlaoise and Kilkenny City, centres which are regionally important.

The route connects with the N8 national primary at Durrow, connects with the N10 (M9) national primary routes at Kilkenny via the Kilkenny Ring Road Extension. The route also connects with the N76 national secondary route at Kilkenny and connects with the N78 national secondary north of Kilkenny.

Kilkenny City is a Hub under the National Spatial Strategy.

2.5.8.2 Existing Condition

The route is expected to carry traffic of the order of 7,000 to 14,000 AADT rising to circa 18,000 AADT on the approach to Kilkenny city with a typical HCV content of less than 5% but with some sections carrying between 5% and 10% HCV content. The route is of mixed quality combining relatively good sections of road with sections of poor alignment. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard parts of this route which indicates a lack of quality overtaking opportunities. The accident data suggests accidents regularly occur along the route.

Recently completed upgrades to this route include the N77 Kilkenny Ring Road Extension and planned upgrades include the N77 Ballynaslee realignment. Also being considered is an extension of the N77 to include the existing N8 from Durrow to Portlaoise after the M7/M8 Portlaoise PPP scheme is completed.

The route parallels the River Nore basin which is designated as an SAC and NHA.

The carriageway lane widths are assessed to be < 3m wide for 21% of the route and < 3.5m wide for 50% of the route.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

The pavement condition indicators suggest that the existing pavement condition is moderately poor at present and should continue to be monitored as some 67% of the route is indicated to have at least one non-compliance in respect of the pavement condition indicators assessed.

2.5.9 N78 – Kilcullen to N77 near Kilkenny

2.5.9.1 Description

The N78 is 62.254 km long and is situated in counties Kildare, Laois and Kilkenny and connects Kilcullen just south of Newbridge to the N77 just north of Kilkenny City via a series of villages and towns including Kilmead, Athy, Ballylynan, Coolbaun and Castlecomer. The route serves commuter traffic into Athy and via onward connectivity to Newbridge, Naas, Kildare town, Carlow town and Kilkenny.

This route might not be considered strategically nationally important as it is paralleled from Newbridge to Kilkenny by the M9/N9 national primary route. However the route is regionally and locally important as it links Athy to both Newbridge and Kilkenny.

The N78 route connects with the M9 national primary at Kilcullen, connects with M9 Link at Athy and the route connects with the N77 national secondary to the north of Kilkenny city and connects to the N80 national secondary south of Ballylynan.

Kilkenny City is a Hub under the Strategic National Spatial Strategy.

2.5.9.2 Existing Condition

The route is expected to carry traffic of the order of 5,000 AADT over most of its length except on the approach to Athy where the traffic levels are of the order of 7,500 AADT with a typical HCV content of less than 5%, though the HCV content from Athy to Kilcullen is over 10%. The route is of reasonable quality with occasional sections of poorer standard alignment and width, particularly between the N80 junction and Kilkenny. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. The accident data suggests accidents regularly occur along the route.

Currently there are no planned upgrades for the N78, though a southern relief road of Athy is currently being studied.

The route crosses the River Barrow basin and also a tributary of the River Nore both of which are SACs but overall the route is not located in a particularly sensitive area.

The carriageway lane widths are assessed to be < 3m wide for 13% of the route and < 3.5m wide for 49% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present but should continue to be monitored as some 40% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

2.5.10 N80 –Athlone to Enniscorthy

2.5.10.1 Description

The N80 is 136.923 km long and situated in counties Offaly, Laois, Carlow and Wexford. The route connects Moate to the east of Athlone with Enniscorthy through a series of villages and

towns including Clara, Tullamore, Killeigh, Mountmellick, Portlaoise, Stradbally, Ballickmoyler, Carlow, Ballon, Kildavin and Bunclody. The N80 strategically connects Athlone, Tullamore, Portlaoise and their associated hinterlands with the South East including Rosslare port.

The N80 connects with the M6 national primary at Moate, connects with the M7 national primary at Portlaoise, connects with N9 national primary at Carlow and connects with the N11 national primary at Enniscorthy. The route also connects with the N52 national secondary at Tullamore, connects with the N78 national secondary south of Ballylynan and connects with the N81 national secondary near Ballon.

In terms of the National Spatial Strategy, the N80 provides an important linkage for the midlands I Gateway of Athlone/Mullingar/Tullamore to the national primary road network and to the port of Rosslare.

The route may be classified as an inter-urban route though there may be an element of commuting associated with the larger urban centres.

2.5.10.2 Existing Condition

The route is expected to carry traffic ranging from 5,000 AADT between Enniscorthy and Bunclody, 9,000 AADT between Bunclody and Carlow, 5,000 AADT between Carlow and Stradbally and 10,000 to 15,000 AADT between Stradbally and Moate. The route carries a typical HCV content of less than 5% with the exception of the section between the N81 and the N11 where the HCV percentage is between 5% and 10%. The N80 route is of reasonably good quality but with sections of poorer standard alignment and width. On the poorer sections of the route, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment.

Sections of the route that have been upgraded in recent years include the sections associated with the N52 Tullamore bypass and the M6 upgrade at Moate, which includes a new grade separated junction with the N80.

Planned upgrades along the route include the N80 Mountmellick Relief Road and the Whitemills realignment.

The N80 route passes close to a number of very small environmentally sensitive areas and over the River Barrow basin in Carlow and runs parallel in part to the River Slaney basin but overall it is not located in a particularly sensitive area.

The carriageway lane widths are assessed to be < 3m wide for 16% of the route and < 3.5m wide for 42% of the route.

The pavement condition indicators suggest that the existing pavement condition is moderately good at present but should continue to be monitored as some 31% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

2.5.11 N81 –Dublin to the N80 near Ballon

2.5.11.1 Description

The N81 is 85.548 km long and is situated in counties Dublin, Wicklow, Kildare and Carlow and connects Dublin City to the junction with the N80 near Ballon village through a number of villages and towns including Tallaght, Brittas, Blessington, Baltinglass, Rathvilly and Tullow. It also serves substantial commuter traffic into Dublin city, Naas, Carlow town and possibly

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

Enniscorthy via the N80 route. This route could be considered strategically nationally important for the volume of commuter traffic it carries into Dublin city every day.

Within the M50 the N81 route passes through Templeogue, Kimmage, Harold's Cross, Warrenmount, the Coombe, Christchurch and finishes on Dame Street. The N80 connects with the M1, N2, N3, N4, N7 and M11 national primary routes via the M50. The route also connects with the N82 national secondary in Dublin and the N80 national secondary near Ballon.

Dublin city is a Gateway under the National Spatial Strategy and the N80 which this route connects into near Ballon is listed as a Strategic Linking Route between Carlow town and Enniscorthy.

The route's principal function varies along its length from a feeder route servicing south county Dublin and north Wicklow into Dublin city at the northern end through to providing connectivity between the towns and villages it connects across Wicklow and also serving as a tourist route between Dublin, Blessington, Hollywood, Donard, Baltinglass, Rathvilly and Tullow.

2.5.11.2 Existing Condition

The route is expected to carry traffic ranging from typically 2,500 AADT between the N80 junction and Baltinglass, 5,000 AADT between Baltinglass and Hollywood and 7,000 to 12,000 AADT between Hollywood and the M50. The route carries a typical HCV content of less than 5% between the N80 junction and Baltinglass and between 5-10% HCV content between Baltinglass and Dublin. The route is of mixed quality with increasingly improved alignment and widths the closer the route is to Dublin. On the poorer sections of the route, particularly between the N80 junction and Baltinglass, the overtaking opportunities are intermittent and at times constrained by the horizontal and/or the vertical alignment. There are limited forward visibilities over the poorer standard parts of this route which indicates a lack of quality overtaking opportunities. The accident data suggests accidents regularly occur along the route.

A planned upgrade of this route is the Tallaght to Hollywood Cross scheme.

The route passes close to a number of environmentally sensitive areas including the River Slaney basin and the Blessington SPA and NHA. Thus in parts it is located in a particularly sensitive area.

This carriageway lane widths are assessed to be < 3m wide for 27% of the route and < 3.5m wide for 54% of the route.

The pavement condition indicators suggest that the existing pavement condition is relatively good at present but should continue to be monitored as some 42% of the route is indicated to have at least 1 non-compliance in respect of the pavement condition indicators assessed.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

3 OBJECTIVES OF STUDY

3.1 NEED FOR AND OBJECTIVES OF INTERVENTION

Good decisions need clear objectives and ideally these should be Specific, Measurable, Agreed, Realistic and Time-dependent (i.e. SMART). The objectives need to relate to both the policy context and the need for an intervention at a local level. An analysis of need followed by objective setting are two important steps in the NRA's Project Appraisal Guidelines (PAG). This is because they ensure that interventions address identified problems in a corridor. In the NSRNS they perform an additional role in that they can be used at the option generation and option sifting stage to help ensure that projects that meet the strategic objectives of the NSR are screened 'in', whilst projects that serve only a 'local' function are screened 'out'.

The term 'objective' is often loosely used. It can be used to refer to ultimate objectives, aims or goals. These are often strategic or high-level objectives such as the level of economic growth or social cohesion and are often set out in government policy documents. It can also be used to refer to objectives of a programme or project. These are more tactical in nature.

This chapter therefore sets out the economic, social and transport policy context of the NSR network before identifying the approach that will be used to identify any changes to the definition of the roads in NSR network, the method to identify the performance of the proposed NSR network and the objectives of any intervention.

3.2 POLICY CONTEXT

A number of central government policy documents affect transport policy. These include the National Spatial Strategy, Transport 21, National Development Plan, Smarter Travel and Framework for Sustainable Economic Renewal. The objectives contained within these documents can be viewed as ultimate objectives using the above classification of objectives. A summary of the key points in these documents in relation to transport and the NSR network in particular is set out below.

3.2.1 National Development Plan

The National Development Plan (NDP) 2007-2013⁸, published in 2007, is a major seven year investment programme for economic and social development in Ireland. It sets out the economic and social investment priorities needed to realise the vision of a better quality of life for all. The objectives of the NDP are to:

- strengthen and improve Ireland's international competitiveness;
- continue sustainable national economic and employment growth;
- foster balanced regional development;
- promote social inclusion.

The NDP states that dealing with infrastructure deficits is therefore crucial to our future economic growth, regional development and environmental sustainability. Under its Transport Programme, the NDP also states the key strategic objective of creating a road network that will promote regional, national and international competitiveness. The principal objectives of its Roads Sub-programme, which are of particular relevance to the NSR network, include:

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

⁸ Department of Finance (2006) *Transforming Ireland – A Better Quality of Life for All*, National Development Plan 2007-2013.

- improvement of road links between the main Gateways designated under the NSS;
- targeted improvements of a number of key NSRs;
- continued upgrading of road links to Northern Ireland.

The NDP also identifies key investment priorities for individual Gateways. In particular, both the NDP and selected background research highlighted the need for increased connectivity between the Gateways and their hinterlands (Fitzpatrick Associates, 2005)⁹.

3.2.2 Framework for Sustainable Economic Renewal

The Framework for Sustainable Economic Renewal¹⁰ sets out the Government's vision for the next phase of Ireland's economic development. The strategy is to:

- address the current economic challenges facing the Irish economy by stabilising the public finances, improving competitiveness, assisting those who lose their jobs, and supporting Irish business and multinational companies;
- invest heavily in research and development (R&D), incentivise multinational companies to locate more R&D capacity in Ireland, and ensure the commercialisation and retaining of ideas that flow from that investment;
- implement a "new green deal" to move us away from fossil fuel-based energy production through investment in renewable energy and to promote the green enterprise sector and the creation of "green-collar" jobs;
- develop first-class infrastructure that will improve quality of life and increase the competitiveness of Irish business.

On road infrastructure, the short-term action points that it identifies are the completion of the MIUs by 2010 and the continued development of the Atlantic Road Corridor.

3.2.3 National Spatial Strategy 2002-2020

The National Spatial Strategy (NSS) 2002-2020¹¹ published in 2002 presents "a coherent national planning framework for Ireland for the next 20 years. The NSS aims to achieve a better balance of social, economic and physical development across Ireland, supported by more effective planning". In this regard, the NSS promotes:

- a strong, competitive economic position;
- an environment of the highest quality;
- a better quality of life for people.

In order to drive development in the regions, the NSS proposes that areas of sufficient scale and critical mass are built up through a network of nine "Gateways" and nine "Hubs". Gateways should be drivers of development in their region, while Hubs support and are supported by the Gateways and link out to wider rural areas. The role of the Gateways acting at the national level, together with the Hubs acting at the regional and county levels, needs to be partnered by the county towns and other larger towns as a focus for business, residential, service and

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

⁹ Fitzpatrick Associates (2005) *Implementing the NSS: Investment Priorities in the Gateways*. Report Prepared for the Department of the Environment, Heritage and Local Government and Forfás.

¹⁰ Department of the Taoiseach (2008) *Building Ireland's Smart Economy: A Framework for Sustainable Economic Renewal*.

¹¹ Department of the Environment, Heritage and Local Government (2002) *National Spatial Strategy for Ireland 2002-2020: People, Places and Potential*, Dublin:

amenity functions. The NSS also identifies an important need to support the role of smaller towns, villages and rural areas at the local level.

Transport is identified in the NSS as a key part of overall spatial policy and an important tool in supporting balanced regional development. Part of this involves building on Ireland's radial transport system of main roads and rail lines connecting Dublin to other regions, and developing an improved mesh or network of roads and public transport services. For the roads network in particular, this means that:

- implementation of key road investment programmes is a key element in enhancing regional accessibility and thereby underpinning balanced regional development;
- enhanced road links are needed to improve interaction between Gateways and Hubs;
- regional roads are to play a key role in linking the main national transport corridors to wider rural areas and smaller towns and villages within these areas.

Furthermore, a number of NSR routes currently provide “strategic linking corridors” identified within the NSS. These include:

- the N80, which links Athlone/Tullamore (via the N11/N25) to Rosslare Europort;
- the N52, which links Tullamore and Mullingar to Dundalk;
- the N61, which links Athlone to Boyle and then (via the N5/N26) on to Ballina.

Investment in the NSR network is therefore a key element of the overall NSS framework.

3.2.4 Smarter Travel – A Sustainable Transport Future

*Smarter Travel – A Sustainable Transport Future*¹² is a new sustainable transport policy for Ireland for the period 2009-2020. Delivering this policy is a key objective of Government because transport and travel trends in Ireland are currently unsustainable.

Despite the much needed investment promoted through Transport 21, congestion will get worse, transport emissions will continue to grow, economic competitiveness will suffer and quality of life will decline unless more sustainable transport policies are adopted. The Government has therefore reaffirmed its vision for sustainability in transport by setting down key goals, which are to:

- improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport;
- improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;
- minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions;
- reduce overall travel demand and commuting distances travelled by the private car;
- improve security of energy supply by reducing dependency on imported fossil fuels.

In relation to roads, the policy proposed is to retain investment in roads that will remove bottlenecks, ease congestion and pressure in towns and villages, and provide the necessary infrastructure links to support the NSS. This is consistent with a reviewed focus on prioritised NSR network improvements.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

¹² Department of Transport (2009) *Smarter Travel – A Sustainable Transport Future: A New Transport Policy for Ireland 2009-2020*. .

In relation to the movement of goods, a specific action is to deal with freight in a more integrated and efficient way that reduces emissions, noting that 95% of goods are moved by road and over 30% of greenhouse gas emissions are from the freight sector.

More generally, outside the Greater Dublin Area (GDA) and the major rail corridors, bus transport is the only public transport option for most travellers. For bus transport providers, including the CIE group and private operators, quality roads are an essential requirement. Investment in the road network, including the NSRs, is therefore a key ingredient in improved public transport in Ireland. Improved public bus transport is also a key priority under the Government's Framework for Sustainable Economic Renewal.

3.2.5 Transport 21

Transport 21, published by the Department of Transport in 2005¹³, is a capital investment framework, implemented through the NDP (see below), through which Ireland's transport system will be developed over the period 2006-2015. The projects and programmes that make up Transport 21 aim to:

- increase accessibility – making it easier for everybody to get to and from work, school, college, shopping and business;
- ensure sustainability – recognising that a modern transport system must be sustainable from an economic and environmental perspective;
- expand capacity – addressing existing deficiencies and providing for future growth;
- enhance quality – improving safety, accessibility, integration, reliability, speed and comfort.

One of the key objectives of the “national programme” element of Transport 21 is to create a high quality, efficient national road and rail network that are consistent with the objectives of the NSS. Priorities for renewal and upgrade that Transport 21 identifies for the NSR network include the following routes:

- N52 (Dundalk-Mullingar-Tullamore-Birr-Nenagh);
- N56 (Donegal-Letterkenny Coastal Route);
- N59 (Mayo-Galway Coastal Route);
- N61 (Athlone-Roscommon-Boyle);
- N67 (Clare Coastal Route);
- N69 (Limerick-Tralee);
- N70 (Ring of Kerry);
- N71 (West Cork Coastal Route);
- N80 (Tullamore-Portlaoise-Carlow-Enniscorthy);
- N86 (Tralee-Dingle).

Investment in NSRs is therefore part of the Transport 21 agenda.

3.3 NETWORK DEFINITION

The existing NSR network comprises approximately 2,708 km of road on 34 routes throughout Ireland (i.e. the N51-N87 inclusive – see Table 1.1). It provides a hierarchical level of network connectivity between regional centres and to/from National Primary Roads. The network also provides for accessibility to areas of the country that have high amenity or tourism value or

¹³ http://www.transport21.ie/Home/Home_Page/index.html

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

suffer from higher levels of social exclusion due to their peripheral location (e.g. routes such as the N56, N59, N67, N70 and N86).

The need to have a national network of routes, such as the national secondary roads, managed by a central government agency primarily arises as a consequence of the existence of long distance traffic combined with decentralised government. Long distance traffic almost by definition will cross county boundaries and may pass through several counties en-route to its final destination. Furthermore such traffic, when taken as a whole, is often of national importance. Given that there is a high potential that transport priorities will differ between counties and between counties and central government, it then becomes in the national interest to manage a network that serves strategic traffic centrally. This role in combination with the ultimate economic, social and transport policy objectives set out above mean that the NSR network fulfils three broad functions:

- Economic – supporting economic growth;
- Social – accessibility for all; and
- Strategic – providing for inter-county traffic.

An analysis of the existing national secondary network indicates that in the main the routes are predominantly rural and inter-urban and are characterised by being medium length through and semi-through routes; carrying medium to heavy volumes of traffic, with an annual average daily traffic (AADT) of over 2,000 vehicles; serving as connecting roads between principal towns; serving medium to large geographical regions; forming extensions to the National Primary Roads; and linking National Primary Roads together to form a network.

Such criteria however do not provide a basis for including new routes into the NSR network or removing some routes from the network. Instead criteria that specifically relate to the function of the national secondary roads are needed (i.e. economic, social and strategic). Six criteria and five indicators to assess them are proposed. These criteria and indicators are summarised in Table 3.1 as well as how the five indicators map onto the six criteria.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Table 3.1: Function of the National Secondary Road Network and Criteria for Inclusion of Roads in the Network

Criteria encompassing the function of the national secondary network	Indicators				
	Volume of traffic with both trip ends in a Gateway/Hub	Volume of traffic with one trip end in a zone containing a port or airport	Proportion of business traffic	Proportion of HGV traffic	Proportion of county population within different threshold distances from a national route
National economic interest					
Support NSS gateways and hubs	X				
Access to nationally-significant ports and airports		X			
High proportion of economically high-value traffic			X	X	
National social interest					
Binding the nation together					X
Balanced regional development	X				X
Strategic function					
Inter-county traffic	X	X			

3.4 THE NEED FOR A TRANSPORT INTERVENTION

The need for a transport intervention is to be assessed for each of the existing NSR routes and each of the proposed new routes. This aspect of the analysis was reported in the *Baseline Report* along with a technical description of each route corridor. The objective of the analysis of need for each route corridor is to identify which sections of the corridor fail to achieve acceptable network performance (relating to accidents, environment and journey times) and are thus considered to constitute problems which should be addressed if at all possible.

Initially each of the 34 National Secondary routes was broken up into sections that are intersected by National Primary or Secondary Routes. In the cases of some of the longer western coastal routes which are not intersected by national routes, the route was split at those places which seem the most natural termini, e.g. the N56 at Dunfanaghy, where one section runs south east to Letterkenny and the other runs south west along the coast. This proposed breakdown of the existing National Secondary Road network, gives 112 separate corridors for analysis. The corridor lengths vary from 2.5km to 76km with an average length of corridor 24km. Table 3.2 details the different corridor sections for the existing NSR network.

Table 3.2: NSR Corridor Sections for Existing NSR

Corridor	Road	From	To	Length (approx)
N51a	N51	Drogheda	Slane (N2)	11.9
N51b		Slane (N2)	Navan (N3)	12.1
N51c		Navan (N3)	Athboy	18.3
N51d		Athboy	Delvin (N52)	12.3
N52a	N52	Dundalk	M1	10.0
N52b		M1	Ardee (N2)	15.0
N52c		Ardee (N2)	Kells (N3)	29.2
N52d		Kells (N3)	Delvin (N51)	21.7
N52e		Delvin (N51)	Mullingar (N4)	18.2
N52f		Mullingar (N4)	N6	17.9
N52g		N6	Tullamore (N80)	10.4
N52h		Tullamore (N80)	Birr (N62)	36.5
N52i		Birr (N62)	Borrisokane (N65)	19.6
N52j		Borrisokane (N65)	Nenagh (N7)	21.1
N53	N53	Dundalk	Castleblayney	18.1
N54a	N54	Monaghan	Clones	19.5
N54b		Clones	Cavan	20.0
N55a	N55	Cavan	Granard	27.3
N55b		Granard	Edgeworthstown (N4)	12.1
N55c		Edgeworthstown (N4)	Athlone (N6)	38.6
N56a	N56	Letterkenny	Dunfanaghy	36.9
N56b		Dunfanaghy	Gweedore	44.2
N56c		Gweedore	Dunglow	17
N56d		Dunglow	Glenties	27

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Corridor	Road	From	To	Length (approx)
N56e		Glenties	Killybegs(Dunkineely)	27
N56f		Killybegs	Donegal	19
N58	N58	Bellavary	Foxford	11.3
N59a	N59	Ballysadare	Ballina (N26)	53.4
N59b		Ballina (N26)	Bangor	42.6
N59c		Bangor	Westport (N5)	60.7
N59d		Westport (N5)	Clifden	65.2
N59e		Clifden	Galway	75.8
N60a	N60	Castlebar	Claremorris (N17)	27.3
N60b		Claremorris (N17)	Ballyhaunis (N83)	17.4
N60c		Ballyhaunis (N83)	Castlerea	19.2
N60d		Castlerea	Roscommon	29.4
N61a	N61	Boyle	Tulsk (N5)	27.1
N61b		Tulsk (N5)	Roscommon (N60)	17.2
N61c		Roscommon (N60)	Athlone (N6)	30.5
N62a	N62	Athlone (N6)	Birr (N52)	34.8
N62b		Birr (N52)	Roscrea (N7)	19.5
N62c		Roscrea (N7)	Templemore	18.3
N62d		Templemore	Thurles	14.1
N62e		Thurles	Horse & Jockey (N8)	8
N63a	N63	Longford	Lanesborough	16.1
N63b		Lanesborough	Roscommon	14.2
N63c		Roscommon (N60)	N17	65.3
N65a	N65	Borrisokane	Portumna	15.1
N65b		Portumna	Loughrea	25.4
N66	N66	Gort	Loughrea	24.6
N67a	N67	Kilcolgan (N18)	Lisdoonvara	45.8
N67b		Lisdoonvara	Ennistimon	12
N67c		Ennistimon	Miltown Malbay	15.1
N67d		Milltown Malbay	Kilkee	30.3
N67e		Kilkee	Kilrush	12.8
N67f		Kilrush	Tarbert	11.5
N68	N68	Kilrush	Ennis	40.7
N69a	N69	Limerick	Askeaton	26.2
N69b		Askeaton	Foynes	10.4
N69c		Foynes	Tarbert	20.4
N69d		Tarbert	Listowel	17.5
N69e		Listowel	Tralee	26.3
N70a	N70	Tralee	Killorglin (N72)	25.6

Corridor	Road	From	To	Length (approx)
N70b		Killorglin (N72)	Cahersiveen	40.2
N70c		Cahersiveen	Waterville	16.6
N70d		Waterville	Sneem	33.3
N70e		Sneem	Kenmare	26
N71a	N71	Cork	N25	1.9
N71b		N25	Junction with R589	8
N71c		Junction with R589	Bandon	17
N71d		Bandon	Clonakilty	21
N71e		Clonakilty	Skibbereen	31.9
N71f		Skibbereen	Bantry	32.1
N71g		Bantry	Kenmare (N70)	44.8
N71h		Kenmare (N70)	Killarney	33.3
N72a	N72	Dungarvan	Lismore	25.3
N72b		Lismore	Fermoy(N8)	27.5
N72c		Fermoy (N8)	Mallow (N20)	32.4
N72d		Mallow (N20)	Killarney (N22)	60.7
N72e		Killarney (N22)	Killorglin	19.6
N73a	N73	Mallow	N72	21.1
N73b		N72	Mitchelstown	9.5
N74a	N74	Tipperary	Golden	12.5
N74b		Golden	Cashel	6.8
N75	N75	Thurles	N8	8.9
N76	N76	Clonmel	Kilkenny	43.7
N77	N77	Kilkenny	Durrow	27.1
N78a	N78	Kilcullen	Athy	22.3
N78b		Athy	N80	8.8
N78c		N80	Castlecomer	18.8
N78d		Castlecomer	N77 nr Kilkenny	12.7
N80a	N80	Moate (N6)	Tullamore (N52)	20.9
N80b		Tullamore (N52)	Portlaoise (M7)	36.5
N80c		Portlaoise (M7)	N78	19
N80d		N78	Carlow	15.6
N80e		Carlow	N81 nr Ballon	19.5
N80f		N81 nr Ballon	N11 nr Enniscorthy	26.6
N81a	N81	Dublin	M50	8.5
N81b		M50	N82 nr Saggart	6.2
N81c		N82 nr Saggart	Blessington	14.1
N81d		Blessington	Baltinglass	29.9
N81e		Baltinglass	Tulow	17.1

Corridor	Road	From	To	Length (approx)
N81f		Tullow	N78 nr Ballon	8.2
N82a	N82	N7	N81	2.5
N83a	N83	Knock Airport	Ballyhaunis (N60)	15.2
N83b		Ballyhaunis (N60)	Tuam	29.9
N84a	N84	Galway	Ballinrobe	46
N84b		Ballinrobe	Castlebar	27.3
N85	N85	Ennis	Ennistimon	32.2
N86	N86	Tralee	Dingle	49.4
N87a	N87	Belturbet	Ballyconnell	11.7
N87b		Ballyconnell	Swanlibar	15.8

A transport intervention is appraised against five criteria: environment, safety, economy, accessibility and social inclusion and integration. Any investment in the national secondary road network needs to minimise or reduce the impact on the environment whilst promoting safety, the economy, accessibility and social inclusion as well as integration. In the context of a national secondary road network which serves a strategic function and supports economic growth through the Gateway cities and Hubs whilst facilitating access to key international gateways the main determinant of economic, accessibility and social inclusion and integration benefits is the direct cost of transport. The link between the direct costs of transport and the economy is quite clear, but it is also (in the context of the NSR) a good indicator for accessibility and social inclusion as by reducing the direct costs of transport access to and between Gateway cities and Hubs accessibility and integration improves. This is because services will centralise in the Gateway cities and Hubs and improved access to them, through lower direct costs of transport, is therefore important in promoting accessibility, social inclusion and integration objectives.

The objectives of investment in the national secondary road network can therefore be summarised as:

- To reduce the direct costs of transport;
- To reduce accident numbers and the proportion of fatal and serious injuries; and
- To minimise impact on the environment.

It should be noted that the direct costs of transport encompass time costs and quality of journey costs as well as the out of pocket costs associated with fuel and vehicle maintenance and depreciation. Table 4. maps the three objectives of improving the NSR network onto the five appraisal criteria.

Thirteen indicators that assist in describing the performance of the each national secondary route are set out in Table 3.4. These indicators focus exclusively on the performance of the national secondary route against the objectives of the investment programme. A poor performance against any one indicator does not itself constitute a rationale for investment, but instead contributes to a broad picture of how well each national secondary route performs. The focus in identifying poor performance is to identify which sections of each corridor fail to achieve acceptable network performance (relating to accidents, environment and journey times).

The data for the assessment of these indicators will be drawn from a variety of sources these include the transport model, journey time surveys (undertaken as part of the traffic model development), and engineering, accident and environment datasets i.e. NRA Road Needs GIS

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Database, GIS databases for Natura 2000, SPAs, SACs, NHAs sites, Database for Protected Areas under Water Framework Directive designated site databases, database for National Monuments and Protected Structures and CORINE. The results of this assessment are reported in the *Baseline Report*.

Table 3.3: The Appraisal Criteria and the Objectives of Improving the NSR Network

Appraisal criteria	To reduce the direct costs of transport	To reduce accident numbers and the proportion of fatal and serious injuries	To minimise impact on the environment
Environment			X
Safety		X	
Economy	X		
Accessibility and social inclusion	X		
Integration	X		

3.5 SMART CORRIDOR OBJECTIVES AND THE OUTPUT OF THE ASSESSMENT OF NEED

The final output of the *Baseline Report* is a brief summary of the performance of each national secondary route corridor and a view as to what constitutes problems in the corridor. Again it needs to be stated that one of the focuses of the report, in addition to giving a technical description of each route corridor, is to identify which sections of each corridor fail to achieve acceptable network performance (relating to accidents, environment and journey times) and are thus considered to constitute problems which should be addressed if at all possible. A set of SMART objectives at the corridor level that specifically relate to these problems will also be developed. An example of such SMART objectives for a particular corridor could be:

- Improve pavement condition;
- Reduce accident numbers to average for road type;
- Increase average journey speeds on rural sections of the route to within 80% of speed limit.

These SMART corridor specific objectives are critical in providing the link between the ultimate objectives of policy (as set out for example in the National Spatial Strategy or the National Development Plan and reviewed in Section and the route options that will be generated, appraised and prioritised – the methodologies for which are discussed in the chapters following this.

Introduction	
Baseline	
Objectives	
Methodology	
Option Identification	
Costing	
Option Appraisal	
Recommendations	
Cycling & walking	

Table 3.4: Objectives of Improving the NSR and Indicators of Performance

Objective of the NSR	Indicator	Included in interim and/or final Baseline and Future year analysis report	
To reduce the direct costs of transport	Are travel times on rural sections of the corridor less than the times that would be achieved when travelling at 80% of the speed limit?	Final only	Introduction
	Do urban areas significantly impact on journey times?	Final only	Baseline
	Are volume to capacity ratios in the peak periods greater than 0.75 (noting the peak periods will be at different times of the day in different parts of the network)?	Final only	Objectives
	Are sight distances poor? ¹	Interim and Final	Methodology
	Is the quality of the road surface acceptable?	Interim and Final	Option Identification
To reduce accident numbers and the proportion of fatal and serious injuries	Is the accident rate worse than average?	Interim and Final	Costing
	Is the accident severity rate worse than average?	Interim and Final	Option Appraisal
	Is there a lack of consistency in design standard between adjoining route sections?	Interim and Final	Recommendations
	Are sight distances poor? ¹	Interim and Final	Cycling & walking
	Do accident black spots exist?	Interim and Final	
To minimise the additional impact on the environment	Does the route impact on a Special Area of Conservation?	Interim and Final	
	Does the route impact on a National Monument	Interim and Final	
	Are noise thresholds exceeded?	Final only	
	Are air pollution thresholds exceeded?	Final only	

Note 1: Poor sight distances have both a safety and travel time impact

4 APPRAISAL AND PRIORITISATION METHODOLOGY

4.1 APPRAISAL PROCESS

This chapter sets out an overview of the principles and some of the details of the appraisal and prioritisation process that was undertaken. The methodology is fundamental to achieving one of the principal outcomes of the NSRNS, that of a prioritised set of routes that will form the basis for an emerging programme of National Secondary Roads improvement projects.

Transport appraisal in Ireland is guided by three principal documents: the Department of Finance's project appraisal guidelines¹⁴, the NRA's Project Appraisal Guidelines (NRA, 2008)¹⁵ and the Department of Transport's Common Appraisal Framework (DoT, 2007)¹⁶. The appraisal of national secondary road projects is therefore undertaken against five primary criteria - environment, economy, safety, accessibility and integration. Schemes are compared using these criteria, and multi-criteria analysis (MCA) is used to rank the schemes. A partial cost benefit analysis is undertaken as part of this process. It is partial as only some of the impacts can be monetised. In comparison the multi-criteria analysis gives a fuller overall picture of a scheme's worth as each impact is scored and therefore contributes to the overall score of the scheme.

The DoT's Common Appraisal Framework (CAF) and the NRA's Project Appraisal Guidelines (PAG) set out the basic requirements of the appraisal process, which the NSRNS follows. These are consistent with international best practice and have the following steps:

- (1) Setting appropriate objectives – what the programme or project is trying to achieve
- (2) Defining the need for the intervention – identifying the problem (or extent to which objectives are not currently being met)
- (3) Considering possible options;
- (4) Assessing the merits of each option and choosing between them; and
- (5) Evaluation – revisiting the appraisal once the project or programme has been implemented, to see what lessons can be learned for future appraisals¹⁷.

It can therefore be seen that the appraisal process is larger than just an assessment of scheme impacts and the generation of a prioritised list. The appraisal process therefore needs to consider the rationale and objectives of the investment programme; identify schemes that contribute towards it as well as those that do not; and sift out those schemes that are clearly uneconomical or have unacceptable environmental impacts.

Furthermore an appraisal by its nature looks forward and therefore the methodology needs to consider how the road network will perform in the future. A Do Minimum scenario therefore needs to be defined as the basis for the comparison and traffic growth forecasts need to be made. The environmental impact of a proposal can influence the appraisal process at a number of different stages, and there is therefore an interest in how the appraisal process interacts with the environmental impact assessment.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling walking &

¹⁴ Department of Finance *Guidance for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector*. Report dated February 2005.

¹⁵ National Roads Authority *Project Appraisal Guidelines*. Report dated March 2008.

¹⁶ Department of Transport *Guidelines on a Common Appraisal Framework for Transport Projects and Programmes*. Report dated May 2007.

¹⁷ It should be noted that the evaluation step is not relevant to the NSRNS as the NSRNS is specifically an ex-ante study.

When choosing between options the impact of each option is assessed under the five main criteria broken down into approximately twenty sub-criteria. An overall score is achieved by scoring each sub-criterion on a scale of 1 to 7 and then combining them in a weighted average to give a score for each of the criteria. These criteria scores are then combined using a further set of weights.

4.2 APPLICATION TO THE NSRNS

The appraisal process set out in the NRA PAG and DoT CAF are perfectly appropriate for the NSRNS, however, and as with all studies, to a greater or lesser extent, a number of challenges arise in implementing the recommended methods. These are summarised below.

- How to ensure that projects that meet the strategic objectives of the NSR network are prioritised above ‘local’ projects, and how to ensure that projects that have an over-riding national need are prioritised above those that do not;
- How to balance the treatment of impacts that can be monetised and those which cannot in the prioritisation process;
- How to streamline and automate the appraisal process as far as possible (as required to assess around 400 distinct projects) whilst maintaining transparency and credibility;
- How to assess some of the sub-criteria (impacts) for which limited data will be available given the projects being appraised are at a pre-feasibility stage;
- How to derive a transparent and robust method for translating sub-criterion impacts onto a 7 point scale (that also takes account of the scale of a project); and
- How to derive reasonable weights for combining sub-criteria. Related to this is the need to ensure that projects that score very poorly against one criterion (e.g. an environmental sub-criterion) receive a much lower ranking than those that do not. Similarly there is the need to ensure that projects that score very highly against one criterion (e.g. safety) and offer good value for money are prioritised sufficiently highly.

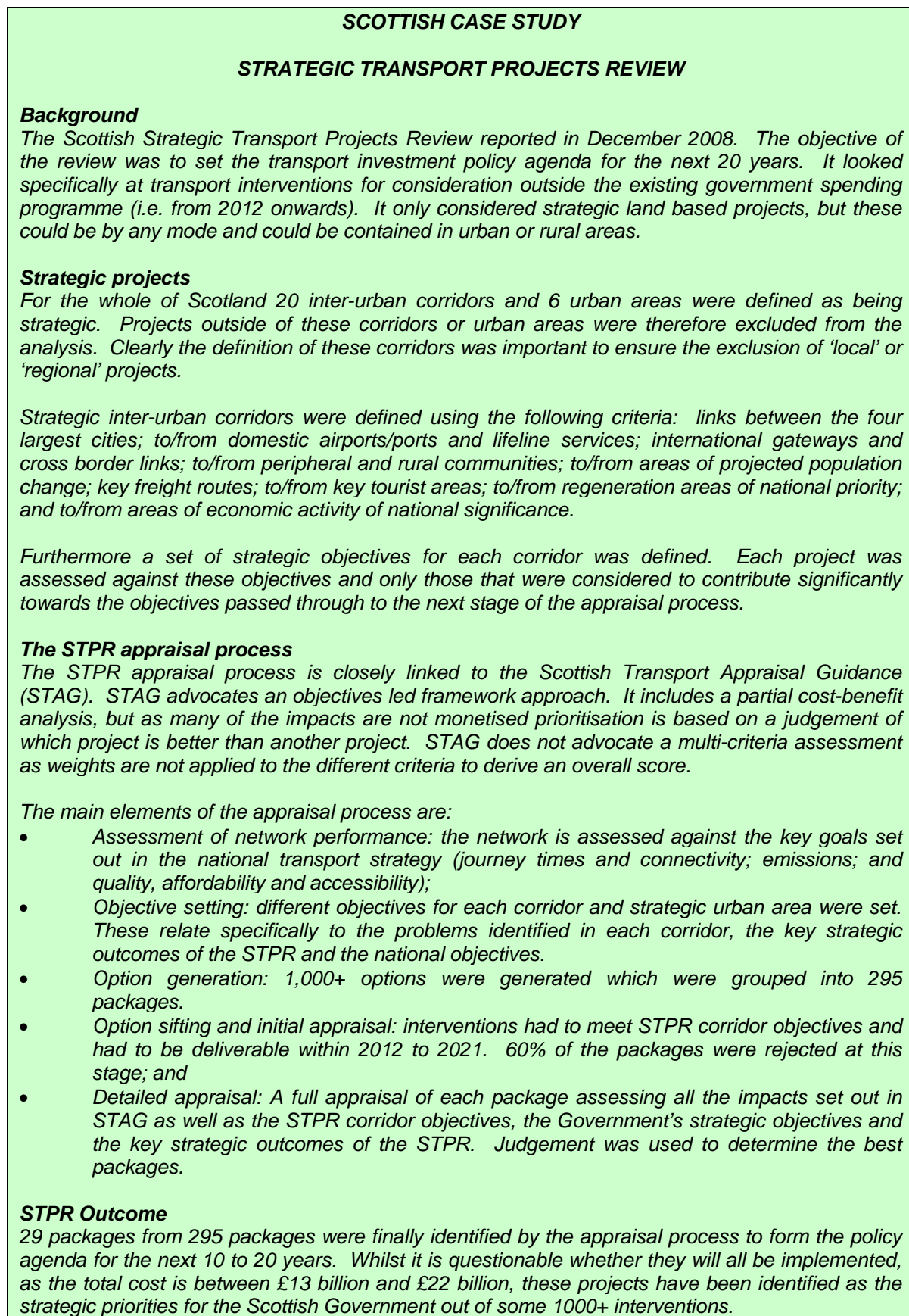
Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

4.3 INTERNATIONAL CASE STUDIES

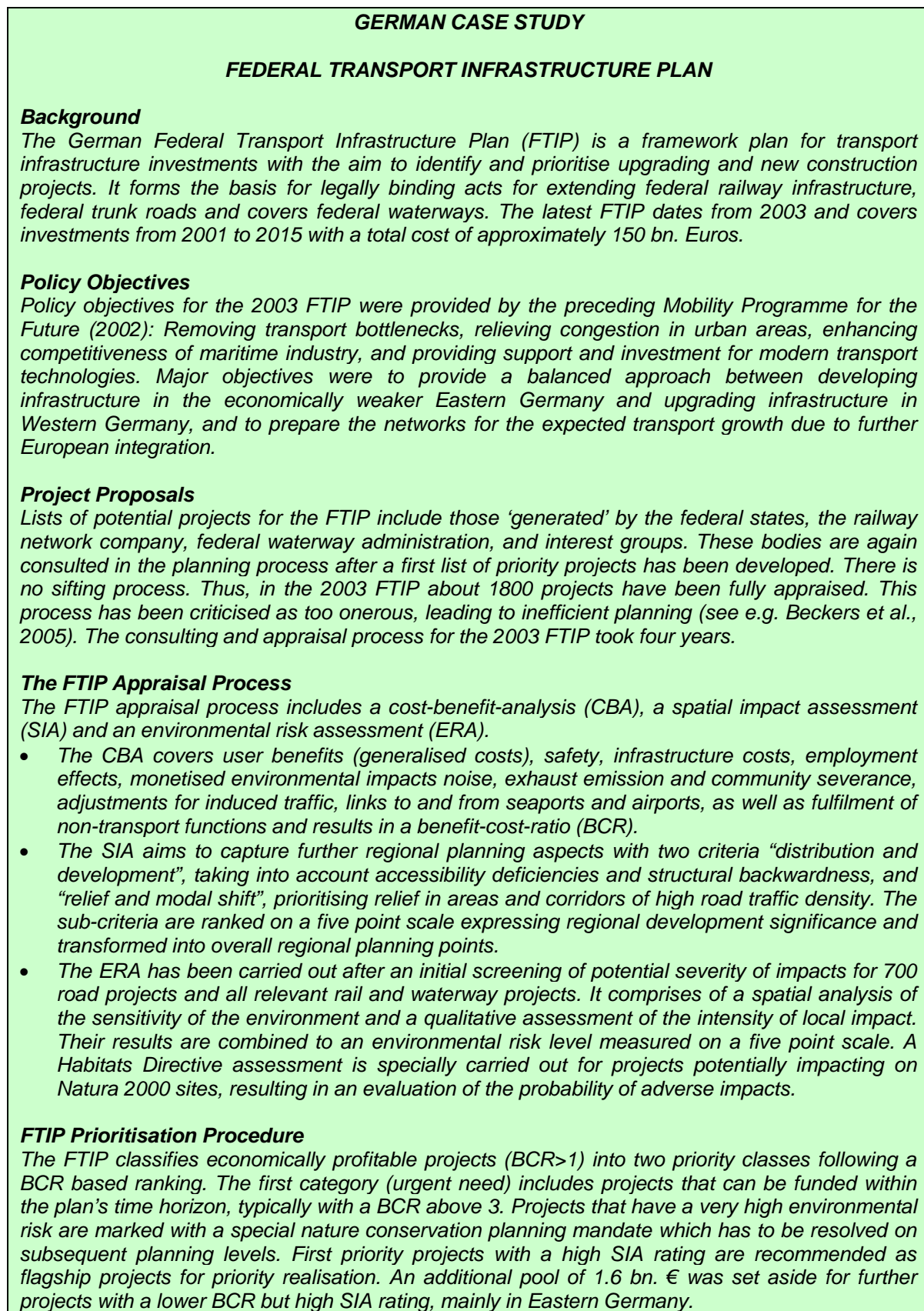
Figure 4.21 and Figure 4.2 illustrates two similar appraisals of the components of a national transport investment programme. The first is that relating to Scotland and the second to Germany. From the Scottish case study we can see that the use of an objectives led approach in combination with a tightly controlled option sifting process allows only ‘strategic’ projects to pass to the next stage of the appraisal process. This is of interest to the NSRNS as there is also a need to prioritise ‘strategic’ projects over ‘local’ projects.

From the German case study we can see that projects that fail certain environmental thresholds or for whose impact is uncertain at the pre-feasibility stage are taken forward into the prioritisation process but are red flagged. The red flag implies that an environmental condition must be met before the project is implemented. Potentially the reverse policy could also be adopted. That is a project could be green-flagged if it offered very good value for money but only scored positively against one objective (e.g. a road safety project). Given the main outcome of the NSRNS, a list of prioritised National Secondary Road projects that does not include safety projects (which fall into the Road Safety programme), this procedure was not anticipated to be needed.

The German case study also provides an example for the integration of employment effects into a cost-benefit analysis and the integration of economic results from a cost-benefit analysis and spatial planning results in a case when strengthening the infrastructure in more deprived regions is of major policy concern, both of which are of interest in this study.

Figure 4.1: Scottish Case Study: Strategic Transport Projects Review

Source: JACOBS, GRANT THORNTON, FABER MAUNSELL AND TRIBAL (2008) *Strategic Transport Projects Review*. Glasgow: Transport Scotland. <http://www.transportscotland.gov.uk/stpr>

Figure 4.2: German Case Study: Federal Transport Infrastructure Plan

Source: FEDERAL MINISTRY OF TRANSPORT, BUILDING AND HOUSING 2003. *Federal Transport Infrastructure Plan*. <http://www.bmvbs.de/en/Transport/Programmes-2571/Federal-Transport-Infrastructu.htm>

There tools commonly used for ranking projects are as follows:

CBA

Cost-benefit analysis (CBA) is an appraisal method that is based on economic welfare theory. The objective is to assess the total benefits and costs of projects/policies whoever they accrue to in society and to test whether the sum of benefits exceeds the costs. Thus, it assumes that losses can be compensated for by the gains of a project. All benefits and costs are valued based empirical evidence of individuals’ preferences and need to be transformed into monetary units which express a welfare measure. Explicit procedures have been developed for valuing costs for many non-market impacts and for dealing with impacts in the future.

MCA

In contrast to CBA, multi-criteria analysis (MCA) does not transform all impacts into a common value which is considered to express public welfare. Instead, the aim is to rank different alternatives according to decision makers’ or stakeholders’ preferences. The first step is therefore to establish a set of decision criteria and corresponding indicators. Many MCA methodologies allow the use of qualitative criteria, e.g. descriptions such as ‘high impact’. In the next step, the extent to which project alternatives contributes to these objective(s) is measured. A valuation step is usually applied to transform the impacts from their original units into numerical scores on a preference scale. Finally, weight measures can be applied to the impact scores in order to aggregate them into an overall value and produce a ranking. These weights express the relative value for each impact. Generally there are different techniques available for both the valuing and the weighting steps.

CEA

Cost-effectiveness analysis (CEA) measures at which costs certain benefits of a project can be achieved. Thus, it requires the normalisation of different types of benefits as in MCA but avoids the monetisation of non-market goods as necessary for CBA. It can only be applied for a comparative analysis of projects but not for an absolute assessment of their worthiness.

4.4 METHODS OF MULTI-CRITERIA ANALYSIS (MCA)

The NRA PAG and the DoT CAF do not stipulate the type of MCA method that should be adopted. Some common methods are set out in Figure 4.3. Aside from the reliability of the weighted summation approach the Department of the Environment, Transport and the Regions UK (DETR) Manual on Multi-Criteria Analysis (DETR, 2000) points out advantages of the weighted summation (or linear additive) approach include its robustness, effectiveness and lower complexity compared to other approaches. These reasons, and because the NRA already has familiarity with the successful application of this approach, lead us to choose this method.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Figure 4.3: Overview of common methods for MCA

“Weighted summation:
Perhaps the most commonly applied MCA method; weighted summation involves transforming performance measures into commensurate units, multiplying by criteria weights, then summing to attain an overall performance score for each project. Janssen (2001) argues that although computationally simple, weighted summation will often provide a reliable solution.

Lexicographic ordering:
This involves ranking projects against the most important criterion. If a complete ranking is attained then that is the result. Otherwise the projects with tied rank positions are ranked against the second most important criterion and so on until a complete ordering is established, or all criteria are exhausted. This approach is described by Hutchinson and Gigerenzer (2005) who refer to it as the Take the Best (TTB) method.

ELECTRE (concordance–discordance analysis):
This approach was developed by Roy (1968) and is applied in environmental management problems (Gershon and Duckstein, 1983; Ozelkan and Duckstein, 1996). An adaptation was made in this study based on Nijkamp et al. (1990) to avoid the need for decision makers to specify a concordance or discordance threshold. These are important parameters for ELECTRE but are difficult to explain to decision makers. Concordance and discordance analysis lies at the heart of ELECTRE and involves comparing every pair of projects to compute an overall performance score.

Evamix:
Developed by Voogd (1982, 1983) this approach separates cardinal and ordinal data in the performance matrix, applying algorithms suited to each level of measurement. Evamix makes paired comparisons for the projects and combines the ordinal and cardinal scores to attain an overall performance score. “

Source: HAJKOWICZ, S., 2007. A comparison of multiple criteria analysis and unaided approaches to environmental decision making. *Environmental Science & Policy* 10 pp 117-184.

4.5 METHODOLOGY

Having reviewed a number of alternative approaches, a methodology was selected for the NSRNS which addresses these challenges within the framework of the NRA PAG and the DoT CAF. The process can be described as an objectives-led multi-criteria assessment (MCA).

National policy is used to determine the objectives of upgrading the NSR network. These objectives are used to assess the ‘baseline’ performance of the NSR. Where the NSR does not perform satisfactorily against these objectives, then that defines a problem. Possible solutions are generated which form the options to be appraised. A sifting stage follows to ensure that the projects that pass through to later stages of the appraisal meet the strategic objectives of the NSR, do not just serve local needs and meet minimum environmental and economic criteria. Projects which fail environmental criteria at the sifting stage are ‘red-flagged’ to indicate that they should not proceed to implementation unless the issue is resolved (which may be an issue of mitigation measures or of detailed design).

Each impact is scored on a numeric scale from 1(worst) to 7 (best), in a way that is as consistent as possible over different criteria. The weights that are used to combine the scores for the different sub-criteria are based on monetary values as far as possible and other evidence where no monetised values are available. A weighted MCA framework is used to combine all the different impacts into a single ‘score’. Sensitivity testing will be undertaken to understand how robust the prioritisation is to some of the key assumptions of the appraisal process.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling walking &

4.6 THE NEED FOR AND OBJECTIVES OF AN INTERVENTION

Section 3 discusses the role of the NSR in terms of national economic policy, social policy and transport policy. From this it can be seen that the network performs three broad functions:

- Economic – supporting economic growth;
- Social – providing accessibility for all; and
- Strategic – providing for inter-county traffic.

Table 4.1: Function of the National Secondary Network and Criteria for Inclusion of Roads in the Network

Criteria encompassing the function of the national secondary network	Indicators					Introduction
	Volume of traffic with both trip ends in a Gateway/ Hub	Volume of traffic with one trip end in a zone containing a port or airport	Volume or proportion of business traffic	Volume or proportion of HGV traffic	Proportion within different threshold distances from a national route	
National economic interest						Baseline
Support NSS gateways and hubs	X					Objectives
Access to nationally-significant ports and airports		X				Methodology
High proportion of economically high-value traffic			X	X		Option Identification
National social interest						Costing
Binding the nation together					X	Option Appraisal
Balanced regional development	X				X	Recommendations
Strategic function						Cycling & walking
Inter-county traffic	X	X				

These functions and criteria that relate to them (see Table 4.1) form the basis of deciding whether new routes should be included in the NSR network and whether some routes should be excluded. It is anticipated that only marginal changes in the NSR network will be proposed.

Given the criteria for appraisal, any investment in the national secondary road network needs to minimise or reduce the impact on the environment whilst promoting safety, the economy, accessibility and social inclusion as well as integration. In the context of a national secondary road network which serves a strategic function and supports economic growth through the

Gateway cities and Hubs whilst facilitating access to key international gateways the main determinant of economic, accessibility and social inclusion and integration benefits is the direct cost of transport. The link between the direct costs of transport and the economy is quite clear, but it is also (in the context of the NSR network) a good indicator for accessibility and social inclusion as by reducing the direct costs of transport access to and between Gateway cities and Hubs accessibility and integration improves. This is because the National Spatial Strategy envisages a centralisation of services in Gateway cities and Hubs. Improved access to the Gateways and Hubs, through lower direct costs of transport, is therefore important to promote accessibility, social inclusion and integration objectives.

The objectives of investment in the national secondary road network can be summarised as:

- To reduce the direct costs of transport;
- To reduce accident numbers and the proportion of fatal and serious injuries; and
- To minimise impact on the environment.

It should be noted that the direct costs of transport encompass time costs and quality of journey costs as well as the out of pocket costs associated with fuel and vehicle maintenance and depreciation. Table 4.2 maps the three objectives of improving the NSR network onto the five appraisal criteria.

Table 4.2: The Appraisal Criteria and the Objectives of Improving the NSR Network

Appraisal criteria	To reduce the direct costs of transport	To reduce accident numbers and the proportion of fatal and serious injuries	To minimise impact on the environment
Environment			X
Safety		X	
Economy	X		
Accessibility and social inclusion	X		
Integration	X		

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

The need for a transport intervention is assessed for each of the existing NSR routes. Given the length of some of the routes, each route has been broken down into a number of corridors. In total the 34 National Secondary Roads are analysed in terms of 112 corridors. This process is described in more detail in the Baseline Report¹⁸ and is summarised in Chapter 2 of this report. Problems identified in the Baseline Report are used to develop a set of objectives at the corridor/route level. These specific objectives provide the link between the ultimate objectives of policy (as set out for example in the National Spatial Strategy or the National Development Plan) and the route options that will be generated, appraised and prioritised.

4.7 SCENARIO DEFINITION

An appraisal compares a design option, a Do Something, with a benchmark case. The benchmark case is not the existing network but the existing network plus any committed transport projects and is usually referred to as the Do Minimum. Included in the Do Minimum is a programme of maintenance and renewal works necessary to maintain the life of the asset

¹⁸ National Secondary Road Needs Study Interim Baseline Assessment Summary, November 2009

over the appraisal period. The Do Something also includes a maintenance and renewal programme. The scenarios used in the NSRNS are:

- **Do Minimum:** is defined as the existing network (2009) plus all schemes under construction or where there is a firm commitment to provide improvements. Initial assessment of schemes is against a Do-Minimum case.
- **Future Vision:** it is also appropriate to assess schemes against a scenario in which the national primary network is completed as currently envisaged by NRA, i.e. a future in which all projects currently being actively progressed are assumed to be in place. Such projects, by either complementing or competing with the NSR proposals, will have an impact on the appraisal of the Do Something options. This assessment will be carried out as a sensitivity test on the complete set of schemes emerging from the initial assessment.
- **Do Something:** this is the option being appraised.

4.8 ASSESSMENT OF IMPACTS

The impacts of each of the options that pass the sifting process need to be appraised against five criteria (environment, safety, economy, accessibility and integration) and their associated sub-criteria. This section summarises that process with a set of tables, each one relating to a different criteria, describing the method used to assess each impact. As there are a large number of options to be assessed the methods applied are automated as far as possible and are appropriate to a strategic study rather than considering detailed localised impacts.

4.8.1 Environment

There are eight sub-criteria in the environmental criterion. These are:

- Air quality and climate. This reflects local air pollution with corresponding negative impacts on health and environment and the contribution of road transport to climate change. It requires the quantification of emissions and, in the case of local pollution, of household exposure. A monetary value is assigned to the impact.
- Noise and vibration. The focus here is on noise exposure and requires the quantification of households situated in noise bands along corridors. The change in noise annoyance is assessed in monetary terms.
- Landscape and visual quality. Visual sensitivity is a combination of the sensitivity of the human receptor and the quality of view experienced by the viewer. Local authorities designate areas with scenic value; however, a national database does not exist. Therefore, landscape is not included, i.e. scoring it neutral for all projects.
- Biodiversity. This aims at the protection of designated conservation areas that contain habitats or species of national or international conservation importance. A non-monetised approach is used, calculating the number of areas impacted through a GIS overlay with the transport network and assessing the impact significance according to type of area affected as well as extent and duration of impacts.
- Cultural heritage/ Archaeology. A non-monetised approach as for the biodiversity assessment is applied to identify potential conflicts with registered sites designated for the conservation of archaeology, architecture and cultural heritage features.
- Land use. This measures the loss of land by land use categories from the CORINE land cover database providing an indication of whether economic, recreational, natural or built environment are the main receptors of changes in land use
- Soils and geology. This is not assessed due to localised impacts and lack of a national database.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

- Water resources. The focus of the assessment is on pressures and impacts on water bodies. The assessment approach follows the methodology used for the assessment of biodiversity.

The methods used to assess the impacts under each sub-criterion are summarised in Table 4.3.

Table 4.3: Method for Assessing Environment Impacts

Sub-criteria	Measurement of impacts
Air quality and climate	Volume of emissions and household exposure (by proximity to scheme) in 2025. Carbon outputs are presented separately from other forms of air pollution. Monetised measure PV_{air} and $PV_{climate}$
Noise and vibration	Change in number of households experiencing change in noise volumes in 2025 Monetised measure PV_{noise}
Landscape and visual quality	Not assessed due to data limitations
Biodiversity	Number of protected areas potentially impacted Number of Natura 2000 sites potentially impacted Number of protected areas under the WFD potentially impacted
Cultural heritage/ Archaeology	Number of national monuments potentially impacted upon Number of protected structures/listed buildings potentially impacted upon UNESCO World Heritage area potentially impacted upon
Land use	% area loss of each land cover class
Soils and geology	Not assessed due to data limitations
Water resources	Number of rivers directly impacted

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

4.8.2 Safety

The NRA Project Appraisal Guidelines identifies that safety impacts comprise the impact on road accidents and road user security and has the following two sub-criteria.

- Accident Reduction Impact. This requires a quantification of the changes in accident numbers;
- Security. This refers to the personal security of road users and comprises a non-monetised qualitative assessment. The example quoted in the NRA PAG for the most likely occasion in which this impact would be assessed is where pedestrian facilities such as underground passes are put in place

The DoT CAF identifies accident reduction only.

The methods used to assess the impacts under each sub-criterion are summarised in Table 4.4.

Table 4.4: Method for Assessing Safety Impacts

Sub-criteria	Description
Accident reduction	An accident model based on the last 5 years of observed accident data for the period 2003 – 2007 has been developed. This model derives a relationship between the quality of a road and the accident rate and economic cost. This model is applied to forecasts of 2025 traffic flows to give an estimate of the change in accident numbers for each accident severity category. The 2025 economic cost is scaled up to a cost over the evaluation period to give a PV_{safety}
Security	This impact is expected to be neutral in all instances. Primarily this is because the study is considering rural roads where levels of pedestrian traffic are low.

4.8.3 Economy

There are three sub-criteria under the economy criterion. These are:

- Transport efficiency and effectiveness – this includes impacts to users, transport providers and impacts on the Exchequer
- Other economic impacts – these include impacts on competition, agglomeration, inward investment, improved labour supply and urban regeneration; and
- Funding – whether external funding sources are available

The funding sub-criteria does not appear in the DoT CAF.

The methods used to assess the impacts under each criterion are summarised in Table 4.5.

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Table 4.5: Method for Assessing Economy Impacts

Sub-criteria	Description
Transport efficiency and effectiveness	<p><i>Private vehicle transport user impacts:</i> the outputs from the traffic model for future year 2025 are used to calculate changes in travel time along the corridor. The outputs are also used to calculate the economic costs of travel time and vehicle operating cost changes. The economic cost changes from 2025 are scaled up to values for the full evaluation period to give a $PV_{\text{transport efficiency and effectiveness}}$. These calculations are made in the absence of induced traffic. Changes in journey quality and reliability are not estimated as the methods available are not commensurate with a strategic study of this nature. Similarly delays during construction are not estimated.</p> <p><i>Public transport users and providers:</i> these impacts are not estimated. In part this is due to a lack of data, but it also relates to the view that in the main impacts on bus and train users and providers will be small.</p> <p><i>Exchequer impacts:</i> Capital costs and changes in maintenance costs are estimated using the cost models set out in Chapter 6 of this report. Changes in indirect tax revenues are calculated when relevant.</p>
Wider economic impacts	<p>The assessment of these impacts can be complex and resource intensive, particularly for a study of this nature. In some instances there are no methods available for assessing the impact. As a consequence only two impacts are assessed. These are imperfect competition and labour supply impacts during construction. The value of additional output in imperfectly competitive markets is taken to be a function of the business and freight time and cost savings. Labour supply impacts during construction are assessed using a shadow wage and construction employment impacts at a programme level only.</p>
Funding	<p>No external sources of funding are expected to be available. There is no impact under this sub-criterion, and it is always scored neutral.</p>

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

4.8.4 Accessibility and Social Inclusion

There are two sub-criteria under the accessibility and social inclusion criterion. These are:

- Vulnerable groups – this relates particularly to low income groups, those with disabilities, and those who do not have access to a car; and
- Deprived geographic areas –this relates to impacts on CLAR and RAPID populations.

The methods used to assess the impacts under each criterion are summarised in Table 4.6.

Table 4.6: Method for Assessing Accessibility and Social Inclusion Impacts

Sub-criteria	Description
Vulnerable groups	The impact on this sub-criterion is not assessed. The impact is therefore taken to be zero (i.e. neutral). In part this is because the proposals are expected to have only small impacts on vulnerable groups (low incomes and no access to car) and in part because the data required for assessment of impacts is not commensurate with a strategic study.
Deprived geographic areas	An accessibility score is developed based on change in accessibility for CLAR designated populations accessing their nearest Gateway or Hub settlement (where jobs, schools and health services are likely to be centered) in 2025. For each affected zone, the reduction in journey time is weighted by the CLAR population and by the Do-Minimum travel time, so that benefits for peripheral areas that are further away from a Gateway or Hub receive a higher score.

4.8.5 Integration

There are four sub-criteria to the integration criterion. These are:

- Transport Integration – this concerns the promotion of the integration of transport infrastructure and services through the development of missing transport links and opportunities for interchange;
- Land Use Integration – this concerns the integration of the scheme with land use strategies and objectives as set out in regional and local land use plans;
- Geographical Integration – this focuses on improved links to Northern Ireland and the rest of Europe via ports and airports;
- Other Government Policy Integration – this relates to consistency with national policies, particularly for balanced regional development

In developing a set of indicators for each sub-criterion it becomes clear that there can be overlap between the different sub-criteria. This is most acute with the treatment of national policy documents such as the NDP and NSS which relate to land use integration and other government policy integration. There is therefore a degree of arbitrariness regarding the labelling of the different indicators, but the set of indicators as a whole is considered to reflect the most important dimensions of integration with government policy. The methods used to assess the impacts under each sub-criterion are summarised in Table 4.7.

Table 4.7: Method for Assessing Integration Impacts

Sub-criterion	Description
Transport Integration	Improvements to NSR corridors with a scheduled bus service are scored more highly, to reflect improvements with cross-modal benefit. Improvement schemes which improve a junction between the NSR being upgraded and another National Route are also scored more highly, to reflect enhanced “network effects”. The indicator variable for Transport Integration can therefore take values {0, 1 or 2} according to whether the scheme is “marked up” on one or both of these aspects.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Sub-criterion	Description
Land Use Integration	<p>In a similar way, the indicator variable for Land Use Integration can take values { 0, 1, 2, 3, 4, 5 } according to whether:</p> <ul style="list-style-type: none"> the route is identified for improvement in the NSS the route is identified for improvement in Transport 21 the route is identified for improvement in the National Development Plan the route or corridor is identified for improvement in the relevant Regional Planning Guidelines the corridor or scheme is identified for improvement in the relevant County Development Plan <p>A corridor which is designated for improvement in three of these policy documents would get a score of three, and so forth.</p>
Geographic Integration	<p>We considered two aspects of Geographic Integration – cross-Border accessibility and access to ports and airports. In each case, we undertook a single one-off analysis of the future year Do-Minimum traffic model, to count the number of zone pairs served by each NSR corridor:</p> <ul style="list-style-type: none"> One count of zone pairs with one zone in the North and one zone in the Republic, weighted by the inverse of distance to allow for the fact that the likelihood of cross-Border commerce diminishes with distance. One count of zone pairs where one zone contains a major port or airport. <p>These two indicator variables were factored to a 4-to-7 scale (where a corridor that serves no relevant zone pairs scored 4.0, and the NSR corridor that served the highest number of relevant zone pairs scored 7.0, with most corridors achieving a value in between).</p>
Other Government Policy Integration	<p>The major way in which road improvements support a policy of balanced regional development is by improving accessibility to and between non-Dublin Gateways. We therefore undertook two more one-off analyses, counting the number of zone pairs served by each NSR corridor:</p> <ul style="list-style-type: none"> One count of zone pairs where one zone is a non-Dublin Gateway One count of zone pairs where both zones contain a non-Dublin Gateway town or city. <p>These two indicator variables were factored to a 4-to-7 scale in a similar way, and each scheme was given the average of the two resulting scores (to-Gateway and between-Gateway) for the relevant NSR corridor.</p>

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

4.9 SCORING

4.9.1 Background

A weighted summation Multiple Criteria Analysis (MCA) is employed in the National Secondary Roads Needs Study (NSRNS). The first of two critical steps in applying a weighted MCA is to derive a set of scores for each impact. The second step is to apply a set of weights. This section is concerned with the first step – that of scoring each impact. In the case of the NSRNS the scores need to lie between 1 and 7 (see Table 4.8).

Table 4.8: Scale Definitions

Score	Description
1.0	Highly negative
2.0	Moderately negative
3.0	Slightly negative
4.0	Neutral
5.0	Slightly positive
6.0	Moderately positive
7.0	Highly positive

The scoring system needs to be

- Transparent;
- Consistent between schemes;
- Consistent between sub-criteria;
- Scored objectively (to aide transparency and consistency and comparisons between schemes);
- Reflect the size of a scheme. To ensure that small schemes that deliver value for money as good as big schemes are scored equally to big schemes; and
- Allow for the inclusion of capital costs and the derivation of value for money indicators.

It was further felt by the study team that the scoring system should be:

- Absolute rather than use a value for money metric. That is if a scheme delivers accident savings then it is given a score in excess of 4.0 (neutral), even if the accident savings are small in relation of the size of the scheme (i.e. poor value for money).
- Symmetrical. That is 1 accident saved is scored equal in absolute terms but opposite in sign to an increase in accidents of 1.
- Linear: That is if the impact doubles then the score (above the neutral benchmark doubles). That is if a saving of 1 accident a year gives a score of 5.0 (i.e. 1.0 above the neutral benchmark), then saving 2 accidents a year would give a score of 6.0.

These latter three preferences reflect the view that the scoring method should be as transparent and understandable as possible.

4.9.2 Monetised Impacts

For the five sub-criteria that can be monetised (air, noise, economy sub-criteria and accident reduction) a scoring system that meets the requirements set out above can be derived based on contribution to what would be regarded as a highly positive benefit cost ratio, that is a BCR in excess of 2.5.

Introduction	
Baseline	
Objectives	
Methodology	
Option Identification	
Costing	
Option Appraisal	
Recommendations	
Cycling & walking	

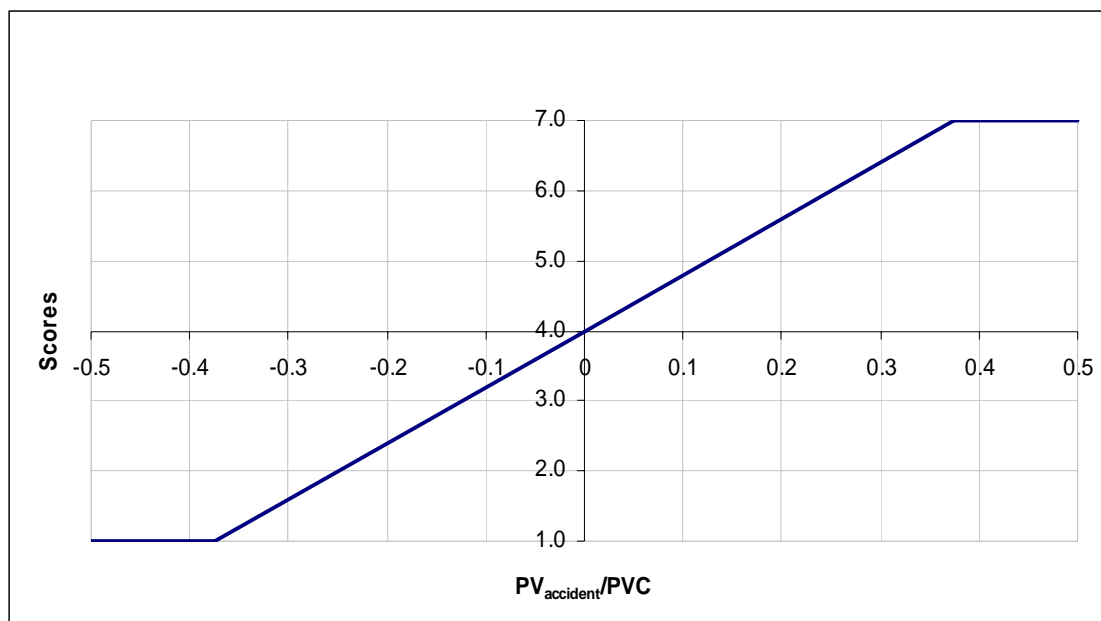
For each of the impacts the ratio of the present value of the impact (PV_{impact}/PVC) has to be calculated. This ratio has to be calculated to ensure that size of the project will not bias any comparisons. A threshold value defining when each PV_{impact}/PVC ratio is considered to be highly positive can then be defined based on an average contribution of the PV_{impact}/PVC ratio to the BCR. The threshold values used are set out in Table 4.9. These values are then used to define scoring functions by sub-criteria – for example as in Figure 4.4 for accidents.

Table 4.9: Calculation of ‘highly positive’ thresholds for monetised impacts

Sub-criteria	Average contribution of each impact to PVB	PV_{impact}/PVC regarded as Highly Positive (score = 7)
Air and climate	5%	0.13
Noise	5%	0.13
Transport efficiency and effectiveness	70%	1.75
Wider economic impacts	5%	0.13
Accident reduction	15%	0.38
	100%	

Note: Treats a BCR of 2.5 as highly positive

Figure 4.4: Scoring Function for Accident Reduction



Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

4.9.3 Environment

In contrast to the economic indicators, most environmental impacts are difficult or even impossible to express in monetary terms. In accordance with the general methodology, our aim is to monetise as many impacts as possible in order to achieve a consistent evaluation throughout impacts. For the monetised impacts, the results can be used as a basis for the scoring in the MCA. For non-monetised impacts, the classes of the 7 point scale had to be

developed in a way that reflects the value functions in accordance with the BCR based ratings. Our general approach is to score according to the following scale:

Table 4.10: Scoring Framework for Environmental Impacts

Score	Description
1	High risk of detrimental, potentially irreversible environmental damage, can only be mitigated or compensated at high cost during project realisation
2	Intermediate risk of environmental damage, requires average effort for mitigation / compensation at project level
3	Some risk of environmental damage, can be offset or mitigated at project level at moderate costs
4	Neutral or very small environmental gain or risk of damage
5	Some potential of environmental gains
6	Intermediate potential of environmental gains, reducing impacts to considerably below national average levels
7	High probability of positive environmental effects, reducing impacts almost completely to below environmental standards

As can be seen from Table 4.10, the basic assumption in the scoring is that environmental damages can be mitigated or compensated for at project level, though potentially at high costs. However, this might not always be the case, in particular if there is a high risk of conflicts with environmental legislation, in particular nature and heritage conservation. In this case, a realisation of the project is highly unlikely or would come at unreasonable costs; therefore these projects will be “red-flagged”, i.e. option only to proceed conditional on stated environmental issues being resolved. Similarly, if a project has the potential to remove an existing conflict of this type (e.g. removing a conflict with a protected habitat), it could be “green-flagged”.

4.9.4 Air Quality and Climate

The scoring of air quality and climate is based in monetised values. The scoring function is described earlier in this chapter (see Section 4.9.2).

4.9.5 Noise and Vibration

The scoring of noise and vibration is based in monetised values. The scoring function is described earlier in this chapter (see Section 4.9.2).

4.9.6 Biodiversity and water resources

Monetary values are not assigned to the biodiversity and water resource elements in the assessment; however, these impacts are based on a risk assessment. Risk levels will be based on an evaluation of degree of legislative protection (SAC under EU legislation, NHA under National legislation), previous experience with similar designated areas and likely cost of mitigation (high, medium, and low). The scoring system used is consistent with the criteria for assessing ecological impact significance presented in the *NRA Guidelines for Assessment of Ecological Impacts*, 2006 (Table 4.11).

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Table 4.11: Criteria for Assessing Impact Significance

Impact	Internationally Important	Nationally Important	High Value Locally Important	Moderate Value Locally Important	Low Value, Locally Important
Severe Negative = Red Flag	Any permanent impacts	Permanent impacts on a large part of a site			
Major Negative = 1	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site		
Moderate Negative = 2	Temporary impact on a small part of a site	Temporary impact on a large part of a site	Permanent impacts on a small part of a site	Permanent impact on a large part of a site	
Minor Negative = 3		Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impact on a small part of a site	Permanent impact on a large part of a site
Neutral = 4	No impacts	No impacts	No impacts	No impacts	Permanent impact on a large part of a site
Minor Positive = 5				Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site
Moderate Positive = 6			Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site	
Major Positive = 7		Permanent beneficial impacts on a small part of the site	Permanent beneficial impacts on a large part of a site		

Source: NRA Guidelines on the Assessment of Ecological Impacts of National Road Schemes, 2006.

If there is an extremely high risk of conflicts with environmental legislation that would make the realisation of the project highly unlikely or would come at unreasonable costs, such a project will be “red-flagged”, i.e. the decision to proceed will be conditional on environmental issues being resolved. This would equate to severe negative in Table 4.11. Where a route potentially impacts directly or indirectly on an SPA or SAC it will automatically be red-flagged to highlight the high risk. However, it is recognised that the presence of an SAC / SPA does not automatically result in unacceptable conflict and in some cases conflicts may be avoided or mitigated through design at project level. This is particularly the case where protected areas relate to rivers which can be crossed using a number of solutions including clear spanning. In these cases, a red flag has been assigned but the impact significance reflects available options even at a strategic level. For non-riverine SACs the significance is more difficult to determine at this strategic level. In those cases, the red flag is used but further information on alignment would be needed before any reduction in impact significance could be determined. Therefore for non-riverine SACs, an impact significance of 1 has been used. For SPAs, given the mobile nature of the designated features, all direct and indirect impacts have been categorised as Red Flag with an impact significance of 1 for direct or 2 for indirect impacts.

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

A summary of the scores used in conjunction with red flags is presented in Table 4.12.

Table 4.12: Scores Attributed to Red Flagged Impacts

Environment type	Direct or Indirect Impact	Impact significance
River based SAC	Direct Impact	2.5
	Indirect impact	3.0
	Indirect Impact to water dependant SAC e.g. bog	2.5
All other SACs (non-water dependant) e.g. woodland	Direct Impact	1.0
	Indirect Impact	3.0
SPA	Direct impact	1.0
	Indirect impact	2.0

4.9.7 Cultural Heritage

The scoring system follows the same principle as the one for biodiversity and water resources. It is consistent with the NRA Guidelines for the *Assessment of Archaeological Heritage Impacts of National Roads* and *Guidelines for the Assessment of Architectural Heritage Impacts of National Roads*. Hence, monetary values are not assigned to cultural heritage elements in the assessment. Instead, the impact ranges are translated into risk levels and corresponding scores. As for biodiversity, projects where impacts on cultural heritage cannot be mitigated and are in direct contradiction with protection laws will be red-flagged.

4.9.8 Land use

CORINE provides information on land cover rather than specific land uses, therefore monetary valuation is not possible. A qualitative scoring has been used for land use which takes account of the main type of land uses impacted along a given scheme.

4.9.9 Landscape

This sub-criterion is not assessed and is therefore scored neutral (4.0).

4.9.10 Safety

Accident reduction

The scoring of accident reduction is based in monetised values. The scoring function is described earlier in this chapter (see Section 4.9.2).

Security

This sub-criterion is not assessed and is therefore scored neutral (4.0).

4.9.11 Economy

Transport efficiency and effectiveness

The scoring of transport efficiency and effectiveness is based in monetised values. The scoring function is described earlier in this chapter (see Section 4.9.2).

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

Wider economic impacts

The scoring of wider economic impacts is based in monetised values. The scoring function is described earlier in this chapter (see Section 4.9.2).

Funding

This impact is therefore always scored as neutral (i.e. score = 4). It is noted that this sub-criterion does not appear in the CAF. It is therefore allocated a zero weight within the weighting process, to avoid the other economic criteria being diluted thereby.

4.9.12 Accessibility and social inclusion

Vulnerable groups

This is not assessed as part of Do Something 1 and is therefore always scored as neutral (4.0).

Deprived geographic areas

The accessibility measure derived is divided by the PVC of the scheme (to prevent bias in favour of large schemes) to give a normalised accessibility score. A normalised accessibility score of 10 is treated as the maximum impact and scored with 7.0 points. A score of 0 is scored as neutral. A linear interpolation between these two points gives intermediate scores.

4.9.13 Integration

Under each of the integration sub-criteria a series of questions is asked. Weightings are then used to combine these to a score for the sub-criteria. For the dichotomous choice questions (yes/no) a score of 7.0 is given if the answer is yes and a score of 4.0 is given if the answer is no. For the integration questions that involve some model analysis the score for that question is output as part of the analysis.

4.10 PRIORITISATION

Prioritisation of mutually exclusive projects (i.e. different options for one route) and between route corridors is undertaken on the basis of the highest project score. The project score is derived by deriving a weighted average of the different sub-criteria scores as follows:

- The scores for each sub-criterion are combined into a weighted average for that criterion using the weightings in Table 4.13. These weightings are based on a view of the likely importance of each impact in decision-makers eyes. In some instances monetary values are used as a proxy for decision-makers preferences.
- The criteria scores are then combined into a project score using another weighted averaging process. These are also detailed in Table 4.13.

When all routes have been appraised prioritisation of the route corridors is based on the highest scoring option appraised for a route corridor in the first instance. However, an incremental assessment is also undertaken to see if there is value to upgrading the route to a higher standard (e.g. Type 2 or Type 1 or offline) for a corridor from a lower standard (e.g. online Type 3).

It should be noted that a project whose average score is 4.0 has an overall impact of zero despite the expenditure of capital on construction and maintenance. This clearly represents poor value for money. With a weighted MCA it is not possible to identify a definitive threshold above which value for money is achieved. It is however estimated that an overall score in excess of 5.2 is needed to achieve value for money.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Table 4.13: Criteria and Sub-criteria Weightings

Criteria	Criteria weighting	Sub-criteria	Sub-criteria weighting
Environment	10%	Local Air quality	10%
		Climate change	15%
		Noise and vibration	10%
		Landscape and visual quality	0%*
		Biodiversity + Water resources	30%
		Cultural heritage/ Archaeology	30%
		Land use	5%
		Soils and geology	0%*
Safety	10%	Accident reduction impact	90%
		Security	10%*
Economy	35%	Transport efficiency and effectiveness	90%
		Other-economic impacts	10%
		Funding	0%*
Accessibility and social inclusion	10%	Vulnerable groups	50%
		Deprived geographic areas	50%
Integration	35%	Transport integration	10%
		Land use integration	70%
		Geographical integration	10%
		Other government policy integration	10%

* Not included

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

Integration sub-sub-criteria weights

Sub-criteria	Measure	Weight
Transport	Bus Eireann service?	33.3%
	Joins with other NR?	33.3%
	National Cycle Strategy	33.3%
Landuse	Trans21	60%
	NDP	10%
	NSS	10%
	RPG	10%
	County Plan	10%
Geographical	X-Border	50%
	Ports	50%
Other Government Policy	to/from Gateways	50%
	to/from Gateways	50%

The outcome of this prioritisation step will be a ranked set of proposed schemes that can be taken forward for further analysis through the NRA's standard Project Appraisal procedures.

Introduction

Baseline

Objectives

MethodologyOption
Identification

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

5 OPTION IDENTIFICATION

5.1 INTRODUCTION

The inputs to the option generation and identification process are the corridor objectives and consequently the options identified in the baseline assessment as a result of the problem identification assessment described in Chapter 2. The output of the option generation and option sifting stage is a set of options for each route corridor. These options will be subjected to an appraisal commensurate with the pre-feasibility stage of a project.

There is a strong interaction between the option generation and option sifting stage. As this study is carried out in close co-operation with the NRA, a targeted, efficient option generation process reflecting their objectives has been adopted, considering from the start only options that are likely to impact on the corridor specific objectives.

The main focus of the option sifting process is therefore to identify:

- Options which are clearly likely to offer very poor value for money (such as improving the road to a Type 1 standard where the traffic levels are clearly more appropriate for Type 3 or recommending a Type 2 upgrade where the existing road condition is clearly very close to this standard already).
- Options which upon review are likely to be excessively costly or difficult to construct (such as at a town where a relief road is proposed, sometimes an intricate route through the town requiring the acquisition of dwellings or local amenities such as football pitches or golf courses was sifted out in favour of an alternative wider route around the town).
- Options which do not provide continuity of standard along the route (such as recommending a Type 3 upgrade for a section that occurs between two sections where the existing is already to Type 1 or Type 2 standard). It is important consistency of design standard be borne in mind from a road safety perspective.
- Options which unequivocally transgress environmental thresholds and for which no mitigation options exist – that is would receive a severe negative rating (i.e. a score of 1.0) under the environmental impact sub-criteria. Where possible such options were sifted out in favour of alternative options.

The output of the option generation and option sifting stage is a set of options for each route corridor. These options will be subjected to a detailed appraisal commensurate with the pre-feasibility stage of the project. Following the option generation and sifting process 405 options were developed for appraisal.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

5.2 OPTION GENERATION

Outline Principle

A staged process starting with a minimum standard of provision and building up to higher standards was adopted. This is consistent with the NRA's objective of maximising the amount of the NSR network that can be upgraded within a fixed budget. An example of such a staged process for a route corridor, that has a corridor specific objective to increase average journey speeds to greater than 80% of speed limit, would be:

1. Minimum standard provision (online) – upgrade rural sections of the route to Type 3 geometric standard in approximately 10 km sections;
2. Medium standard provision (online) – upgrade rural sections of the route to Type 2 standard where future year flows justify such a provision in approximately 10 km

- sections, Type 3 elsewhere. Consideration regarding consistency of design standard needs to be borne in mind for road safety perspective;
- 3. High standard provision (on/offline) – upgrade rural sections of the route to Type 1 standard where future year flows justify such a provision in approximately 10 km sections, Type 2 and 3 elsewhere. Once again consistency in design standards will be necessary to maximise road safety.
 - 4. Inclusion of possible relief roads – where settlement size, length of relief road and through traffic are sufficient to warrant a relief road.

As noted in the above example the targeted minimum length of route that is considered for upgrade is approximately 10km in length. The reason for this is twofold. Firstly, small sections of route upgrade (e.g. 2km) would constitute part of NRA's maintenance programme, and secondly the study is strategic in nature and only a finite number of alternatives for each route section can be considered.

There may also be a need to review the options generated and create hybrid options throughout the appraisal process should for example either the option sifting process and or the appraisal suggest that a complete route upgrade to any particular design standard is not justified.

5.2.1 Option Generation Process

The starting point for the option generation stage is the corridor specific problems and the options identified in the baseline assessment along with the SMART corridor specific objectives discussed in the Chapter 3. These give an indication of the types of options that are required to meet the problems experienced in the corridor and also provide the link between the tactical solution (i.e. the investment) and the ultimate objectives of government policy.

The option generation process is a complex one and many variables come under consideration when refining specific generated options. Firstly, the baseline assessment options for a particular route are examined and the route is broken down into individual route options of a reasonable length from a constructability point of view with a minimum length of approx 10km or between towns/villages as appropriate. Sometimes where towns/villages are located relatively close together two stretches between towns will be included in one scheme to bring the length of the scheme to a reasonable length (i.e. above 10km).

Once the corridor is broken down into suitably sized schemes to be assessed, the 50k Ordinance Survey mapping is examined and marked up to take account of existing local characteristics such as the number of river or stream crossings, sidelong topographical profiles, forest areas, dwellings close to the road etc. The aerial photography from the www.osi.ie/publicviewer website was also reviewed at this stage to get a general appreciation for the route. The latest available NRA videos (2009), see Figure 5.1, for the route were then examined in detail to confirm or reject what the 50k mapping and aerial photography indicated and also to provide additional information such as the hilliness of the route and other constraints such as narrow bridges, marshy land adjacent to the road or dwellings / premises close to the road. The existing road standard was noted from the videos in general terms in relation to bendiness, hilliness and width of corridor. Locations of sections with bad bends or poor vertical alignment were also noted in detail with chainages being marked and lengths calculated.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking



Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Figure 5.1: Video Screen Shot of Narrow Bridge on N73 between the N72 and Kildorrery

A specific comment on overtaking opportunity was also made along with a description of any recent upgrades local or otherwise which have taken place in the vicinity of the route. The NRA and Local Authority websites were also consulted at this stage to identify schemes that had recently been constructed or were at planning stage on or in the vicinity of the route in question. To complete this search an internet search was also conducted for the route number and also for possible relief roads and bypasses for the towns and villages along the route. Comments on issues such as these were included in the 'Notes' section of the scheme sheets for the individual options.

In general, where a scheme was recently upgraded it was not recommended for further upgrade. Where an existing NRA scheme option was at planning stage the available details of the scheme have were found and an attempt to model the scheme was made to give the NRA an estimate of the costs of the scheme according to the cost model. Where details of proposed NRA or Local Authority scheme options were found that were early in the planning phase similar schemes were modelled and on occasion an alternative scheme option was also provided.

If sections of the existing route had road widths and alignments already at or better than the standard of upgrade being proposed then the lengths of these sections were noted and they were either removed from the scheme sheet (if they occurred at the start or end of the proposed option) or else they were removed from the costs (if they occurred in the middle of a proposed option).

If the traffic volumes or other parameters suggested that a required upgrade fell between two standards then scheme sheets were generated for both options and they were both put through the assessment process or one of them removed at option sifting stage. Likewise, if two options

were generated for a particular section and the lower standard generated option was thought to be only to a slightly better standard than the existing road then sometimes it was removed at the options sifting stage. In a small number of cases an existing route may pass through a very small village / crossroads with a speed limit restriction in operation at either side of the village / crossroads but with poor alignment, pavement condition or carriageway width through the village / crossroads. In cases like this where there was available width to improve the road within the speed limit then the improvement was proposed and the online costs of the improvement included on the scheme sheet. Note: In the TUBA assessment process the section upgraded within the speed limit restriction will not be credited with the benefit of a higher speed flow curve but it will benefit from alignment improvements.

In generating the scheme option sheets an estimate of any additional exceptional costs over and above those included in the cost model such as major structures or route specific construction constraints has been made in all cases. For example, where a Type 3 upgrade is being proposed the existing bridge structures may be wide enough to accommodate the upgrade, whereas if a Type 1 or Type 2 upgrade is being proposed then provision over and above that included in the cost model may need to be allocated to a particular scheme option. Possible bog or poor subgrade or rock outcrop areas are also identified using the aerial photography from the www.osi.ie/publicviewer website and also the subgrade GIS information provided by the NRA. An estimate of additional earthworks costs was made for construction through such areas. Likewise, if the topography in a particular area suggests that sidelong construction will be a major feature in the construction of the improvement, then an allowance is also made for this in the additional costs. From a maintenance point of view for the available subgrade and pavement condition GIS information was examined and the individual generated schemes were categorised into the appropriate maintenance brackets in relation to traffic and subgrade and also in relation to the do minimum pavement maintenance bracket.

At this stage the environmentally designated areas (NHA's, SPAs and SACs) in the vicinity of the scheme are also noted and environmental red flags identified where present. For Type 1 offline options and higher standards, the options were generated in such a way so that these environmentally sensitive areas were avoided as much as possible. In cases where the environmentally designated areas could not be avoided they were red flagged in the 'Notes' section of the scheme sheets.

Scheme sheets were also generated for possible relief road options at towns where the traffic volumes appeared to justify the assessment of a relief road option. In general, relief roads were considered from a point on the National Secondary Route in question around the town to a point on the National Secondary Route in question on the other side of the town. In some cases where appropriate the relief road was continued to connect with a national primary route or a significant Regional Road or indeed a different National Secondary Road. In a small number of cases a relief road at a particular town encompasses two National Secondary Roads; in cases such as this the relief road is attributed to the most appropriate route and will not be replicated under the other route number.

At villages, possible relief road options were also considered at a limited number of cases where traffic volumes may justify such a relief road, where there was significant congestion potential within the village and where geometrically viable relief road corridors appear to be available at a relatively low cost. Once again the 50k Ordinance Survey mapping and also the aerial photography from the www.osi.ie/publicviewer website were used to identify possible routes for the relief roads. The subgrade GIS information and also the environmentally designated areas GIS information were also very important in considering the appropriate location for such relief road options.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

5.3 OPTION SIFTING

At the route option generation stage, the initial option sifting took place to identify;

- Options which are clearly likely to offer very poor value for money
- Options which upon review are likely to be excessively costly or difficult to construct
- Options which do not provide continuity of standard along the route
- Options which unequivocally transgress environmental thresholds and for which no mitigation options

The final stage of the sifting process was conducted at the route option review stage where the reviewer assessed the route option scheme sheets and cross referenced them with the problems identified and the route options recommended in the baseline assessment and also the SMART corridor specific objectives.

The reviewer also cross referenced the available GIS information, (widths, sightlines, environmentally designated areas, traffic congestion, etc.) as well as the aerial photography available at the www.osi.ie/publicviewer website and the NRA (2009) videos for the route. First, the reviewer made general notes on the route corridor and compared these to the general notes the route option assessor had made on the 50k Ordinance Survey Mapping. The reviewer then took independent notes on what they felt the upgrade recommendations if any should be. The reviewer then compared their findings to those generated by the route option assessor. At this stage the reviewer also examined the costings put forward by the route option assessor. If necessary the reviewer then made comments and recommendations on the individual route option scheme sheets. These comments were then discussed with the route option assessor and through these discussions it was agreed which routes should go through to the appraisal process, which routes should be amended, and which routes should be sifted out at this stage.

The baseline assessment generated a total of 569 route options. The sifting process then reduced the number of options going forward for appraisal to 405 options.

5.4 SUMMARY OF OPTIONS IDENTIFIED FOR NSR NETWORK

This section summarises the options identified as a result of the problem identification described in Chapter 2, and the option generation and sifting described earlier in this Chapter and lists the options which were appraised for each national secondary route in the South East Region.

Each option is named by an identifier in the form **Nxx.y.w.Tz**, where Nxx.y is a corridor on a national secondary route as identified in Table 3.2 of this report with 'xx' representing the route number and 'y' the corridor on the route. In the case of a relief road option an 'r' was used in place of 'y'. 'W' is a number used to identify a sub-corridor generally between urban speed zones in the particular corridor 'y'. In some cases where a variant of the same subcorridor option was being appraised then the 'W' number is in the form 'w.1', 'w.2' etc. 'Tz' represents the road cross section for the particular option i.e. T3 is a Type 3 single carriageway, T2 is a Type 2 single carriageway, T1 is a Type 1 single carriageway with a suffix 'D' appended for a Type 1, Type 2 or Type 3 dual carriageway cross section. This naming system was developed and used to facilitate the mutual exclusion of different route options for the same corridor and sub corridor in the prioritisation of the options.

The results of the appraisals for those options in the South East Region are provided in Section 7.3 of this report with the results of the prioritisation summarised in Chapter 8.

The options appraised in the South East Region in accordance with the methodology described in Chapter 4 are as follows:

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

5.4.1 N52 – Nenagh to Dundalk

Corridor N52i Birr to Borrisokane – 19.6km

N52.i.1.T2 Birr (N62) to Borrisokane (N65)

N52.i.1.T3 Birr (N62) to Borrisokane (N65)

Corridor N52j Borrisokane to Nenagh – 21.1km

N52.j.1.T2 Borrisokane (N65) to Nenagh Bypass

N52.j.1.T3 Borrisokane (N65) to Lisgariff

5.4.2 N62 – Athlone to Horse and Jockey

Corridor N62b Birr to Roscrea – 19.5km

N62.b.1.T2 Birr to Roscrea (N7)

Corridor N62c Roscrea to Templemore – 18.3km

N62.c.1.T2 Roscrea (N7) to Templemore

Corridor N62d Templemore to Thurles – 14.1km

N62.d.1.T2 Templemore to Thurles

N62.d.1.T3 Templemore to Thurles

Corridor N62e Thurles to Horse and Jockey – 8.0km

N62.e.1.T1 Thurles to Horse & Jockey (N8)

N62.e.1.T2 Thurles to Horse & Jockey (N8)

N62 Possible Relief Roads

N62.r.3.T1 Roscrea Relief Road

N62.r.4.T1 Templemore Relief Road

N62.r.5.T1 Thurles Relief Road

5.4.3 N65 –Loughrea to Borrisokane

Corridor N65a Borrisokane to Portumna – 15.1km

N65.a.1.T2 Borrisokane to Portumna

N65.a.1.T3 Borrisokane to Portumna

N65 Possible Relief Roads

N65.r.1.T3 Borrisokane Relief Road

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

5.4.4 N72 –Killorglin to Dungarvan

Corridor N72a Dungarvan to Lismore – 25.3km

- N72.a.1.T1 Junction with N25 (Dungarvan) to Cappoquin
 N72.a.1.T2 Junction with N25 (Dungarvan) to Cappoquin

Corridor N72b Lismore to Fermoy (N8) – 27.5km

- N72.b.1.T2 Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)
 N72.b.1.T3 Lismore (Ballinaspick) to Fermoy

N72 Possible Relief Roads

- N72.r.1.1.T2 Cappoquin Relief Road
 N72.r.1.2.T2 Cappoquin and Lismore Relief Road
 N72.r.3.T3 Tallowbridge Relief Road

5.4.5 N74 –Tipperary to Cashel

Corridor N74a Tipperary to Golden – 12.5km

- N74.a.1.T2 Tipperary to Golden
 N74.a.1.T3 Tipperary to Golden

Corridor N74b Golden to Cashel – 6.8km

- N74.b.1.T2 Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)
 N74.b.1.T3 Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)

N74 Possible Relief Roads

- N74.r.1.T2 Tipperary Relief Road
 N74.r.2.T3 Golden Relief Road

5.4.6 N75 –Thurles to the Junction with the M8/N8

Corridor N75 Thurles to N8 – 8.9km

- N75.a.1.T2 Thurles to M8/N8 Interchange

5.4.7 N76 –Clonmel to Kilkenny

Corridor N76 Clonmel (N24) to Kilkenny (N10) – 43.7km

- N76.a.1.T1 Kilkenny Ring Road to Callan Bypass
 N76.a.1.T2 Kilkenny Ring Road to Callan Bypass

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

N76.a.2.T1	Callan Bypass (R692 junction) to Ninemilehouse
N76.a.2.T2	Callan Bypass (R692 junction) to Ninemilehouse
N76.a.3.T2	Ninemilehouse to Clonmel (junction with N24)
N76.a.3.T3	Ninemilehouse to Clonmel (junction with N24)

5.4.8 N77 –Kilkenny to Durrow

Corridor Kilkenny (Kilkenny Ring Road Extension) to the junction with the N78 – 4km

N77.a.1.T1	Kilkenny Ring Road Extension to the junction with the N78
N77.a.1.T2	Kilkenny Ring Road Extension to the junction with the N78

Corridor Junction with the N78 to Durrow – 19.6km

N77.a.2.T2	Junction with the N78 to Durrow
N77.a.2.T3	Junction with the N78 to Durrow

N77 Possible Relief Roads

N77.r.1.T2	Ballyragget Relief Road
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5.4.9 N78 – Kilcullen to N77 near Kilkenny

Corridor N78c N80 to Castlecomer - 18.8 km

N78.c.2.T2	Newtown to Castlecomer
N78.c.2.T3	Coolbaun to Castlecomer

Corridor N78d Castlecomer to N77 near Kilkenny - 12.7 km

N78.d.1.T2	Castlecomer to N77 near Kilkenny
N78.d.1.T3	Castlecomer to N77 near Kilkenny

N78 Possible Relief Roads

N78.r.2.T2	Castlecomer Relief Road
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Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

5.4.10 N80 –Athlone to Enniscorthy

Corridor N80d - N78 to Carlow (N9) – 15.6km

N80.d.1.T2	N78 to Carlow
N80.d.1.T3	N78 to Carlow

Corridor N80e - Carlow (N9) to N81 near Ballon – 19.5km

N80.e.1.T1	Carlow to Ballon
N80.e.1.T2	Carlow to Ballon

Corridor N80f - N81 near Ballon to N11 near Enniscorthy – 26.6km

N80.f.1.T1 Ballon to Bunclody (Kildavin)

N80.f.1.T2 Ballon to Bunclody (Kildavin)

N80 Possible Relief Roads

N80.r.7.T1 Ballon Relief Road

N80.r.7.T2 Ballon Relief Road

N80.r.8.T2 Bunclody Relief Road

5.4.11 N81 –Dublin to the N80 near Ballon**Corridor N81e Baltinglass to Tullow – 17.1km**

N81.e.1.T3 Baltinglass to Tullow

Corridor N81f Tullow to N80 near Ballon – 8.2km

N81.f.1.T2 Tullow to N80 junction near Ballon

N81.f.1.T3 Tullow to N80 junction near Ballon

N81 Possible Relief Roads

N81.r.2.T3 Rathvilly Relief Road

N81.r.3.T2 Tullow Relief Road

Introduction

Baseline

Objectives

Methodology

**Option
Identification**

Costing

Option
AppraisalRecommen-
dationsCycling &
walking

6 COST ESTIMATION

6.1 INTRODUCTION

The cost to upgrade the National Secondary Road Network (NSRN) is an essential component of the appraisal of the options generated. This cost may be quite variable and will vary between schemes due to existing conditions, environmental impact, physical constraints, ground conditions, land and the nature and standard of the upgrade proposed. In order to obtain meaningful appraisal results, it is essential that realistic and robust cost estimation is achieved. In the following sections, the methodology adopted to determine an accepted cost estimation model that is robust and adaptable to the various scenarios that may be encountered when considering upgrade options is outlined.

The costs to be considered in the upgrades of the NSR network are the construction costs, the land acquisition costs, the archaeology costs, the planning/design costs and the supervision costs. In the following sections, the methodology applied in this study is outlined.

The costs quoted in this document are exclusive of VAT.

6.2 METHODOLOGY

For the most part, the potential upgrades to the National Secondary Roads will be to specific single carriageway standards. In accordance with NRA TD9 and NRA TD27, as amended by IAN 01/09, the following are the typical range of upgrade options that will apply to the NSRN;

- S2 Type 1 Single Carriageway – A 7.3m wide Single Carriageway, with Hard Shoulders, for use on National Secondary Routes with Design Year Traffic Flows above 8,600 AADT, typically. The Design Speed Standard for S2 Type 1 is 100kph.
- S2 Type 2 Single Carriageway – A 7.0m wide Single Carriageway, with Hard Strips, for use on National Secondary Routes with Design Year Traffic Flows below 8,600 AADT, typically. The Design Speed Standard for S2 Type 2 is 100kph.
- S2 Type 3 Single Carriageway – A 6.0m wide Single Carriageway, with Hard Strips, for use on National Secondary Routes with Design Year Traffic Flows below 5,000 AADT, typically. The Design Speed Standard for S2 Type 3 is 85kph.

These road standards are the principal types that will apply to the upgrade of the NSRN. Each will differ in their construction cost and the higher the standard adopted the higher the cost will be.

For the most part, it is not envisaged that the National Secondary Road network will be upgraded by new routes. Thus, typically the alignment of the existing road will be incorporated as much as possible into the upgrade. Thus, an upgrade is likely to consist of percentages of the upgrade that are on-line and off-line. Logically, the cost of an upgrade that can be incorporated into the existing road corridor will be lower as the realignment will not require as much new construction and land costs will be negligible. However, the construction costs for on-line construction are likely to require additional temporary traffic management, possibly additional temporary works and may be more onerous in terms of the phasing and programming of the works.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

The principal variables that apply to providing a robust cost estimation model for upgrades to the NSRN are summarised thus;

- Standard of upgrade proposed
- Percentage on-line and percentage off-line
- Land acquisition costs.
- Archaeology
- Planning, design and procurement costs
- Exceptional costs

6.2.1 Construction Cost from First Principles

In order to establish a base construction cost range for the types of road upgrades likely to be implemented on the NSR network, a fully on-line and fully off-line scenario for each S2 Single Carriageway Option was cost estimated on a per kilometre basis. The exception to this is the S2 Type 1 Cross Section, which if adopted for an upgrade will be effectively 100% off-line.

These cost estimates are based on the particular standard cross-section layouts with assumed typical earthworks, drainage, pavement, general roadworks and structural requirements. The results of this analysis excluding VAT are summarised in Table 6.1:

Table 6.1: Normal Construction Cost Estimates from First Principles

Road Upgrade Standard	Fully On-line		Fully Off-line	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
S2 Type 1	N/A	N/A	€2,000,000	€3,100,000
S2 Type 2	€760,000	€1,150,000	€1,470,000	€2,300,000
S2 Type 3	€650,000	€980,000	€1,180,000	€1,750,000

In order to establish a construction cost for each proposed upgrade of the network, it is proposed that the proportions of the upgrade that is on-line and off-line be established. Once this is established, the appropriate rates from the ranges given in Table 6.1 can be applied to estimate the normal expected construction cost for upgrading the route option in rural areas.

6.2.2 Exceptional Costs

The cost estimation ranges from first principles represents normal construction and do not specifically address exceptional circumstances that might apply to any particular upgrade option. As upgrade options are generated by this study, it is proposed that where possible, exceptional circumstances such as large rock excavations, soft ground, significant river crossings, difficult topography will be noted in the assessment and that an appropriate premium will be added to the construction cost of the particular upgrade. It is also proposed that 'environmental red flags' that may be raised in the Appraisal process will be considered from an additional cost perspective and that an appropriate addition be made to the construction cost accordingly.

With reference to Section 6.2.3, an appropriate premium/exceptional cost should be considered for lands required for bypass or relief road options close to existing urban centres.

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

6.2.3 Land Costs

Typically the cost of acquiring land for the purposes of road infrastructure development will be subject to the procedures established in legislation and for lands not the subject of planning permission or zoned for open space, commercial, residential, industrial or recreational purposes, the Agreement between the Irish Farmers' Association and the Department of the Environment and Local Government and the NRA which was established in 2001. The costs to be taken into account include the open market value of the land to be acquired, injurious affection, severance, disturbance and where applicable, a goodwill payment of €5,000 per acre.

It is envisaged that the December 2001 Agreement will apply to lands compulsorily acquired for upgrades to the NSR network.

The factors which will influence land costs on the NSR network include market sentiment at the date of service of the notice to treat, the development potential of the relevant land, transaction comparisons in the vicinity of the proposed scheme and the nature of the enterprise carried out on the land. On-line schemes tend to involve acquisition of or injury to occupied houses and can complicate access to/egress from property, all of which leads to higher compensation entitlements. Off-line schemes will sever portions of land from the main holding and this can cause difficulties, particularly for dairy farmers for which compensation will be payable.

Considering the average land acquisition costs for schemes which are predominantly located in the rural environment, without significant urban or peri-urban factors, an average land acquisition cost of €100k per acre is considered to be an appropriate valuation for off-line construction.

For schemes and portions of schemes, where slivers of land adjacent to the road are expected to be acquired, it is expected that there will be some difference in the average price per acre. It is considered that an evaluation of €50k per acre is a good representation of the expected average price that will be necessary to purchase slivers of land adjacent to the existing road.

For on-line construction, the land costs are assumed to be negligible, though it is acknowledged that accommodation works may be necessary at individual properties that may be affected by proposed upgrades immediately adjacent to their accesses. This element will normally be included in the construction cost.

Thus, the following typical land costs are assessed;

- Fully off-line land acquisition - €100k/acre
- Acquisition of slivers of lane adjacent to existing roads - €50k/acre
- Fully on-line land acquisition - negligible

Taking these basic land acquisition costs and assumed typical profiles for the S2 Single Carriageway upgrade standards, the following are the approximated land costs per km of upgrade;

- S2 Type 3 fully offline - €500k/km.
- S2 Type 3 off-line adjacent to the existing road – €125k/km.
- S2 Type 2 fully offline - €700k/km.
- S2 Type 2 off-line adjacent to the existing road – €175k/km
- S2 Type 1 fully offline €900k/km.

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

6.3 ARCHAEOLOGY

For the construction of road schemes in Ireland, archaeological assessment and resolution has become an identifiable financial risk which needs to be taken into account in the estimation of project costs. Sites of known archaeological interest should be avoided; however, there is always a residual risk that unknown sites of archaeological interest would be encountered. To mitigate this risk, archaeological surveys and investigations have become normal best practice and would have to be taken into account in this Cost Estimation model.

Much of the NSR network is expected to be upgraded predominantly along the route of the existing road. Broadly speaking the existing roads would be considered to be unlikely to be the sites of major archaeological interest and so this risk is unlikely to be as significant as for schemes that are fully off-line. Thus, for this study it is proposed for fully offline solutions, that an archaeological cost of €0.13m/km be utilised in the analysis and that the archaeological cost associated with on-line construction is considered to be negligible.

6.4 PLANNING, DESIGN AND SUPERVISION

The design, planning and supervision costs associated with scheme procurement are important considerations in the overall cost of a project. These costs also include ground investigations, environmental surveys and topographical surveys. As a percentage of construction cost, it is considered that these costs could vary considerably depending on scheme complexity, planning/environmental requirements and form of procurement.

For the purposes of this study, it is proposed to adopt a sum of €0.3m per km to take into account the planning, design and supervision costs for each scheme appraised.

6.5 SUMMARY OF COST ESTIMATION METHODOLOGY ADOPTED

Using the available sources of costing information, the following summarises the proposed cost model adopted for the National Secondary Road Needs Study with a base date of May 2009;

S2 Type 1 Standard – Off-line construction

Construction cost	-	€3.1m/km
Land and property	-	€0.90m/km
Planning, Design, supervision	-	€0.3m/km
Archaeology	-	<u>€0.13m/km</u>
Total		€4.43m/km plus exceptional costs, if any

S2 Type 2 Standard – Off-line construction

Construction cost	-	€2.3m/km
Land and property	-	€0.70m/km
Planning, Design, supervision	-	€0.3m/km
Archaeology	-	<u>€0.13m/km</u>
Total		€3.43m/km plus exceptional costs, if any

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

S2 Type 2 Standard – On-line construction

Construction cost	-	€0.96m/km
Land and property	-	€0.00m/km
Planning, Design, supervision	-	€0.30m/km
Archaeology	-	€0.00m/km
Total		€1.26m/km plus exceptional costs, if any

S2 Type 2 Standard – Partially off-line construction

Construction cost (50% off-line + 50% on-line)	-	€1.63m/km
Land and property	-	€0.175m/km
Planning, Design, supervision	-	€0.30m/km
Archaeology (50% of fully off-line)	-	€0.065m/km
Total if any		€2.17m/km plus exceptional costs,

S2 Type 3 Standard – Off-line construction

Construction cost	-	€1.75m/km
Land and property	-	€0.50m/km
Planning, Design, supervision	-	€0.30m/km
Archaeology	-	€0.13m/km
Total		€2.68m/km plus exceptional costs, if any

S2 Type 3 Standard – On-line construction

Construction cost	-	€0.82m/km
Land and property	-	€0.00m/km
Planning, Design, supervision	-	€0.30m/km
Archaeology	-	€0.00m/km
Total		€1.12m/km plus exceptional costs, if any

S2 Type 3 Standard – Partially off-line construction

Construction cost (50% off-line + 50% on-line)	-	€1.285m/km
Land and property	-	€0.125m/km
Planning, Design, supervision	-	€0.30m/km
Archaeology (50% of fully off-line)	-	€0.065m/km
Total if any		€1.775m/km plus exceptional costs,

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

6.6 APPLICATION OF COST MODEL TO TRAFFIC MODEL

As part of the Study, relationships between the measured Route Quality Index (RQI) and associated speed flow curves as modelled in the Traffic Model and the cost to upgrade route corridors of varying existing condition to the various standards was established using a number of pilot schemes. This relationship essentially establishes a relationship between existing road condition and the cost to upgrade it to a specific standard. The following graphics present this relationship for upgrades to S2 Type 3 and S2 Type 2 Standards and represent the cost model as applied in the appraisal process.

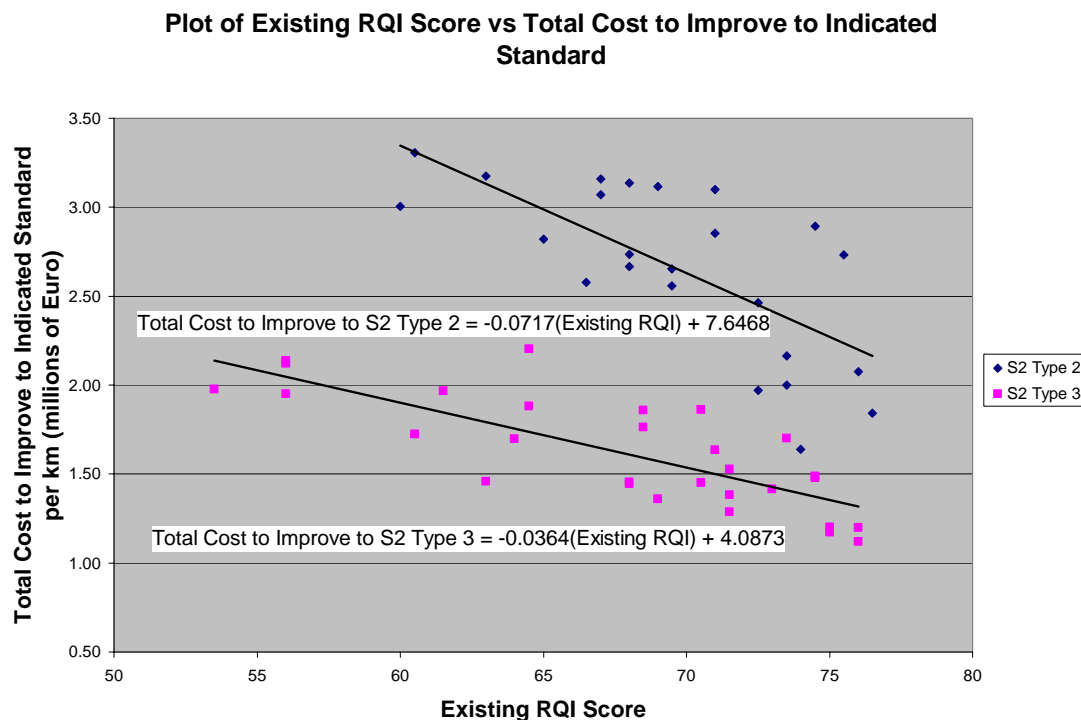


Figure 6.1: Plot of Existing RQI Score vs Total Cost to Improve to Indicated Standard

The individual relationships between the existing RQI and Construction Cost, Land Cost and Archaeological Cost were also developed for the Type 3 and Type 2 Options. These relationships are outlined in graph format in Figures 6.2 to 6.7:

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

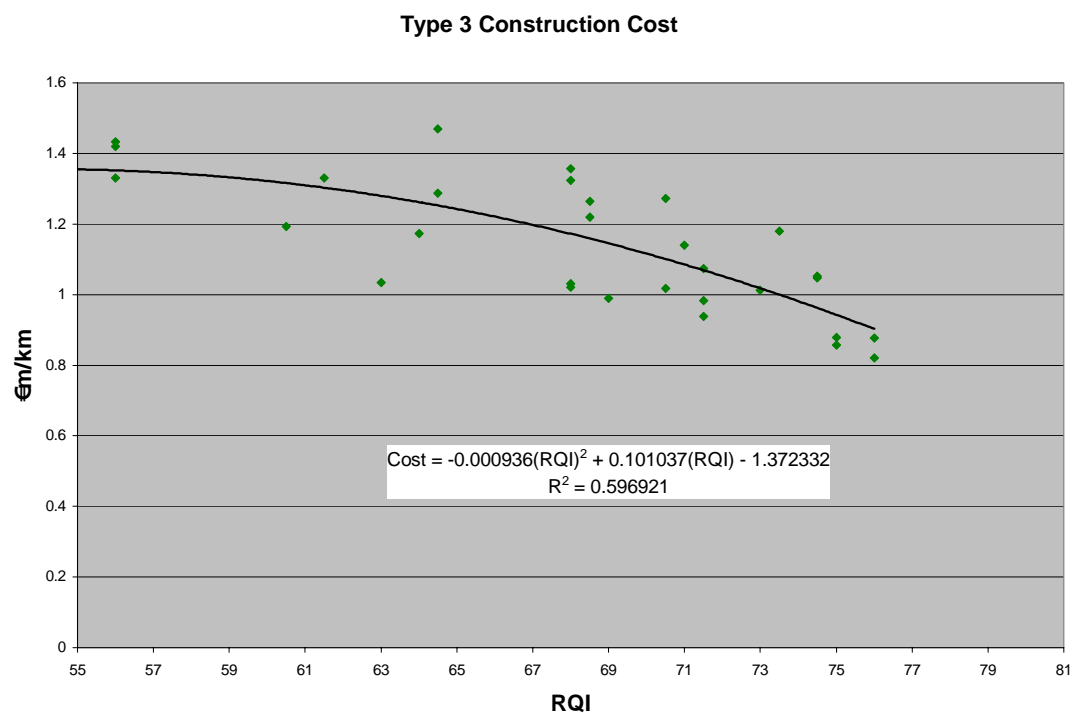


Figure 6.2: Plot of Existing RQI Score vs Total Construction Cost to improve to Type 3

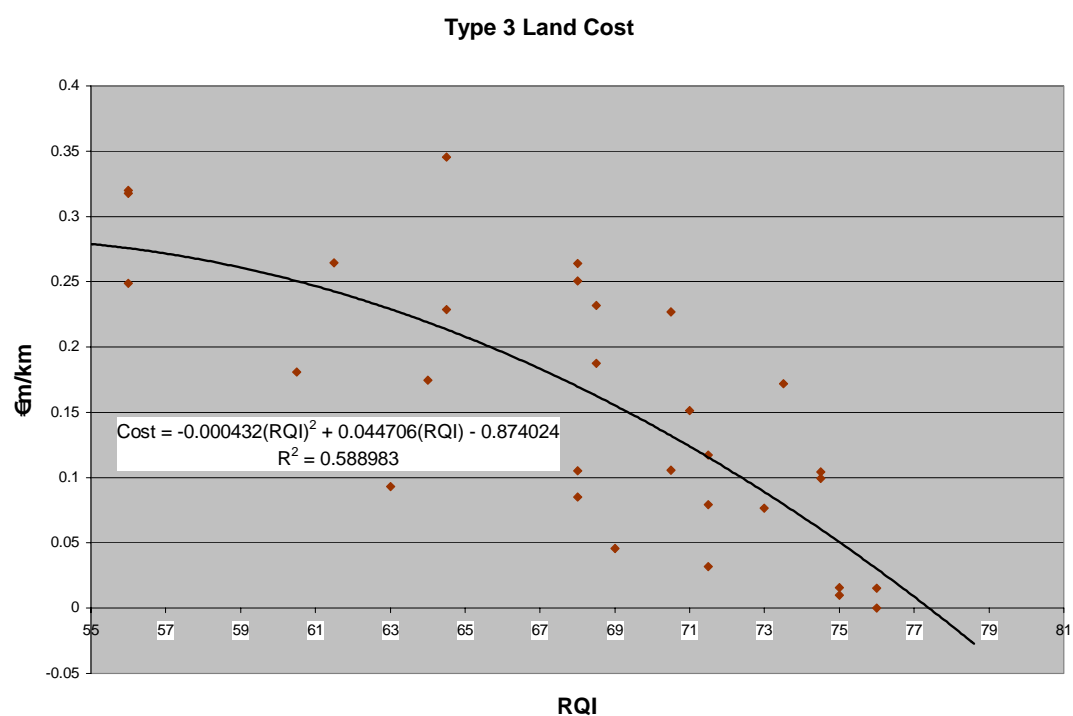


Figure 6.3: Plot of Existing RQI Score vs Total Land Cost to improve to Type 3

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

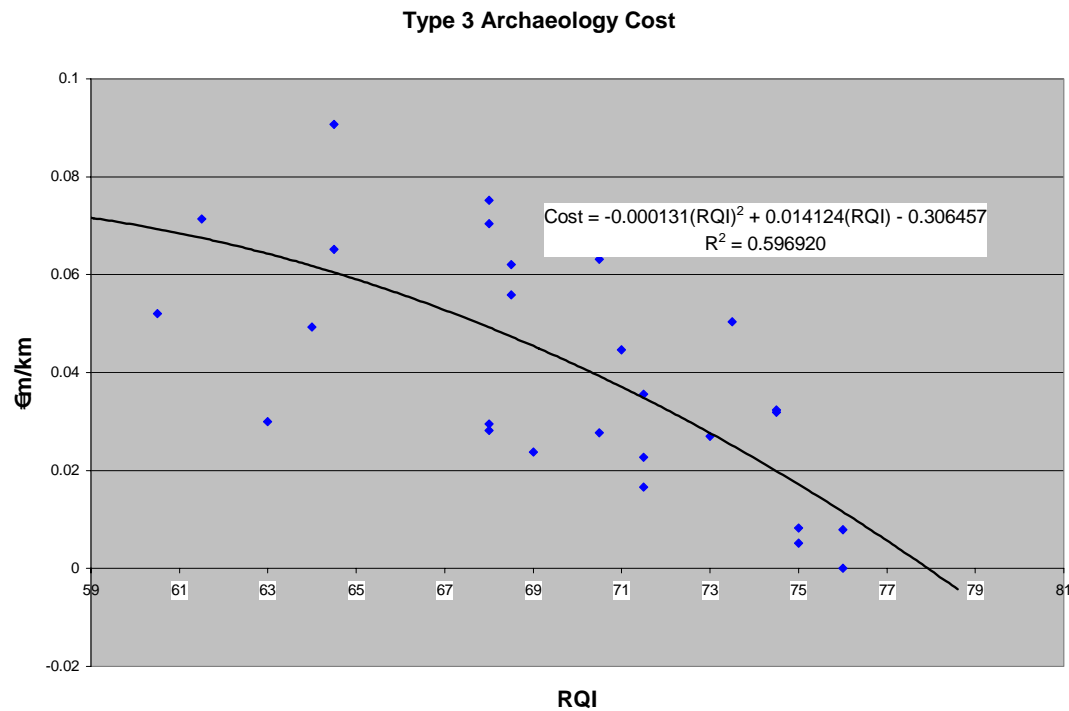


Figure 6.4: Plot of Existing RQI Score vs Total Archaeology Cost to improve to Type 3

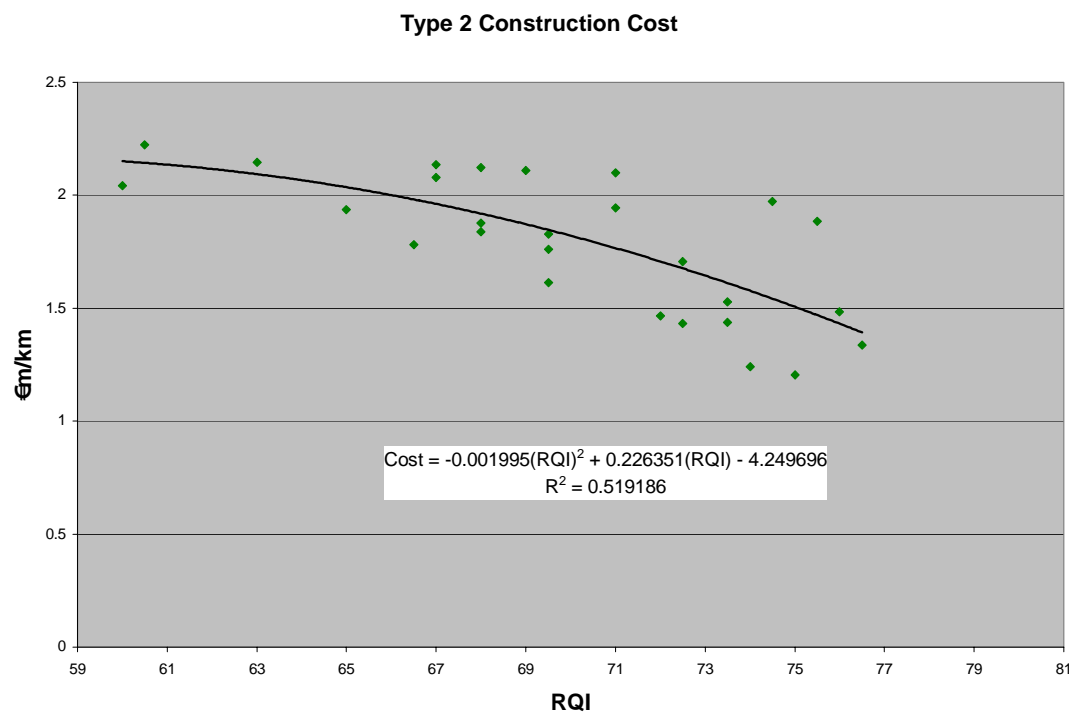


Figure 6.5: Plot of Existing RQI Score vs Total Construction Cost to improve to Type 2

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal

Recommen-
dations

Cycling &
walking

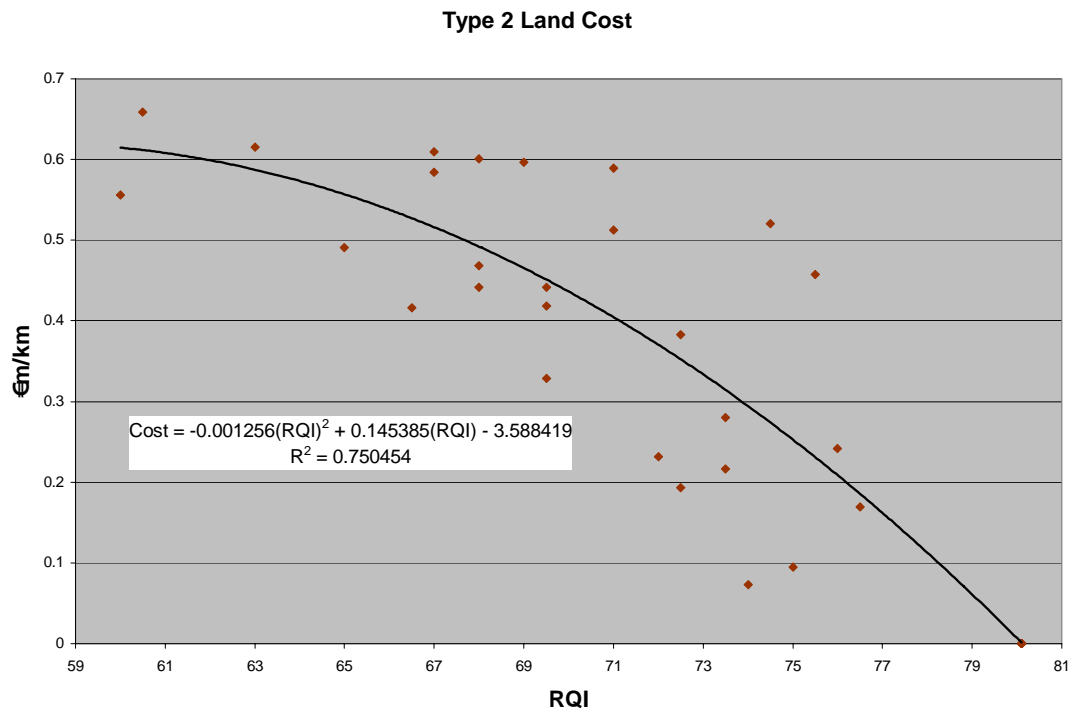


Figure 6.6: Plot of Existing RQI Score vs Total Land Cost to improve to Type 2

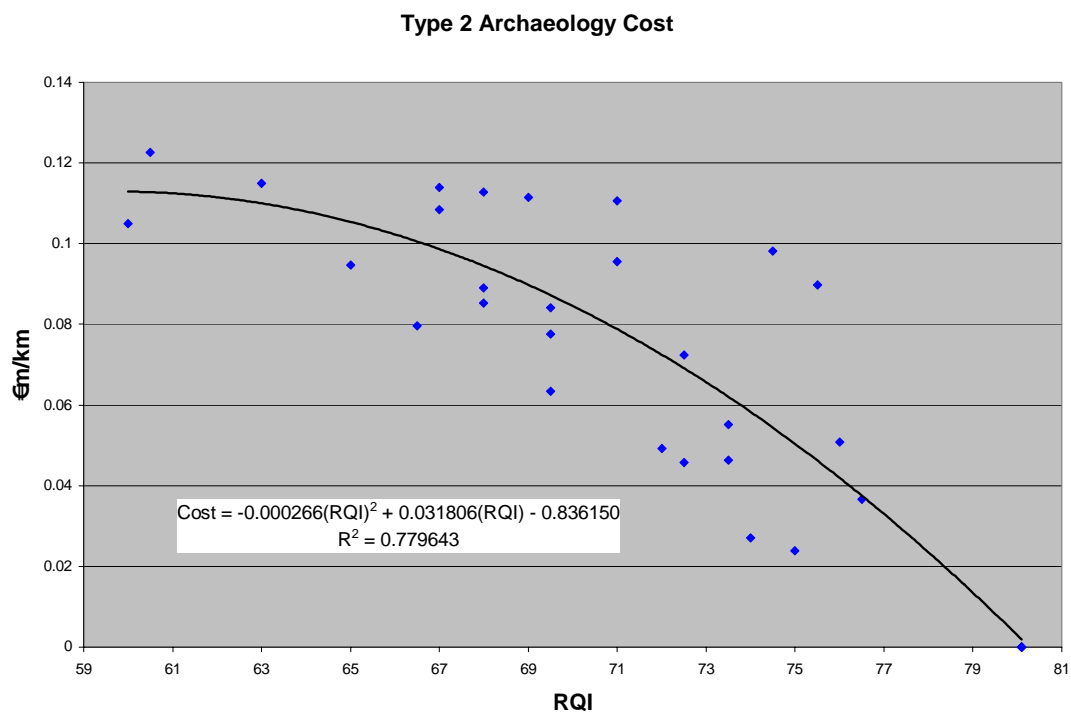


Figure 6.7: Plot of Existing RQI Score vs Total Archaeology Cost to improve to Type 2

Introduction

Baseline

Objectives

Methodology

Option
Identification**Costing**Option
AppraisalRecommen-
dationsCycling &
walking

6.7 MAINTENANCE AND RENEWAL COSTS

The standard approach used to calculate maintenance costs is to apply a fixed cost per km per annum (NRA PAG, Appendix 6). For a national study like the NSRNS this approach is too coarse as it does not reflect how the quality of the existing pavement structure will vary between national secondary routes and how different maintenance regimes are needed in different environmental and soil conditions. A bespoke maintenance cost model has therefore been developed for the NSRNS.

In the absence of sufficient pavement maintenance expenditure, the condition of the NSR network deteriorates over time due to the combined effects of traffic loading, environmental conditions and changes in material properties. The cost to restore the deteriorated pavement to an acceptable pavement condition increases depending on the level of condition deterioration. In addition, the annual costs to maintain the pavement (e.g. localised repairs that do not significantly improve the overall pavement condition) will also increase as the pavement condition decreases.

Typically, the relationship between cost to renew the pavement and existing condition is a non-linear function. Costs to renew pavements with poor existing condition, particularly pavements that have exceeded their structural carrying capacity, are much higher (typically by a ratio of 3 or 4 to 1) than the costs to renew pavements with better existing condition.

In addition, the annual costs to maintain the pavement (e.g. localised repairs – that do not significantly improve the overall pavement condition) will also increase as the pavement condition decreases. On the other hand, pavement sections that are upgraded as part of the multi-year plan will have ongoing maintenance costs that are significantly lower than would otherwise be the case, and these cost savings over an extended period are captured in the analysis.

For this study, the following Do Something categories are established;

- schemes with low traffic and generally good subgrade,
- schemes with high traffic and generally good subgrade,
- schemes with low traffic and generally poor subgrade and
- high traffic and generally poor subgrade.

It is envisaged that each of these categories will attract differing maintenance requirements over the 30 year appraisal period. In consideration of the typical traffic flows evident on the NSR network it is proposed that the definition of low traffic volume be 5,000 AADT. Included in the economic appraisal of options is a typical maintenance regime associated with an upgrade scheme.

In order to assess the impact of carrying out the investment to upgrade the network, it is necessary to consider the option of not carrying out the upgrade. In this Do Minimum scenario, the network will continually deteriorate and require ever increasing maintenance and renewal. In order to give consideration to the current state of the existing road network, it is proposed to consider the IRI parameter in a range of bands to distinguish between the various extents to which ongoing maintenance and renewal will be necessary. Included in the economic appraisal methodology is a Do minimum maintenance regime associated with band widths of IRI; Range 0 to 2.5, 2.6 to 3.5, 3.5 to 5.0 and > 5.0.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

7 APPRAISAL OF OPTIONS

Having identified a set of 405 feasible scheme options for improvement of the NSR network, each option was assessed against the five appraisal criteria.

Extensive traffic modelling work was undertaken to estimate the traffic impact of each option. The changes in traffic flows and speeds were then fed into the assessments of economic and safety impacts of each scheme, and informed aspects of the environmental assessment.

7.1 TRAFFIC MODEL ENHANCEMENTS

The traffic model used for this study was a version of the NRA's National Highway Model. For the purposes of assessing improvements to NSRs, a number of significant improvements to the model were implemented.

7.1.1 Road Network in Northern Ireland

Among NSRs, the N53, N54 and N87 carry significant amounts of cross-border traffic, which is considered to be of particular political and economic importance. The original model's representation of such traffic was quite coarse, with county-size zones and only primary routes represented in the North.

In order to get a better estimate of the proportion of cross-border traffic likely to use NSRs, additional detail was introduced. Additional links were coded to represent the North's equivalent of NSRs, and more centroid connectors were introduced so as to spread the traffic to and from the six counties more widely.

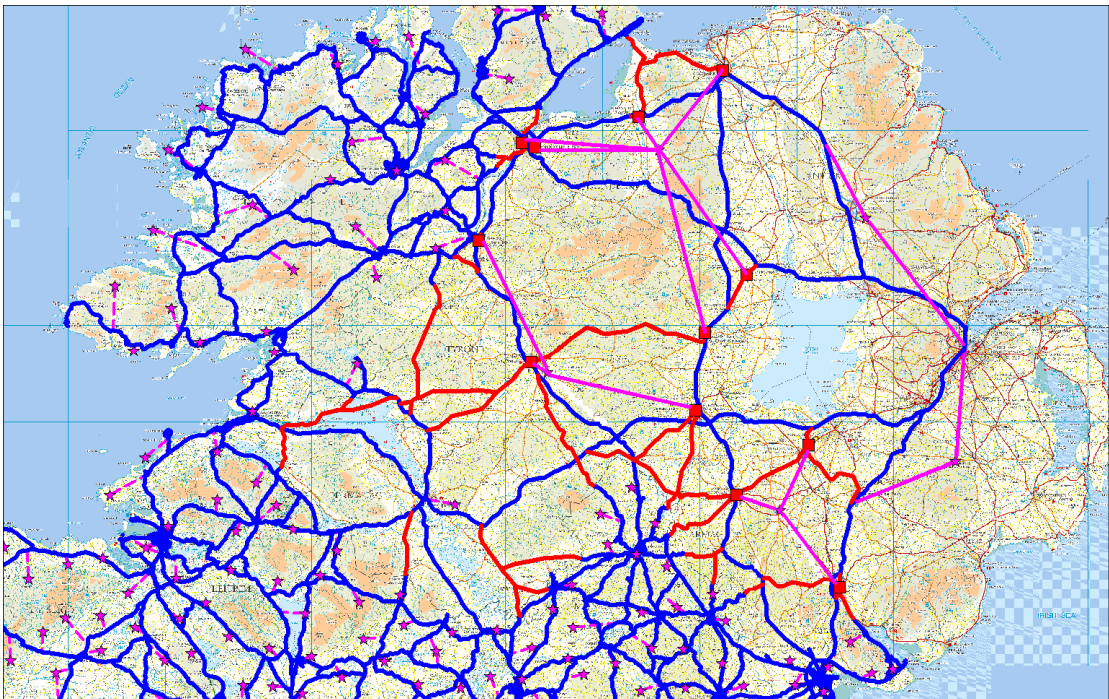


Figure 7.1: Additional Road Network in Northern Ireland

Figure 7.1 shows in blue the original network, in red the additional Northern Ireland A-roads that were added to the network and in pink the amended centroid connectors. The number of loading points in the North (red squares) has been increased.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

7.1.2 Business Traffic

The economic justification for treating some traffic movements as being more valuable than others is based on business travellers and freight having higher values of time than other traffic. The model assigns freight traffic separately, but the original version had merged business traffic with leisure and other non-commuting traffic prior to the matrix estimation step of the original National Traffic Model development.

In order to be able to draw conclusions about which roads serve a strategic function by carrying above-average proportions or volumes of freight and business traffic, the non-commuting car matrix was split into Business and non-Business proportions, using the original pre-matrix-estimation matrices supplied by the NRA.

7.1.3 Tolls and Ferries

There are a small number of tolled roads and ferries in Ireland. Although many are of limited significance, the Tarbert-Killimer ferry was considered to be of importance for modelling traffic on the N67 / N68 / N69.

The NRA supplied details of the existing tolls and these were interpolated between rates for different classes of HGV in order to give representative average values, and extrapolated to other years as required. Future year tolls are projected to remain at 2009 levels in real terms.

7.1.4 Changes to Generalised Cost

With the introduction of tolls, it becomes necessary to include in the model explicit values of time for converting between money costs and time costs, so as to model the choice between quicker tolled routes and slower free routes for each origin-destination pair for which such a choice applies.

Values of time, vehicle occupancy, and fuel and non-fuel costs were derived from the appraisal values set out in the NRA Project Appraisal Guidance.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

**Option
Appraisal**Recommen-
dationsCycling &
walking

Table 7.1: Values of Time and Distance used in Generalised Cost Function (Units are Cents)

Values of time (cents)					
	<u>user class</u>	<u>Business</u>	<u>Commuting</u>	<u>Other</u>	<u>HGV</u>
a	VoT per person 2002	2220	680	610	2220
b	occupancy	1.33	1.34	1.83	1.13
c	VoT per veh 2002 (= a x b)	2953	911	1116	2509
d	VoT growth 2002-2006		1.066		
e	VoT per veh 2006 (= c x d)	3148	972	1190	2675
f	VoT growth 2006-2025		1.568		
g	VoT per veh 2006 (= e x f)	4938	1524	1867	4195

Values of distance		2006	2025
Business Car	Fuel cost/km	5.3	4.1
	Non-fuel cost/km	8.5	8.5
	TOTAL c/km	13.7	12.6
Commuting /Other Car	Fuel cost/km	5.3	4.1
	Non-fuel cost/km	4.9	4.9
	TOTAL c/km	10.1	9.0
HGV	Fuel cost/km	26.8	25.5
	Non-fuel cost/km	19.9	19.9
	TOTAL c/km	46.7	45.4

7.1.5 Additional Traffic Data

A programme of traffic survey data was commissioned and collected in May 2009. This was used to supplement the original traffic database for the model, which was focussed mainly on the National Primary Routes. In order to ensure that the model robustly represented traffic on the National Secondary routes, supplementary data was felt to be required.

The principal aim of collecting new traffic count data was to supplement the existing ATC data stored within the model, so as to ensure a satisfactory level of coverage over the whole of the NSR network. Automatic traffic counters were laid down for a period of two weeks at thirty sites on the network.

Flows on the NSRs are generally light in comparison with the major inter-urban routes. For these rural routes, hourly flows are typically around one-fifteenth of daily flows, so each 100 vehicles per hour one-way equates to around 3000 AADT two-way.

A factor of 0.965 was subsequently applied to convert the counts from 2009 levels to 2006 levels, for use in the base year model. This factor was derived as the average over figures taken from a set of NRA permanent traffic counters on NSRs.

7.1.6 Journey Time Survey Data

Journey Time Surveys were undertaken for 20 route sections, chosen to give good coverage of a range of road and traffic conditions over all parts of the country. Each route section was a stretch of approximately 20km of National Secondary route, usually starting and ending at junctions with Regional or National roads.

Surveys used the “moving observer” method – one person would drive along the route in an ordinary car, attempting to keep to the same speed as other traffic and not exceed the speed limit, with a GPS unit automatically recording time and position at frequent intervals.

Each route was driven in both directions 3 times in succession in the morning peak, and then repeating for another 3 times at the inter-peak (12:00 to 14:00) time period.

Average speeds over NSR sections that are represented in the model as urban links was 48kph.

Average speeds over NSR sections that are represented in the model as rural links varied considerably, between 51kph and 94kph.

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

**Option
Appraisal**Recommen-
dationsCycling &
walking

7.1.7 Speed-Flow Curves

This variation in speeds was represented in the model by linking the modelled speed to the Route Quality Index derived as part of the Baseline Assessment and outlined in Chapter 2. A family of speed-flow curves was derived, as shown in Figure 7.2.

Each curve is linear up to a nominal capacity value. Although flows greater than the capacity value may not arise in practice, the model needs to be able to estimate a speed for any given demand level, as part of the assignment process. The form of curve used here – a hyperbolic tail as in the standard UK Advice Note 1A curves reflects an assumption that queuing behaviour applies beyond capacity, so that incremental delay is linear in flow.

Theory suggests that better quality roads not only have a higher freeflow speed, but also a higher capacity and a flatter slope, as the incremental impact of each additional vehicle is lower.

Within this structure, there are then six parameters to be estimated:

- Free-flow speed for a reference curve
- Variation of free-flow speed with Route Quality Index
- Slope for a reference curve
- Variation of slope with Route Quality Index
- Capacity of a reference curve
- Variation of capacity with Route Quality Index

A consistent set of parameters were derived from three sources of evidence:

- Historic journey time information on NSRs held by NRA in the form of a set of GPS data.
- Recorded speeds from Journey Time Surveys
- Spot speeds from the Automatic Traffic Counters

Details of the estimation are presented in the Traffic Model Development Report.

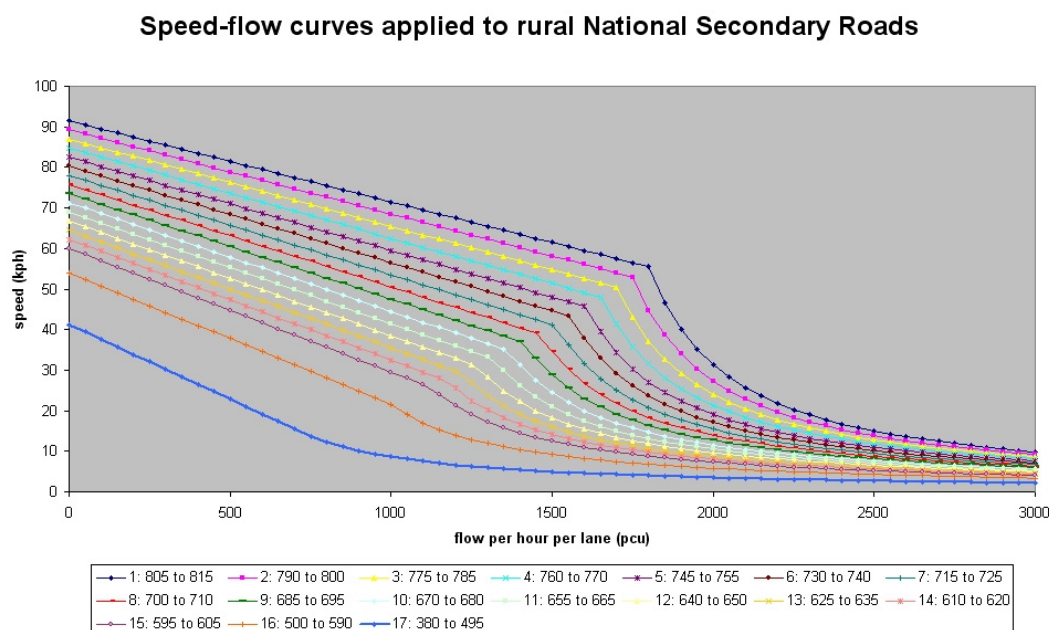


Figure 7.2: Speed-Flow Curves for Rural NSR Sections

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

7.1.8 Model Revalidation

The base year (2006) trip matrices from the original National Highway Model were adopted without adjustment.

Having made changes to the network speeds on NSRs within the model, a check was undertaken to ensure that the modelled flows adequately reproduced the existing and supplementary traffic count data.

Two adjustments were required in order to attain a good fit to count data:

- reducing the modelled speeds on rural regional roads in order to balance the relative attractiveness of routes using these roads compared with alternative routes using NSRs
- reducing speeds within Dublin to compensate for the introduction of tolls on the M50.

With these corrections, the model validated well.

7.2 TRAFFIC MODEL APPLICATION

7.2.1 Do-Min scenario

All scheme options were tested for a future year of 2025. A Do-Minimum scenario was constructed, in which only completed and committed improvements to the national road network were assumed to be in place. Road layouts for these improvements were taken from an existing future year network from the National Highway Model. This formed an appropriate reference case against which the introduction of improvements to the NSR network was assessed.

7.2.2 Future year traffic levels

The future year matrices used for the National Highway Model were originally derived from population and employment growth factors which now appear somewhat optimistic in the light of the economic downturn. These matrices were used in this study only as a high growth sensitivity test.

For the appraisal of schemes, a set of Medium growth 2025 matrices was calculated as a linear interpolation between the Base year 2006 matrices and the 2025 High growth matrices. The factor used was 46% - a little less than half-way between Base and High growth demand levels. This was derived from a draft Note on Population Projections prepared for NRA by Goodbody Economic Consultants, which indicated that of the various national population scenarios prepared by CSO, scenario F1M0 now appears the most likely outcome. This scenario depicts a national population of 4.859m in 2025.

7.2.3 Convergence

Rather than using the full national traffic model for assessment of scheme options, a set of cordon models was created. This was to reduce the problem of “noise” in the model - a well-known issue when modelling the impact of small changes to a large modelled network.

Like most traffic models, the national traffic model uses an equilibrium approach – running for a number of iterations, each iteration coming closer to a fully-equilibrated state of the system where the traffic flows and costs are perfectly balanced and no driver can reduce their journey

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

costs by taking a different route. The process stops when the model is sufficiently close to reducing this theoretical equilibrium state, but it never quite gets there. If the modelled area is large relative to the degree of improvement offered by the scheme, the uncertainty in the model results arising from imperfect convergence of the process can be of the same order of magnitude as the benefits of the scheme, so that the results have a high level of statistical uncertainty attached.

7.3 OPTIONS APPRAISED

Having scored each scheme option against each appraisal subcriterion as set out in Chapter 4, the option is presented on a scheme sheet as a red line on the location plan with some summary data with respect to length, traffic model links and scheme cost under the various headings. In addition the 'Notes' section of the scheme sheet provides a brief description of the route and identifies route constraints.

The appraisal results are presented as a one-page tabular summary for each option, based on the Project Appraisal Balance Sheet (PABS) from the NRA PAG. Each row of the PABS table corresponds to one of the appraisal subcriteria. Where an estimate of the monetised value of the impact is available, this is presented, with such qualitative or quantitative supporting information as can reasonably be fitted into a small space. The right-hand columns give the score for that scheme option against each subcriterion.

Summary statistics include the total length of the scheme, the estimated total cost of the scheme, the Benefit-to-Cost Ratio (BCR) of the monetised elements only, and the overall score from the multi-criteria analysis.



The scheme sheet and PABS for each of the route options appraised for the South East Region is presented in Pages 106 to 225.

Figures 7.3 to 7.8 indicate in graphical format the various types of options appraised:-



- Figure 7.3 indicates the Type 1 single carriageway options included in the appraisals;
- Figure 7.4 indicates the Type 2 single carriageway options included in the appraisals;
- Figure 7.5 indicates the Type 3 single carriageway options included in the appraisals;
- Figure 7.6 indicates the Type 1 dual carriageway options included in the appraisals;
- Figure 7.7 indicates the Type 2 dual carriageway options included in the appraisals;
- Figure 7.8 indicates the Type 3 dual carriageway options included in the appraisals.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking





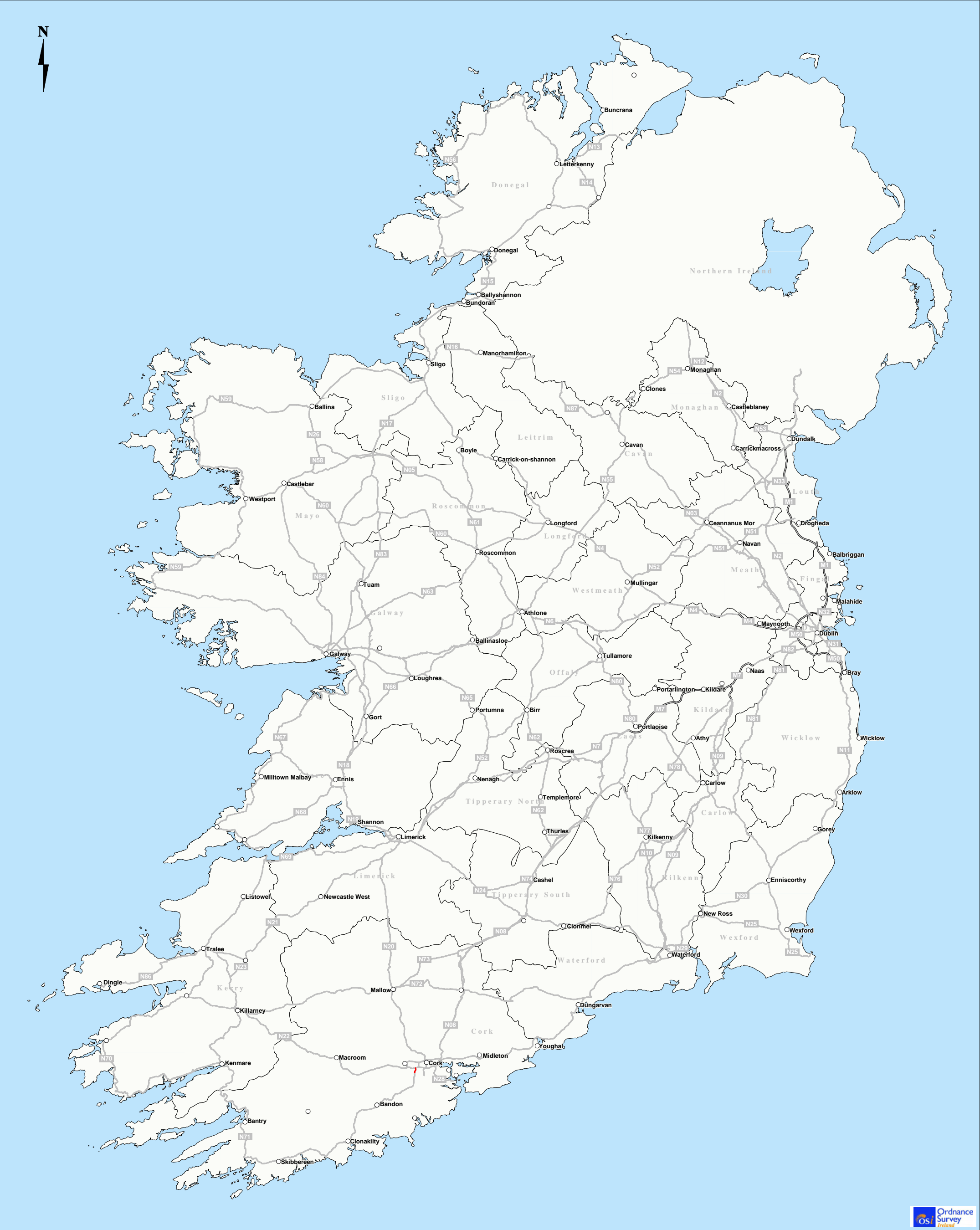
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Figure 7.3 - S2 Type 1 Options	National Secondary Road Needs Study	Drawn by: S. Khan		Project No. MDT0436	
		Checked by: A. Grady		File Ref.	
		Approved by: xxx		MDT0436MI0075D02	
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Figure 7.4 - S2 Type 2 Options	National Secondary Road Needs Study	Drawn by: S. Khan		Project No. MDT0436	
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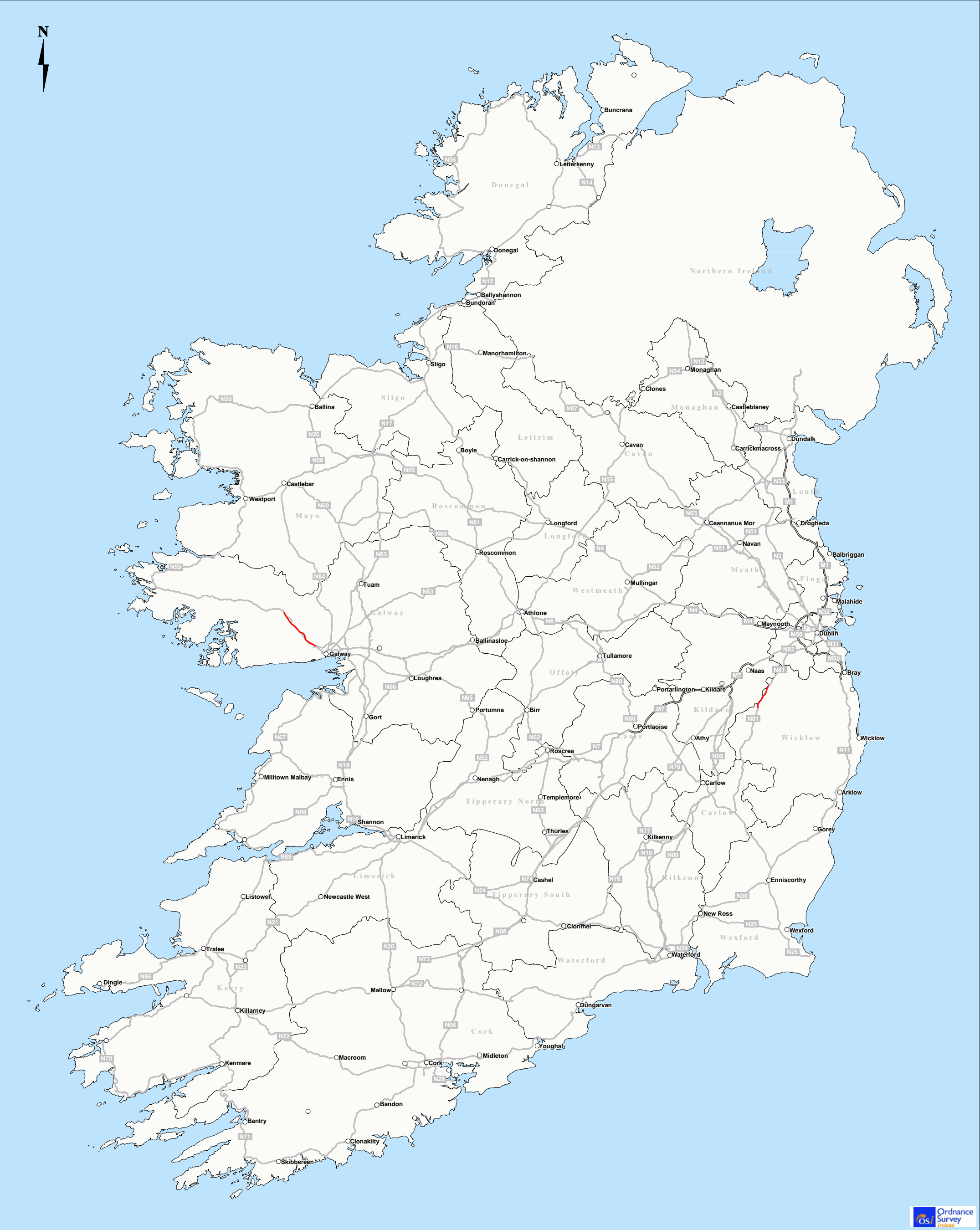
Title		Project	Issue Details		
Figure 7.5 - S2 Type 3 Options		National Secondary Road Needs Study	Drawn by:	S. Khan	Project No. MDT0436
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			Scale:	1: 650,000 @ A1	Drawing No. Rev.
			Date:	11/11/2010	M10077 D02
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Title	Project	Issue Details		
Figure 7.6 - Type 1 Dual	National Secondary Road Needs Study	Drawn by:	S. Khan	
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		Approved by:	xxx	
	Project No.		MDT0436	
	File Ref.		MDT0436Mi0078D02	
	Scale:	1: 650,000 @ A1	Drawing No.	Rev.
Date:	11/11/2010	Mi0078	D02	
<div><div><div><div><div>NRA</div><div>National Roads Authority</div><div>An tArdáil um Bóithre Náisiúnta</div></div><div><div>RPS</div></div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div><div><div>T</div><div>+353 (0)1 2884499</div></div><div><div>F</div><div>+353 (0)1 2835676</div></div><div><div>E</div><div>ireland@rpsgroup.com</div></div><div><div>W</div><div>rpsgroup.com/ireland</div></div></div></div></div>		Notes <div>1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.</div> <div>2. All levels are referred to Ordnance Datum, Malin Head.</div> <div>3. Ordnance Survey Ireland Licence EN 0005010</div> <div>©Copyright Government of Ireland.</div>		



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Figure 7.7 - Type 2 Dual	National Secondary Road Needs Study	Drawn by: S. Khan		Project No. MDT0436	
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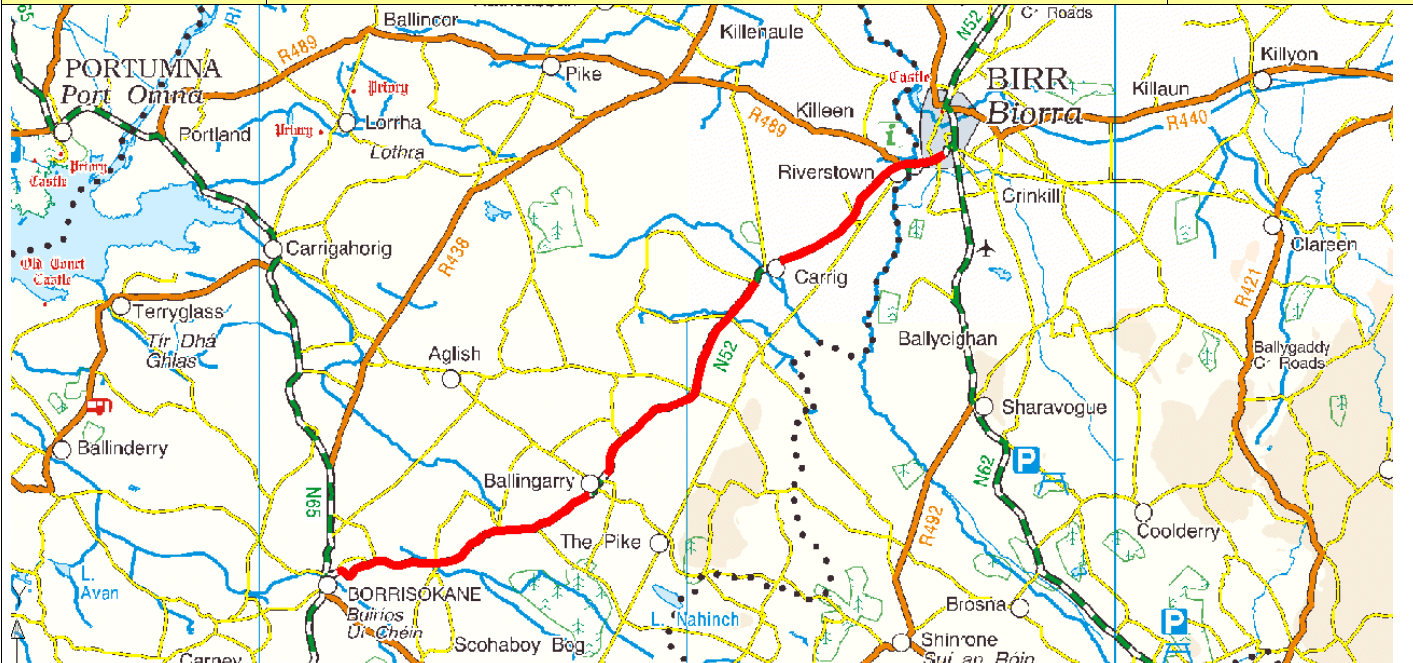


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Figure 7.8 - Type 3 Dual		National Secondary Road Needs Study		Drawn by: S. Khan	Project No. MDT0436
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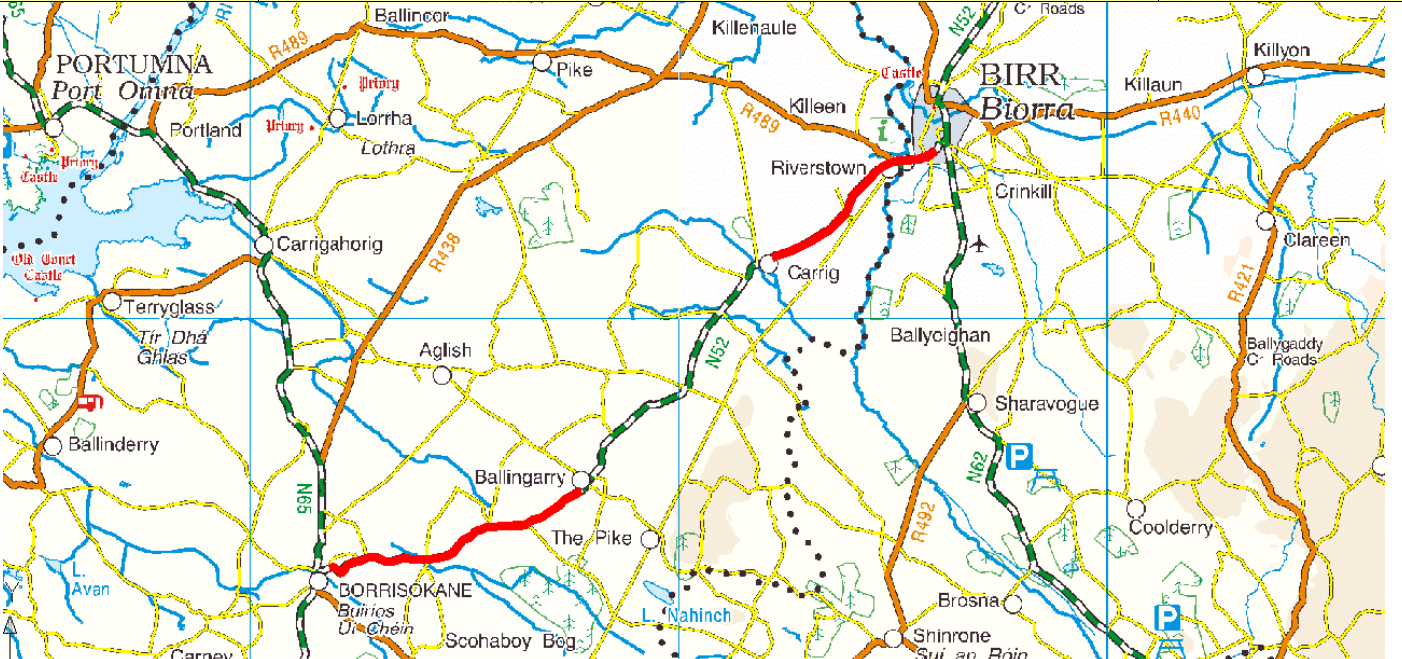


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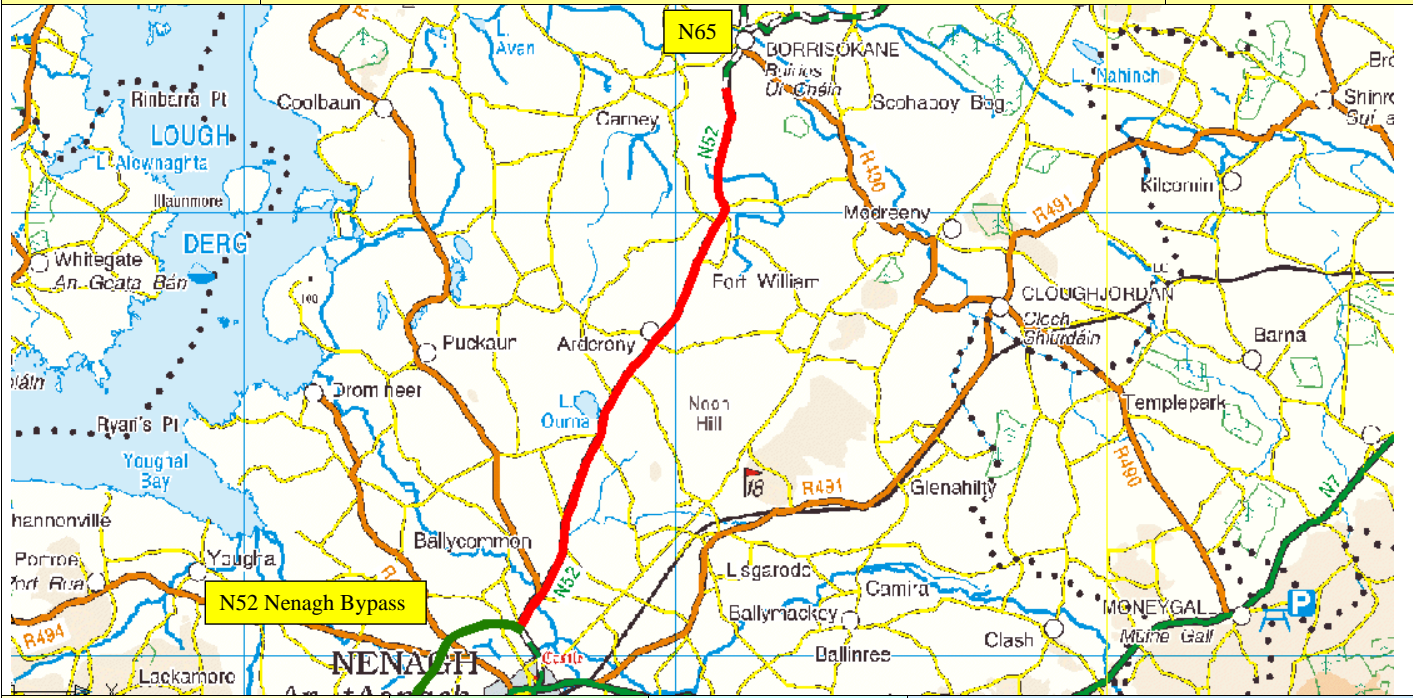
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N52.i.1.T2			Name: Birr (N62) to Borrisokane (N65)							Type: S2 Type 2	
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118820 (Improvement to part of link)	0.286 used (Full length of link0.832)	71.5	4.7	1.8	3303	0.281	0.496	0.110	0.022	0.086	
New (around Riverstown)	1.372	N/A	4.7	0.0	3303	1.372	3.156	0.960	0.178	0.412	
118819 (Improvement to part of link)	0.247 used (Full length of link0.681)	71.5	4.7	1.8	3303	0.243	0.429	0.095	0.019	0.074	
118814	2.850	71.5	4.7	1.8	3303	2.799	4.946	1.099	0.223	0.855	
Break at Carrig											
118816	3.816	73	3.5	0.8	3303	3.785	6.268	1.265	0.260	1.145	
118813	2.202	70	5.0	2.0	3304	2.158	4.006	0.956	0.191	0.661	
Break at Ballingarry											
118835	2.728	70	5.0	2.0	3304	2.673	4.963	1.184	0.237	0.818	
118834	3.851	68.5	5.6	2.6	3304	3.751	7.295	1.837	0.364	1.155	
Birr (N62) to Borrisokane (N65)	Total 17.352					Total 17.062					
Notes: This existing route varies in standard. It has bendy and hilly sections as well as straight sections with some overtaking opportunity. The section between Birr and Riverstown is quite urbanised in nature and has very large stone walls along some of the section therefore an off-line route is proposed in this area to relieve Riverstown. South of Riverstown there is a decent overtaking section at Stonestown followed by a hilly and bendy section until Carrig. From Carrig to Ballingarry the existing route is roughly to Type 3 standard with some decent overtaking opportunity. South of Ballingarry there is a short section to Type 3 standard (0.43km). The remainder of this route to Borrisokane has an extremely poor alignment and is very bendy, hilly and narrow in places with only one overtaking opportunity (west of Lismaline). There are also a number of very bad bends at the approach to Borrisokane. There are no environmentally designated areas in the vicinity of this route. A new bridge over the Little Brosna River will need to be constructed (add cost) There are no environmentally designated areas in the vicinity of this route. 2 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	31.559	7.507	1.495	5.206	
						Any special costs	0.300	0.000	0.000	0.000	
						Grand Total	46.067				

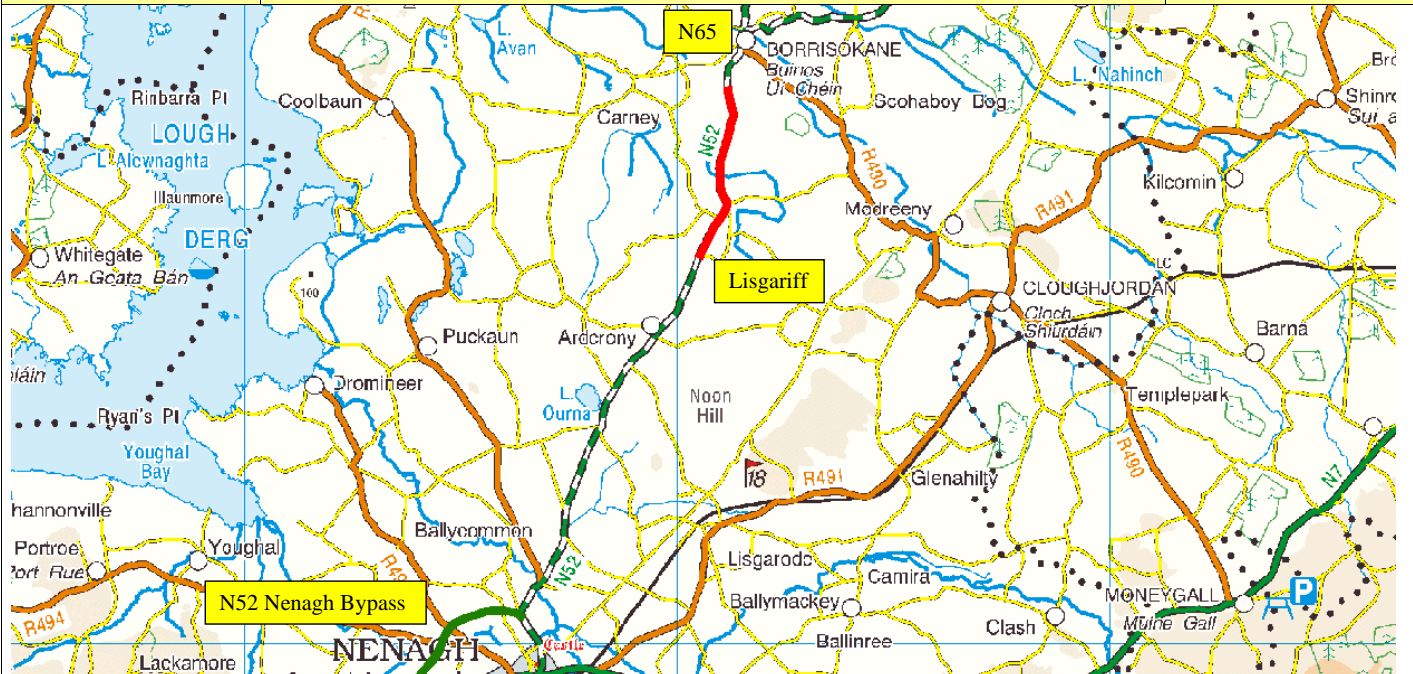
PABS Appraisal Summary Table - N52.1.T2						
Scheme Option: N52 Birr (N62) to Borrisokane (N65)		Description: 17.062km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €46.07	
			<ul style="list-style-type: none"> • Lane width < 3m for 94% of the corridor and less than 3.5m for 98% of the corridor. These deficiencies occur generally along the corridor. • Visibilities are poor for both standards west of Birr and on the approaches to Borrisokane. • Historical accident cluster at the junction with the N65 at Borrisokane. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		108 households affected in 2025 -5 tonnes of carbon saved in 2025	-€0.129 €0.000	No	3.5
	Noise and vibration		108 households affected in 2025	-€0.390	No	2.5
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity				No	3.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on Kileen Bog NHA (000648). No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five NIAH Structures, a Barrow – Ditch Barrow, a Barrow – Ring Barrow, two Ringforts and an Enclosure.			No	3.0
Landuse		The proposed realignments will primarily be within Agricultural Areas with one section through a Forest Semi Natural Area.			No	4.0
	Water resources	The proposed realignments in this section of the N52 will cross the Little Brosna River.			No	3.0
Safety	Accident reduction		1.0 accidents saved in 2025	€10.251		6.6
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		223 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.442 €14.803		4.8
				Active travel €0.000		
				PVC €31.962		
				Residual value €2.466		
	Other economic impacts		Imperfect competition effects	€1.480		5.9
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				
Integration	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport Integration					
	Land-use integration					6.0
	Geographical integration					6.7
	Integration with other government policies					4.3
						4.2
				NPV	Total	5.2
				BCR	Red Flagged	No
					0.94	

N52.i.1.T3			Name: Birr (N62) to Borrisokane (N65)					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
118820 (Improvement to part of link)	0.286 used (Full length of link0.832)	71.5	1.9	0.2	3306	0.285	0.305	0.033	0.010	0.086
New (around Riverstown)	1.372	N/A	1.9	0.0	3306	1.372	2.401	0.686	0.178	0.412
118819 (Improvement to part of link)	0.247 used (Full length of link0.681)	71.5	1.9	0.2	3306	0.247	0.263	0.028	0.008	0.074
118814	2.850	71.5	1.9	0.2	3306	2.844	3.040	0.325	0.096	0.855
Break from Carrig to Ballingarry										
118835	2.728	70	2.1	0.2	3307	2.723	3.039	0.378	0.110	0.818
118834	3.851	68.5	2.4	0.4	3308	3.836	4.455	0.621	0.179	1.155
Birr (N62) to Borrisokane (N65)	Total 11.334					Total 11.307				
<p>Notes:</p> <p>This existing route varies in standard. It has bendy and hilly sections as well as straight sections with some overtaking opportunity. The section between Birr and Riverstown is quite urbanised in nature and has very large stone walls along some of the section therefore an off-line route is proposed in this area to relieve Riverstown. South of Riverstown there is a decent overtaking section at Stonestown followed by a hilly and bendy section until Carrig. From Carrig to Ballingarry the existing route is roughly to Type 3 standard with some decent overtaking opportunity and this 6.018km section is therefore not considered for upgrade here. South of Ballingarry there is a short section to Type 3 standard (0.43km) and this section has therefore been removed from the costs. The remainder of this route to Borrisokane has an extremely poor alignment and is very bendy, hilly and narrow in places with only one overtaking opportunity (west of Lismaline). There are also a number of very bad bends at the approach to Borrisokane.</p> <p>A new bridge over the Little Brosna River will need to be constructed (add cost)</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. stream crossing.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.6 to 5 – Maintenance Bracket 3</p>						TOTAL:	13.503	2.071	0.581	3.400
						Any special costs	0.200 -0.479	-0.060	-0.017	-0.129
						Grand Total	19.070			

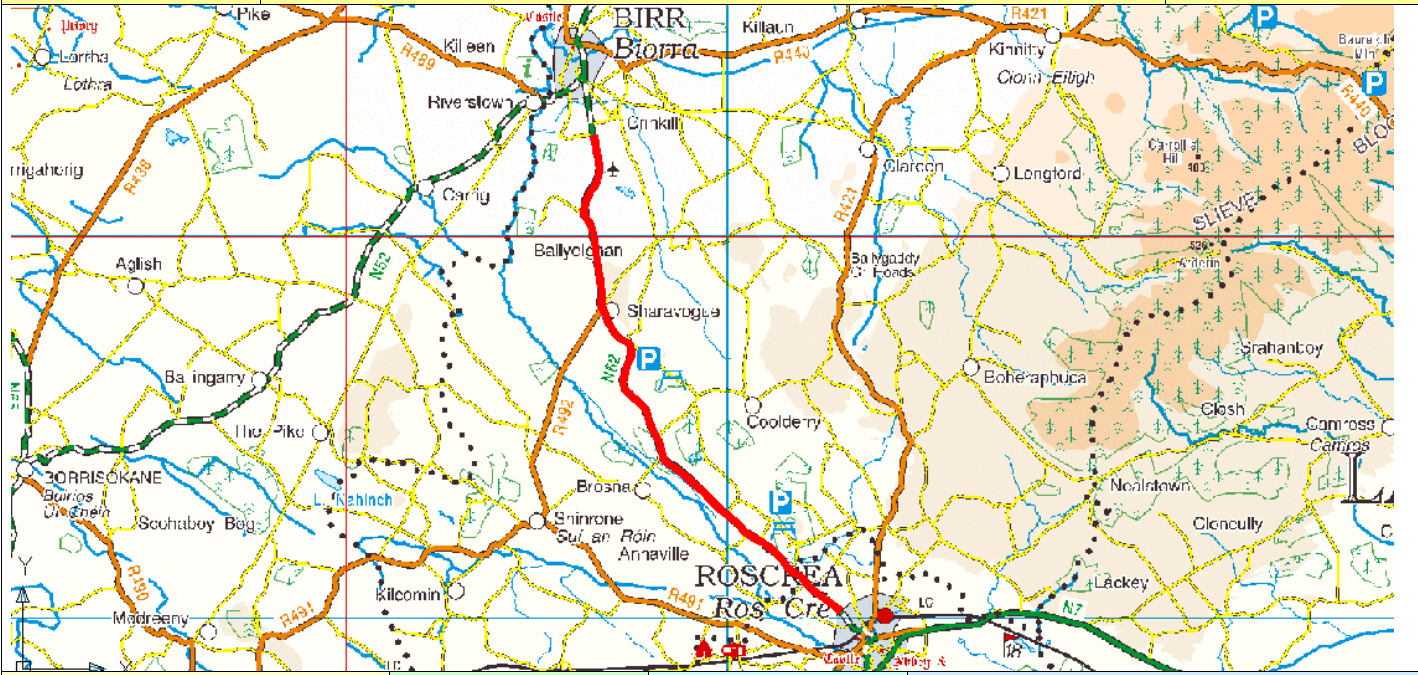
PABS Appraisal Summary Table - N52L1.T3							
Scheme Option: N52 Birr (N62) to Borrisokane (N65)		Description: 11.307km upgrade to S2 Type 3 standard	Problems Identified: • Lane width < 3m for 94% of the corridor and less than 3.5m for 98% of the corridor. These deficiencies occur generally along the corridor. • Visibilities are poor for both standards west of Birr and on the approaches to Borrisokane. • Historical accident cluster at the junction with the N65 at Borrisokane.				Budget Cost (million) €19.07
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		81 households affected in 2025	-€0.015	No	3.8	
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	2.0	
	Landscape and visual quality	Not assessed	81 households affected in 2025	-€0.199	Not assessed	4.0	
	Biodiversity	The proposed realignment may impact indirectly on Kileen Bog NHA (000648).			No	3.0	
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five NIAH Structures, a Ringfort and an Enclosure.			No	3.0	
	Landuse	The proposed realignments will primarily be within Agricultural Areas.					
Safety	Water resources	The proposed realignments in this section of the N52 will cross the Little Brosna River.			No	4.0	
	Accident reduction		0.4 accidents saved in 2025		No	3.0	
Economy	Security	No additional facility for walkers and cyclists is to be provided.		-€0.312		3.8	
	Transport Efficiency and Effectiveness		57 vehicle-hours per day in travel time saved in 2025	Non-work €3.245 Work €3.647 Active travel €0.000 PVC €1.758 Residual value €0.848		4.9	
	Other economic impacts		Imperfect competition effects	€0.365		5.2	
	Funding	Not assessed				4.0	
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0	
	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.1	
Accessibility and Social Inclusion	Transport integration					6.0	
	Land-use integration					6.7	
	Geographical integration					4.3	
	Integration with other government policies					4.2	
				NPV -€4.180	Total	5.0	
				BCR 0.64	Red Flagged	No	

N52.j.1.T2			Name: Borrisokane (N65) to Nenagh Bypass							Type: S2 Type 2	
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118801	2.874	68.5	5.6	2.6	3304	2.799	5.444	1.371	0.271	0.862	
118804	3.051	76	2.0	0.4	3303	3.039	4.363	0.629	0.136	0.915	
118805 (through Ardcroney)	0.698	76 assumed		0.0		0.698	0.998	0.144	0.031	0.209	
118802	1.701	76	2.0	0.4	3303	1.694	2.432	0.351	0.076	0.510	
118807	1.019	76	2.0	0.4	3303	1.015	1.457	0.210	0.046	0.306	
118806	3.298	77.5	3.0	1.5	3301	3.249	4.321	0.445	0.103	0.989	
105090	0.090	77.5	3.0	1.5	3301	0.089	0.118	0.012	0.003	0.027	
104837	0.760	77.5	3.0	1.5	3301	0.749	0.996	0.103	0.024	0.228	
Borrisokane to Nenagh Bypass	Total 13.491					Total 13.332					
Notes: This section of the existing route is to quite varying standards. It is hilly and narrow in some places and is to Type 2 or 3 standard with some overtaking opportunity at other places. There are some bad bends but also a number of decent straight sections. There is a short overtaking section south of Borrisokane before Gaulross. South of Gaulross there is also decent overtaking opportunity although it is hampered somewhat by the vertical alignment. This is followed by a hilly and narrow section at Ballinderry. There is also a number of bad bends at this location. Between Ballinderry and south of Lisgarraff there is a section with good overtaking opportunity. At Lisgarraff there is a 1.245km section that is to Type 2 standard or perhaps a bit better. This section is therefore removed from the costs of this upgrade. It is possible to continue this upgrade through the village of Ardcroney to provide some alignment improvements. It is proposed however that the speed limit restrictions at Ardcroney remain in place. South of Ardcroney at Sedgemoor (Lough Eorna) there is a 2.435km section that is thought to be already to Type 2 standard. This section is also removed from the costs for this scheme. Lough Eorna is close to this route south of Ardcroney and is environmentally designated as a Natural Heritage Area. The existing Grange Bridge over a Nenagh River tributary is wide enough to accommodate this upgrade. The existing Nenagh Bridge over the Nenagh River is wide enough to accommodate this upgrade. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	20.128	3.265	0.690	4.047	
						Any special costs	-5.490	-0.891	-0.188	-1.104	
						Grand Total	20.457				

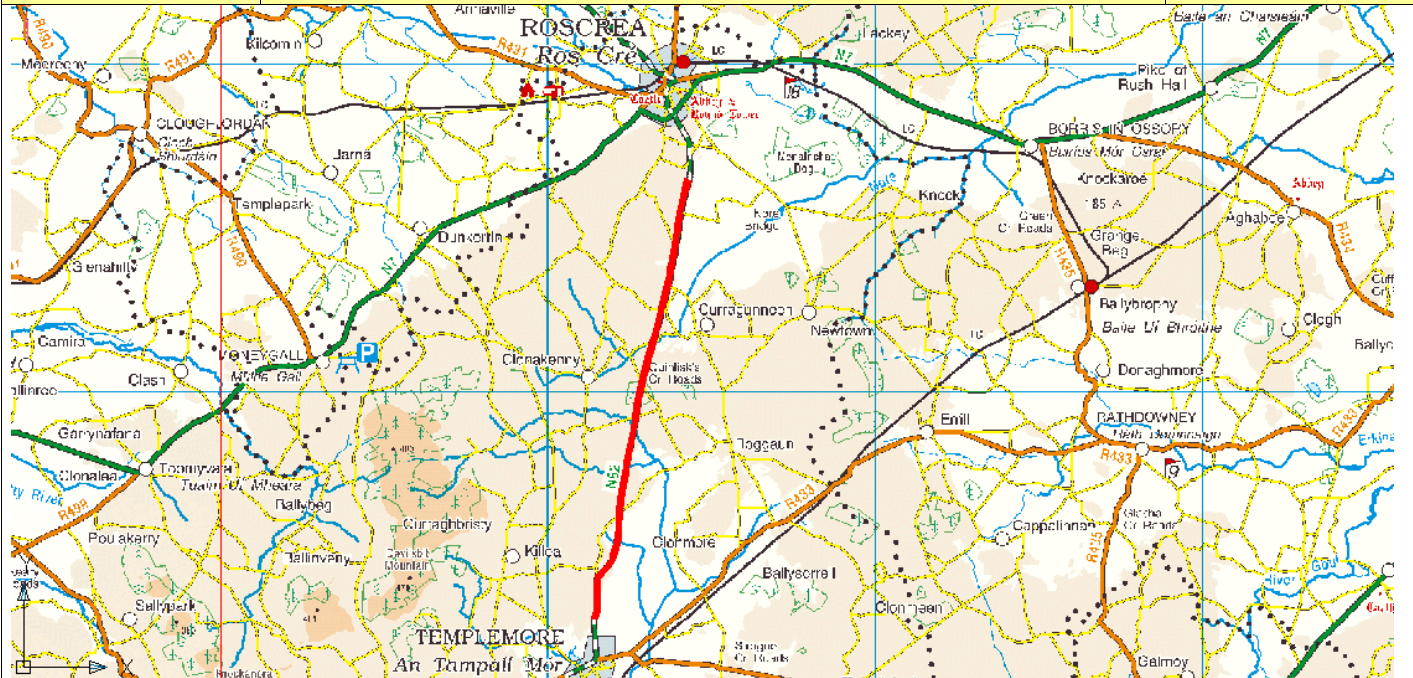
PABS Appraisal Summary Table - N52J.1.T2						
Scheme Option: N52 Borrisokane (N65) to Nenagh Bypass	Description: 13.332km upgrade to S2 Type 2 standard	Problems Identified: • Lane width < 3m for 25% of the corridor and less than 3.5m for 53% of the corridor. These deficiencies occur south of Borrisokane. • Visibilities are somewhat deficient on the section of the route south of Borrisokane. • Accident cluster noted just north of Ardrony.	Budget Cost (million) €20.46	Red Flag		
				Score		
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		116 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.064 €0.000	No	3.4
	Noise and vibration Landscape and visual quality		116 households affected in 2025	-€0.184	No	2.3
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on Lough Ourna pNHA (000850) and may impact indirectly on Lough Derg pNHA (000011) and Lough Derg SPA (004058).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including an Enclosure, four Ringforts, a Castle – Tower House, a Church, a Graveyard, Bawn, three NIAH Structures and a Bridge. The proposed realignments will primarily be within Agricultural Areas but one section is through Wetlands.			No	3.0
Safety	Water resources	The proposed realignments in this section of the N52 will cross the Nenagh River which discharges to Lough Derg pNHA (000011) and Lough Derg SPA (004058).			No	4.0
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	1.0 accidents saved in 2025	€14.533	Yes	2.5
Economy	Transport Efficiency and Effectiveness					7.0
			200 vehicle-hours per day in travel time saved in 2025	€10.715 €1.127 €0.000		4.0
				Non-work Work Active travel PVC Residual value		6.5
Accessibility and Social Inclusion	Other economic impacts Funding	Not assessed	Imperfect competition effects	€1.113		7.0
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		7 CLAR zones experience improved access to Hub/Gateway			6.8
Integration						5.0
						6.7
						6.5
				NPV	€25.005	6.1
				BCR	2.89	Yes
				Total		Red Flagged

N52.j.1.T3			Name: Borrisokane (N65) to Lisgariff					Type: S2 Type 3			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118801	2.874	68.5	2.4	0.4	3308	2.863	3.325	0.464	0.133	0.862	
120297 (Former link no. 118804)	1.317 (Former link length 3.051)	76	0.5	0.0	3304	1.317	1.185	0.037	0.014	0.395	
Borrisokane to Lisgariff	Total 4.191					Total 4.180					
Notes: This section of the existing route is to quite varying standards. It is hilly and narrow in some places and is to Type 2 or 3 standard with some overtaking opportunity at other places. There are some bad bends but also a number of decent straight sections. There is a short overtaking section south of Borrisokane before Gaulross. South of Gaulross there is also decent overtaking opportunity although it is hampered somewhat by the vertical alignment. This is followed by a hilly and narrow section at Ballinderry. There is also a number of bad bends at this location. Between Ballinderry and south of Lisgariff there is a section with good overtaking opportunity. The remainder of the route from Lisgariff to the N52Nenagh Bypass is to Type 3 standard or better. This section has also been removed from the costs for this scheme. There are no environmentally designated areas in the vicinity of this route. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	4.510	0.501	0.147	1.257	
						Any special costs	0.000	0.000	0.000	0.000	
						Grand Total	6.415				

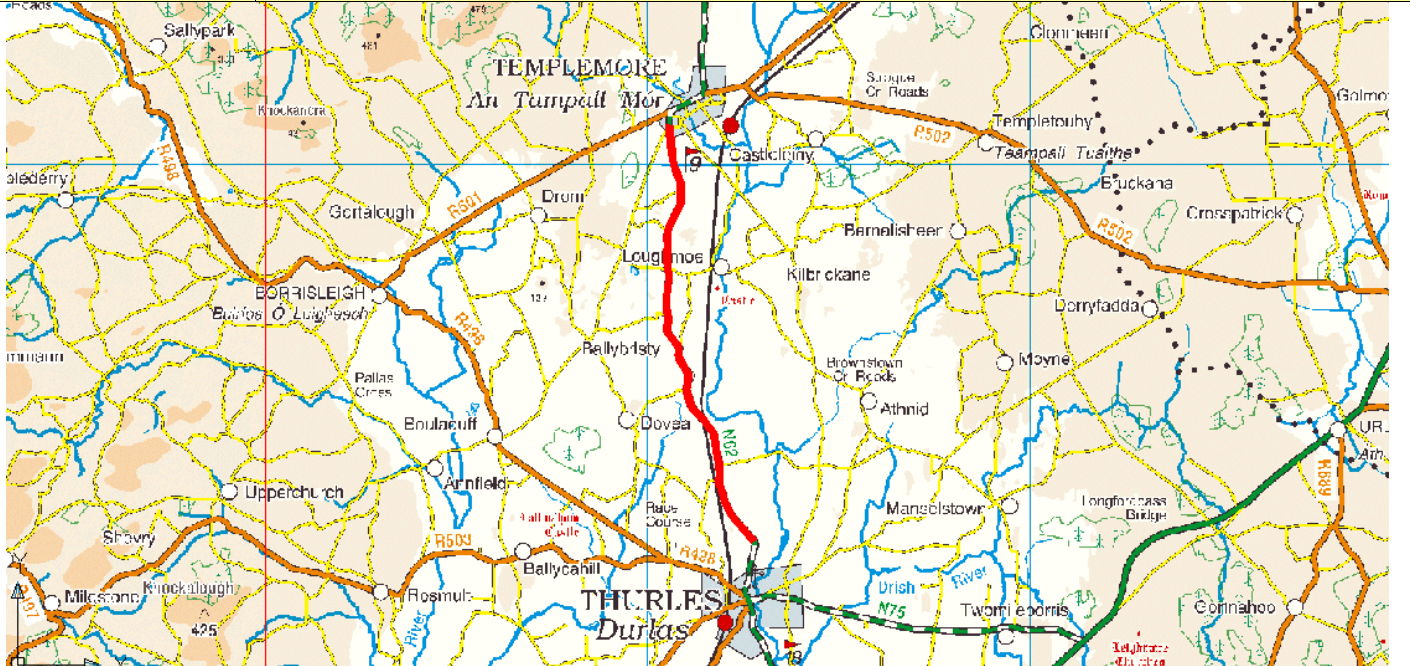
PABS Appraisal Summary Table - N52,1,T3						
Scheme Option: N52 Borrisokane (N65) to Lisgariff		Description: 4.18km upgrade to S2 Type 3 standard	Problems Identified:		Budget Cost (million) €6.42	
			<ul style="list-style-type: none"> • Lane width < 3m for 25% of the corridor and less than 3.5m for 53% of the corridor. These deficiencies occur south of Borrisokane. • Visibilities are somewhat deficient on the section of the route south of Borrisokane. • Accident cluster noted just north of Ardrony. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		40 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration		40 households affected in 2025	€0.000	No	2.5
	Landscape and visual quality	Not assessed		-€0.049	Not assessed	4.0
	Biodiversity	The proposed realignment will not impact directly or indirectly on any European or Nationally designated Sites.			No	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including an Enclosure and a Ringfort.			No	3.0
Safety	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N52 will not cross any watercourses.			No	4.0
Safety	Accident reduction		0.2 accidents saved in 2025	-€0.299		3.4
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		41 vehicle-hours per day in travel time saved in 2025	Non-work Work €2.239 €2.369		5.8
				Active travel €0.000		
				PVC €3.931		
				Residual €0.260		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.237		6.4
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		4 CLAR zones experience improved access to Hub/Gateway			5.7
Integration	Transport integration					5.0
	Land-use integration					6.7
	Geographical integration					6.5
	Integration with other government policies					6.6
				NPV	€0.826	Total
				BCR	1.21	Red Flagged
						5.5
						No

N62.b.1.T2			Name: Birr to Roscrea (N7)					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118711	0.461	72	2.8	1.1	3305	0.456	0.786	0.170	0.035	0.138	
118710	0.313	72	2.8	1.1	3305	0.310	0.534	0.115	0.023	0.094	
118712	2.455	72	2.8	1.1	3305	2.429	4.187	0.904	0.184	0.737	
118713	1.505	75	2.3	0.9	3304	1.491	2.265	0.377	0.080	0.452	
118714	3.515	75	2.3	0.9	3304	3.482	5.289	0.880	0.186	1.055	
118715	1.481	77.5	1.4	0.4	3303	1.475	1.940	0.200	0.046	0.444	
112758	3.250	77.5	1.4	0.4	3303	3.237	4.258	0.439	0.101	0.975	
118717	1.494	77.5	1.4	0.4	3303	1.488	1.957	0.202	0.047	0.448	
118716	1.011	78	1.3	0.1	3303	1.010	1.282	0.111	0.027	0.303	
Birr to Roscrea (N7)	Total 15.485					Total 15.378					
<p>Notes:</p> <p>In general the horizontal alignment over this section is not too bad. There are however a large number of medium radius bends and the overtaking is therefore quite poor along this section. There is a lack of decent straight sections leading to a number of very short overtaking opportunities but none of real significance. From Crinkill to Ballyvaughan is quite bendy. There is a 4.485km section from Boveen to Eagle Hill that is considered to be fully to Type 2 standard and this section has been removed from the costs. The remaining 5.284km of the section from south of Sharavogue to Roscrea is to Type 3 standard and quite close to Type 2 standard and so a reduction has been made to the cost over this section.</p> <p>The road markings are inaccurate at some locations from Boveen to Sharavogue and indicate that overtaking is permitted where the forward visibility is clearly not adequate. i.e. around short radius bends.</p> <p>There is a collection of small forest areas to the north of Roscrea that are environmentally designated as an Natural Heritage Area. Some if these areas are in close proximity to the route.</p> <p>1 No stream crossing.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p>						TOTAL:	22.498	3.398	0.729	4.646	
						Any special costs	-1.550 -7.047	-0.580 -1.064	-0.032 -0.228	-0.369 -1.455	
Grand Total						18.946					

PABS Appraisal Summary Table - N62b.1.T2						
Scheme Option: N62 Birr to Roscrea (N7)		Description: 15.378km upgrade to S2 Type 2 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths are less than 3.5m wide for 45% of the corridor. • On corridor 62b, approximately 5km south of Birr for approx 4km the visibility is also in the 20 to 120m range also. • Approx 3km south of Birr there is a cluster of 3 fatal and 1 serious accident however this area represents an area of good visibility. • Just north of Roscrea there is a large cluster of accidents. This location represents a relatively straight section of road with good visibility. The road width is also relatively good at this location. 			
			Budget Cost (million) €18.95			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		102 households affected in 2025	-€0.031	No	3.7
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	3.0
	Landscape and visual quality	Not assessed	102 households affected in 2025	-€0.105	Not assessed	4.0
	Biodiversity	The proposed realignment may impact indirectly on Drumakeenan, Eagle Hill and Perry's Mill pNHA (000900) and on Golden Grove Woods pNHA (000903)			No	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Fulacht Fia, seven NIAH Structures, two Enclosures, two Souterrain and a Barrow – Ring Barrow.			No	3.0
Landuse		The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces.			No	4.0
	Water resources	The proposed realignments in this section of the N62 will cross the Golden Grove Stream.			No	3.0
	Accident reduction		0.7 accidents saved in 2025	€7.812		7.0
Safety	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		120 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €7.569 €6.768 €0.000		5.8
				PVC Residual value €12.280 €0.834		
	Other economic impacts	Imperfect competition effects		€0.677		6.2
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.1
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.1
Integration	Transport integration					5.0
	Land-use integration					4.6
	Geographical integration					4.5
	Integration with other government policies					5.3
				NPV	€11.244	Total
				BCR	1.92	Red Flagged
						5.1
						No

N62.c.1.T2			Name: Roscrea (N7) to Templemore					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
New Link (south of Roscrea)	1.246	78.5 assumed	N/A	0.0		1.246	1.526	0.105	0.027	0.374	
118688	2.272	78.5	1.0	0.0	3303	2.271	2.783	0.192	0.049	0.682	
118689	0.347	78.5	1.0	0.0	3303	0.347	0.425	0.029	0.007	0.104	
118686	2.209	78.5	1.0	0.0	3303	2.208	2.706	0.187	0.047	0.663	
118719	3.946	78.5	1.0	0.0	3303	3.945	4.835	0.334	0.085	1.184	
118718	3.829	75.5	1.0	0.0	3303	3.828	5.620	0.875	0.187	1.149	
Roscrea (N7) to Templemore	Total 13.849					Total 13.849					
Notes: This route is narrow, bendy and hilly in places but also has a number of straight sections with significant overtaking opportunity. On the straight sections along this route there is some overtaking however it is restricted by the poor vertical alignment. The first 955m south of the speed limit restriction at Roscrea is to Type 2 standard and is therefore not included in this upgrade. There is a further 2.480km section from Corrigan to Clonakenny that is to circa Type 2 standard and the costs have been adjusted to allow for this section. There are a number of bad bends over the 2.5km north of the speed restriction at Templemore. There are no environmentally designated areas in the vicinity of this route. 9 no. stream crossings. The existing Killough Bridge and the bridge of similar construction approx 1km north of it appear to have been recently upgraded and should be wide enough to accommodate this upgrade. Low Traffic Good Subgrade – Maintenance Category 1 IRI 2.6 to 3.5 – Maintenance Bracket 2						TOTAL:	17.896	1.722	0.402	4.155	
						Any special costs	-3.205	-0.308	-0.072	-0.744	
						Grand Total	19.846				

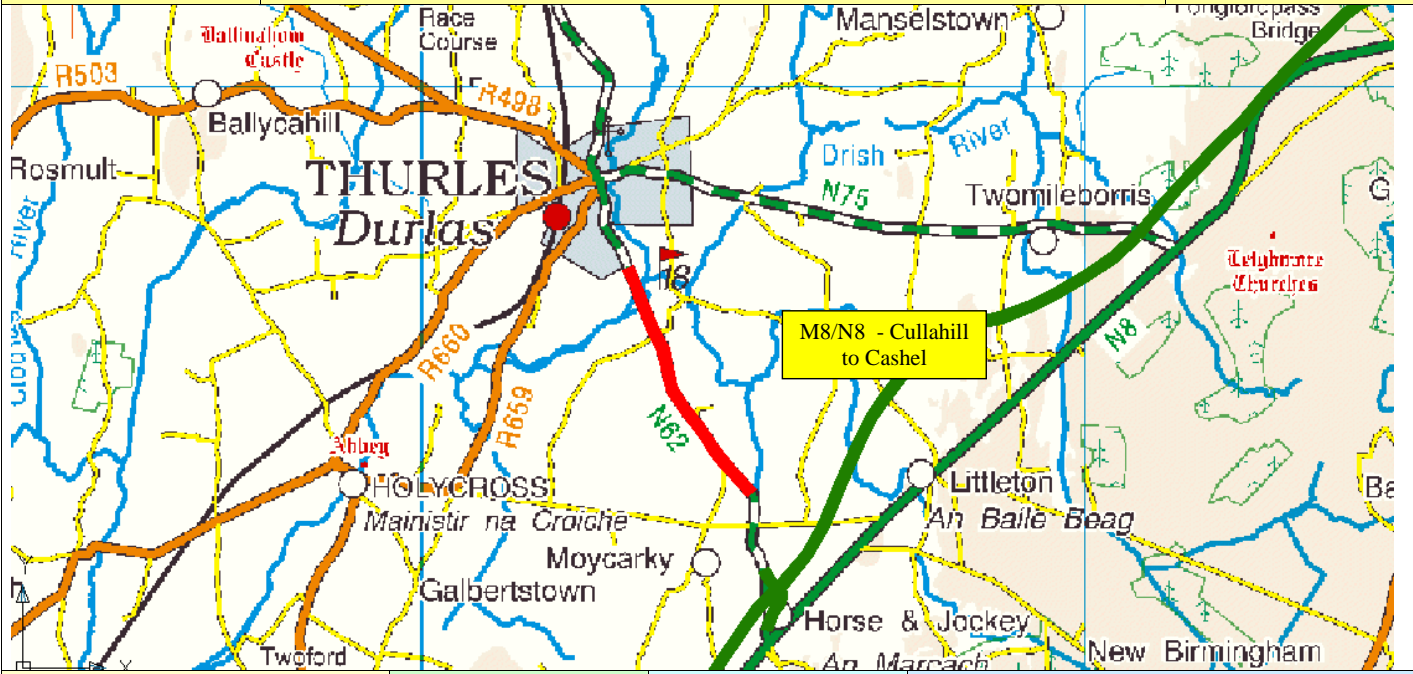
PABS Appraisal Summary Table - N62c.1.T2						
Scheme Option: N62 Roscrea (N7) to Templemore		Description: 13.849km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €19.85	
			<ul style="list-style-type: none"> Lane widths are less than 3m wide for 52% of the corridor and are less than 3.5m for 79% of the corridor. Between Roscrea and Templemore there is a small accident cluster at the junction of the N62 with the road to Clonakenny. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		74 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.071 €0.000	No	3.3
	Noise and vibration Landscape and visual quality		74 households affected in 2025	-€0.148	No	2.6
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Nore Freshwater Pearl Mussel Catchment. There is potential for indirect impacts to Sheehills Esker pNHA (000938), Aghsmear House pNHA (002060) and Templemore Wood pNHA (000942).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two NIAH Structures and a Ringfort.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area.			No	4.0
Safety	Accident reduction Security	The proposed realignment will impact directly on the River Nore Freshwater Pearl Mussel Catchment. Further, the proposed route directly crosses the River Nore and the River Suir.			Yes	2.5
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€5.118		7.0
						4.0
Accessibility and Social Inclusion	Other economic impacts					
	Funding	Not assessed				5.3
Integration	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		2 CLAR zones experience improved access to Hub/Gateway			4.2
Integration	Transport integration					
	Land-use integration					6.0
Integration	Geographical integration					4.6
	Integration with other government policies					4.3
				NPV	€2.148	Total
				BCR	1.17	Red Flagged
						4.8
						Yes

N62.d.1.T2			Name: Templemore to Thurles					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
118721	3.899	75.5	2.2	0.3	3304	3.886	5.723	0.891	0.191	1.170
118723	3.111	71.5	4.0	1.6	3304	3.062	5.399	1.200	0.243	0.933
120296 (Former link no. 118722)	4.674 (Former link length 5.221)	74	3.3	0.9	3304	4.630	7.365	1.366	0.285	1.402
Templemore to Thurles	Total 11.684					Total 11.578				
<p>Notes:</p> <p>This route is varied in standard but is generally quite bendy and has intermittent short straight sections between bends. There is a 1.77km section from Whitefield to Carrickloughmore Cross Roads that is to Type 2 standard already. The costs have been amended to reflect this. From Carrickloughmore Cross Roads to Ballybrist the route is quite bendy and hilly and only has a few short straight sections. The route is also quite narrow in places, particularly at Grange north of Thurles. Here the width on straight sections may be hampering the overtaking opportunity. Some recent footpath construction and road resurfacing / widening has occurred just inside the speed limit at Thurles. There is an environmentally designated NHA to the west of the route immediately north of Thurles at Grange.</p> <p>The pavement condition is also quite poor at places along this route. The existing bridge south of Templemore at Forest may need to be widened for this upgrade as it is quite narrow.</p> <p>The existing railway bridge at Clonamuckoge Bed is narrow and humped and has bends either side of it. This bridge will need to be widened / replaced as part of this upgrade. Tree lined for approx 700m south of the speed limit at Templemore.</p> <p>4 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.5 to 5 – Maintenance Bracket 3</p> <p>Link 118722 split @ approx (212707, 160274)</p>						TOTAL:	18.487	3.457	0.718	3.505
						Any special costs	0.400 -2.801	-0.524	-0.109	-0.531

PABS Appraisal Summary Table - N62d.1.T2							
Scheme Option: N62 Templemore to Thurles		Description: 11.578km upgrade to S2 Type 2 standard		Problems Identified:		Budget Cost (million) €2.60	
				<ul style="list-style-type: none">• Lane widths are less than 3m wide for 52% of the corridor and are less than 3.5m for 79% of the corridor.• On corridor 62d, between Templemore and Thurles there are a number of areas with visibility in the 20 to 120 m range. Two of note include a section of approx 2km beginning 2km south of Templemore. A further section begins approx 5km south of Templemore and stretches for approx 3km.• The corridor between Templemore and Thurles has 6 fatal accidents recorded over the recent accident history data, indicating there may be a significant accident problem on this corridor.			
Objective	Sub-objective	Qualitative impacts		Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality			79 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.027 €0.000	No	3.8
	Noise and vibration			79 households affected in 2025	-€0.154	No	2.7
	Landscape and visual quality		Not assessed			Not assessed	4.0
	Biodiversity		The proposed realignment may impact indirectly on Templemore Wood pNHA (000942) and on Cabragh Wetlands pNHA (001934).			No	3.0
	Cultural Heritage / archaeology		No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including Earthworks, an Enclosure and two NIAH Structures.			No	3.0
	Landuse		The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces.			No	4.0
Safety	Water resources		The proposed realignment may impact indirectly on the River Suir.			No	3.0
	Accident reduction		No additional facility for walkers and cyclists is to be provided.	0.5 accidents saved in 2025	€9.117		7.0
Economy	Security						4.0
	Transport Efficiency and Effectiveness			127 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €7.205 €6.443 €0.000		5.4
Accessibility and Social Inclusion	Other economic impacts			PVC Residual value €14.475 €1.109			
	Funding		Not assessed	Imperfect competition effects	€0.644		5.8
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas			0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration						
	Land-use integration						5.0
	Geographical integration						4.6
	Integration with other government policies						4.3
				NPV	€9.862	Total	
				BCR	1.68	Red Flagged	
							4.9
						No	No

N62.d.1.T3			Name: Templemore to Thurles					Type: S2 Type 3			
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118721	3.899	75.5	0.6	0.0	3305	3.899	3.589	0.151	0.051	1.170	
118723	3.111	71.5	1.5	0.1	3306	3.108	3.319	0.355	0.105	0.933	
120296 (Former link no. 118722)	4.674 (Former link length 5.221)	74	1.1	0.0	3306	4.674	4.575	0.321	0.100	1.402	
Templemore to Thurles	Total 11.684					Total 11.681					
Notes: This route is varied in standard but is generally quite bendy and has intermittent short straight sections between bends. There is a 1.77km section from Whitefield to Carrickloughmore Cross Roads that is to Type 2 standard already. The costs have been amended to reflect this. From Carrickloughmore Cross Roads to Ballybrist the route is quite bendy and hilly and only has a few short straight sections. There is a further 1.09km section to Type 3 standard from Ballybrist to Clonamuckoge Beg and this section has been removed from the costs. The route is also quite narrow in places, particularly at Grange north of Thurles. Here the width on straight sections may be hampering the overtaking opportunity. Some recent footpath construction and road resurfacing / widening has occurred just inside the speed limit at Thurles. There is an environmentally designated NHA to the west of the route immediately north of Thurles at Grange. The pavement condition is also quite poor at places along this route. The existing bridge south of Templemore at Forest may need to be widened for this upgrade as it is quite narrow. The existing railway bridge at Clonamuckoge Bed is narrow and humped and has bends either side of it. This bridge will need to be widened / replaced as part of this upgrade. Tree lined for approx 700m south of the speed limit at Templemore. 4 No. stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.5 to 5 – Maintenance Bracket 3 Recycle variant N62.d.1.T2						TOTAL:	11.483	0.826	0.256	3.505	
						Any special costs	0.300 -2.811	-0.202	-0.063	-0.858	

PABS Appraisal Summary Table - N62d.1.T3						
Scheme Option: N62 Templemore to Thurles	Description: 11.681km upgrade to S2 Type 3 standard	Problems Identified:	Budget Cost (million) €12.44	Problems Identified:		
				<ul style="list-style-type: none"> • Lane widths are less than 3m wide for 52% of the corridor and are less than 3.5m for 79% of the corridor. • On corridor 62d, between Templemore and Thurles there are a number of areas with visibility in the 20 to 120 m range. Two of note include a section of approx 2km beginning 2km south of Templemore. A further section begins approx 5km south of Templemore and stretches for approx 3km. • The corridor between Templemore and Thurles has 6 fatal accidents recorded over the recent accident history data, indicating there may be a significant accident problem on this corridor. 		
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		79 households affected in 2025 0 tonnes of carbon saved in 2025	€0.002 €0.000	No	4.0
	Noise and vibration Landscape and visual quality		79 households affected in 2025	-€0.064	No	2.9
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on Templemore Wood pNHA (000942) and on Cabragh Wetlands pNHA (001934).			No	3.0
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including Earthworks, an Enclosure and two NIAH Structures.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces.			No	4.0
Safety	Accident reduction Security	The proposed realignment may impact indirectly on the River Suir.	0.2 accidents saved in 2025	€2.645	No	3.0
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.	65 vehicle-hours per day in travel time saved in 2025	€3.734 €3.245 €0.000		5.4
	Other economic impacts		Imperfect competition effects	PVC Residual value €7.349 €0.457		5.8
	Funding	Not assessed		€0.325		4.0
Accessibility and Social Inclusion	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration					5.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.3
				NPV	€2.994	Total
				BCR	1.41	Red Flagged
						4.9
						No

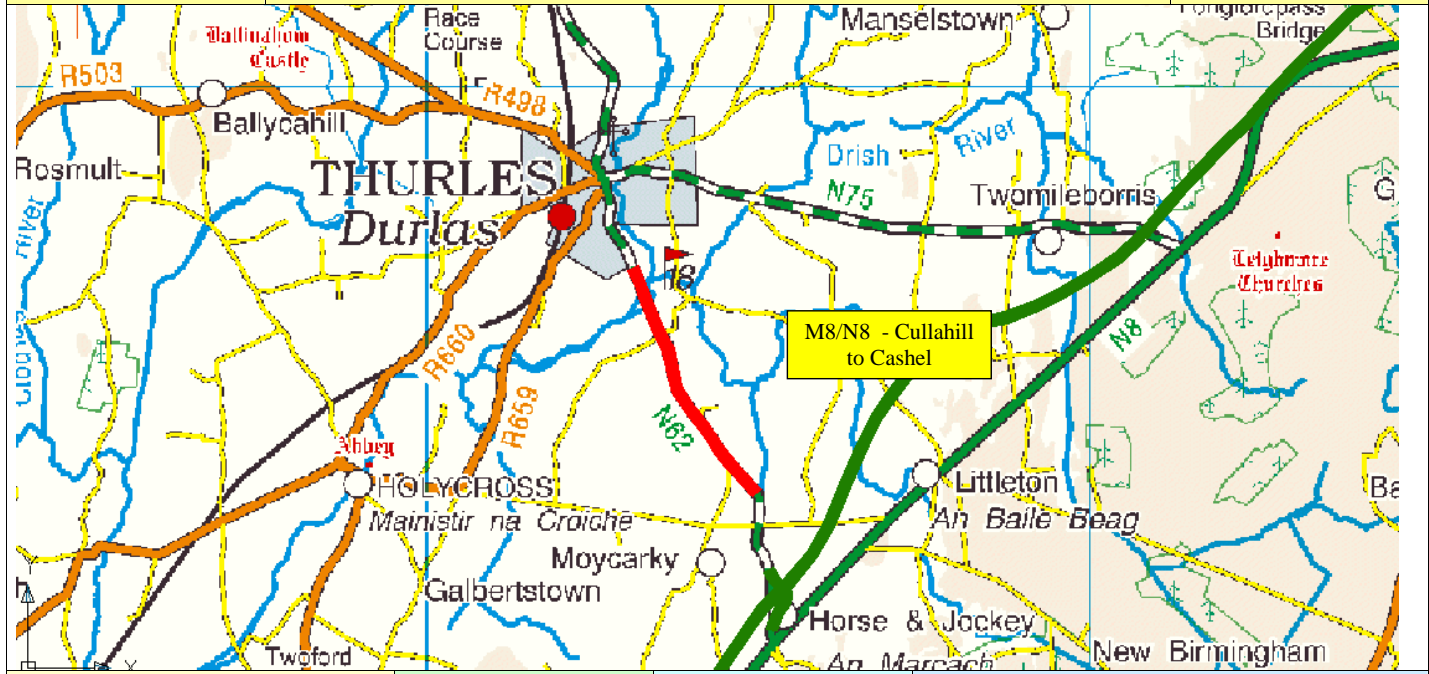
N62.e.1.T1			Name: Thurles to Horse & Jockey (N8)					Type: S2 Type 1			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120297 (Former link no. 112906)	0.705 (Former link length 2.370)	75	N/A	0.0	3301	0.705	2.186	0.635	0.092	0.212	
105457	3.410	76.5	N/A	0.0	3301	3.410	10.571	3.069	0.443	1.023	
Thurles to Horse & Jockey (N8)	Total 4.115					Total 4.115					
<p>Notes:</p> <p>From the tie in to the Interchange with the recently opened M8/N8 Cullahill to Cashel Scheme this route is to approx Type 2 standard until Pouldine. This section is not therefore proposed to be upgraded further here. The remainder of the scheme is close to Type 2 standard. There are some short overtaking opportunities and one decent one at the approach to Thurles.</p> <p>The existing Turtulla Bridge over the over the River Suir is wide enough to accommodate this upgrade.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. stream crossing.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 2.6 to 3.5– Maintenance Bracket 2</p> <p>Split link 112906 @ approx (214957, 153926) – resulting link 120297</p>						TOTAL:	12.757	3.704	0.535	1.235	
						Any special costs	0.000	0.000	0.000	0.000	
						Grand Total	18.231				

PABS Appraisal Summary Table - N62e.1.11						
Scheme Option: N62 Thurles to Horse & Jockey (N8)		Description: 4.115km upgrade to S2 Type 1 standard	Problems Identified:		Budget Cost (million) €18.23	
			<ul style="list-style-type: none"> Lane widths are less than 3m wide for 11% of the corridor and are less than 3.5m for 35% of the corridor. Between Thurles and the Horse and Jockey there are a number of accidents but they do not seem to be established in clusters. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		66 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.033 €0.000	No	3.7
	Noise and vibration Landscape and visual quality	Not assessed	66 households affected in 2025	-€0.327	No	1.0
	Biodiversity	The proposed realignment may impact indirectly on the Lower River Suir SAC (002137).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Water Mill, an NIAH Structure, an Enclosure and a Ringfort – Rath.			Yes	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas but with one section through existing Artificial Surfaces.			No	3.0
Safety	Water resources	The proposed realignments in this section of the N62 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			Yes	3.0
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.4 accidents saved in 2025	€8.788		7.0
Economy	Transport Efficiency and Effectiveness		98 vehicle-hours per day in travel time saved in 2025	Non-work Work €5.180 €5.900		5.4
	Other economic impacts			Active travel €0.000		
	Funding	Not assessed		PVC Residual €12.293 €1.098		
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	Imperfect competition effects	€0.590		5.9
Accessibility and Social Inclusion	Transport integration					4.0
	Land-use integration		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Geographical integration					6.0
	Integration with other government policies					4.6
Integration						4.2
				NPV	€8.903	Total
				BCR	1.72	Red Flagged
						4.9
						Yes

N62.e.1.T2

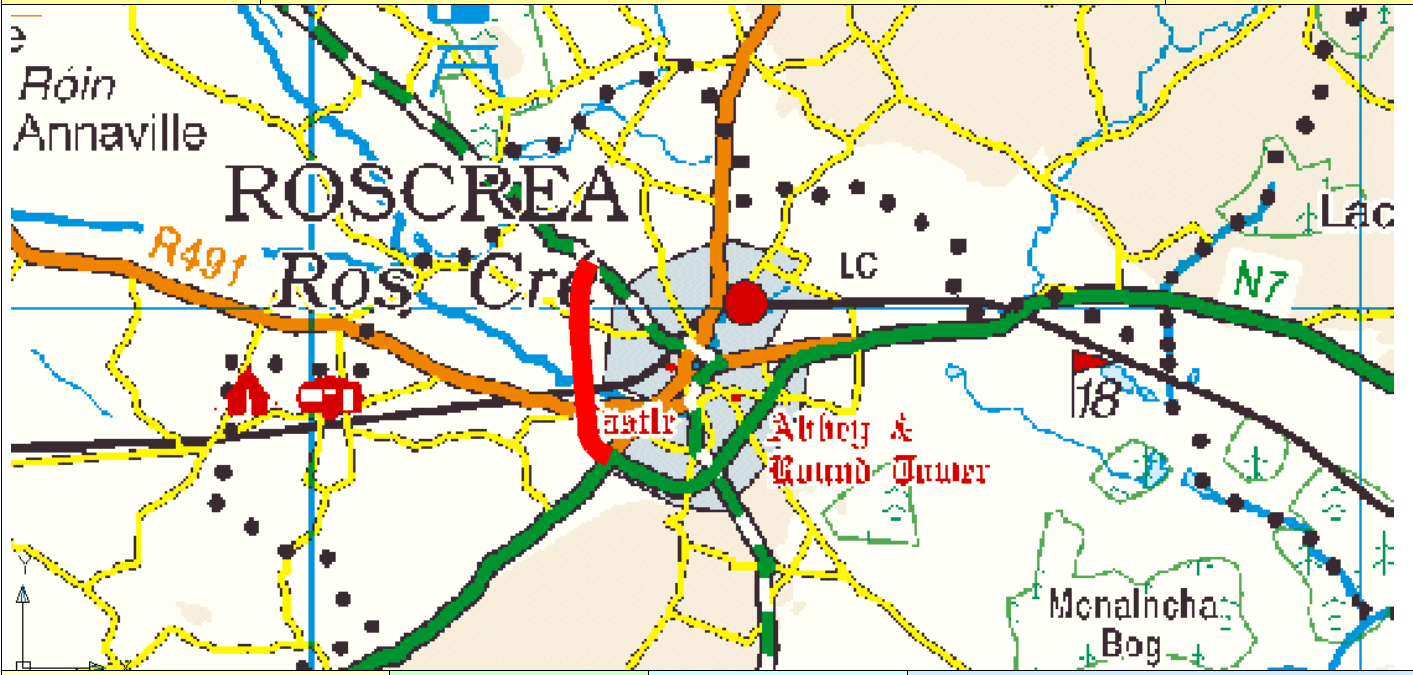
Name: Thurles to Horse & Jockey (N8)

Type: S2 Type 2

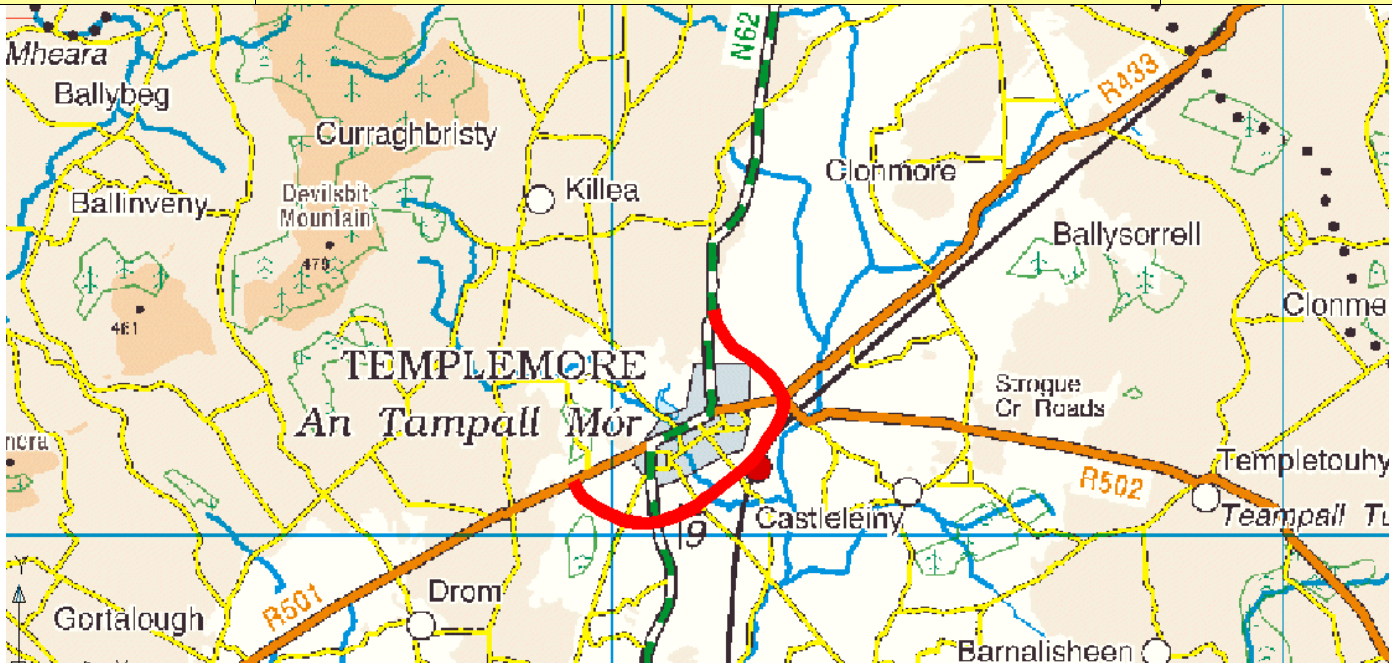


Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120297 (Former link no. 112906)	0.705 (Former link length2.370)	75	N/A	0.0	3303	0.705	1.061	0.177	0.037	0.212	
105457	3.410	76.5	1.8	0.5	3303	3.391	4.743	0.624	0.137	1.023	
Thurles to Horse & Jockey (N8)	Total 4.115					Total 4.096					
Notes: From the tie in to the Interchange with the recently opened M8/N8 Cullahill to Cashel Scheme this route is to approx Type 2 standard until Pouldine. This section is not therefore proposed to be upgraded further here. The remainder of the scheme is close to Type 2 standard. There are some short overtaking opportunities and one decent one at the approach to Thurles. The existing Turtulla Bridge over the over the River Suir is wide enough to accommodate this upgrade. There are no environmentally designated areas in the vicinity of this route. 1 No. stream crossing. High Traffic Good Subgrade – Maintenance Category 2 IRI 2.6 to 3.5– Maintenance Bracket 2 Split link 112906 @ approx (214957, 153926) – resulting link 120297							TOTAL:	5.804	0.801	0.175	1.235
							Any special costs	0.000	0.000	0.000	0.000
							Grand Total	8.015			

PABS Appraisal Summary Table - N62e.1.T2						
Scheme Option: N62 Thurles to Horse & Jockey (N8)		Description: 4.096km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €0.02	
			<ul style="list-style-type: none"> Lane widths are less than 3m wide for 11% of the corridor and are less than 3.5m for 35% of the corridor. Between Thurles and the Horse and Jockey there are a number of accidents but they do not seem to be established in clusters. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		66 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.011 €0.000	No	3.8
	Noise and vibration Landscape and visual quality	Not assessed	66 households affected in 2025	-€0.327	No	1.0
	Biodiversity	The proposed realignment may impact indirectly on the Lower River Suir SAC (002137).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Water Mill, an NIAH Structure, an Enclosure and a Ringfort – Rath.			Yes	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas but with one section through existing Artificial Surfaces.			No	4.0
Safety	Water resources	The proposed realignments in this section of the N62 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			Yes	3.0
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€4.192		7.0
Economy	Transport Efficiency and Effectiveness		54 vehicle-hours per day in travel time saved in 2025	€2.844 €3.376 €0.000		5.8
	Other economic impacts			PVC Residual value		
	Funding	Not assessed	Imperfect competition effects	€0.338		6.6
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	0 CLAR zones experience improved access to Hub/Gateway			4.0
Accessibility and Social Inclusion	Transport integration					6.0
	Land-use integration					4.6
	Geographical integration					4.2
	Integration with other government policies					4.2
				NPV	Total	5.1
				BCR	Red Flagged	Yes

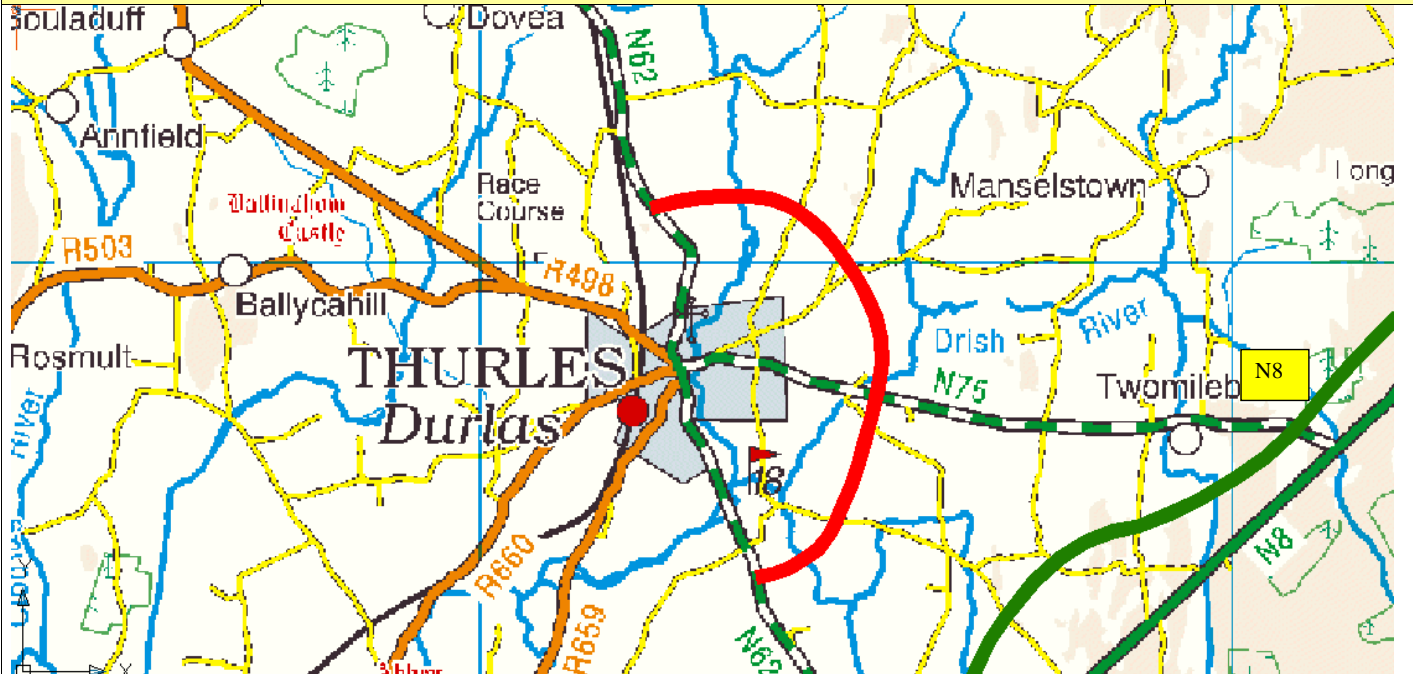
N62.r.3.T1			Name: Roscrea Relief Road					Type: S2 Type 1			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120313	1.441	N/A	N/A	0.0	3301	1.441	4.467	1.297	0.187	0.432	
120316	0.518	N/A	N/A	0.0	3301	0.518	1.606	0.466	0.067	0.155	
Roscrea Relief Road						Total 1.959					
<p>Notes:</p> <p>This route passes to the west of Roscrea and connects the N62, the R491 and the N7. It bypasses a number of junctions and bends within the town of Roscrea.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. Bunow River Crossing (minor structure)</p> <p>1 No junction with the R491</p> <p>Connects in to existing roundabout where the R445 connects with the N7.</p> <p>2 No junctions with local roads.</p> <p>Crosses 2 No. local accesses.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Split Link 118716 @ (212664, 190425)</p> <p>Split Link 101463 @ (212535, 189015)</p> <p>Split Link 118716 @ (212804, 188584)</p>							TOTAL:	6.073	1.763	0.255	0.588
							Any special costs	0.200	0.000	0.000	0.000
							Grand Total	8.879			

PABS Appraisal Summary Table - N62r.3.T1						
Scheme Option: N62 Roscrea Relief Road		Description: 1.959km upgrade to S2 Type 1 standard		Problems Identified:		Budget Cost (million) €8.88
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025	€0.000	No	4.0
	Noise and vibration		0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Landscape and visual quality	Not assessed	0 households affected in 2025		Not assessed	4.0
	Biodiversity	The proposed realignment will not impact directly or indirectly on any European or Nationally designated sites.			No	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Mound and an NIAH Structure.			No	3.0
Safety	Landuse	The proposed realignments will be within a combination of Agricultural Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N62 will cross the Bunow River.			No	3.0
	Accident reduction	No additional facility for walkers and cyclists is to be provided.	0.9 accidents saved in 2025	€2.879		7.0
						4.0
Economy	Transport Efficiency and Effectiveness		88 vehicle-hours per day in travel time saved in 2025	Non-work Work €4.593 €4.422 €0.000		6.1
				PVC Residual value €6.308 €0.531		
	Other economic impacts		Imperfect competition effects	€0.442		6.8
	Funding	Not assessed				4.0
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		2 CLAR zones experience improved access to Hub/Gateway			6.0
Integration	Transport integration					6.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.3
				NPV BCR	Total 2.04	5.3 No

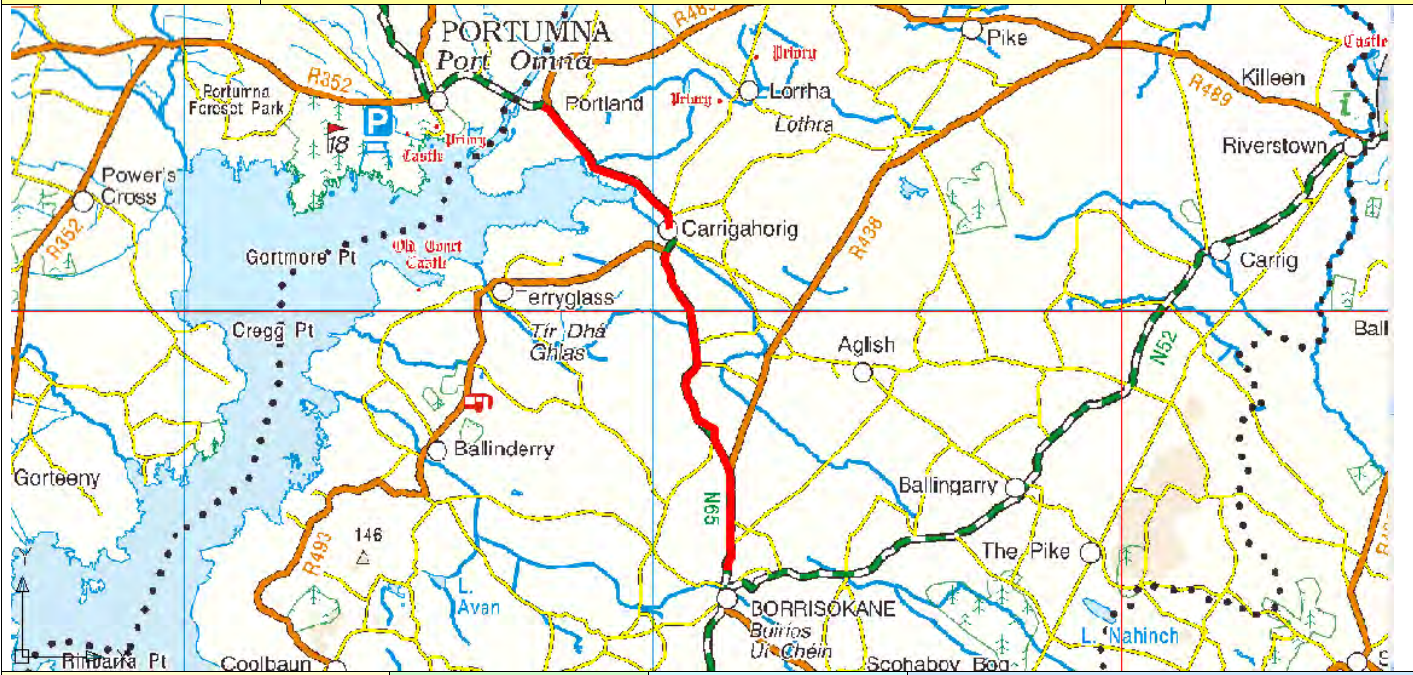
N62.r.4.T1			Name: Templemore Relief Road					Type: S2 Type 1		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120137	1.513	N/A	N/A	0.0	3301	1.513	4.690	1.362	0.197	0.454
120322	2.411	N/A	N/A	0.0	3301	2.411	7.474	2.170	0.313	0.723
120323	1.216	N/A	N/A	0.0	3301	1.216	3.770	1.094	0.158	0.365
Templemore Relief Road						Total 5.140				
Notes: This route passes to the east and south of Templemore and connects the N62 southbound, the R433, the R502, the N62 southbound and the R501. It bypasses a number of junctions and bends within the town. There are no environmentally designated areas in the vicinity of this route. 2 No. stream crossings. 3 No junctions with local roads. Crosses 1 No. local accesses. High Traffic Good Subgrade – Maintenance Category 2 Split link 118721 @ (210594, 170640) Split link 105062 @ (209389, 170805) Link 120317 joins nodes 52882 and 52752.						TOTAL:	15.934	4.626	0.668	1.542
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	22.770			

PABS Appraisal Summary Table - N62r.4.11						
Scheme Option: N62 Templemore Relief Road		Description: 5.14km upgrade to S2 Type 1 standard	Problems Identified:			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000 €0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on Templemore Wood pNHA (000942).			No	3.0
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two NIAH Structures and an Enclosure.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces. The proposed realignments in this section of the N62 will not cross any watercourses.			No	4.0
Safety	Accident reduction		0.8 accidents saved in 2025		No	3.0
	Security	No additional facility for walkers and cyclists is to be provided.		€3.426		5.4
Economy	Transport Efficiency and Effectiveness		91 vehicle-hours per day in travel time saved in 2025	Non-work Work €5.743 €5.136 €0.000		4.8
	Other economic impacts			PVC Residual value €19.866 €1.372		
	Funding	Not assessed	Imperfect competition effects	€0.514		5.0
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.5
Integration	Transport integration					5.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.3
				NPV BCR	Total Red Flagged	4.6 No
				-€3.674 0.82		

Budget
Cost
(million)
€22.77

N62.r.5.T1			Name: Thurles Relief Road					Type: S2 Type 1		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120340	3.785	N/A	N/A	0.0	3301	3.785	11.734	3.407	0.492	1.136
120352	2.839	N/A	N/A	0.0	3301	2.839	8.801	2.555	0.369	0.852
Thurles Relief Road						Total 6.624				
<p>Notes:</p> <p>This route passes to the east of Thurles and connects the N62 to Templemore, the N75 to the M8/N8 and the N62 to Cork. A scheme similar to this (N62 Thurles Bypass is currently at Route Selection Stage). The scheme represented here is very similar to the Green Route being put forward in the route selection process. This route was chosen here as it has the potential to be extended at a later date to tie in to the following routes; the R498 to Nenagh; the R659 to Cashel; and the R660 to Tipperary.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No River Suir Crossing (medium / large structure) (add cost)</p> <p>1 No. Drish River Crossing (medium structure) (add cost)</p> <p>1 No. Poulaneigh River Crossing (minor crossing) (add cost)</p> <p>5 No junctions with local roads.</p> <p>1 No junction with the N75</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Split Link 118722 @ (212603, 160413)</p> <p>Split Link 118722 @ (215193, 158275)</p> <p>Split Link 118722 @ (213633, 156049)</p>						TOTAL:	20.534	5.962	0.861	1.987
						Any special costs	1.200	0.000	0.000	0.000
						Grand Total	30.544			

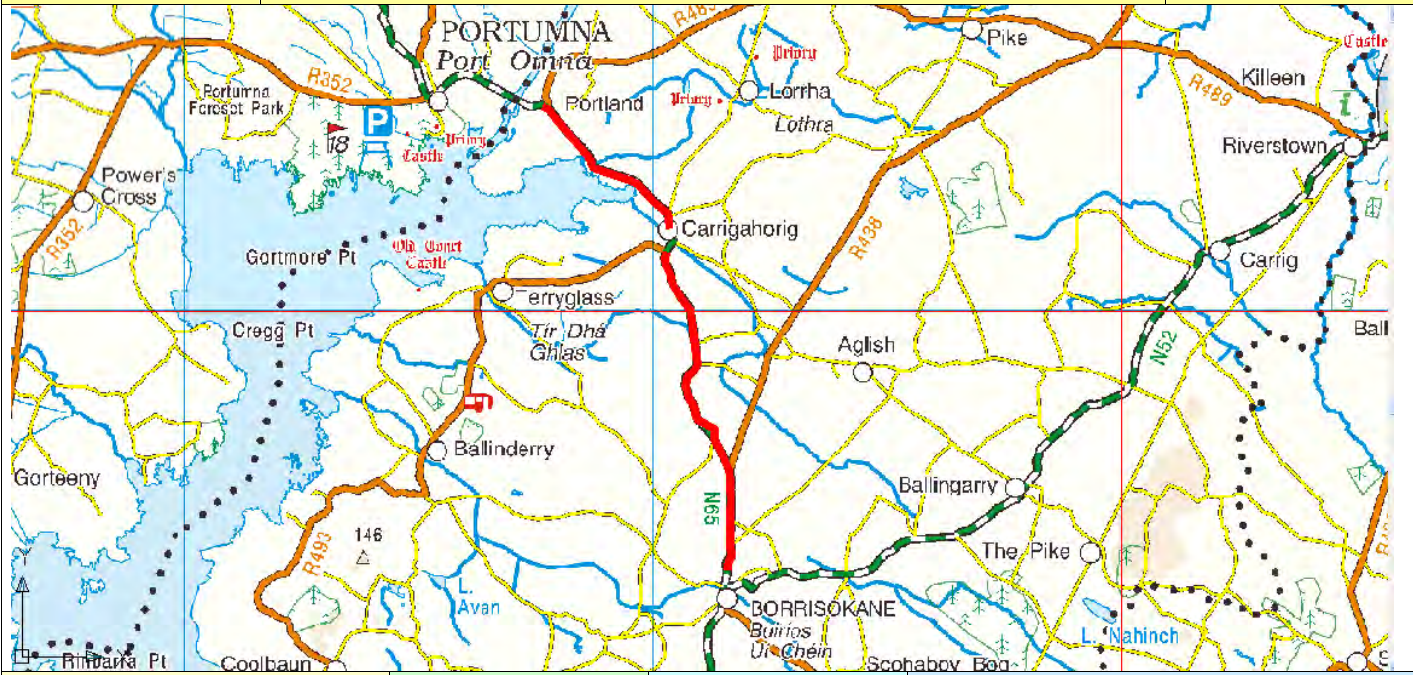
PABS Appraisal Summary Table - N62r.5.T1						
Scheme Option: N62 Thurles Relief Road		Description: 6.624km upgrade to S2 Type 1 standard	Problems Identified:			
						Budget Cost (million) €0.54
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Lower River Suir SAC (002137) and the Cabragh Wetlands pHNA (001934).			Yes	3.0
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including an Enclosure, a Mill – Unclassified and an NIAH Structure.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
Safety	Accident reduction	The proposed realignments in this section of the N62 will cross the Rivers Suir and Drish. Both of which discharge to the Lower River Suir SAC (002137).			Yes	3.0
	Security	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€1.080		4.3
Economy	Transport Efficiency and Effectiveness		74 vehicle-hours per day in travel time saved in 2025	Non-work Work €4.387 €2.851 €0.000		4.4
	Other economic impacts			PVC €27.018 Residual €1.816 value		
	Funding	Not assessed	Imperfect competition effects	€0.285		4.4
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Accessibility and Social Inclusion	Transport integration		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Land-use integration					6.0
	Geographical integration					4.6
	Integration with other government policies					4.2
				NPV	-€16.599	Total
				BCR	0.39	Red Flagged
						4.3
						Yes

N65.a.1.T2			Name: Borrisokane to Portumna					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
104409	2.160	70	4.6	2.0	3304	2.117	3.930	0.938	0.188	0.648	
118797	2.772	70	4.6	2.0	3304	2.717	5.043	1.203	0.241	0.832	
118796	2.412	72	4.5	1.6	3303	2.374	4.114	0.888	0.181	0.724	
Break at Carrigahorig											
118795	2.339	72	4.5	1.6	3303	2.302	3.989	0.861	0.175	0.702	
118793	1.591	75	2.2	0.5	3304	1.583	2.394	0.398	0.084	0.477	
Borrisokane to Portumna	Total 11.274					Total 11.093					
Notes: This route is predominantly narrow and is bendy in places. The vertical alignment is relatively flat although there are some local hilly sections. The pavement condition is also very poor in places especially immediately south of Carrigahorig and also between Ballyeiragh Bridge and the junction with the R489. There is relatively poor overtaking along this route. There are a number of short overtaking sections but only one of any great length which is located just south of the junction with the R489. There is a short section (approx 610m) at the junction with the R438 that is already to Type 2 standard approx and has therefore been removed from the costs of this scheme. The section from Portumna Bridge to Portumna Town is not included for upgrade here as it is within a speed limit restriction and is also quite built up and has existing footpaths. This section would however benefit from resurfacing. This route passes close to Lough Derg and the River Shannon near Portumna. These are environmentally designated as SPA's, NHA's and SAC's. The route also passes between two small lakes near Drum. These lakes are environmentally designated as Natural Heritage Areas. Existing stone bridges at Ballycasey are wide enough to accommodate this upgrade. 1 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	19.470	4.289	0.869	3.382	
						Any special costs	-1.053	-0.232	-0.047	-0.183	

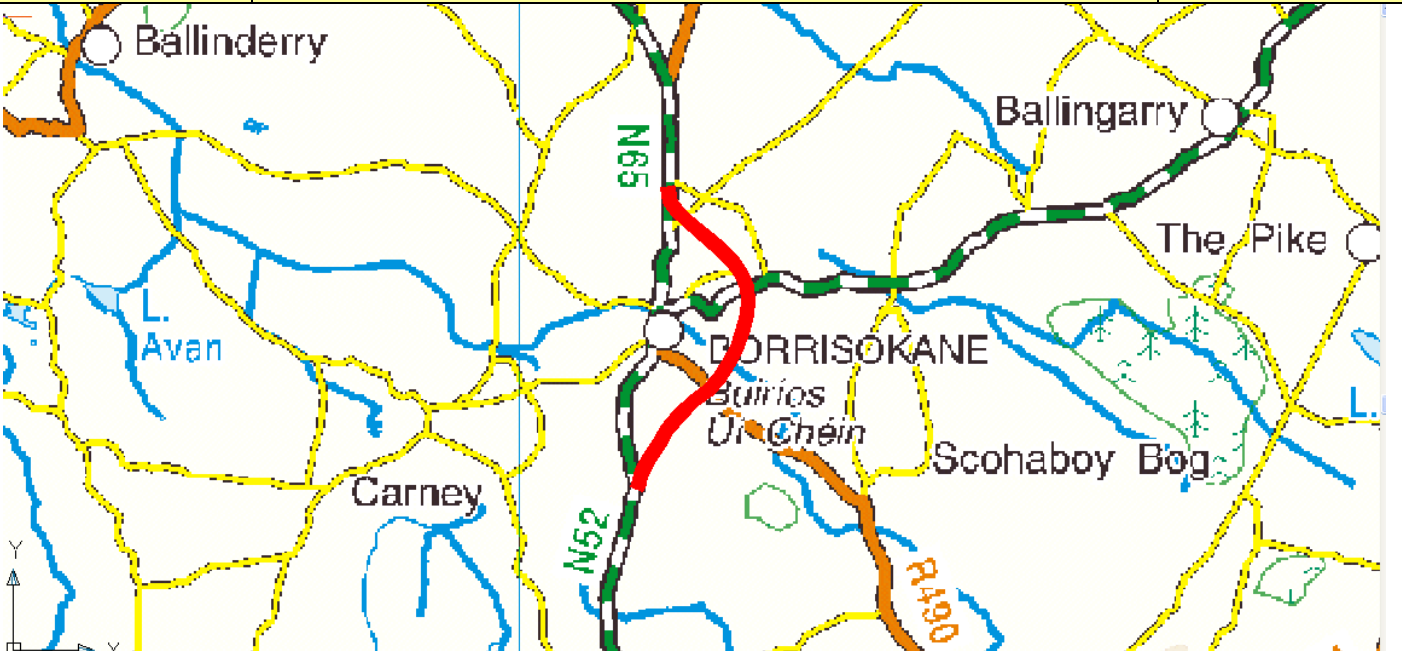
PABS Appraisal Summary Table - N65a.1.T2						
Scheme Option: N65 Borrisokane to Portumna		Description: 11.093km upgrade to S2 Type 2 standard	Problems Identified: • Some 57.3 % of the route, is below the desirable minimum of 3m with 75.6% has a lane width less than 3.5m. • Poor sightlines identified from Killinor north west towards Loughrea for approx 7km. • Poor sightlines identified from Portumna north towards Kilmor for approximately 5km. • Poor sightlines identified from Carrigahorig south for approximately 7km to the junction with the R438 • Apparent accident cluster north of Portumna coinciding with a location of poor lane widths and visibility. • Some 16km of the route (40%) has an IRI > 4 indicating a high percentage of the route is below the intervention threshold.			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		46 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.026 €0.000	No	3.8
	Noise and vibration Landscape and visual quality		46 households affected in 2025	-€0.094	No	3.3
	Biodiversity				Not assessed	4.0
		The proposed realignments may indirectly impact on Fiagh Bog pNHA (000932) and directly impact on Spring Park Wetlands pNHA (000941), and Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011).			Yes	1.0
	Cultural Heritage / archaeology		There are no Heritage sites within the 100m of the proposed realignment.		No	4.0
	Landuse		The proposed realignments will be primarily within Agricultural Areas, with a small section through Forest and Semi Natural Areas.		No	4.0
Safety	Water resources				Yes	1.0
	Accident reduction		0.7 accidents saved in 2025	€7.106		7.0
	Security		No additional facility for walkers and cyclists is to be provided.			4.0
	Transport Efficiency and Effectiveness		116 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €7.584 €5.317 €0.000		5.1
Economy				PVC Residual value €17.097 €1.381		
	Other economic impacts		Imperfect competition effects	€0.532		5.2
	Funding					4.0
	Vulnerable groups					4.0
Accessibility and Social Inclusion	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.1
	Transport integration					4.0
	Land-use integration					4.3
	Geographical integration					4.9
Integration	Integration with other government policies					4.9
				NPV	€4.702	Total
				BCR	1.28	Red Flagged
						4.7
						Yes

Problems Identified:

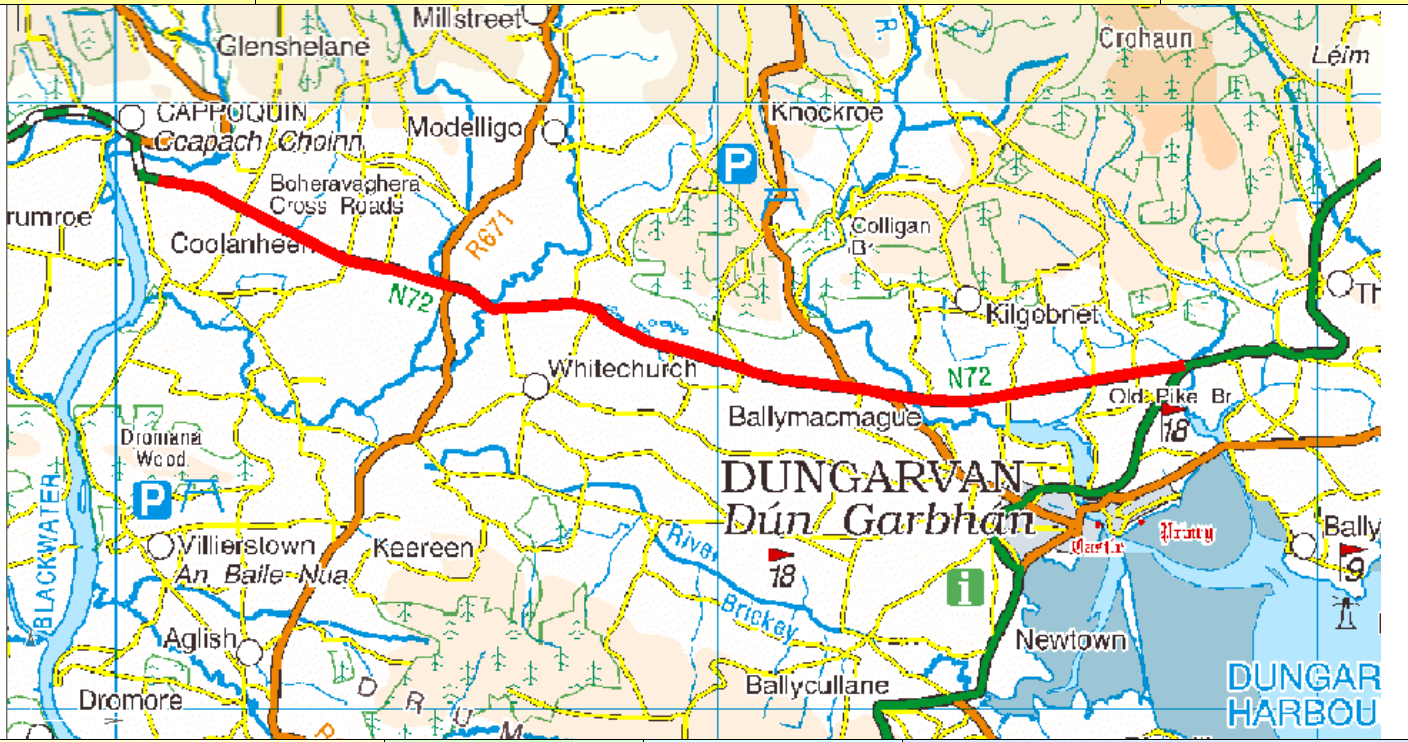
- Some 57.3 % of the route, is below the desirable minimum of 3m with 75.6% has a lane width less than 3.5m.
- Poor sightlines identified from Killimor north west towards Loughrea for approx 7km.
- Poor sightlines identified from Portumna north towards Killimor for approximately 5km.
- Poor sightlines identified from Carrigahorig south for approximately 7km to the junction with the R438
- Apparent accident cluster north of Portumna coinciding with a location of poor lane widths and visibility.
- Some 16km of the route (40%) has an IRI > 4 indicating a high percentage of the route is below the intervention threshold.

N65.a.1.T3			Name: Borrisokane to Portumna					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
104409	2.160	70	1.9	0.2	3307	2.156	2.406	0.299	0.087	0.648
118797	2.772	70	1.9	0.2	3307	2.766	3.088	0.384	0.112	0.832
118796	2.412	72	1.7	0.1	3306	2.409	2.533	0.254	0.076	0.724
Break at Carrigahorig										
118795	2.339	72	1.7	0.1	3306	2.336	2.456	0.246	0.073	0.702
118793	1.591	75	0.6	0.0	3305	1.591	1.496	0.078	0.025	0.477
Borrisokane to Portumna	Total 11.274					Total 11.258				
Notes: This route is predominantly narrow and is bendy in places. The vertical alignment is relatively flat although there are some local hilly sections. The pavement condition is also very poor in places especially immediately south of Carrigahorig and also between Ballyeiragh Bridge and the junction with the R489. There is relatively poor overtaking along this route. There are a number of short overtaking sections but only one of any great length which is located just south of the junction with the R489. There is a short section (approx 610m) at the junction with the R438 that is already to Type 2 standard approx and has therefore been removed from the costs of this scheme. The section from Portumna Bridge to Portumna Town is not included for upgrade here as it is within a speed limit restriction and is also quite built up and has existing footpaths. This section would however benefit from resurfacing. This route passes close to Lough Derg and the River Shannon near Portumna. These are environmentally designated as SPA's, NHA's and SAC's. The route also passes between two small lakes near Drum. These lakes are environmentally designated as Natural Heritage Areas. Existing stone bridges at Ballycasey are wide enough to accommodate this upgrade. 1 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	11.979	1.262	0.373	3.382
						Any special costs	-0.648	-0.068	-0.020	-0.183
						Grand Total	16.077			

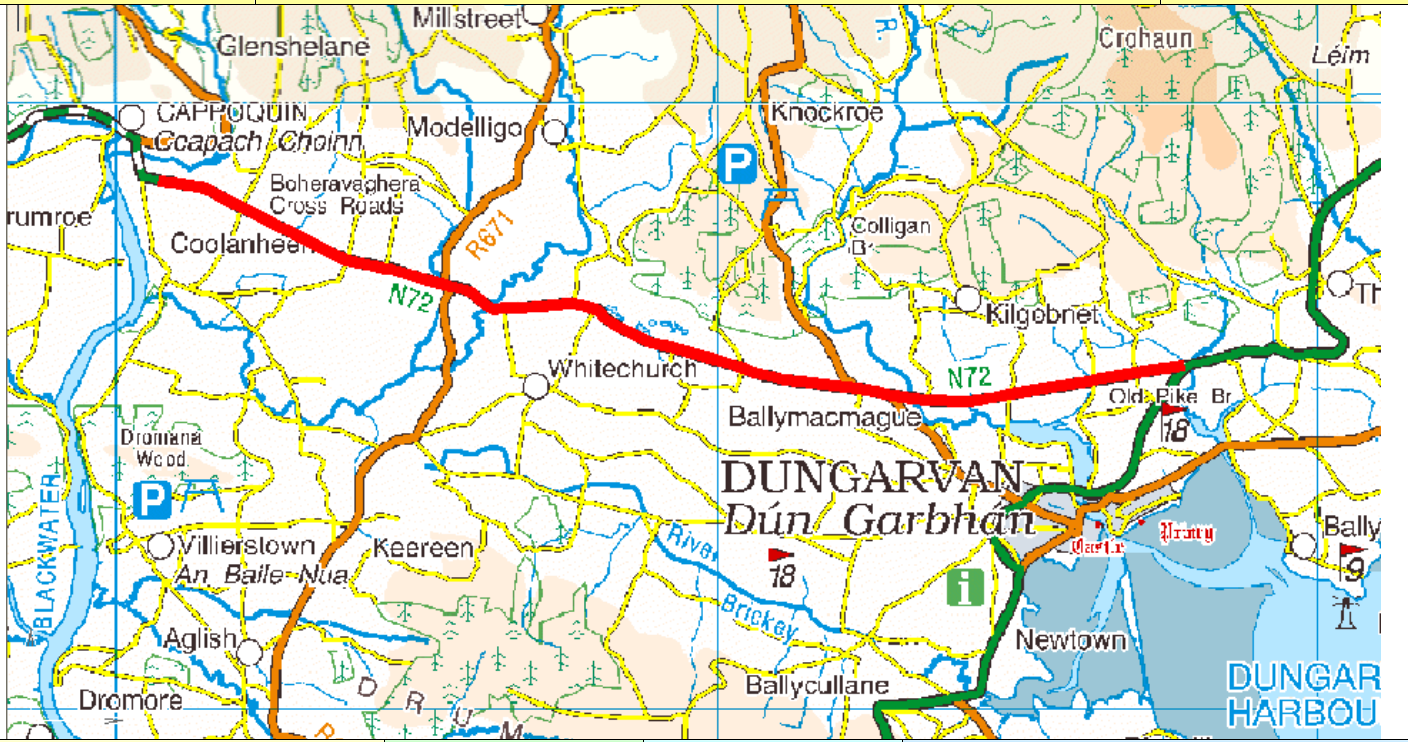
PABS Appraisal Summary Table - N65a.1.T3						
Scheme Option: N65 Borrisokane to Portumna	Description: 11.258km upgrade to S2 Type 3 standard	Problems Identified: <ul style="list-style-type: none"> Some 57.3 % of the route, is below the desirable minimum of 3m with 75.6% has a lane width less than 3.5m. Poor sightlines identified from Killimor north west towards Loughrea for approx 7km. Poor sightlines identified from Portumna north towards Killimor for approximately 5km. Poor sightlines identified from Carrigahorig south for approximately 7km to the junction with the R438 Apparent accident cluster north of Portumna coinciding with a location of poor lane widths and visibility. Some 16km of the route (40%) has an IRI > 4 indicating a high percentage of the route is below the intervention threshold. 	Budget Cost (million) €16.08			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		46 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.9
	Noise and vibration Landscape and visual quality	Not assessed	46 households affected in 2025	-€0.054	No	3.3
	Biodiversity	The proposed realignments may indirectly impact on Fiagh Bog pNHA (000932) and directly impact on Spring Park Wetlands pNHA (000941), and Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011).			Not assessed	4.0
	Cultural Heritage / archaeology	There are no Heritage sites within the 100m of the proposed realignment.			Yes	1.0
	Landuse	The proposed realignments will be primarily within Agricultural Areas, with a small section through Forest and Semi Natural Areas.			No	4.0
Safety	Water resources	The proposed realignment will cross Lorraha Stream which discharges into Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011). It will also directly impact on Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011).			Yes	1.0
	Accident reduction		0.2 accidents saved in 2025	-€0.037		3.9
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
	Transport Efficiency and Effectiveness		53 vehicle-hours per day in travel time saved in 2025	€2.752		4.9
	Other economic impacts			€3.160		
Accessibility and Social Inclusion	Funding	Not assessed		€0.000		
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				
	Deprived geographic areas					
	Transport integration					
	Land-use integration					
Integration	Geographical integration					
	Integration with other government policies					
				NPV	-€2.938	Total
				BCR	0.70	Red Flagged
						4.4
						Yes

N65.r.1.T3			Name: Borrisokane Relief Road				Type: S2 Type 3			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120252	1.461	N/A	N/A	0.0	3305	1.461	2.518	0.720	0.187	0.432
120251	1.189	N/A	N/A	0.0	3305	1.189	2.049	0.585	0.152	0.351
120250	1.470	N/A	N/A	0.0	3305	1.470	2.533	0.724	0.188	0.434
Borrisokane Relief Road						Total 4.120				
Notes: This route passes to the east of Borrisokane and bypasses the congested urban area within Borrisokane and links with the N53 and R490 as well as a number of local roads. There are no environmentally designated areas in the vicinity of this route. 1 No stream crossing. 1 No. Ballyfinboy River Crossing (minor structure) 2 No junctions with local roads. Runs on top of an existing local road at Gaulross for approx 200m. High Traffic Good Subgrade – Maintenance Category 2 Split link 104409 (N65) @ 191,640 195,430 Split link 118834 (N52) @ 192,500 194,360 Split link 105669 (R490) @ 192,090 193,280 Split link 118801 (N52 Sth) @ 191,290 192,200 Pro rata scheme among the Four links.						TOTAL:	7.100	2.029	0.527	1.217
						Any special costs	0.100	0.000	0.000	0.000
						Grand Total	10.973			

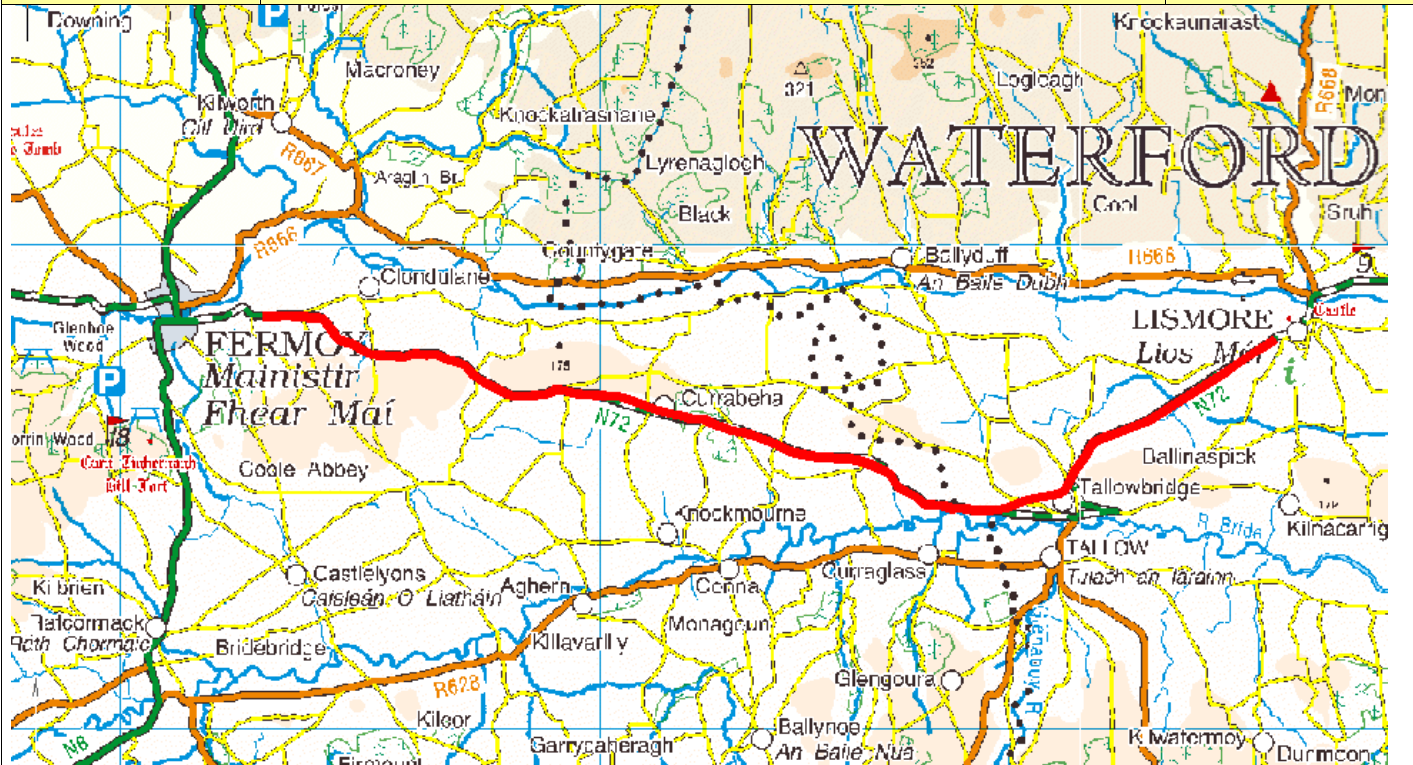
PABS Appraisal Summary Table - N65r.1.T3						
Scheme Option: N65 Borrisokane Relief Road		Description: 4.12km upgrade to S2 Type 3 standard	Problems Identified:			
						Budget Cost (million) €10.97
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will cross Ballyfinboy River which discharges into Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011), potential for indirect impacts.			Yes	3.0
	Landuse Water resources	The proposed realignment will not bring any heritage sites within 100m of the route. The proposed realignments will be within Agricultural Areas. The proposed realignment will cross Ballyfinboy River which discharges into Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011).			No	4.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	1.2 accidents saved in 2025	€2.920		7.0
Economy	Transport Efficiency and Effectiveness		237 vehicle-hours per day in travel time saved in 2025	Non-work Work €15.157 €18.990		7.0
	Other economic impacts			Active travel €0.000		
	Funding	Not assessed		PVC Residual value €7.315 €0.610		
	Vulnerable groups Deprived geographic areas	None of the route corridor is within 4km of a settlement of 1,500 people or more.	Imperfect competition effects	€1.899		7.0
Accessibility and Social Inclusion	Transport integration		1 CLAR zones experience improved access to Hub/Gateway			4.0
	Land-use integration					4.0
	Geographical integration					4.3
	Integration with other government policies					4.9
				NPV	€32.262	Total
				BCR	5.41	Red Flagged
						5.4
						Yes

N72.a.1.T1			Name: Junction with N25 (Dungarvan) to Cappoquin						Type: S2 Type 1	
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
106580	5.050	78.5	N/A	0.0	3301	5.050	15.531	4.509	0.651	1.503
106579	0.300	78.5	N/A	0.0	3301	0.300	0.930	0.270	0.039	0.09
107670	2.550	78.5	N/A	0.0	3301	2.550	7.936	2.304	0.333	0.768
119121	0.900	78.5	N/A	0.0	3301	0.900	2.790	0.810	0.117	0.27
119120	3.802	75.0	N/A	0.0	3301	3.802	11.749	3.411	0.493	1.137
106554	0.130	79.5	N/A	0.0	3301	0.130	0.434	0.126	0.018	0.042
106979	1.240	79.5	N/A	0.0	3301	1.240	3.875	1.125	0.163	0.375
119123	2.368	79.5	N/A	0.0	3301	2.368	7.316	2.124	0.307	0.708
119125	1.487	76.5		0.0	3301	1.487	4.588	1.332	0.192	0.444
Dungarvan to Cappoquin	Total 17.827					Total 17.827				
<p>Notes:</p> <p>5 No. Bridge widenings</p> <p>Alignment is relatively straight forward for most of the route from N20 but overtaking is limited due to vertical alignment in places. An objective to increase overtaking might be worth pursuing on this route</p> <p>3 No pinch points with houses / out buildings close to the road.</p> <p>N72 does not have priority at Ballymacmague South</p> <p>Very bendy and hilly vertical section at the approach to Cappoquin (3 km) with no overtaking</p> <p>Note: existing Type 1 standard for approx 1km, circa 4km from Cappoquin – therefore discount applied</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>Type 1 road set to class 3301 by definition: no changes to length applied.</p>						TOTAL:	55.149	16.011	2.313	5.337
						Any special costs	-3.100	0.000	0.000	0.000
						Grand Total	75.710			

PABS Appraisal Summary Table - N72a.1.11						
Scheme Option: N72 Junction with N25 (Dungarvan) to Cappoquin	Description: 17.827km upgrade to S2 Type 1 standard	Problems Identified: <ul style="list-style-type: none"> The width is generally in excess of 3.0m for this corridor. Circa 50% of the corridor indicates a lane width of less than 3.5m. The initial section of this scheme from Dungarvan to Lismore has an historical high frequency of serious accidents. This trend is also supported by the more recent data. 	Budget Cost (million) €5.71			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		106 households affected in 2025 -5 tonnes of carbon saved in 2025	-€0.151 -€0.000	No	3.7
	Noise and vibration Landscape and visual quality		106 households affected in 2025	-€0.139	No	3.7
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170). Care would be needed for any works in this area.			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments, however, a number of sites will be brought within 100m of the realigned section of the route which include a Mound Barrow, Battlefield, Castle – Tower House and a Cross Inscribed Stone.			No	3.0
Safety	Accident reduction Security	The proposed realignment will be within Agricultural Areas.			No	4.0
Economy	Transport Efficiency and Effectiveness	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170).			Yes	2.5
		No additional facility for walkers and cyclists is to be provided.	-5.0 accidents saved in 2025	€3.253		4.5
						4.0
			301 vehicle-hours per day in travel time saved in 2025	Non-work Work €18.911 €16.911		5.0
				Active travel €0.000 PVC €2.086 Residual €4.626 value		
Accessibility and Social Inclusion	Other economic impacts Funding	Imperfect competition effects		€1.691		5.3
	Vulnerable groups Deprived geographic areas	Not assessed Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		9 CLAR zones experience improved access to Hub/Gateway			4.4
						6.0
						4.6
						4.3
						4.2
						4.7
						4.6
						4.2
				NPV	-€6.985	Total
				BCR	0.87	Red Flagged
						4.6
						Yes

N72.a.1.T2			Name: Junction with N25 (Dungarvan) to Cappoquin							Type: S2 Type 2		
												
Scheme Definition			Modelled as		OT Input		Scheme Cost €m					
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S		
106580	5.050	78.5	1.1	0.1	3303	5.045	6.138	0.423	0.108	1.503		
106579	0.300	78.5	1.1	0.1	3303	0.300	0.368	0.025	0.006	0.09		
107670	2.550	78.5	1.1	0.1	3303	2.547	3.136	0.216	0.055	0.768		
119121	0.900	78.5	1.1	0.1	3303	0.899	1.103	0.076	0.019	0.27		
119120	3.802	75.0	2.2	0.7	3304	3.775	5.703	0.949	0.201	1.137		
106554	0.130	79.5	0.5	0.0	3302	0.130	0.159	0.004	0.002	0.042		
106979	1.240	79.5	0.5	0.0	3302	1.240	1.420	0.039	0.014	0.375		
119123	2.368	79.5	0.5	0.0	3302	2.368	2.682	0.074	0.027	0.708		
119125	1.487	76.5	1.9	0.6	3302	1.478	2.059	0.271	0.060	0.444		
Dungarvan to Cappoquin	Total 17.827					Total 17.783						
<p>Notes:</p> <p>5 No. Bridge widenings</p> <p>Alignment is relatively straight forward for most of the route from N20 but overtaking is limited due to vertical alignment in places. An objective to increase overtaking might be worth pursuing on this route</p> <p>3 No pinch points with houses / out buildings close to the road.</p> <p>N72 does not have priority at Ballymacmague South</p> <p>Very bendy and hilly vertical section at the approach to Cappoquin (3 km) with no overtaking</p> <p>Note: existing Type 1 standard for approx 1km, circa 4km from Cappoquin – therefore discount applied</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	22.767	2.079	0.491	5.337		
						Any special costs	-1.750	0.000	0.000	0.000		
						Grand Total	28.924					

PABS Appraisal Summary Table - N72a.1.T2						
Scheme Option: N72 Junction with N25 (Dungarvan) to Cappoquin	Description: 17.783km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> The width is generally in excess of 3.0m for this corridor. Circa 50% of the corridor indicates a lane width of less than 3.5m. The initial section of this scheme from Dungarvan to Lismore has an historical high frequency of serious accidents. This trend is also supported by the more recent data. 	Budget Cost (million) €8.92			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		106 households affected in 2025 -3 tonnes of carbon saved in 2025	-€0.074 -€0.000	No	3.5
	Noise and vibration Landscape and visual quality		106 households affected in 2025	-€0.111	No	3.3
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170). Care would be needed for any works in this area.			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments, however, a number of sites will be brought within 100m of the realigned section of the route which include a Mound Barrow, Battlefield, Castle – Tower House and a Cross Inscribed Stone.			No	3.0
Safety	Accident reduction Security	The proposed realignment will be within Agricultural Areas.			No	4.0
Economy	Transport Efficiency and Effectiveness	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170).			Yes	2.5
		No additional facility for walkers and cyclists is to be provided.	-5.2 accidents saved in 2025	-€5.047		1.9
						4.0
			158 vehicle-hours per day in travel time saved in 2025	Non-work Work €3.929 €8.879		5.5
				Active travel €0.000 PVC €19.406 Residual €1.169 value €0.888		
Accessibility and Social Inclusion	Other economic impacts Funding	Not assessed	Imperfect competition effects			5.8
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		9 CLAR zones experience improved access to Hub/Gateway			4.8
						6.0
						4.6
						4.3
						4.2
				NPV	-€3.773	Total
				BCR	0.81	Red Flagged
						4.5
						Yes

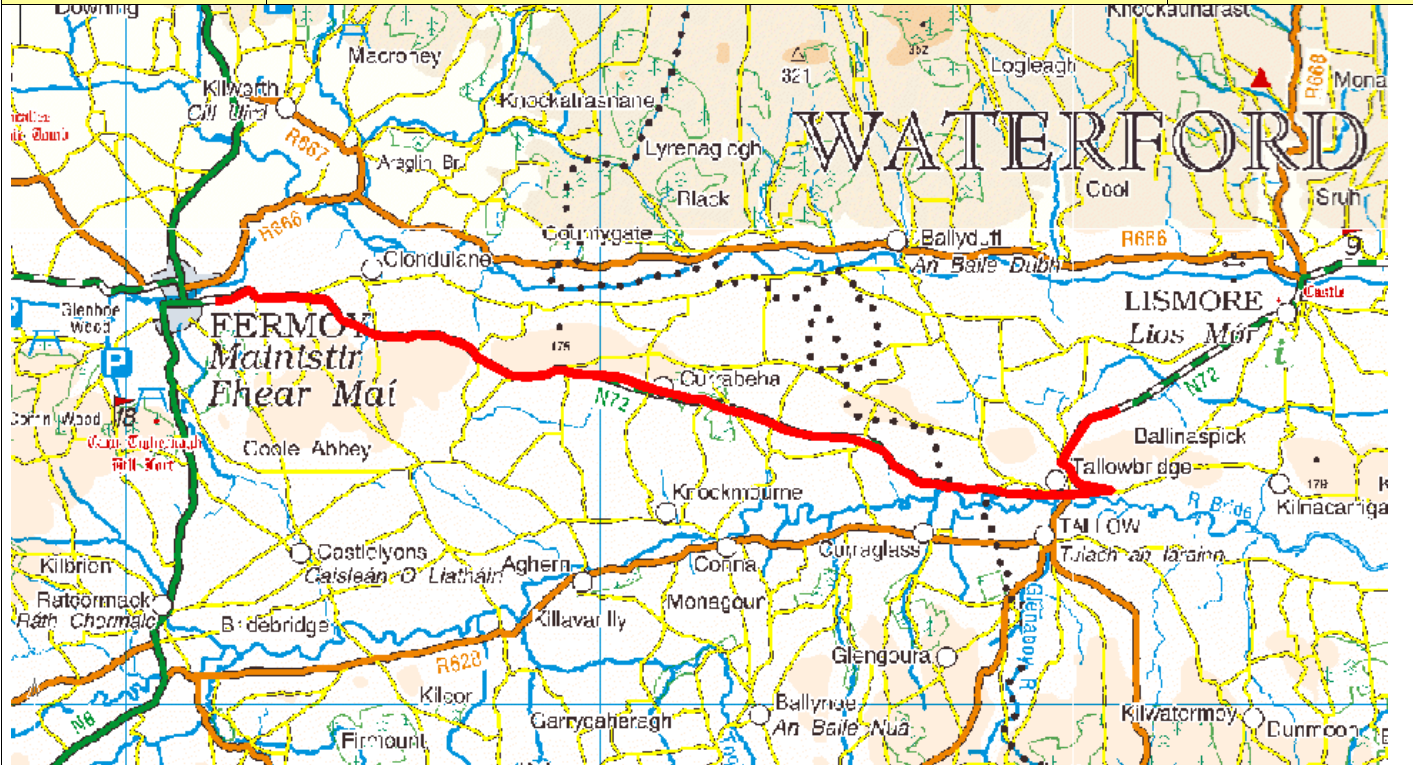
N72.b.1.T2			Name: Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119131	5.308	78.0	1.2	0.2	3303	5.297	6.721	0.584	0.140	1.59
120049 (Former link nos. 119130 & 119133)	2.370 (Former link lengths 2.184 & 0.917)	N/A	N/A	0.0	3303	2.370	5.451	1.659	0.308	0.711
120037 (Former link no. 119135)	1.850 (Former link length 3.350)	71.0	3.8	0.0	3305	1.850	3.264	0.744	0.150	0.555
119137	6.915	75.5	2.2	0.2	3304	6.901	10.113	1.575	0.337	2.067
119139	6.942	73.5	3.1	0.8	3304	6.886	11.139	2.160	0.447	2.076
119138	1.198	67.5	6.9	5.0	3304	1.138	2.308	0.598	0.118	0.357
Lismore to Fermoy	Total 24.583					Total 24.443				
<p>Notes:</p> <p>Route is at least Type 3 standard from Lismore to start of bends into Tallowcross.</p> <p>Bad hairpin at Tallowbridge is bypassed in this option</p> <p>Very bendy section for approx 2.5km west of Littlegrace</p> <p>Bendy section for approx 2km at Curragh Upper</p> <p>3 No pinch points with buildings close to the road</p> <p>Moderate sidelong sections for approx 4.75km</p> <p>Forest area for 2km. Tree lined for approx 6km but not an environmentally designated area.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.5 – 5.0 – Maintenance Bracket 3</p> <p>New link from node 59,610 to new node from splitting link below</p> <p>Split link 119135 for southern end of by pass.</p>						TOTAL:	38.996	7.320	1.500	7.356
						Any special costs	2.000	0.000	0.000	0.000
						Grand Total	57.172			

PABS Appraisal Summary Table - N72b.1.T2						
Scheme Option: N72 Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Description: 24.443km upgrade to S2 Type 2 standard	Air Quality		85 households affected in 2025 -30 tonnes of carbon saved in 2025	-€0.504 -€0.001	No	2.4
	Noise and vibration Landscape and visual quality	Not assessed	85 households affected in 2025	-€0.340	No	2.9
	Biodiversity	The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment and pNHA (001561).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and realignment will move closer to a number of sites already within 100m of the route including a Castle – Tower House, Bridge, Ringfort, Graveyard, Church, Fulacht Fia and Klin - Lime. Potential for construction impact.			Yes	2.5
	Landuse Water resources	The proposed realignments will primarily be within Agricultural Areas. The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment.			No	3.0
					No	4.0
					No	2.5
	Accident reduction		0.4 accidents saved in 2025	€5.511		5.2
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
	Transport Efficiency and Effectiveness		425 vehicle-hours per day in travel time saved in 2025	Non-work Work €26.716 €23.890 €0.000		6.1
Safety Economy				PVC Residual value €36.907 €2.801		
	Other economic impacts		Imperfect competition effects	€2.369		6.6
	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		6 CLAR zones experience improved access to Hub/Gateway			5.0
Accessibility and Social Inclusion Integration	Transport integration					5.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.2
				NPV BCR	€23.554 1.64	Total Red Flagged
						5.0 Yes

Budget Cost (million)
€57.17

Problems Identified:

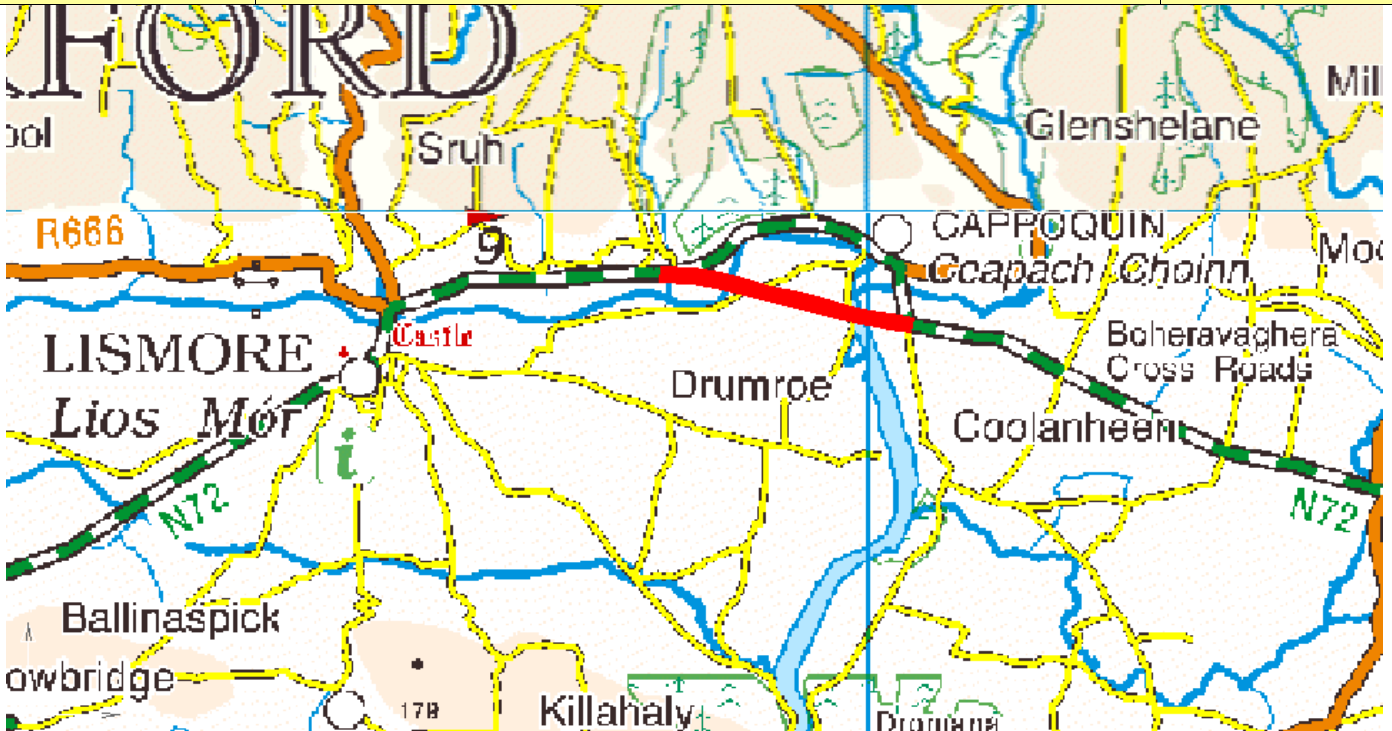
- The lane width indicator shows that the lane widths are greater than 3m between Lismore and Tallow but are mostly less than 3.5m over this section.
- Between Tallow and Fermoy, the lane widths are mostly less than 3.0m.
- Overall between Dungarvan and Fermoy, some 27% of these corridors has a lane width of less than 3.0m wide and some 65% of these corridors has a lane width of less than 3.5m
- West of Tallow on the approach to Fermoy there is a section of approximately 5km where visibility is highly variable from 20 to 160m.
- For some 8km on the eastern approach to Fermoy there are significant intermittent sections with poor visibility
- A slight cluster of recent accidents are noted at Tallow.

N72.b.1.T3			Name: Lismore to Fermoy					Type: S2 Type 3			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
119131 (Improvement to part of link)	1.700 used (Full length of link 5.308)	78.0	0.2	0.0	3304	1.700	1.384	0.000	0.000	0.51	
119130	2.184	63.5	5.2	2.4	3309	2.132	2.767	0.486	0.136	0.654	
119133	0.917	63.5	5.2	2.4	3309	0.895	1.155	0.203	0.057	0.273	
119135	3.350	71.0	1.3	0.0	3308	3.350	3.617	0.409	0.120	1.002	
119137	6.915	75.5	0.7	0.0	3305	6.915	6.342	0.267	0.091	2.067	
119139	6.942	73.5	0.5	0.0	3306	6.942	6.902	0.540	0.166	2.076	
119138	1.198	67.5	3.3	1.2	3308	1.184	1.408	0.209	0.060	0.357	
Lismore to Fermoy	Total 23.206					Total 23.117					
Notes: Route is at least Type 3 standard from Lismore to start of bends into Tallowcross therefore no upgrade is proposed over this section. Bad hairpin at Tallowbridge Very bendy section for approx 2.5km west of Littlegrace Bendy section for approx 2km at Curragh Upper 3 No pinch points with buildings close to the road Moderate sidelong sections for approx 4.75km Forest area for 2km. Tree lined for approx 6km but not an environmentally designated area. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.5 – 5.0 – Maintenance Bracket 3							TOTAL:	23.575	2.114	0.628	6.939
							Any special costs	2.000	0.000	0.000	0.000
							Grand Total	35.256			


PABS Appraisal Summary Table - N72b.1.T3						
Scheme Option: N72 Lismore to Fermoy	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Description: 23.117km upgrade to S2 Type 3 standard	Air Quality		89 households affected in 2025 -10 tonnes of carbon saved in 2025	-€0.171 €0.000	No	3.0
	Noise and vibration Landscape and visual quality	Not assessed	89 households affected in 2025	-€0.125	No	3.3
	Biodiversity	The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment and pNHA (001561).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and realignment will move closer to a number of sites already within 100m of the route including a Castle – Tower House, Bridge, Ringfort, Graveyard, Church, Fulacht Fia and Klin - Lime. Potential for construction impact.			Yes	2.5
	Landuse Water resources	The proposed realignments will primarily be within Agricultural Areas. The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment.			No	3.0
					No	4.0
					No	2.5
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	-0.7 accidents saved in 2025	-€3.906		2.5
	Transport Efficiency and Effectiveness		136 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €8.576 €7.669 €0.000		4.0
	Other economic impacts Funding	Imperfect competition effects		PVC Residual value €21.322 €1.356		5.1
Accessibility and Social Inclusion Integration	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.		€0.767		5.4
						4.0
	Transport integration Land-use integration	1 CLAR zones experience improved access to Hub/Gateway				4.3
	Geographical integration Integration with other government policies					4.3
				NPV	-€7.157	4.4
				BCR	0.66	Yes
				Total	Red Flagged	

Problems Identified:

- The lane width indicator shows that the lane widths are greater than 3m between Lismore and Tallow but are mostly less than 3.5m over this section.
- Between Tallow and Fermoy, the lane widths are mostly less than 3.0m.
- Overall between Dungarvan and Fermoy, some 27% of these corridors has a lane width of less than 3.0m wide and some 65% of these corridors has a lane width of less than 3.5m
- West of Tallow on the approach to Fermoy there is a section of approximately 5km where visibility is highly variable from 20 to 160m.
- For some 8km on the eastern approach to Fermoy there are significant intermittent sections with poor visibility
- A slight cluster of recent accidents are noted at Tallow.

N72.r.1.1.T2			Name: Cappoquin Relief Road					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120055	2.780	N/A	N/A	0.0	3303	2.780	6.394	1.946	0.361	0.834	
Cappoquin Relief Road						Total 2.780					
<p>Notes:</p> <p>2 No. River Blackwater Crossings required – add premium to construction cost</p> <p>2 No. junctions with minor roads</p> <p>Peri-urban location – add premium to land cost</p> <p>High Traffic Good Subgrade (may be poor in proximity to the river) – Maintenance Category 2</p> <p>Use super mode for splitting link 119124: Super mode is to be active for variants N72r1 and N72r2. This is to recycle node: or use cut and paste between variants.</p>						TOTAL:	6.394	1.946	0.361	0.834	
						Any special costs	3.000	0.973	0.000	0.000	
						Grand Total	13.508				

PABS Appraisal Summary Table - N72r-1.1.T2						
Scheme Option: N72 Cappoquin Relief Road		Description: 2.78km upgrade to S2 Type 2 standard	Problems identified:			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025	€0.000	No	4.0
	Noise and vibration		0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Landscape and visual quality		0 households affected in 2025	€0.000	Not assessed	4.0
	Biodiversity				Yes	2.5
	Cultural Heritage / archaeology	The proposed realignment of this section would cross the River Blackwater SAC (002170) at two locations. Care would be needed for any works in this area.			No	4.0
		No sites will be directly impacted by the proposed realignments and no sites will be brought within 100m of the realigned section of the route.			No	4.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignment of this section would cross the River Blackwater SAC (002170) at two locations. Care would be needed for any works in this area.			Yes	2.5
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	-4.2 accidents saved in 2025	-€8.892		1.0
Economy						4.0
	Transport Efficiency and Effectiveness		447 vehicle-hours per day in travel time saved in 2025	Non-work Work €28.097 Active travel €25.128 €0.000		7.0
				PVC Residual value €10.040 €0.840		
			Imperfect competition effects	€2.513		7.0
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups Deprived geographic areas	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration			5 CLAR zones experience improved access to Hub/Gateway			4.4
	Transport integration					5.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.2
				NPV €37.642	Total	5.0
				BCR 4.75	Red Flanned	Yes
						Yes

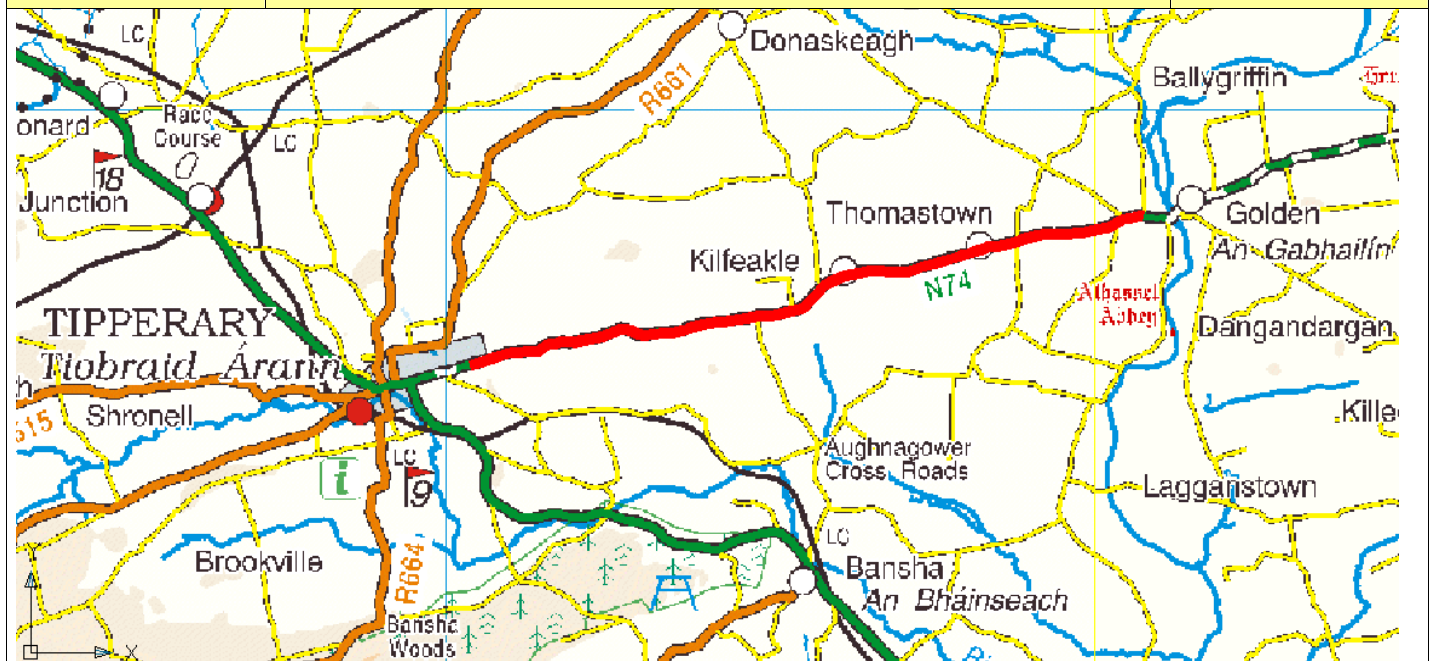
N72.r.1.2.T2			Name: Cappoquin and Lismore Relief Road					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120058	8.000	N/A	N/A	0.0	3303	8.000	18.400	5.600	1.040	2.400
Lismore and Cappoquin Relief Road						Total 8.000				
<p>Notes:</p> <p>1 No. River Blackwater Crossing – add premium to construction</p> <p>Junctions with 7 No. local roads</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Split link 119131 near 202,900. 97,350.</p> <p>Recycle (cut and Paste between variants) from N72r1 for split link required for 119124 for eastern end of new road.</p>						TOTAL:	18.400	5.600	1.040	2.400
						Any special costs	1.500	0.000	0.000	0.000
						Grand Total	28.940			

PABS Appraisal Summary Table - N72r.1.2.T2						
Scheme Option: N72 Cappoquin and Lismore Relief Road		Description: 8km upgrade to S2 Type 2 standard	Problems Identified:			
						Budget Cost (million) €28.94
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration		0 households affected in 2025	€0.000	No	4.0
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignment of this section would cross the River Blackwater SAC (002170) at one location. Care would be needed for any works in this area.			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and no sites will be brought within 100m of the realigned section of the route.			No	4.0
	Landuse	The proposed realignments will be within Agricultural Areas.			No	4.0
Safety	Water resources	The proposed realignment of this section would cross the River Blackwater SAC (002170) at one location. Care would be needed for any works in this area.			No	2.5
	Accident reduction		-0.1 accidents saved in 2025	€0.453		4.2
Economy	Security	No additional facility for walkers and cyclists is to be provided.				4.0
	Transport Efficiency and Effectiveness		643 vehicle-hours per day in travel time saved in 2025	Non-work Work €40.407 €36.133		7.0
				Active travel €0.000		
				PVC €21.826		
				Residual value €1.686		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€3.613		7.0
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		2 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport integration					
Integration	Land-use integration					5.0
	Geographical integration					4.6
	Integration with other government policies					4.3
						4.2
				NPV €60.466	Total	5.2
				BCR 3.77	Red Flagged	Yes

N72.r.3.T3			Name: Tallowbridge Relief Road					Type: S2 Type 3		
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120049	2.37	N/A	N/A	0.0	3305	2.370	4.148	1.185	0.308	0.711
Tallowbridge Relief Road						Total 2.370				
Notes: Sidelong earthworks profile over entire length Likely to be steep vertical gradient, additional earthworks cost to improve vertical. Low Traffic Good Subgrade – Maintenance Category 1 Recycle Bypass link from N72b2 by cutting and pasting by pass: Link 119135 is to be rebuilt via hanging node. Total length of two links are to remain as 3.35 km @3309 type.						TOTAL:	4.148	1.185	0.308	0.711
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	6.352			

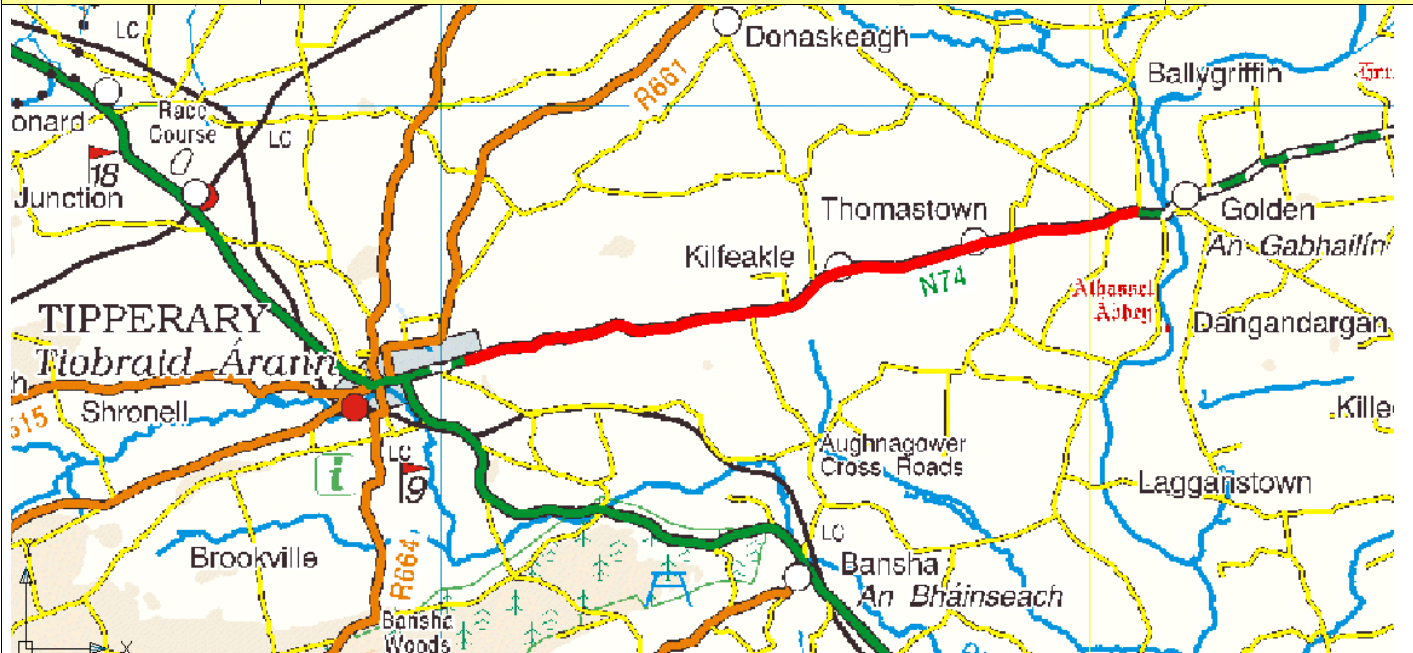
PABS Appraisal Summary Table - N72r.3.T3						
Scheme Option: N72 Tallowbridge Relief Road		Description: 2.37km upgrade to S2 Type 3 standard	Problems Identified:		Budget Cost (million) €3.35	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment of this section of the route has the potential to impact on the River Blackwater SAC (002170). No sites will be directly impacted by the proposed realignments and no sites will be brought within 100m of the realigned section of the route.			Yes	3.0
	Landuse	The proposed realignment will be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignment of this section of the route has the potential to impact on the River Blackwater SAC (002170)..			No	3.0
	Accident reduction		-0.6 accidents saved in 2025	-€3.025		1.0
Safety	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		187 vehicle-hours per day in travel time saved in 2025	Non-work Work €11.748 €10.507		7.0
				Active travel €0.000		
				PVC €4.385		
				Residual value €0.354		
	Other economic impacts		Imperfect competition effects	€1.051		7.0
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Deprived geographic areas		3 CLAR zones experience improved access to Hub/Gateway			7.0
	Transport integration					
	Land-use integration					5.0
	Geographical integration					4.6
	Integration with other government policies					4.3
				NPV	€16.251	5.1
				BCR	4.71	Red Flagged
						Yes

N74.a.1.T2	Name: Tipperary to Golden	Type: S2 Type 2
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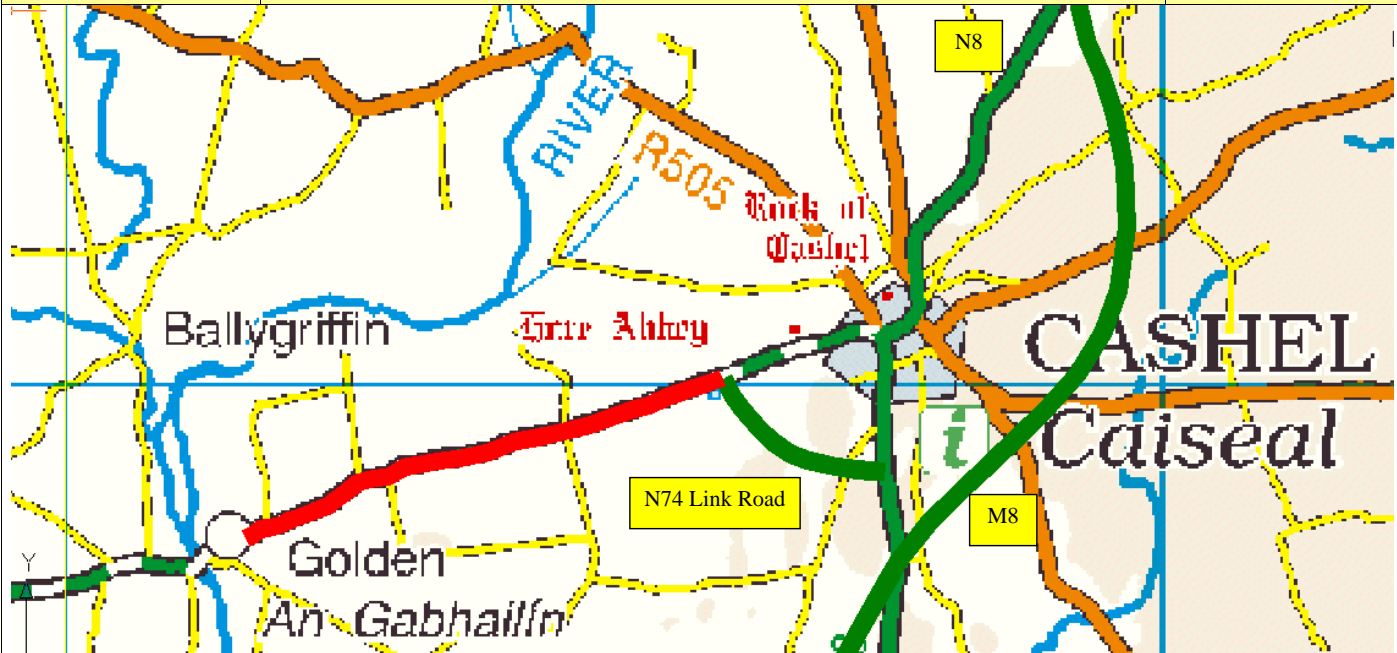


Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119231	1.583	70	5.1	3.1	3304	1.534	2.880	0.687	0.138	0.475
119235	2.788	70	6.1	3.1	3304	2.702	5.072	1.210	0.242	0.836
119234	3.314	75.5	2.4	0.5	3304	3.297	4.864	0.758	0.162	0.994
119238	0.323	75.5	2.4	0.5	3304	0.321	0.474	0.074	0.016	0.097
119239	1.146	N/A	N/A	0.0	n/c	1.146	2.650	0.806	0.150	0.346
119241	0.844	75.5	2.4	0.5	3304	0.840	1.239	0.193	0.041	0.253
119240	0.823	72	3.9	1.5	3304	0.811	1.404	0.303	0.062	0.247
Tipperary to Golden	Total 10.821					Total 10.651				
<p>Notes:</p> <p>This route is quite bendy and hilly and is also narrow in places. Widths are variable but thought to be better or equal to Type 3 standard generally. There are speed limit restrictions at Kilfeakle and again at Thomastown. It is proposed to continue this upgrade through these speed limit restrictions. There is very little overtaking opportunity along this route. The route is also characterised by the extent of dwellings directly accessing the road. There are some brief sections where the existing cross section is to Type 2 standard or better in some places, one such section (420m long) west of Kilfeakle has been removed from the costs. The rest of these sections are very short however, the vertical and horizontal alignments are poor and are not therefore considered substantial enough to tie in to or adjust the costs.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>3 No. stream crossings.</p> <p>Stone walls present at Kilfeakle, Thomastown and at the approach to Golden.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.6 to 5 – Maintenance Bracket 3</p> <p>Used existing data for Thomas town. Link class left as it as this is urban speed zone still.</p>						TOTAL:	18.583	4.031	0.811	3.249
						Any special costs	-0.718	-0.156	-0.031	-0.126
						Grand Total	25.643			

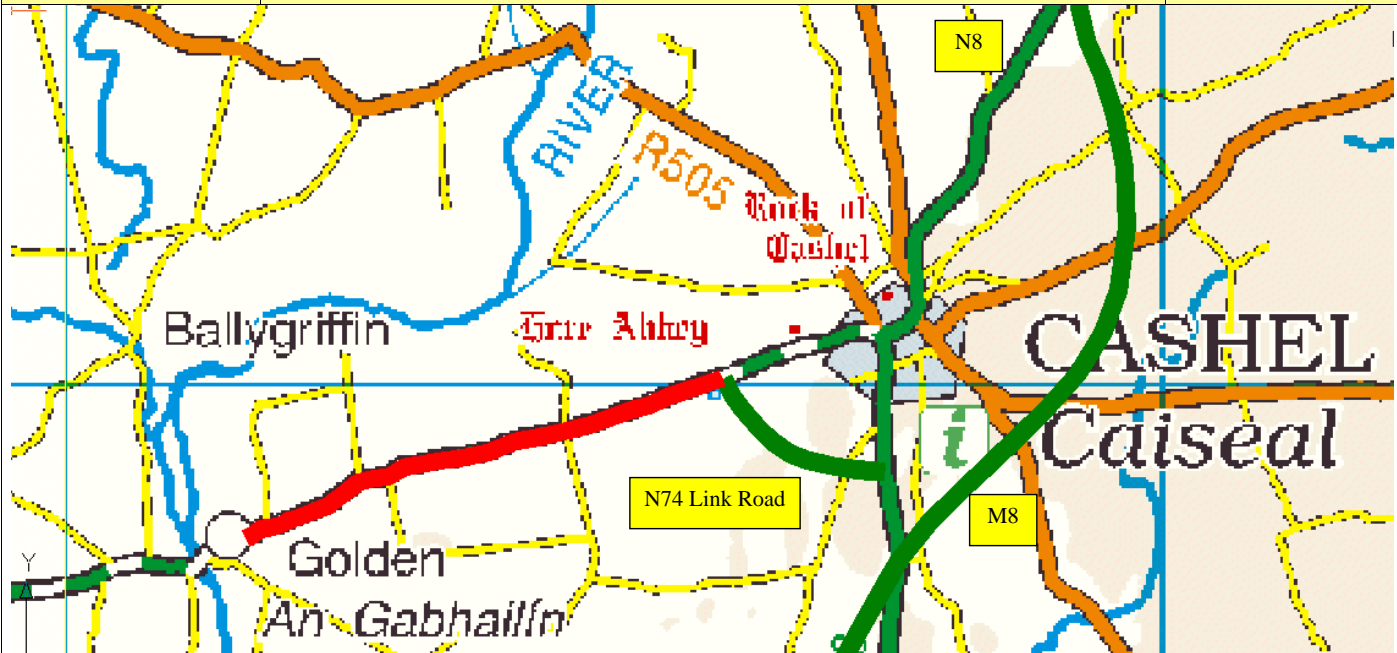
PABS Appraisal Summary Table - N74a.1.T2						
Scheme Option: N74 Tipperary to Golden		Description: 10.651km upgrade to S2 Type 2 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of it's length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €5.64
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		98 households affected in 2025	-€0.032	No	3.8
	Noise and vibration		-1 tonnes of carbon saved in 2025	-€0.000	No	2.8
	Landscape and visual quality	Not assessed	98 households affected in 2025	-€0.166	Not assessed	4.0
	Biodiversity	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Mound, two Enclosures, a Castle – Motte & Bailey, a Settlement Deserted – medieval, a Castle – unclassified and three NIAH Structures.			No	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas with two sections through existing Artificial Surfaces.			No	4.0
	Water resources	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	3.0
Safety	Accident reduction		0.6 accidents saved in 2025	€6.774		7.0
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		157 vehicle-hours per day in travel time saved in 2025	Non-work Work €7.743 €6.890		5.3
				Active travel €0.000		
				PVC Residual value €16.535 €1.330		
	Other economic impacts	Imperfect competition effects		€0.689		5.7
	Funding	Not assessed				4.0
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.1
Integration	Transport integration					4.0
	Land-use integration					4.3
	Geographical integration					4.3
	Integration with other government policies					4.1
				NPV	€6.694	Total
				BCR	1.40	Red Flagged
						4.8
						Yes

N74.a.1.T3			Name: Tipperary to Golden					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119231	1.583	70	2.1	0.6	3307	1.574	1.763	0.219	0.064	0.475
119235	2.788	70	2.1	0.6	3307	2.771	3.105	0.386	0.112	0.836
119234	3.314	75.5	0.5	0.0	3305	3.314	3.051	0.128	0.044	0.994
119238	0.323	75.5	0.5	0.0	3305	0.323	0.297	0.013	0.004	0.097
119239	1.146	N/A	N/A	0.0	nc	1.146	2.016	0.576	0.150	0.346
119241	0.844	75.5	0.5	0.0	3305	0.844	0.777	0.033	0.011	0.253
119240	0.823	72	1.3	0.1	3307	0.822	0.864	0.087	0.026	0.247
Tipperary to Golden	Total 10.821					Total 10.794				
Notes: This route is quite bendy and hilly and is also narrow in places. Widths are broadly equivalent or better than Type 3. Thus, this route option represents alignment improvements. There are speed limit restrictions at Kilfeakle and again at Thomastown. It is proposed to continue this upgrade through these speed limit restrictions. There is very little overtaking opportunity along this route. This route is also characterised by the extent of dwellings accessed from the road. There are some brief sections where the existing cross section is to Type 2 standard or better in some places, one such section (420m long) west of Kilfeakle has been removed from the costs. The rest of these sections are very short however, the vertical and horizontal alignments are poor and are not therefore considered substantial enough to tie in to or adjust the costs. There are no environmentally designated areas in the vicinity of this route. 3 No. stream crossings. Stone walls present at Kilfeakle, Thomastown and at the approach to Golden. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	11.874	1.442	0.411	3.249
						Any special costs	-0.459	-0.056	-0.016	-0.126
						Grand Total	16.319			

PABS Appraisal Summary Table - N74a.1.T3						
Scheme Option: N74 Tipperary to Golden		Description: 10.794km upgrade to S2 Type 3 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of it's length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €16.32
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		98 households affected in 2025	-€0.012	No	3.8
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	3.4
	Landscape and visual quality	Not assessed	98 households affected in 2025	-€0.052	Not assessed	4.0
	Biodiversity	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Mound, two Enclosures, a Castle – Motte & Bailey, a Settlement Deserted – medieval, a Castle – unclassified and three NIAH Structures.			No	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas with two sections through existing Artificial Surfaces.			No	4.0
Safety	Water resources	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	3.0
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€0.447		4.4
Economy	Transport Efficiency and Effectiveness		88 vehicle-hours per day in travel time saved in 2025	€3.314 Non-work Work Active travel €2.995 €0.000		5.0
	Other economic impacts Funding	Imperfect competition effects		€3.908 PVC Residual value €0.676 €0.300		5.2
Accessibility and Social Inclusion	Vulnerable groups	Not assessed				4.0
	Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	1 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration					4.1
	Land-use integration					4.0
	Geographical integration					4.3
	Integration with other government policies					4.1
				NPV	-€2.240	Total
				BCR	0.77	Red Flagged
						4.4
						Yes

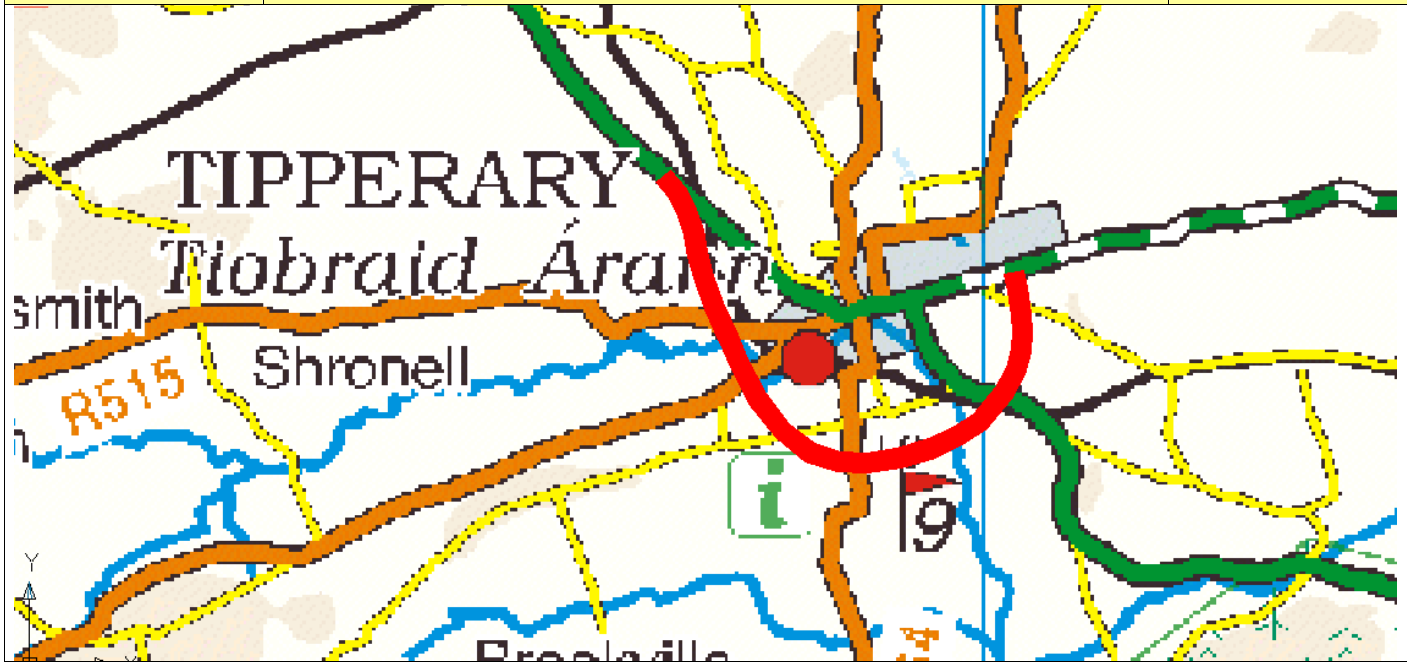
N74.b.1.T2			Name: Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
105593	4.640	72	3.9	1.5	3304	4.570	7.914	1.708	0.348	1.392
Golden to Cashel (N74 Link Road)	Total 4.640					Total 4.570				
<p>Notes:</p> <p>This route is quite bendy and is hilly in places. The widths are relatively consistent with circa Type 3 standard. There is virtually no overtaking opportunity along this section. The route is also characterised by the extent of dwellings directly accessing the road. This route finishes at the Tipperary Road Roundabout which was constructed in 2004 as part of the N74 Link Road.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No stream crossing.</p> <p>Large stone walls present on the north side of this route at Castletlake. Smaller stone walls present on the north side of this route at Horeabby (the approach to Cashel).</p> <p>Route is tree lined in places.</p> <p>Existing pavement condition is quite good.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	7.914	1.708	0.348	1.392
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	11.362			

PABS Appraisal Summary Table - N74b.1.T2							
Scheme Option: N74 Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)		Description: 4.57km upgrade to S2 Type 2 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of it's length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €1.36	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		31 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.011 €0.000	No	3.8	
	Noise and vibration		31 households affected in 2025	-€0.071	No	2.9	
	Landscape and visual quality	Not assessed			Not assessed	4.0	
	Biodiversity	The proposed realignment will impact indirectly on the River Suir SAC (002137) and on the Knockroe Fox Covert pNHA (000964).			Yes	2.5	
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including three Moated Sites, a Ringfort, a House – prehistoric and a Castle – Tower House.			No	3.0	
Safety	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0	
	Water resources	The proposed realignment will impact indirectly on the River Suir SAC (002137).			Yes	3.0	
	Accident reduction	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€2.947		7.0	
Economy	Security					4.0	
	Transport Efficiency and Effectiveness		87 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value	€3.147 €2.759 €0.000 €7.622 €0.588	5.2	
	Other economic impacts		Imperfect competition effects		€0.276	5.4	
	Funding	Not assessed				4.0	
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0	
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0	
Integration	Transport integration					4.0	
	Land-use integration					4.3	
	Geographical integration					4.3	
	Integration with other government policies					4.1	
				NPV	€2.011	Total	
				BCR	1.26	Red Flagged	
						4.7	
						Yes	

N74.b.1.T3			Name: Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
105593	4.640	72	1.3	0.1	3307	4.635	5.168	0.643	0.187	1.392
Golden to Cashel (N74 Link Road)	Total 4.640					Total 4.635				
Notes: This route is quite bendy and is hilly in places. Widths are broadly equivalent to Type 3 standard. This route represents alignment improvements to Type 3 standards. There is virtually no overtaking opportunity along this section. The route is also characterised by the extent of dwellings with direct accesses from the road. This route finishes at the Tipperary Road Roundabout which was constructed in 2004 as part of the N74 Link Road. There are no environmentally designated areas in the vicinity of this route. 1 No stream crossing. Large stone walls present on the north side of this route at Castletlake. Smaller stone walls present on the north side of this route at Horeabby (the approach to Cashel). Route is tree lined in places. Existing pavement condition is quite good. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	5.168	0.643	0.187	1.392
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	7.390			

PABS Appraisal Summary Table - N74b.1.T3							
Scheme Option: N74 Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)		Description: 4.635km upgrade to S2 Type 3 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of its length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €7.39	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		31 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.003 €0.000	No	3.9	
	Noise and vibration		31 households affected in 2025	€0.000	No	4.0	
	Landscape and visual quality	Not assessed			Not assessed	4.0	
	Biodiversity	The proposed realignment will impact indirectly on the River Suir SAC (002137) and on the Knockroe Fox Covert pNHA (000964).			Yes	2.5	
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including three Moated Sites, a Ringfort, a House – prehistoric and a Castle – Tower House.			No	3.0	
Safety	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0	
	Water resources	The proposed realignment will impact indirectly on the River Suir SAC (002137).			Yes	3.0	
	Accident reduction	No additional facility for walkers and cyclists is to be provided.	0.1 accidents saved in 2025	-€0.319		3.5	
Economy	Transport Efficiency and Effectiveness		13 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value		4.4	
	Other economic impacts		Imperfect competition effects	€0.059		4.5	
	Funding	Not assessed				4.0	
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0	
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0	
Integration	Transport integration					4.0	
	Land-use integration					4.3	
	Geographical integration					4.3	
	Integration with other government policies					4.1	
				NPV	-€3.429	Total	4.1
				BCR	0.29	Red Flagged	Yes

N74.r.1.T2	Name: Tipperary Relief Road	Type: S2 Type 2
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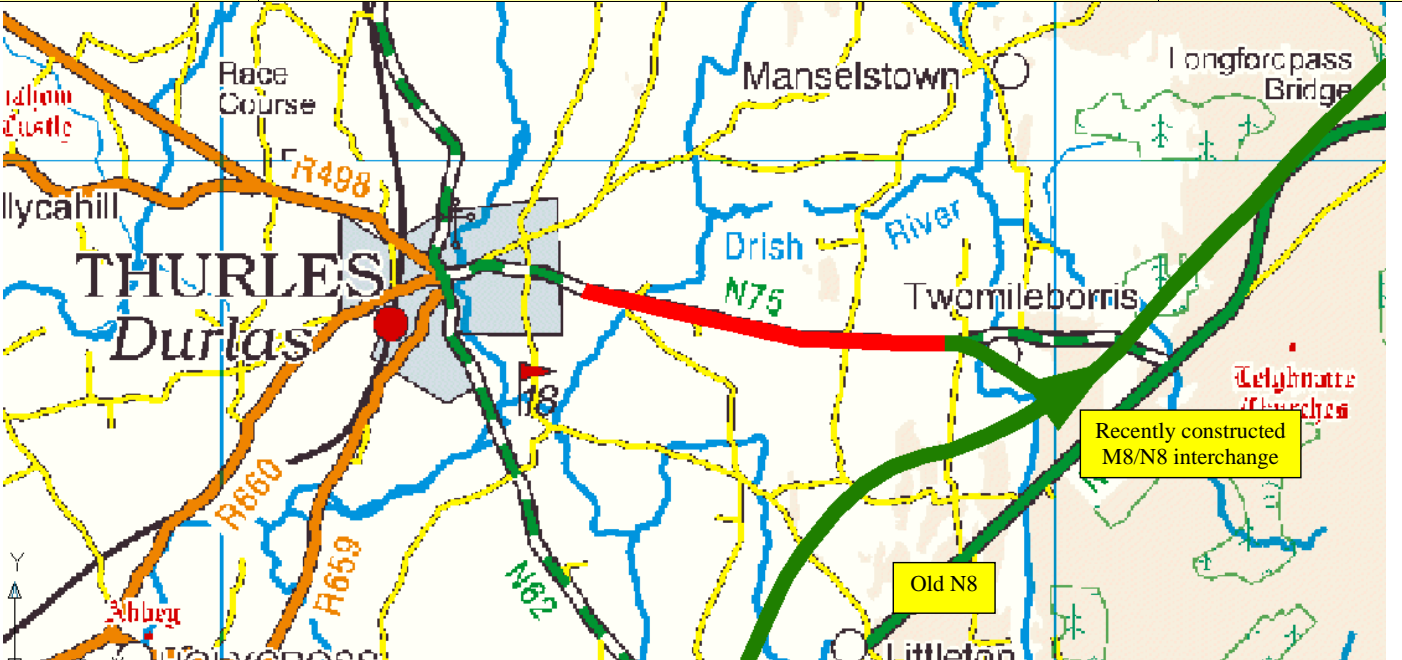


Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120260	1.004	N/A	N/A	0.0	3303	1.004	2.310	0.703	0.131	0.301
120263	1.209	N/A	N/A	0.0	3303	1.209	2.781	0.846	0.157	0.363
120264	1.093	N/A	N/A	0.0	3303	1.093	2.513	0.765	0.142	0.328
120267	0.586	N/A	N/A	0.0	3303	0.586	1.347	0.410	0.076	0.176
120270	1.121	N/A	N/A	0.0	3303	1.121	2.579	0.785	0.146	0.336
Tipperary Relief Road						Total 5.013				
Notes: This route passes to the south of Tipperary Town and connects the N74 to the N24 southbound, the R664, the R662, the R515 and the N24 northbound. This route also crosses the Limerick to Waterford railway line to the south east of Tipperary. There are no environmentally designated areas in the vicinity of this route. 2 No. River Ara crossings (minor structures) 5 No. Stream Crossings. Junction with N24 southbound. Junctions with R664, R662 and R515. High Traffic Good Subgrade – Maintenance Category 2						TOTAL:	11.530	3.509	0.652	1.504
						Any special costs	0.200	0.000	0.000	0.000
						Grand Total	17.395			

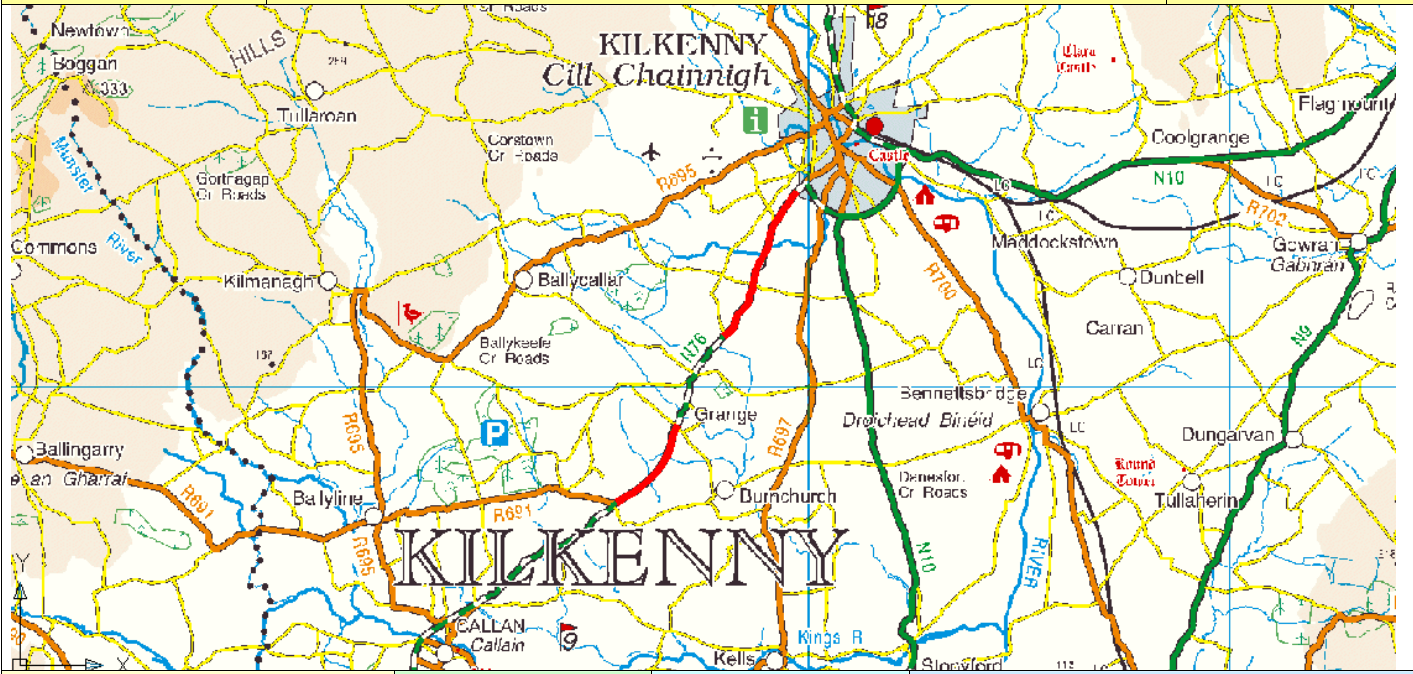
PABS Appraisal Summary Table - N74r.1.T2						
Scheme Option: N74 Tipperary Relief Road		Description: 5,013km upgrade to S2 Type 2 standard		Problems identified:		Budget Cost (million) €17.40
Objective	Sub-objective	Qualitative impacts		Quantitative assessment	Monetised (million 30 yrs)	Red Flag
Environment	Air Quality			0 households affected in 2025	€0.000	No
	Noise and vibration			0 tonnes of carbon saved in 2025	€0.000	No
	Landscape and visual quality			0 households affected in 2025	€0.000	Not assessed
	Biodiversity					No
	Cultural Heritage / archaeology					No
	Landuse					No
	Water resources					No
Safety	Accident reduction			1.2 accidents saved in 2025	€3.409	6.2
	Security					4.0
Economy	Transport Efficiency and Effectiveness			182 vehicle-hours per day in travel time saved in 2025	Non-work Work €11.648 Active travel €0.000 PVC Residual value €12.507 €1.027	6.5
	Other economic impacts				€1.165	7.0
	Funding					4.0
	Vulnerable groups			2 CLAR zones experience improved access to Hub/Gateway		4.0
Accessibility and Social Inclusion	Deprived geographic areas					5.9
	Transport integration					4.0
	Land-use integration					4.3
	Geographical integration					4.1
Integration	Integration with other government policies					
				NPV	€14,235	Total
				BCR	2.14	Red Flagged

N74.r.2.T3			Name: Golden Relief Road					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120287	1.446	N/A	N/A	0.0	3305	1.446	2.531	0.723	0.188	0.434
Tipperary Relief Road						Total 1.446				
<p>Notes:</p> <p>This route passes to the north of Golden bypasses the narrow streets of Golden as well as a narrow stone bridge on a bad bend within the town.</p> <p>The River Suir passes through Golden and environmentally designated as a Special Area of Conservation.</p> <p>1 No. River Suir crossing (medium structure)</p> <p>1 No. Stream Crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>Split Link 105593 @ (201800, 138715) Resultant Node -> 5004</p> <p>Split Link 119240 @ (200435, 138349) Resultant Node -> 5005</p>						TOTAL:	2.531	0.723	0.188	0.434
						Any special costs	0.400	0.000	0.000	0.000
						Grand Total	4.276			

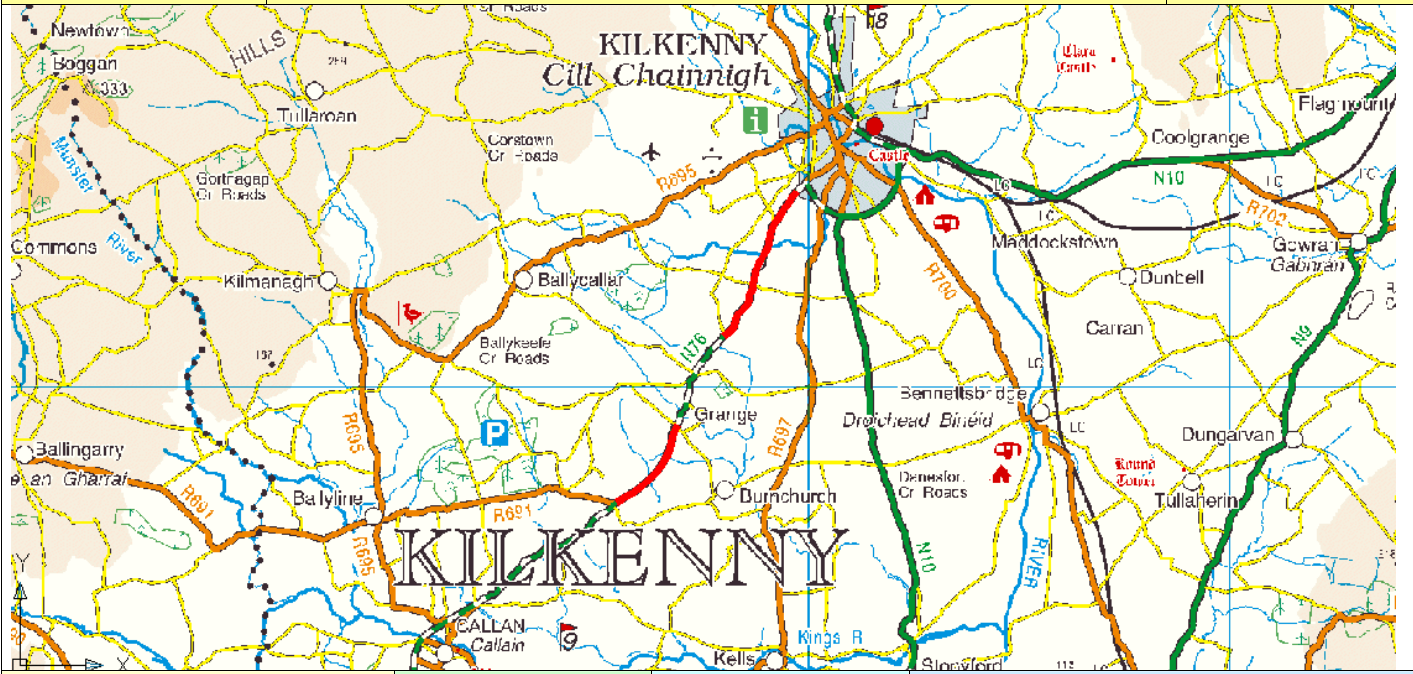
PABS Appraisal Summary Table - N74r.2.T3						
Scheme Option: N74 Golden Relief Road		Description: 1.446km upgrade to S2 Type 3 standard		Problems Identified:		Budget Cost (million) €4.28
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
		Not assessed			Not assessed	4.0
	Biodiversity Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Suir SAC (002137). No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realignment including a Castle, Earthworks, a Settlement Cluster, a Graveyard, a Church, a Water Mill and three NIAH Structures.			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realignment including a Castle, Earthworks, a Settlement Cluster, a Graveyard, a Church, a Water Mill and three NIAH Structures.			No	3.0
Safety	Water resources	The proposed realignments will primarily be within Agricultural Areas with two sections through existing Artificial Surfaces.			No	4.0
	Accident reduction Security	The proposed realignments in this section of the N74 will cross the River Suir SAC (002137). No additional facility for walkers and cyclists is to be provided.	0.4 accidents saved in 2025	€0.795	Yes	2.5
Economy	Transport Efficiency and Effectiveness					6.0
						4.0
			106 vehicle-hours per day in travel time saved in 2025	Non-work Work €4.292 €3.917		7.0
				Active travel €0.000		
				PVC Residual value €3.112 €0.232		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.392		7.0
	Funding	Not assessed				4.0
	Vulnerable groups Deprived geographic areas	None of the route corridor is within 4km of a settlement of 1,500 people or more.	0 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport Integration					4.0
	Land-use integration					4.3
Integration	Geographical integration					4.3
	Integration with other government policies					4.1
				NPV	€6.516	Total
				BCR	3.09	Red Flagged
						5.2
						Yes

N75.a.1.T2		Name: Thurles to M8/N8 Interchange					Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
105595	2.340	77.5	1.3	0.2	3303	2.335	3.065	0.316	0.073	0.702
112904 (Improvement to part of link)	2.051 used (Full length of link 2.290)	77.5	1.3	0.2	3303	2.047	2.687	0.277	0.064	0.615
Thurles to M8/N8 Interchange	Total 4.391					Total 4.382				
<p>Notes:</p> <p>In general this route has a relatively good vertical and horizontal alignment and is thought to be to Type 3 standard or better. The route is relatively straight and has some decent overtaking opportunities. The overtaking is however hampered by the vertical alignment on occasion. A proposed upgrade to this route would therefore primarily take the form of some local widening and improving the vertical alignment and thereby also improving the overtaking opportunity along the route.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. Drish River Crossing. (the existing Drish bridge is wide enough to accommodate this upgrade)</p> <p>2 No stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.6 to 5 – Maintenance Bracket 3</p>						TOTAL:	5.752	0.593	0.137	1.317
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	7.799			

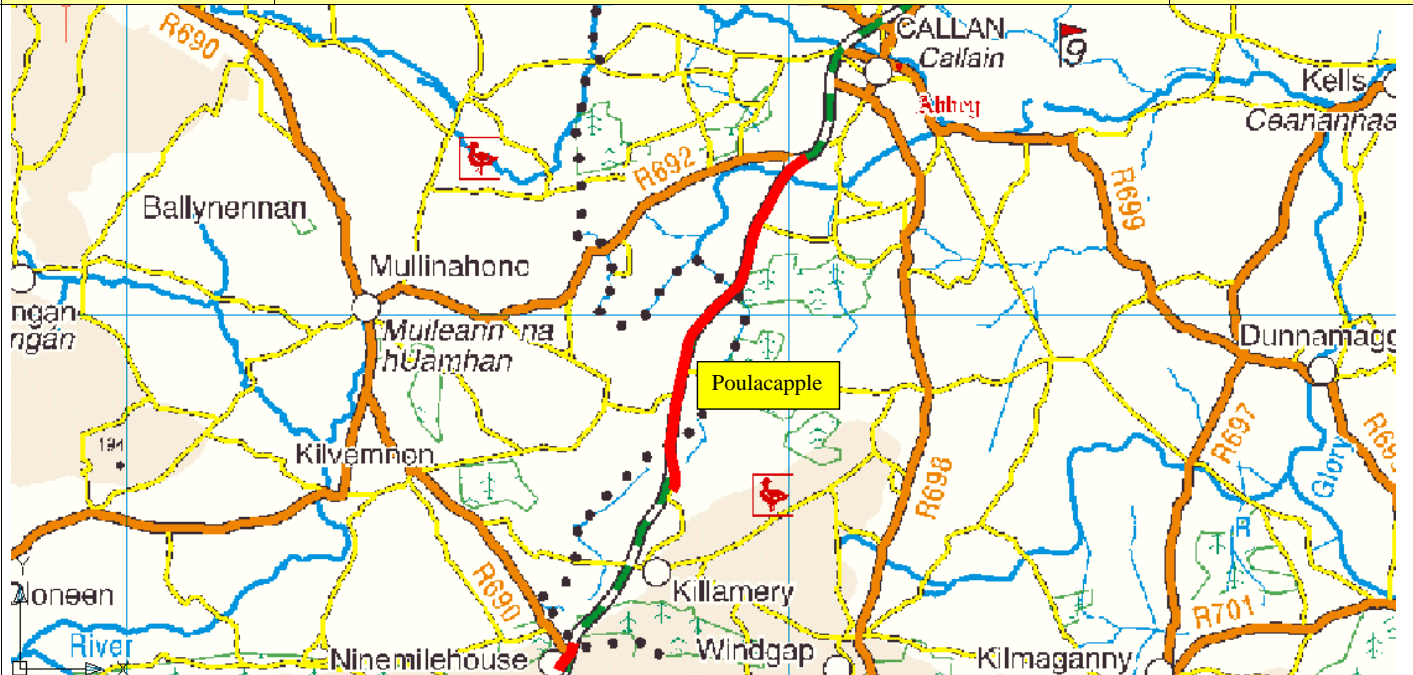
PABS Appraisal Summary Table - N75a.1.T2						
Scheme Option: N75 Thurles to M8/N8 Interchange		Description: 4.382km upgrade to S2 Type 2 standard	Problems Identified:			Budget Cost (million) €7.80
			<ul style="list-style-type: none"> Between Thurles and the junction with the M8/N8 the lane widths are split roughly equally into the 3.0 to 3.5m range and the 3.75 to 9.0m range. The sections nearer Thurles and to the west of Twomileborris are generally in the 3.75 to 9.0m range. There are two main accident clusters along this route, the first is located approximately half way between Thurles and Twomileborris. It forms 3km stretch within which 2 fatal and 3 serious accidents have occurred. The second accident cluster is located immediately west of Twomileborris at the junction with a local road to Moynes. This accident cluster is now off the route due to N75 realignment as part of the M8/N8 Cashel to Cullinagh Scheme. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		50 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.8
	Noise and vibration Landscape and visual quality	Not assessed	50 households affected in 2025	-€0.036	No	3.1
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignments in this section of the N75 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			Yes	3.0
	Landuse	No sites will be directly impacted by the proposed realignments and no sites will be brought within 100m of the realigned sections of the route.			No	4.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
Safety	Accident reduction	The proposed realignments in this section of the N75 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).	0.1 accidents saved in 2025	€2.091	Yes	3.0
Economy	Security	No additional facility for walkers and cyclists is to be provided.				7.0
	Transport Efficiency and Effectiveness		18 vehicle-hours per day in travel time saved in 2025	Non-work €1.072 Work €0.850 €0.000		4.0
	Other economic impacts			PVC €4.889 Residual €0.324		4.6
	Funding		Imperfect competition effects	€0.085		4.7
Accessibility and Social Inclusion	Vulnerable groups	Not assessed				4.0
	Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	0 CLAR zones experience improved access to Hub/Gateway			4.3
Integration	Transport integration					5.0
	Land-use integration					4.3
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV -€0.510	Total	4.6
				BCR 0.90	Red Flagged	Yes

N76.a.1.T1			Name: Kilkenny Ring Road to Callan Bypass					Type: S2 Type 1		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119272	3.953	73	N/A	0.0	3301	3.953	12.254	3.558	0.514	1.186
Break for section at Grange already to Type 1										
119270 (Improvement to part of link)	1.248 used (Full length of link3.687)	77.5	N/A	0.0	3301	1.248	3.869	1.123	0.162	0.374
119267	1.177	76.5	N/A	0.0	3301	1.177	3.649	1.059	0.153	0.353
Kilkenny to Callan	Total 6.378					Total 6.378				
Notes: This route is predominantly bendy and narrow. There is very little overtaking opportunity over the sections proposed here for upgrade. There are some sections that are already to type 1 standard, namely; from Brownstown to Ballybur Lower (1.895km) and from the junction with the R691 to the Callan Bypass. These section are not included in this proposed upgrade. There are no environmentally designated areas in the vicinity of this route. 3 No. stream crossings. 1 No narrow stone bridge at Sunhill (to be widened / replaced) High Traffic Good Subgrade – Maintenance Category 2 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	19.772	5.740	0.829	1.913
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	28.254			

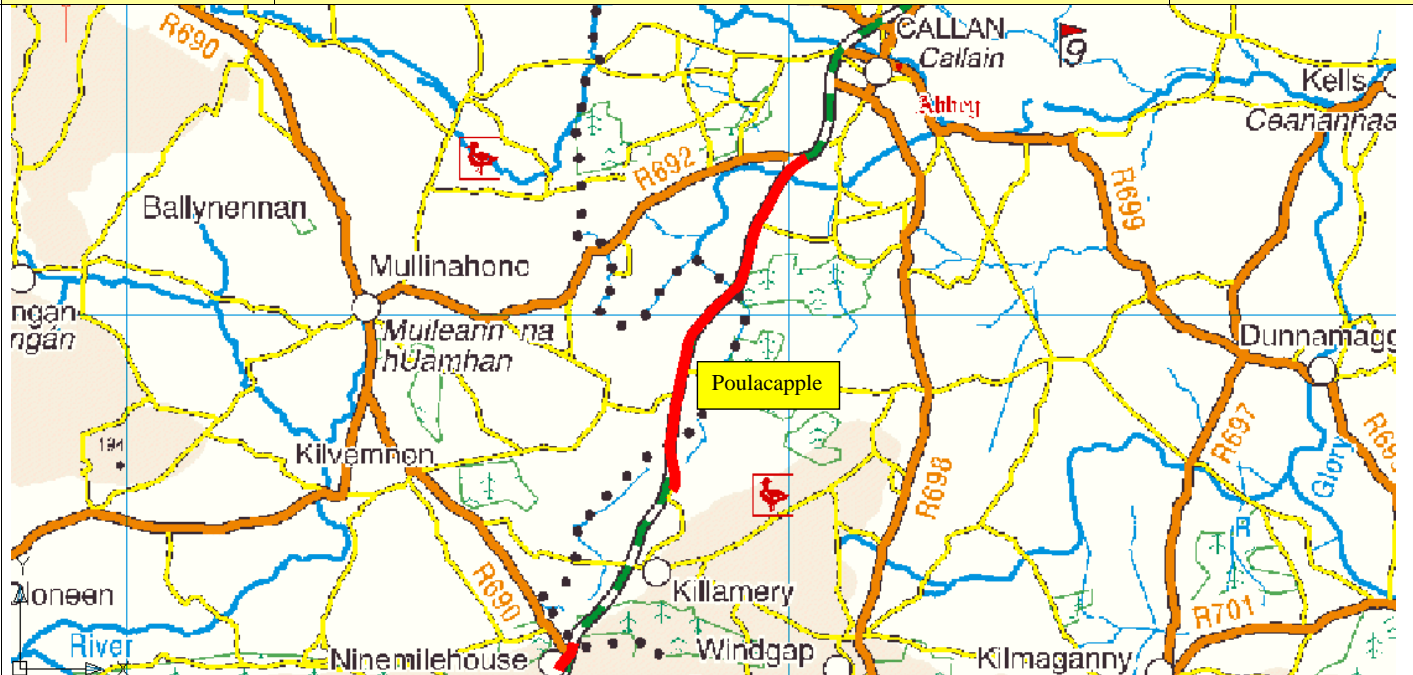
PABS Appraisal Summary Table - N76a.1.11						
Scheme Option: N76 Kilkenny Ring Road to Callan Bypass		Description: 6.378km upgrade to S2 Type 1 standard	Problems Identified:		Budget Cost (million) €8.25	
			<ul style="list-style-type: none"> Approximately 9% of the route has lane widths < 2.75m Approximately 50% of the route has lane widths > 3.75m The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Route lane widths are less than 3.5m for 5km section south of Callan Bypass Intermittent poor visibilities to V=85kph and V=100kph design standards. Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Accident rate well above the national average for fatal accidents. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		102 households affected in 2025 -4 tonnes of carbon saved in 2025	-€0.113 €0.000	No	3.3
	Noise and vibration Landscape and visual quality		102 households affected in 2025	-€0.258	No	2.4
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).			Yes	3.0
	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including two Enclosures and a Fulacht Fia.				No	3.0
Landuse	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
		The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).			Yes	3.0
Safety	Accident reduction		0.5 accidents saved in 2025	€15.743		7.0
Economy	Security	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport Efficiency and Effectiveness		138 vehicle-hours per day in travel time saved in 2025	Non-work Work €8.099 €7.757		5.2
				Active travel €0.000		
				PVC €19.425		
				Residual €1.703		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.776		5.6
	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		7 CLAR zones experience improved access to Hub/Gateway			5.8
	Transport integration					6.0
Integration	Land-use integration					4.6
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV	€14.281	Total
				BCR	1.74	Red Flagged
						4.9
						Yes

N76.a.1.T2			Name: Kilkenny Ring Road to Callan Bypass				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119272	3.953	73	3.2	1.5	3304	3.894	6.493	1.310	0.269	1.186
Break for section at Grange already to Type 1										
119270 (Improvement to part of link)	1.248 used (Full length of link3.687)	77.5	1.2	0.3	3303	1.244	1.635	0.169	0.039	0.374
119267	1.177	76.5	1.7	0.5	3303	1.171	1.637	0.216	0.047	0.353
Kilkenny to Callan	Total 6.378					Total 6.309				
Notes: This route is predominantly bendy and narrow. There is very little overtaking opportunity over the sections proposed here for upgrade. There are some sections that are already to type 1 standard, namely; from Brownstown to Ballybur Lower (1.895km) and from the junction with the R691 to the Callan Bypass. These section are not included in this proposed upgrade. There are no environmentally designated areas in the vicinity of this route. 3 No. stream crossings. 1 No narrow stone bridge at Sunhill (to be widened / replaced) High Traffic Good Subgrade – Maintenance Category 2 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	9.765	1.694	0.356	1.913
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	13.728			

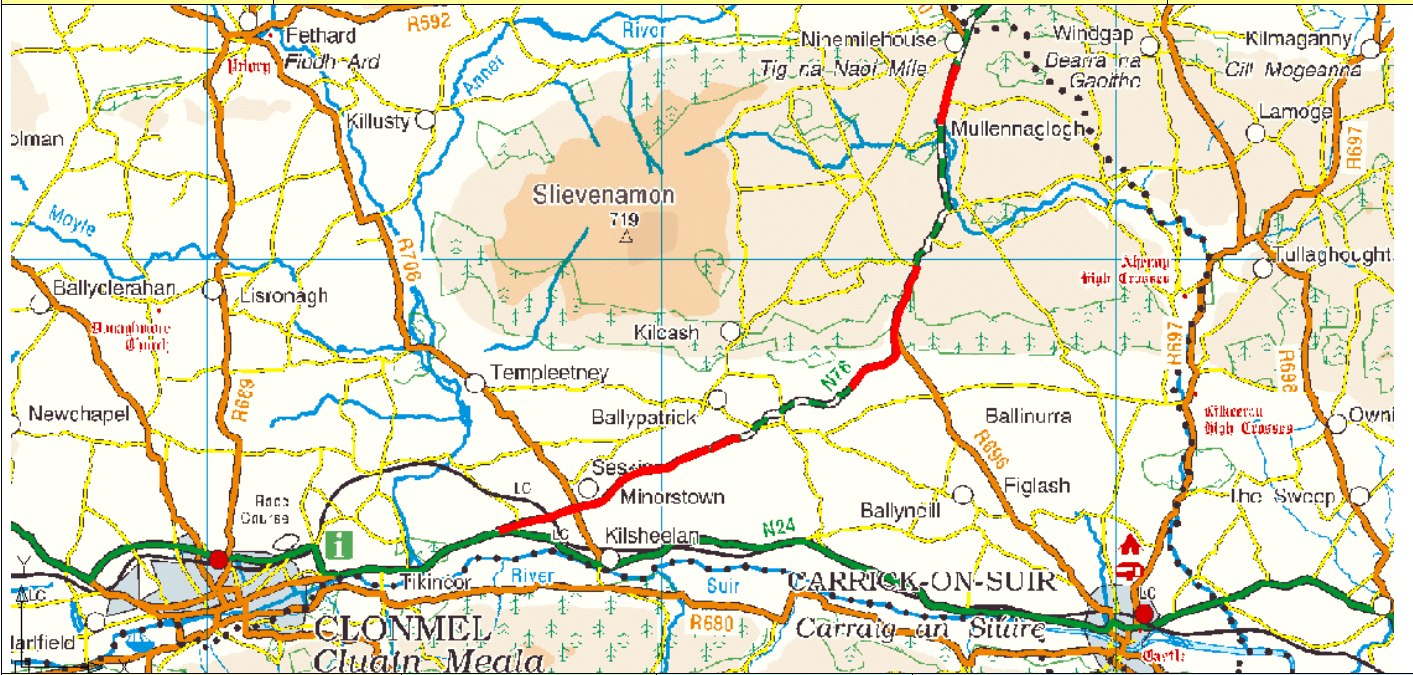
PABS Appraisal Summary Table - N76a.1.T2						
Scheme Option: N76 Kilkenny Ring Road to Callan Bypass		Description: 6.309km upgrade to S2 Type 2 standard	Problems Identified: · Approximately 9% of the route has lane widths < 2.75m · Approximately 50% of the route has lane widths > 3.75m · The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. · The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Route lane widths are less than 3.5m for 5km section south of Callan Bypass · Intermittent poor visibilities to V=85kph and V=100kph design standards. · Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. · Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. · Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Accident rate well above the national average for fatal accidents.			Budget Cost (million) €3.73
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		102 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.040 €0.000	No	3.5
	Noise and vibration		102 households affected in 2025	-€0.145	No	2.0
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity		The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).		Yes	3.0
	Cultural Heritage / archaeology		No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including two Enclosures and a Fulacht Fia.		No	3.0
	Landuse		The proposed realignments will primarily be within Agricultural Areas.		No	4.0
Safety	Water resources		The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).		Yes	3.0
	Accident reduction		0.2 accidents saved in 2025	€7,083		7.0
Economy	Security		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0
	Transport Efficiency and Effectiveness			Non-work Work Active travel	€4,650 €5,014 €0,000	5.6
				PVC Residual value	€8,854 €0,659	
	Other economic impacts		Imperfect competition effects	€0,501		6.3
Accessibility and Social Inclusion	Funding		Not assessed			4.0
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0
Integration	Deprived geographic areas					6.3
	Transport integration					
	Land-use integration					6.0
	Geographical integration					4.6
	Integration with other government policies					4.1
						4.0
				NPV	€8,869	Total
				BCR	2.00	Red Flagged
						5.1
						Yes

N76.a.2.T1			Name: Callan Bypass (R692 junction) to Ninemilehouse				Type: S2 Type 1			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
92122	0.290	76	N/A	0.0	3301	0.290	0.899	0.261	0.038	0.087
119263	3.533	76	N/A	0.0	3301	3.533	10.952	3.180	0.459	1.060
New (through Poulacapple)	0.573	(Qual score of 76 assumed)	N/A	0.0	Nc	0.573	1.776	0.516	0.074	0.172
119262 (Improvement to part of link)	1.393 used (Full length of link3.828)	77.5	N/A	0.0	3301	1.393	4.318	1.254	0.181	0.418
Break for existing section to Type 1										
119260 (Improvement to part of link)	0.239 used (Full length of link0.440)	75.5	N/A	0.0	3301	0.239	0.741	0.215	0.031	0.072
119255	0.236	75.5	N/A	0.0	3301	0.236	0.732	0.212	0.031	0.071
Callan Bypass to Ninemilehouse	Total 6.264					Total 6.264				
Notes: The route recommended for upgrade here is bendy and narrow in places with little overtaking opportunity. The section between Killtallaghan and just north of the junction with the R690 is already close to Type 1 standard and is not included for further upgrade here. There is a speed limit restriction at Poulacapple but it is proposed to carry this upgrade through this speed restricted area. There are no environmentally designated areas in the vicinity of this route. 1 No. Kilbride River crossing (narrow stone bridge to be replaced / widened). 1 No stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	19.418	5.638	0.814	1.879
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	27.749			

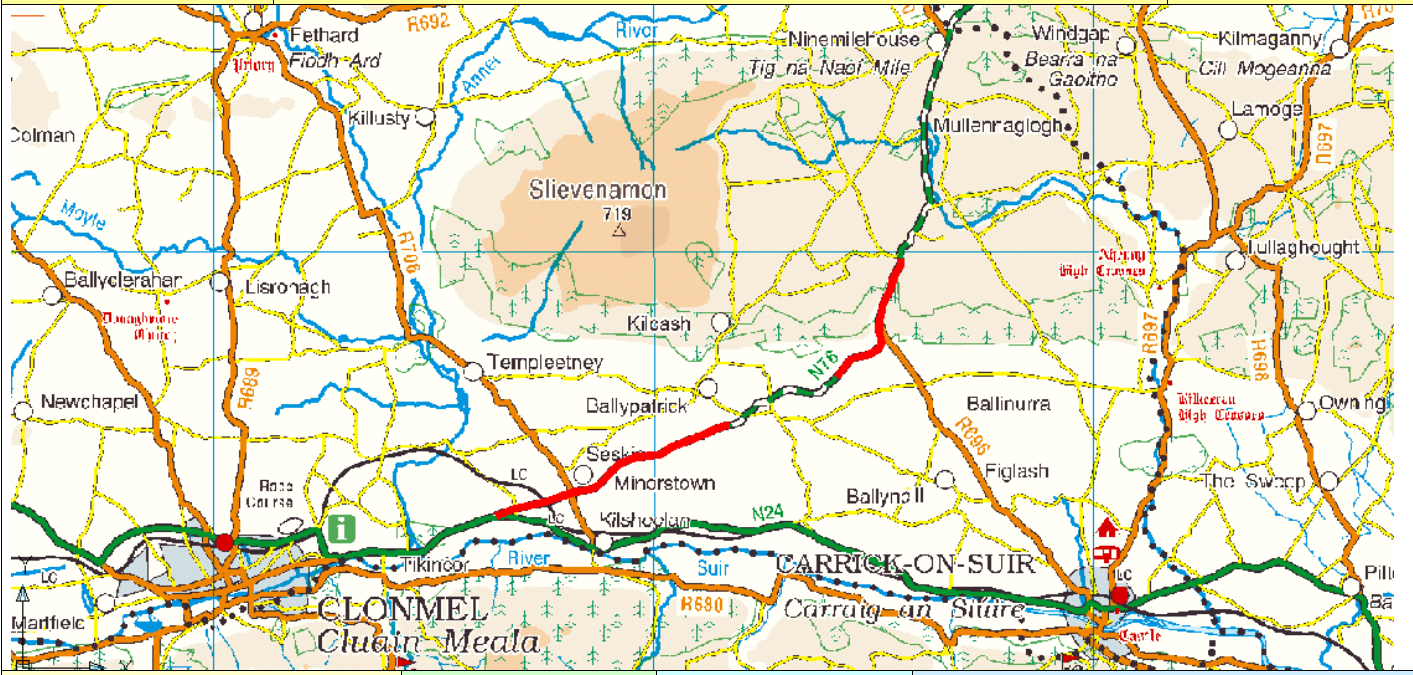
PABS Appraisal Summary Table - N76a.2.T1							
Scheme Option: N76 Callan Bypass (R692 junction) to Ninemilehouse		Description: 6.264km upgrade to S2 Type 1 standard	Problems Identified: · Approximately 9% of the route has lane widths < 2.75m · Approximately 50% of the route has lane widths > 3.75m · The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. · The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Route lane widths are less than 3.5m for 5km section south of Callan Bypass · Intermittent poor visibilities to V=85kph and V=100kph design standards. · Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. · Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. · Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Accident rate well above the national average for fatal accidents.			Budget Cost (million) €27.75	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		36 households affected in 2025	-€0.047	No	3.7	
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	3.8	
	Landscape and visual quality		36 households affected in 2025	-€0.033	No	4.0	
	Biodiversity				Not assessed	4.0	
	Cultural Heritage / archaeology		The proposed realignment will not impact directly or indirectly on any European or Nationally designated sites.		No	3.0	
	Landuse		No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Graveyard, a Church, a Ritual Site – Holy Well, a Ringfort and two NIAH Structures.				
Safety	Landuse		The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area around Ninemilehouse.		No	4.0	
	Water resources		The proposed realignments in this section of the N76 will not cross any water courses.		Np	4.0	
Economy	Accident reduction		0.4 accidents saved in 2025	€8.039		7.0	
	Security					4.0	
	Transport Efficiency and Effectiveness		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.5	
			49 vehicle-hours per day in travel time saved in 2025	Non-work Work €2.813 €3.623 €0.000			
				PVC Residual value €19.221 €1.673			
			Imperfect competition effects	€0.362		4.8	
Accessibility and Social Inclusion	Other economic impacts					4.0	
	Funding		Not assessed				
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0	
	Deprived geographic areas		3 CLAR zones experience improved access to Hub/Gateway			4.7	
	Transport integration					5.0	
	Land-use integration					4.6	
Integration	Geographical integration					4.1	
	Integration with other government policies					4.0	
				NPV	-€2.792	Total	4.6
				BCR	0.85	Red Flagged	No

N76.a.2.T2			Name: Callan Bypass (R692 junction) to Ninemilehouse				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
92122	0.290	76	1.9	0.4	3303	0.289	0.415	0.060	0.013	0.087
119263	3.533	76	1.9	0.4	3303	3.519	5.052	0.728	0.158	1.060
New (through Poulacapple)	0.573	(Qual score of 76 assumed)		0.0	Nc	0.573	0.819	0.118	0.026	0.172
119262 (Improvement to part of link)	1.393 used (Full length of link3.828)	77.5	1.3	0.3	3303	1.389	1.825	0.188	0.043	0.418
Break for existing section to Type 1										
119260 (Improvement to part of link)	0.239 used (Full length of link0.440)	75.5	1.3	0.3	3303	0.238	0.351	0.055	0.012	0.072
119255	0.236	75.5	1.3	0.3	3303	0.235	0.346	0.054	0.012	0.071
Callan Bypass to Ninemilehouse	Total 6.264					Total 6.243				
Notes: The route recommended for upgrade here is bendy and narrow in places with little overtaking opportunity. The section between Killtallaghan and just north of the junction with the R690 is already close to Type 1 standard and is not included for further upgrade here. There is a speed limit restriction at Poulacapple but it is proposed to carry this upgrade through this speed restricted area. There are no environmentally designated areas in the vicinity of this route. 1 No. Kilbride River crossing (narrow stone bridge to be replaced / widened). 1 No stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	8.808	1.203	0.263	1.879
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	12.153			

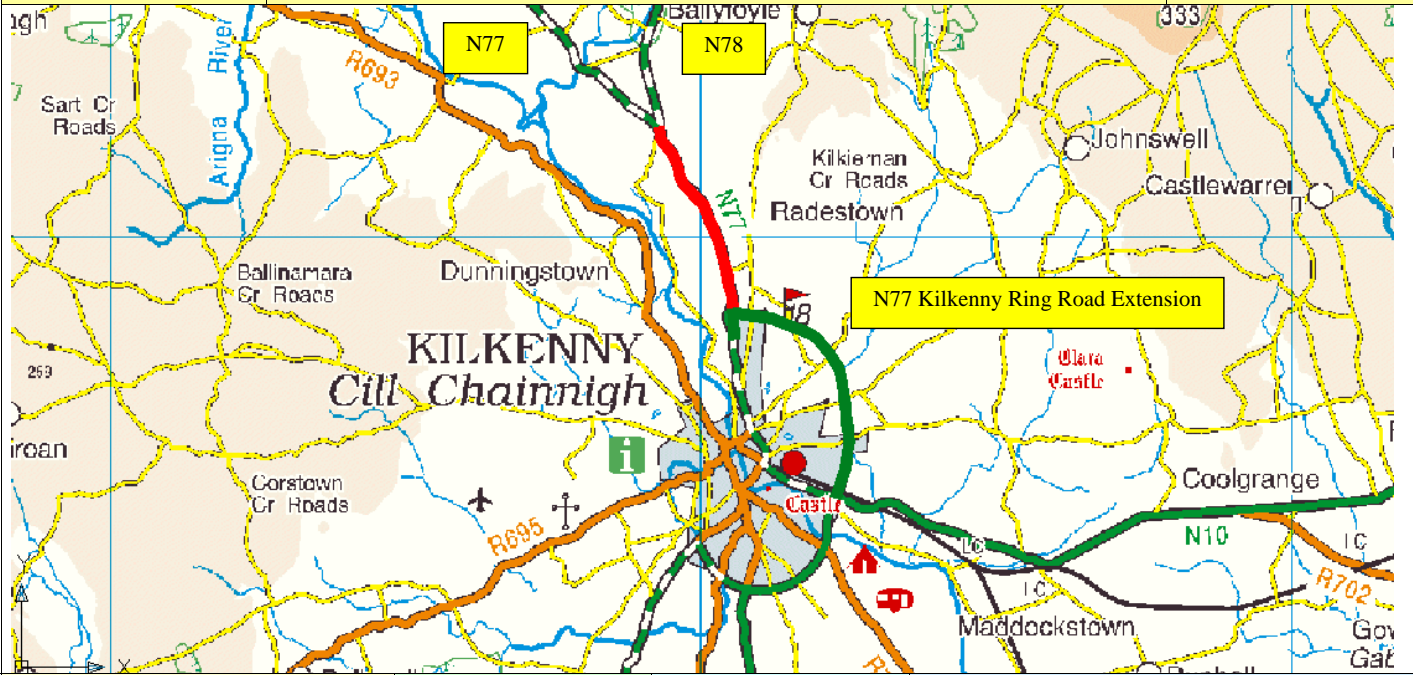
PABS Appraisal Summary Table - N76a.2.T2						
Scheme Option: N76 Callan Bypass (R692 junction) to Ninemilehouse		Description: 6.243km upgrade to S2 Type 2 standard	Problems Identified: · Approximately 9% of the route has lane widths < 2.75m · Approximately 50% of the route has lane widths > 3.75m · The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. · The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Route lane widths are less than 3.5m for 5km section south of Callan Bypass · Intermittent poor visibilities to V=85kph and V=100kph design standards. · Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. · Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. · Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Accident rate well above the national average for fatal accidents.			Budget Cost (million) €12.15
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		36 households affected in 2025	-€0.015	No	3.8
	Noise and vibration		0 tonnes of carbon saved in 2025	-€0.000	No	3.5
	Landscape and visual quality		36 households affected in 2025	-€0.033	Not assessed	4.0
	Biodiversity				No	4.0
	Cultural Heritage / archaeology		The proposed realignment will not impact directly or indirectly on any European or Nationally designated sites.		No	3.0
			No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Graveyard, a Church, a Ritual Site – Holy Well, a Ringfort and two NIAH Structures.			
	Landuse		The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area around Ninemilehouse.		No	4.0
	Water resources		The proposed realignments in this section of the N76 will not cross any water courses.		Np	4.0
Safety	Accident reduction		0.1 accidents saved in 2025	€3.562		7.0
	Security					4.0
Economy	Transport Efficiency and Effectiveness		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.6
			22 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €1.346 €1.679 €0.000		
				PVC Residual value €8.140 €0.543		
	Other economic impacts		Imperfect competition effects	€0.168		4.8
Accessibility and Social Inclusion	Funding		Not assessed			4.0
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			
	Deprived geographic areas			3 CLAR zones experience improved access to Hub/Gateway		4.8
	Transport integration					
Integration	Land-use integration					5.0
	Geographical integration					4.6
	Integration with other government policies					4.1
						4.0
				NPV	Total	
				BCR	0.89	Red Flagged
						4.7
						No

N76.a.3.T2			Name: Ninemilehouse to Clonmel (junction with N24)				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119257	1.338	75.5	2.3	0.9	3304	1.326	1.964	0.306	0.065	0.401
Break for section already better than Type 2 standard.										
119250 (Improvement to part of link)	1.527 used (Full length of link1.851)	71.5					2.650	0.589	0.119	0.458
119273	1.803	71.5	3.4	1.7	3305	1.501	3.129	0.695	0.141	0.541
Break for section already better than Type 2 standard										
119274 (Improvement to part of link)	0.719 used (Full length of link3.546)	74.5					1.108	0.195	0.041	0.216
119248	0.387	74.5	2.3	0.9	3303	0.713				
119244	2.619	74.5	3.6	1.4	3302	0.382	0.596	0.105	0.022	0.116
61750	0.110	74.5	3.6	1.4	3302	2.582	4.035	0.711	0.149	0.786
61752	0.060	74.5	3.6	1.4	3302	0.108	0.188	0.033	0.007	0.036
104054	0.380	74.5	3.6	1.4	3302	0.059	0.102	0.018	0.004	0.020
104912	0.380	74.5	3.6	1.4	3302	0.375	0.585	0.103	0.022	0.114
104912	1.380	74.5	3.6	1.4	3302	1.361	2.126	0.375	0.079	0.414
Ninemilehouse to Clonmel (N24)	Total 10.323					Total 10.179				
Notes: This route is narrow and bendy with little overtaking opportunity where proposed to be upgraded. There is however some overtaking opportunity between Ninemilehouse and Mullennaglogh. From Mullennaglogh to South Lodge (approx 2.8km) the existing route is to better than Type 2 standard and so is not included here. From here to the route is bendy and narrow and passes through a forest area. After this section there is a further section where the existing is to better than type 2 standard for approx 2.88km until Clashinisky. This section is also not included for upgrade here. From Clashinisky to the junction with the N24 the route is quite bendy and quite hilly in places with little overtaking opportunity. There is no speed restriction through the cross roads with the R706 so a new link has been added at this location. There are no environmentally designated areas in the vicinity of this route. 2 No. stream crossings. Forrest area at Brittas for approx 1.8km. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	16.483	3.131	0.649	3.102
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	23.365			

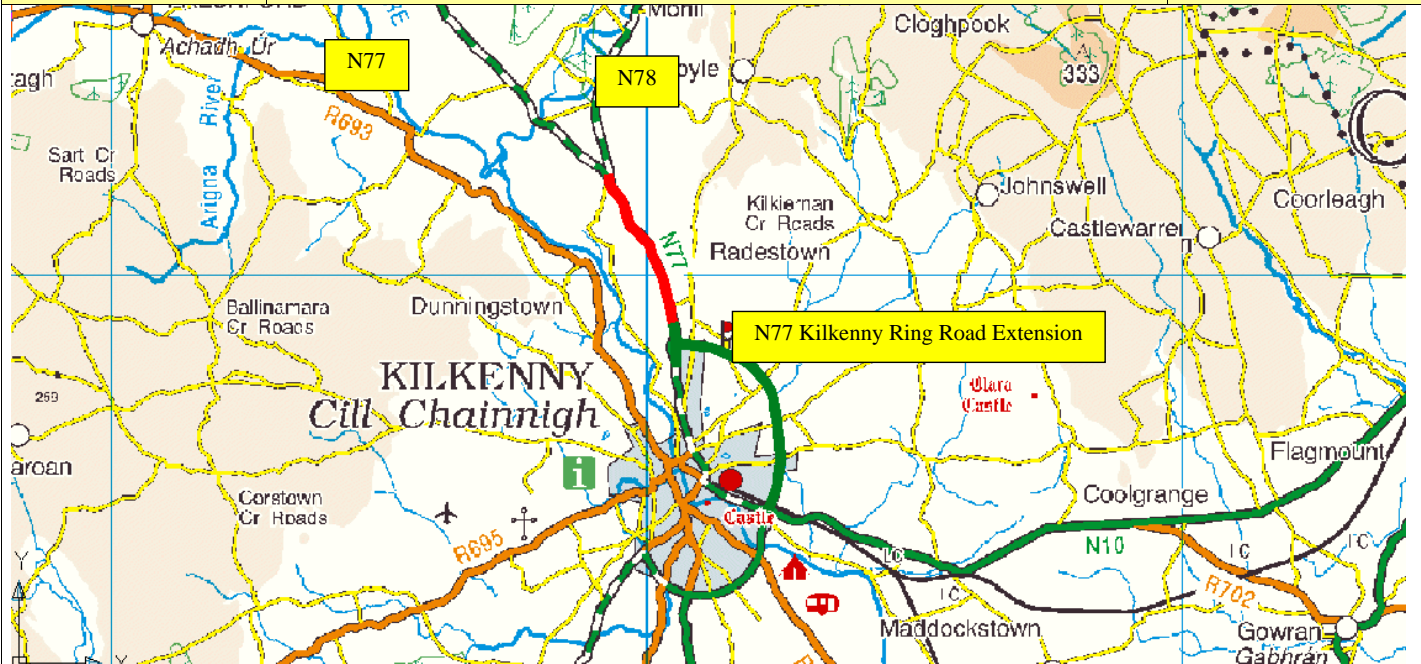
PABS Appraisal Summary Table - N76a.3.T2								
Scheme Option:		Description:	Problems Identified:	Monetised (million 30 yrs)	Score		Budget Cost (million) €23.37	
N76 Ninemilehouse to Clonmel (junction with N24)	10.179km upgrade to S2 Type 2 standard	Red Flag			Score			
Environment		Air Quality	81 households affected in 2025 -4 tonnes of carbon saved in 2025	-€0.138 €0.000	No	2.9	3.0	
		Noise and vibration Landscape and visual quality	81 households affected in 2025	-€0.107	No	Not assessed	3.1	
		Biodiversity	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Yes	3.0	
		Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Castle, an Enclosure and one NIAH Structure.			No	3.0	
		Landuse	The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area.			No	4.0	
		Water resources	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Yes	3.0	
		Accident reduction	None of the route corridor is within 4km of a settlement of 1,500 people or more.	1.3 accidents saved in 2025	€12.418		7.0	6.7
		Security					4.0	
		Transport Efficiency and Effectiveness		255 vehicle-hours per day in travel time saved in 2025	Non-work Work €8.061 €26.211 €0.000		7.0	7.0
		Other economic impacts		Imperfect competition effects	PVC Residual value €14.943 €1.156			
Accessibility and Social Inclusion		Funding	Not assessed			7.0		
		Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0	4.8	
		Deprived geographic areas		3 CLAR zones experience improved access to Hub/Gateway			5.6	
Integration		Transport integration				6.0	4.6	
		Land-use integration				4.6		
		Geographical integration				4.1		
		Integration with other government policies				4.0		
			NPV	€35.280	Total		5.5	
			BCR	3.36	Red Flagged		Yes	

N76.a.3.T3			Name: Ninemilehouse (Garrangibbon) to Clonmel (junction with N24)					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119250 (Improvement to part of link)	1.527 used (Full length of link1.851)	71.5	1.2	0.1	3307	1.525	1.629	0.174	0.051	0.458
119273	1.803	71.5	1.2	0.1	3307	1.801	1.923	0.205	0.061	0.541
Break for section already better than Type 2 standard										
119274 (Improvement to part of link)	0.719 used (Full length of link3.546)	74.5	0.7	0.0	3304	0.719	0.690	0.042	0.013	0.216
119248	0.387	74.5	1.2	0.1	3305	0.387	0.371	0.023	0.007	0.116
119244	2.619	74.5	1.2	0.1	3305	2.616	2.514	0.154	0.049	0.786
61750	0.110	74.5	1.2	0.1	3305	0.110	0.116	0.007	0.003	0.036
61752	0.060	74.5	1.2	0.1	3305	0.060	0.064	0.004	0.001	0.020
104054	0.380	74.5	1.2	0.1	3305	0.380	0.365	0.022	0.007	0.114
104912	1.380	74.5	1.2	0.1	3305	1.379	1.325	0.081	0.026	0.414
Ninemilehouse to Clonmel (N24)	Total 8.985					Total 8.977				
Notes: This route is narrow and bendy with little overtaking opportunity. There is however some overtaking opportunity between Ninemilehouse and Mullennalough. From Mullennalough to South Lodge (approx 2.8km) the existing route is to better than Type 2 standard and so is not included here. From here to the route is bendy and narrow and passes through a forest area. After this section there is a further section where the existing is to better than type 2 standard for approx 2.88km until Clashinisky. This section is also not included for upgrade here. From Clashinisky to the junction with the N24 the route is quite bendy and quite hilly in places with little overtaking opportunity. There is no speed restriction through the cross roads with the R706 so a new link has been added at this location. This option to improve to Type 3 is included to achieve alignment improvements over these sections. There are no environmentally designated areas in the vicinity of this route. 2 No. stream crossings. Forrest area at Brittas for approx 1.8km. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	8.998	0.713	0.218	2.701
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	12.630			

PABS Appraisal Summary Table - N76a.3.T3						
Scheme Option:		Description:	Problems Identified:	Budget Cost (million) €12.63		
N76 Ninemilehouse to Clonmel (junction with N24)		8.977km upgrade to S2 Type 3 standard				
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		49 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.033 €0.000	No	3.5
	Noise and vibration		49 households affected in 2025	-€0.067	No	3.0
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Yes	3.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Castle, an Enclosure and one NIAH Structure.			No	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area.			No	4.0
Safety	Water resources	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Yes	3.0
	Accident reduction		0.1 accidents saved in 2025	€1.175		5.2
Economy	Security	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport Efficiency and Effectiveness		38 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.404 €2.190 €0.000		4.7
				Active travel PVC Residual value €8.094 €0.472		
			Imperfect competition effects	€0.219		5.1
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Deprived geographic areas		3 CLAR zones experience improved access to Hub/Gateway			4.7
	Transport integration					6.0
	Land-use integration					4.6
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV	Total	4.5
				BCR	Red Flagged	Yes
					0.66	

N77.a.1.T1			Name: Kilkenny Ring Road Extension to the junction with the N78					Type: S2 Type 1		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
61494 (Improvement to part of link)	3.392 used (Full length of link 3.310)	69.5	N/A	0.0	3301	3.392	10.515	3.053	0.441	1.018
Kilkenny Ring Road Extension to Junction with the N78.	Total 3.392					Total 3.392				
<p>Notes:</p> <p>This route is bendy and quite hilly in places with no overtaking opportunities and is of quite a poor standard for the volume of traffic it serves.</p> <p>There River Nore is located to the west of this route and is environmentally designated as a combined NHA and SAC. There are also a number of small lakes closer to this route to the west of the route at Loughermans. These lakes are also environmentally designated as combined NHA's and SAC's.</p> <p>2 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p>						TOTAL:	10.515	3.053	0.441	1.018
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	15.027			

PABS Appraisal Summary Table - N77a.1.T1						
Scheme Option: N77 Kilkenny Ring Road Extension to the junction with the N78	Description: 3.392km upgrade to S2 Type 1 standard	Problems Identified: <ul style="list-style-type: none"> • Lane width > 3m for this section of the route and intermittently less than 3.5m wide. • Sightlines predominantly in the 20 to 120m range over this section. • Sightline problem identified for approximately 7km between the junction with the Kilkenny Ring Road Extension and the road to Threecastles. • Accident rate below the national average. • No major accident clusters over this section. • Poor pavement condition with approximately 95% of the route having a pavement condition indicator index, IRI > 4. 	Budget Cost (million) €5.03			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		24 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.010 €0.000	No	3.9
	Noise and vibration Landscape and visual quality	Not assessed	24 households affected in 2025	-€0.254	No	1.3
	Biodiversity	The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162) and on the Dunmore Complex pNHA (001859).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two Enclosures and two NIAH protected structures.			Yes	3.0
	Landuse Water resources	The proposed realignments will primarily be within Agricultural Areas. The proposed realignments in this section of the N77 may impact indirectly on the River Barrow and River Nore SAC (002162).			No	4.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	1.8 accidents saved in 2025	€17.332	Yes	3.0
Economy	Transport Efficiency and Effectiveness		555 vehicle-hours per day in travel time saved in 2025	€28.717 €24.198 €0.000		7.0
	Other economic impacts Funding	Not assessed	Imperfect competition effects	PVC Residual value €11.223 €0.906 €2.420		7.0
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	3 CLAR zones experience improved access to Hub/Gateway			4.0
Accessibility and Social Inclusion	Transport integration					6.0
	Land-use integration					6.0
	Geographical integration					4.6
Integration	Integration with other government policies					5.1
						6.2
				NPV	€62.085	Total
				BCR	6.53	Red Flagged
						5.7
						Yes

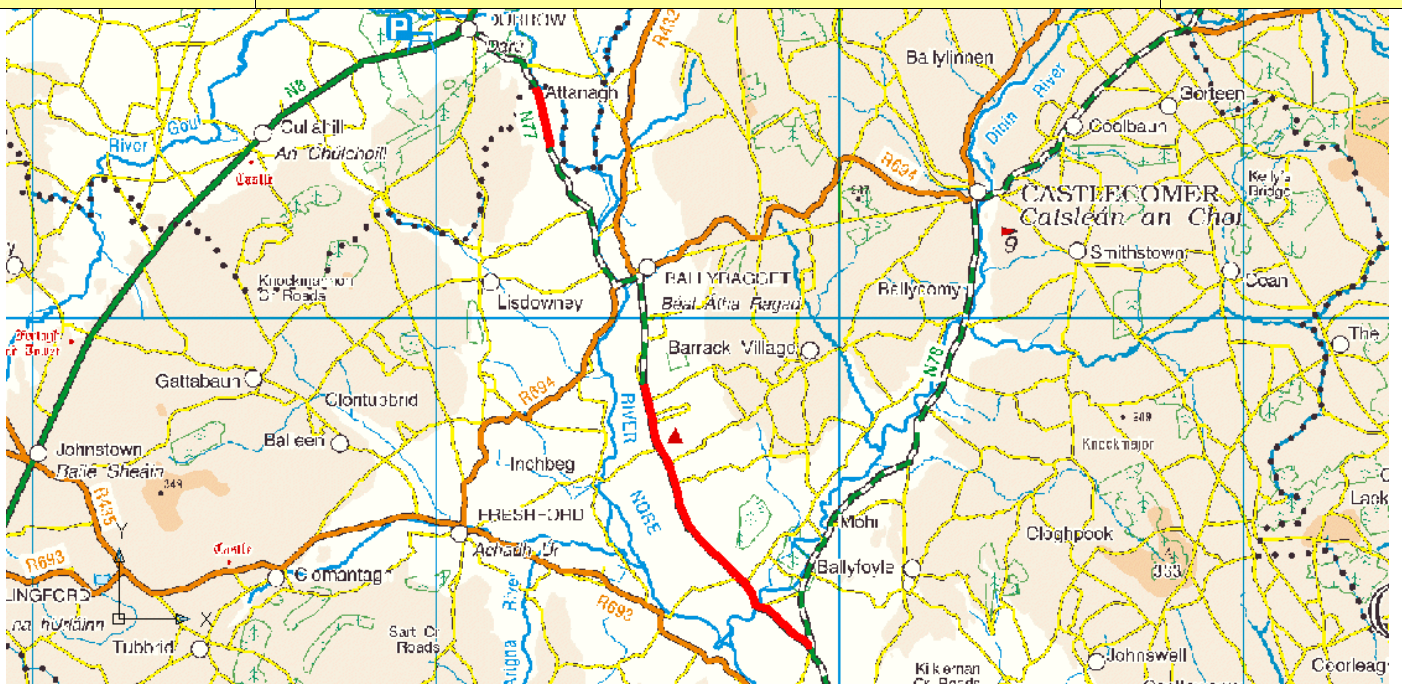
N77.a.1.T2			Name: Kilkenny Ring Road Extension to the junction with the N78						Type: S2 Type 2	
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
61494 (Improvement to part of link)	3.102 used (Full length of link 3.310)	69.5	5.3	3.0	3305	3.009	5.724	1.393	0.278	0.931
Kilkenny Ring Road Extension to Junction with the N78.	Total 3.102					Total 3.009				
<p>Notes:</p> <p>This route is bendy and quite hilly in places with no overtaking opportunities and is of quite a poor standard for the volume of traffic it serves.</p> <p>There River Nore is located to the west of this route and is environmentally designated as a combined NHA and SAC. There are also a number of small lakes closer to this route to the west of the route at Loughermans. These lakes are also environmentally designated as combined NHA's and SAC's.</p> <p>2 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p>						TOTAL:	5.724	1.393	0.278	0.931
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	8.326			

PABS Appraisal Summary Table - N77a.1.T2						
Scheme Option: N77 Kilkenny Ring Road Extension to the junction with the N78	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Description: 3.009km upgrade to S2 Type 2 standard Problems Identified: <ul style="list-style-type: none"> - Lane width > 3m for this section of the route and intermittently less than 3.5m wide. - Sightlines predominantly in the 20 to 120m range over this section. - Sightline problem identified for approximately 7km between the junction with the Kilkenny Ring Road Extension and the road to Threecastles. - Accident rate below the national average. - No major accident clusters over this section. - Poor pavement condition with approximately 95% of the route having a pavement condition indicator index, IRI > 4. 	Air Quality		24 households affected in 2025 1 tonnes of carbon saved in 2025	€0.026 €0.000	No	4.5
	Noise and vibration Landscape and visual quality	Not assessed	24 households affected in 2025	-€0.027	No	3.5
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162) and on the Dunmore Complex pNHA (001859).			Yes	3.0
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two Enclosures and two NIAH protected structures.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Accident reduction	The proposed realignments in this section of the N77 may impact indirectly on the River Barrow and River Nore SAC (002162).			Yes	3.0
	Security		1.0 accidents saved in 2025	€3.090		7.0
	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				4.0
	Other economic impacts		354 vehicle-hours per day in travel time saved in 2025	Non-work Work €21.127 €17.577		7.0
Accessibility and Social Inclusion Integration	Funding	Not assessed		Active travel €0.000		
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.		PVC Residual €6.342 €0.450		
	Deprived geographic areas		Imperfect competition effects	value €1.758		7.0
	Transport integration					4.0
Integration	Land-use integration					4.0
	Geographical integration		3 CLAR zones experience improved access to Hub/Gateway			6.5
	Integration with other government policies					
						6.0
Integration						4.6
						5.1
						6.2
Integration				NPV	€37 660	Total
				BCR	6.94	Red Flagged
						5.7
						Yes

N77.a.2.T2

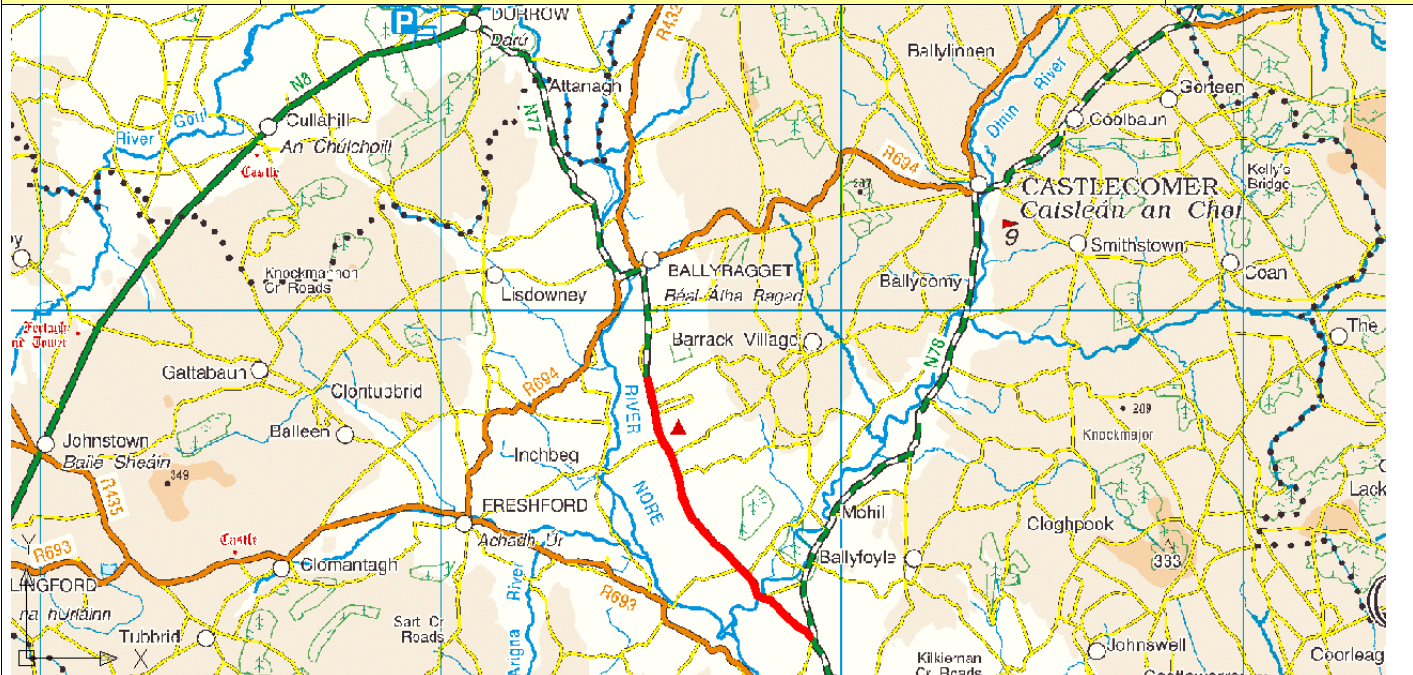
Name: Junction with the N78 to Durrow

Type: S2 Type 2




Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
92005	2.250	69.5	5.3	3.0	3305	2.182	4.152	1.010	0.201	0.675	
119283	0.398	69.5	5.3	3.0	3305	0.386	0.734	0.179	0.036	0.119	
119284	5.113	75	2.3	0.4	3304	5.093	7.694	1.281	0.271	1.534	
120906 (Former link no. 119282)	0.278 (Former link length 1.845)	70 assumed (Former link score 79)	N/A	0.0	3304	0.278	0.506	0.121	0.024	0.083	
Break at Ballyragget											
120911 (Former link no. 119278)	1.516 (Former link length 4.759)	70 assumed (Former link score 73.5)	2.9	1.2	3304	1.498	2.758	0.658	0.132	0.455	
Junction with the N78 to Durrow	Total 9.555					Total 9.437					
<p>Notes:</p> <p>From the junction with the N78 until approx 1.615km before Ballyragget the route is bendy and hilly and is quite narrow in places with little or no overtaking opportunity. The final 1.615km to the speed limit restriction at Ballyragget is to Type 1 standard and is therefore not included in this upgrade.</p> <p>From Ballyragget to Durrow the route is quite varied in standard. The first 1.862km north of the speed limit at Ballyragget is to Type 1 standard. The next 1.678km is to Type 2 standard already and therefore both of these sections are not proposed for upgrade here. There is then a narrow, hilly straight section for approx 1.52km that is proposed to be upgraded here (this may be similar to the N77 Ballynaslee Realignment scheme – currently at Prelim Design), there is no overtaking along this straight section due to the poor vertical alignment. North of this section there is a further section of 531m which is to Type 2 standard followed by a section (1.06km) which is to Type 1 standard up until the speed limit restriction at Durrow. These two final sections are not included in this upgrade also.</p> <p>The River Nore runs parallel to this route and in close proximity to it in places. The River Nore is environmentally designated as both an NHA and an SAC.</p> <p>1 No. new bridge over the Dinin River (Dinin Bridge) as the existing bridge is narrow and humped and is on a bad bend. (medium structure).</p> <p>High stone walls over much of the section from Jenkinstown to the Dinin River crossing.</p> <p>High Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p> <p>Split links: 119282 @ 245,130 168,350. Remainder s/b 1.567 km> Original class change not reflecting facts on ground</p> <p>Split Link 119278 @ 242,430 175,710 (north end) AND 242,810 174,250 (south end) remainders to sum to 3 243 km> Use Pro-rata tool on length/total</p>							TOTAL:	15.844	3.248	0.664	2.867
							Any special costs	0.300	0.000	0.000	0.000
							Grand Total	22 923			

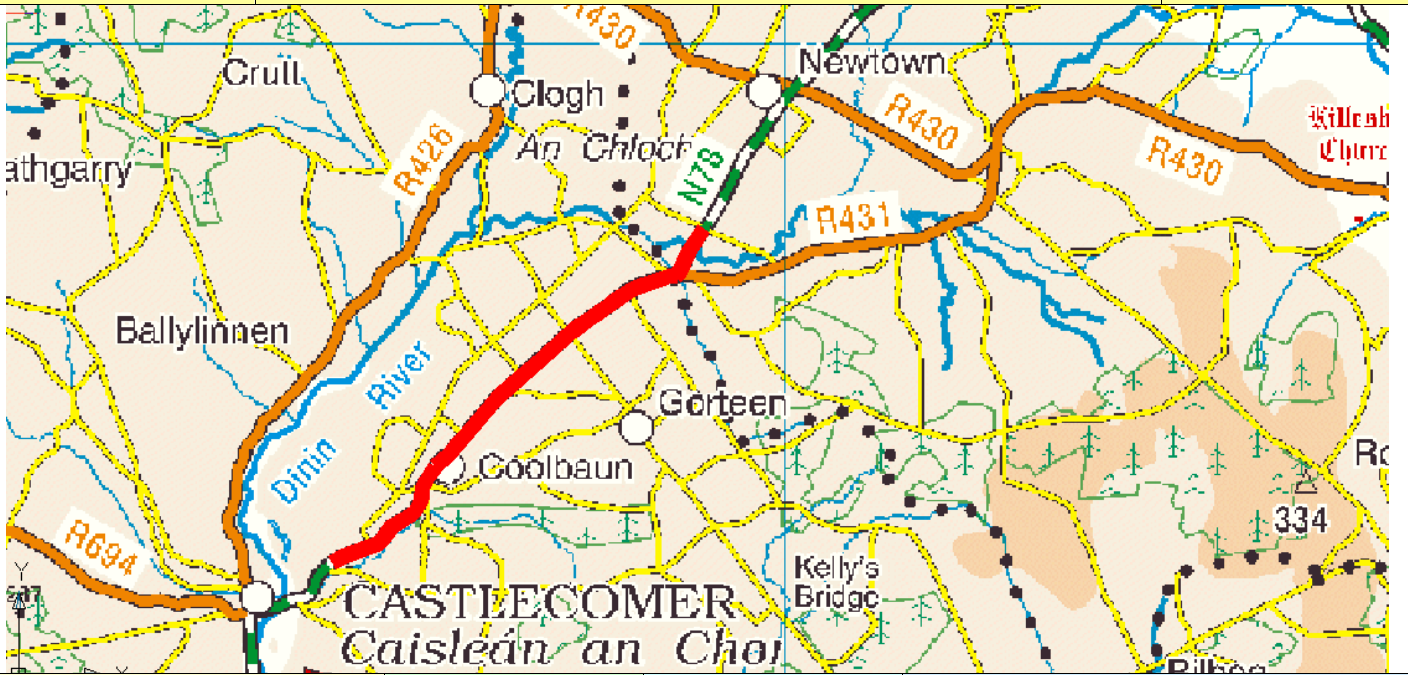
PABS Appraisal Summary Table - N77a.2.T2						
Scheme Option: N77 Junction with the N78 to Durrow		Description: 9.437km upgrade to S2 Type 2 standard	Problems Identified:			
			<ul style="list-style-type: none"> - Lane width > 3m for this section of the route and intermittently less than 3.5m wide. - Sightlines predominantly in the 20 to 120m range over this section. - Sightline problem identified for approximately 7km between the junction with the Kilkenny Ring Road Extension and the road to Threecastles. - Accident rate below the national average. - No major accident clusters over this section. - Poor pavement condition with approximately 95% of the route having a pavement condition indicator index, IRI > 4. 			
			Budget Cost (million) €22.92			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		91 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.039 €0.000	No	3.7
	Noise and vibration Landscape and visual quality	Not assessed	91 households affected in 2025	€0.037	No	4.3
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162), the River Nore/Abbeyleix Woods Complex pNHA (002076) and the Nore Freshwater Pearl Mussel catchment, and may impact indirectly on Ardaloo pNHA (000821) and Inchbeg pNHA (000836).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five Enclosures, six Ring-Ditches and two NIAH protected structures.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
Safety	Accident reduction	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) by crossing the River Dinn.			Yes	2.5
Economy	Security		1.6 accidents saved in 2025	€12.660		7.0
	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				4.0
			333 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €19.402 €22.461 €0.000		7.0
Accessibility and Social Inclusion	Other economic impacts			PVC Residual value €15.940 €1.161		
	Funding	Not assessed	Imperfect competition effects	€2.246		7.0
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Transport integration		2 CLAR zones experience improved access to Hub/Gateway			4.7
	Land-use integration					5.0
	Geographical integration					4.6
	Integration with other government policies					5.3
						6.6
				NPV	€41.989	Total
				BCR	3.63	Red Flagged
						5.6
						Yes

N77.a.2.T3			Name: Junction with the N78 to Ballyragget					Type: S2 Type 3			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
92005	2.250	69.5	2.2	0.5	3308	2.238	2.539	0.329	0.095	0.675	
119283	0.398	69.5	2.2	0.5	3308	0.396	0.449	0.058	0.017	0.119	
119284	5.113	75	0.6	0.0	3305	5.113	4.808	0.250	0.082	1.534	
1209012 (Former link no. 119282)	0.278 (Former link length 1.845)	70 assumed (Former link score 79)	N/A	0.0	3305	0.278	0.310	0.039	0.011	0.083	
Junction with the N78 to Ballyragget	Total 8.039					Total 8.026					
Notes: From the junction with the N78 until approx 1.615km before Ballyragget the route is bendy and hilly and is quite narrow in places with little or no overtaking opportunity. The final 1.615km to the speed limit restriction at Ballyragget is to Type 1 standard and is therefore not included in this upgrade. From Ballyragget to Durrow the route is quite varied in standard but generally at least to Type 3 standard already and therefore this section is not proposed for upgrade here. The River Nore runs parallel to the west of this route and in close proximity to it in places. The River Nore is environmentally designated as both an NHA and an SAC. 1 No. new bridge over the Dinin River (Dinin Bridge) as the existing bridge is narrow and humped and is on a bad bend. (medium structure). High stone walls over much of the section from Jenkinstown to the Dinin River crossing. High Traffic Good Subgrade – Maintenance Category 1 IRI 2.6 to 3.5 – Maintenance Bracket 2 Recycle split link from N77.a.2.T2 variant and change road class. From N77.a.2.T2 instructions Split links: 119282 @ 245,130 168,350. Remainder s/b 1.567 km> Original class change not reflecting facts on ground.							TOTAL:	8.107	0.676	0.205	2.412
							Any special costs	0.200	0.000	0.000	0.000
							Grand Total	11.600			

PABS Appraisal Summary Table - N77a.2.T3						
Scheme Option: N77 Junction with the N78 to Ballyragget		Description: 8.026km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane width > 3m for this section of the route and intermittently less than 3.5m wide. • Sightlines predominantly in the 20 to 120m range over this section. • Sightline problem identified for approximately 7km between the junction with the Kilkenny Ring Road Extension and the road to Threecastles. • Accident rate below the national average. • No major accident clusters over this section. • Poor pavement condition with approximately 95% of the route having a pavement condition indicator index, IRI > 4. 			
			Budget Cost (million) €1.60			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		72 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.001 €0.000	No	4.0
	Noise and vibration Landscape and visual quality	Not assessed	72 households affected in 2025	€0.066	No	5.0
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology (002162) and may impact indirectly on Ardaloó pNHA (000821) and Inchbeg pNHA (000836).	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) and may impact indirectly on Ardaloó pNHA (000821) and Inchbeg pNHA (000836).			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five Enclosures, six Ring-Ditches and two NIAH protected structures. The proposed realignments will primarily be within Agricultural Areas. The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) by crossing the River Dinin.			No	3.0
Safety	Accident reduction Security		0.4 accidents saved in 2025	€1.976	Yes	4.0
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				6.1
			124 vehicle-hours per day in travel time saved in 2025	Non-work Work €7.062 €8.143 €0.000		7.0
	Other economic impacts			PVC Residual value €7.590 €0.439		
	Funding	Not assessed	Imperfect competition effects	€0.814		7.0
Accessibility and Social Inclusion	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Transport Integration Land-use integration Geographical integration Integration with other government policies		2 CLAR zones experience improved access to Hub/Gateway			4.6
						5.0
						4.6
						5.3
						6.6
				NPV	Total	5.5
				BCR	Red Flagged	Yes
				€10.909	2.44	

N77.r.1.T2			Name: Ballyragget Relief Road					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120935	1.693	N/A	N/A	0.0	3033	1.693	3.125	0.760	0.152	0.508
120937	0.793	N/A	N/A	0.0	3033	0.793	1.463	0.356	0.071	0.238
Ballyragget Relief Road						Total 2.486				
<p>Notes:</p> <p>This route passes to the southwest of Ballyragget and passes through primarily agricultural land.</p> <p>1 No. junction with the R694.</p> <p>1 No. River Nore crossing. (medium structure).</p> <p>The River Nore is environmentally designated as combined NHA and SAC.</p> <p>1 No. junction with a local road.</p> <p>High Traffic Good Subgrade – Maintenance Category 1</p> <p>By pass topology</p> <p>Split link: 119280 (N77) @ 243,940 171,750</p> <p>Split link: 91974 (R694) @ 244,410 170,180</p> <p>Connect by pass @ southern end into existing node: 59684</p> <p>Pro rata 2.486 km length among the 2 parts using pro-rata tool on lengulator</p>						TOTAL:	4.588	1.116	0.223	0.746
						Any special costs	0.300	0.000	0.000	0.000
						Grand Total	6.973			

PABS Appraisal Summary Table - N77r.1.T2						
Scheme Option: N77 Ballyragget Relief Road		Description: 2.486km upgrade to S2 Type 2 standard	Problems Identified:			
						Budget Cost (million) €6.97
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162), the River Nore/Abbeyleix Woods Complex pNHA (002076) and the Nore Freshwater Pearl Mussel catchment.			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Ringfort and a Ring-Ditch.			No	3.0
	Water resources	The proposed realignments will primarily be within Agricultural Areas, with a small section through existing Artificial Surfaces.			No	4.0
		The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) by crossing the River Nore directly, and the Nore Freshwater Pearl Mussel catchment.			Yes	2.5
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	3.0 accidents saved in 2025	€7.090		7.0
Economy	Transport Efficiency and Effectiveness		325 vehicle-hours per day in travel time saved in 2025	€19.450		7.0
				€24.154		
				€0.000		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	PVC Residual value		
	Funding	Not assessed		€2.415		7.0
	Vulnerable groups Deprived geographic areas	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Transport integration		1 CLAR zones experience improved access to Hub/Gateway			5.1
	Land-use integration					
	Geographical integration					4.0
	Integration with other government policies					4.6
				NPV	€47.443	5.6
				BCR	8.86	Yes
				Total		Red Flagged

N78.c.2.T2			Name: Newtown to Castlecomer					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120912 (Former link no. 119290)	0.683 (Former link length 2.542)	70 assumed (Former link score 76)	1.6	0.4%	3303	0.680	1.243	0.297	0.059	0.205	
119291	0.410	76	1.6	0.4%	3303	0.408	0.586	0.085	0.018	0.123	
119292	0.467	78.5	0.9	0.1%	3303	0.467	0.572	0.039	0.010	0.140	
119294	3.015	78.5	0.9	0.1%	3303	3.012	3.694	0.255	0.065	0.905	
119296	1.863	74.5	2.7	0.9%	3303	1.846	2.870	0.506	0.106	0.559	
Newtown to Castlecomer	Total 6.438					Total 6.413					
<p>Notes:</p> <p>The first 1.859km of this route south of the speed limit restriction at Newtown is to Type 1 standard approx and is therefore not considered for upgrade here. The next section is quite bendy from north of Ormonde Bridge (Killeen River) through Crettyard. The route then widens out to Type 1 standard and then back to Type 2 standard until the cross roads at Railyard. This Type 1 and Type 2 section (1.12km) has been removed from the costs. After the Railway Cross Roads the route is straight for a stretch and is to approx Type 3 standard before becoming bendy and narrow at the approach to Castlecomer. There are a number of bad bends over this last section.</p> <p>The Dinin River which connects with the Killeen River north of Crettyard at Ormonde Bridge is environmentally designated as a Special Area of Conservation.</p> <p>The existing Ormonde Bridge over the Rivir Killeen may need to be widened / replaced as part of this upgrade.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>SPLIT LINK: 119290 @ 258,980 177,730 remainder s/b 1.859km (now link 120912)</p>							TOTAL:	8.965	1.181	0.259	1.931
							Any special costs	0.300 -1.160	-0.205	-0.045	-0.336
							Grand Total	10.890			

PABS Appraisal Summary Table - N78c.2.T2						
Scheme Option: N78 Newtown to Castlecomer		Description: 6.413km upgrade to S2 Type 2 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths remain generally above 3.75m for approximately 50% of this corridor but dip to the 3.0 to 3.5m range and the 2.75 to 3.0m range at a number of locations. • Poor lane widths from the junction with the N80 south for approx 8km • Lane widths over the last 6.5km into Castlecomer are primarily in the 3.0 to 3.5m range. • Intermittent poor visibilities to V=85kph and V=100kph design standards. • South of the junction with the N80 for approximately 8km the visibility is sporadic and dips to the 120 to 180m range. • From Coolbaun to Castlecomer the visibility is particularly poor and is primarily in the 20 to 120m range. • Fatal and serious accident rates below the national average. • Accident problem evident at the junction with the local road to Swan, north of the village and the junction with the R430. • Accident problem evident at from Cretyard south for approximately 3km. • Relatively good pavement condition. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		95 households affected in 2025 1 tonnes of carbon saved in 2025	€0.017 €0.000	No	4.3
	Noise and vibration Landscape and visual quality	Not assessed	95 households affected in 2025	-€0.087	No	2.6
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including four NIAH Structures.			No	3.0
Safety	Water resources	The proposed realignments will primarily be within Agricultural Areas with a section through existing Artificial Surfaces.			No	4.0
	Accident reduction Security	The proposed realignments in this section of the N78 will cross the Dinin River which is designated under the River Barrow and River Nore SAC (002162).	0.1 accidents saved in 2025	€1.838	Yes	2.5
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				6.0
						4.0
			13 vehicle-hours per day in travel time saved in 2025	Non-work Work €0.864 €0.460 €0.000		4.3
Accessibility and Social Inclusion	Other economic impacts			PVC Residual value €7.256 €0.479		
	Funding	Not assessed	Imperfect competition effects	€0.046		4.3
Integration	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		3 CLAR zones experience improved access to Hub/Gateway			4.2
						5.0
						4.3
						4.1
						4.0
				NPV	Total	4.3
				BCR	Red Flagged	Yes
				0.50		

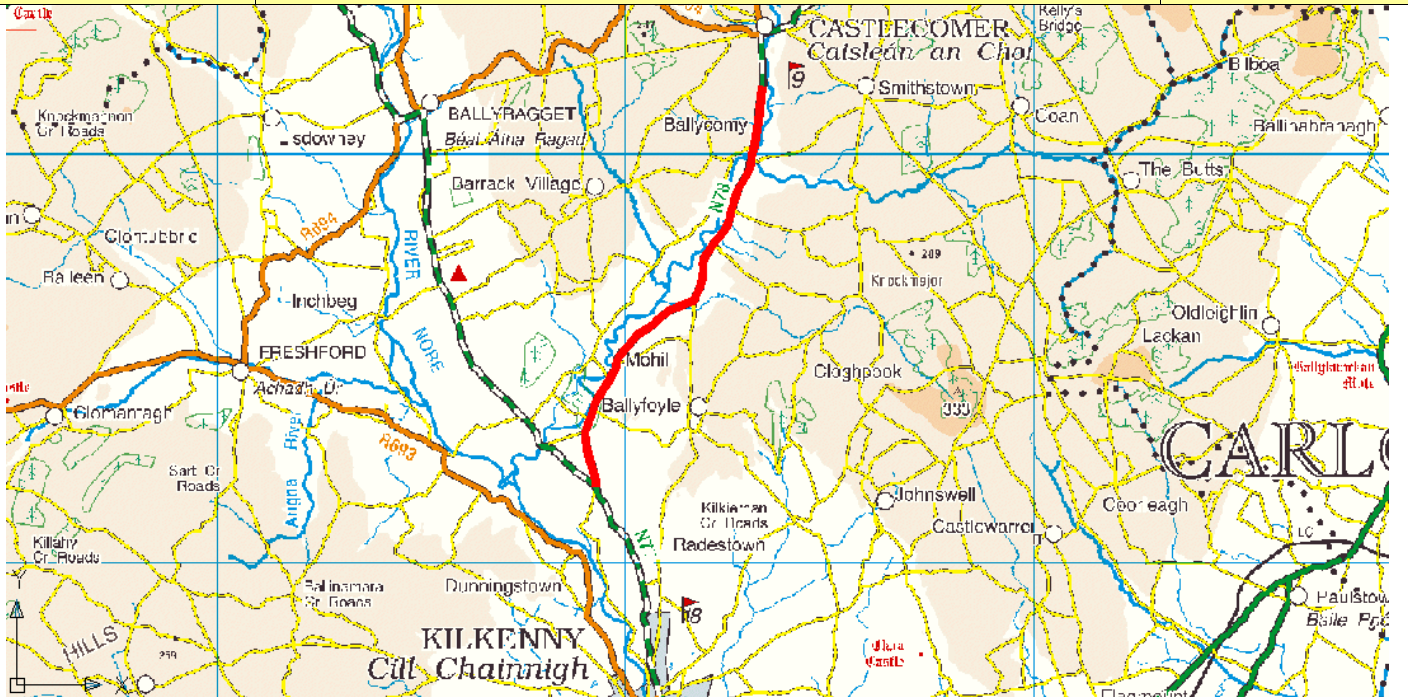
N78.c.2.T3

Name: Coolbaun to Castlecomer

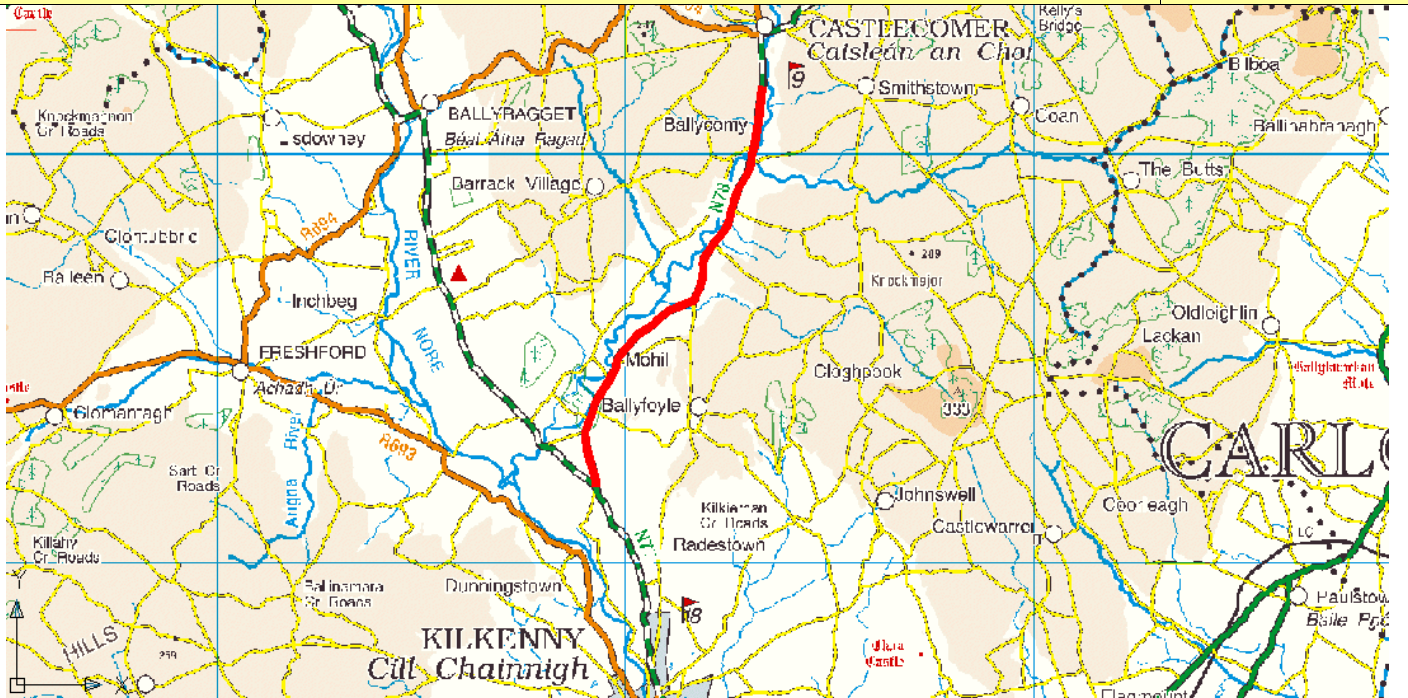
Type: S2 Type 3

Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
119296	1.863	74.5	0.7	0.00	3305	1.863	1.788	0.110	0.035	0.559	
Coolbaun to Castlecomer	Total 1.863					Total 1.863					
Notes: The last 1.863km of this route north of the speed limit restriction at Castlecomer is bendy and even though widths are circa Type 3 standard, there would be benefits to improving the bendiness under a Type 3 upgrade. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1							TOTAL:	1.788	0.110	0.035	0.559
							Any special costs	0.000	0.000	0.000	0.000
							Grand Total	2.492			

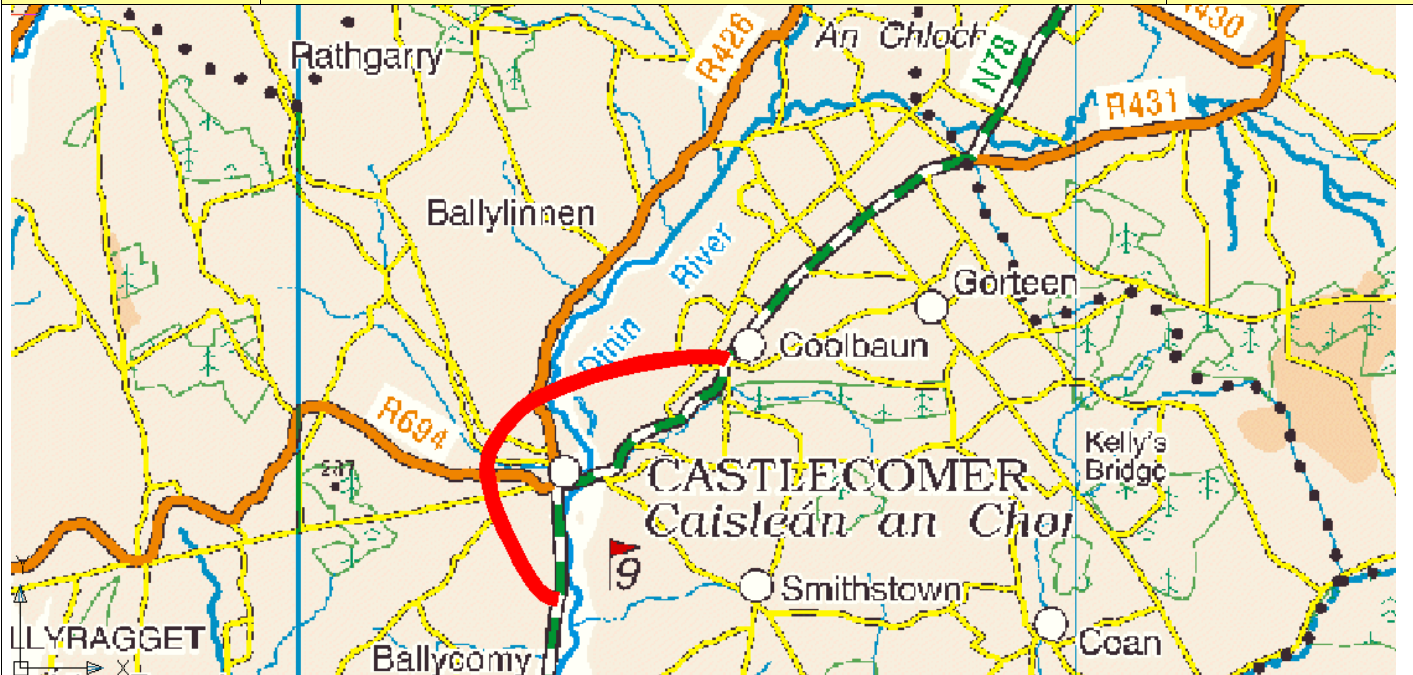
PABS Appraisal Summary Table - N78c.2.T3						
Scheme Option: N78 Coolbaun to Castlecomer		Description: 1.863km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths remain generally above 3.75m for approximately 50% of this corridor but dip to the 3.0 to 3.5m range and the 2.75 to 3.0m range at a number of locations. • Poor lane widths from the junction with the N80 south for approx 8km • Lane widths over the last 6.5km into Castlecomer are primarily in the 3.0 to 3.5m range. • Intermittent poor visibilities to V=85kph and V=100kph design standards. • South of the junction with the N80 for approximately 8km the visibility is sporadic and dips to the 120 to 180m range. • From Coolbaun to Castlecomer the visibility is particularly poor and is primarily in the 20 to 120m range. • Fatal and serious accident rates below the national average. • Accident problem evident at the junction with the local road to Swan, north of the village and the junction with the R430. • Accident problem evident at from Creityard south for approximately 3km. • Relatively good pavement condition. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		8 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000 €0.000	No	4.0
	Noise and vibration Landscape and visual quality	Not assessed	8 households affected in 2025	€0.000	No	4.0
	Biodiversity	The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including three NIAH Structures.			Yes	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas with a section through existing Artificial Surfaces.			No	3.0
	Water resources	The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162).			Yes	3.0
	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.0 accidents saved in 2025	€0.327		5.6
Safety						4.0
Economy	Transport Efficiency and Effectiveness		2 vehicle-hours per day in travel time saved in 2025	Non-work Work €0.160 €0.087		4.2
				Active travel €0.000		
				PVC Residual €1.610 €0.089		
	Other economic impacts		Imperfect competition effects	€0.009		4.2
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	0 CLAR zones experience improved access to Hub/Gateway			4.1
Integration	Transport integration					5.0
	Land-use integration					4.3
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV	Total	4.3
				BCR	Red Flagged	Yes
					0.42	

N78.d.1.T2			Name: Castlecomer to N77 near Kilkenny							Type: S2 Type 2	
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
119297	3.164	74.5	2.7	0.9	3303	3.136	4.875	0.859	0.180	0.949	
119298	3.462	72.5	3.3	1.2	3305	3.420	5.797	1.212	0.248	1.039	
92004	4.710	72.5	3.3	1.2	3305	4.653	7.887	1.649	0.337	1.413	
Castlecomer to N77 near Kilkenny	Total 11.336					Total 11.209					
<p>Notes:</p> <p>This route is quite bendy and is hilly and narrow in places. The alignment is to below Type 3 standard in most places due to bendiness, though widths are close to Type 3 standard, and overtaking is substandard. There is however a 1.35km section south of Castlecomer at Dysart Glebe that is to Type 1 standard. This section has been removed from the costs of this scheme.</p> <p>The Dinin River is environmentally designated as a Special Area of Conservation and runs parallel to this route for the majority of this section. The Douglas River is also designated as an SAC and this route crosses the Douglas River north of Corbetstown.</p> <p>The existing Dysart Bridges are located at the Type 1 section mentioned above and will not need to be upgraded as part of this scheme.</p> <p>The existing stone bridge Douglas River crossing will need to be widened / replaced as part of this upgrade.</p> <p>Large stone walls in front of forest area at Ballyraffon (approx 600m)</p> <p>4 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	18.559	3.721	0.766	3.401	
						Any special costs	0.300 -2.210	-0.443	-0.091	-0.405	
						Grand Total	23.598				

PABS Appraisal Summary Table - N78d.1.12						
Scheme Option: N78 Castlecomer to N77 near Kilkenny		Description: 11.209km upgrade to S2 Type 2 standard		Problems Identified:		Budget Cost (million) €23.60
				<ul style="list-style-type: none">• Lane widths remain in the 3.0 to 3.5m range for approximately 85% of this corridor but dip to the 2.75 to 3.0m range on one occasion.• For the first approx 5km out of Castlecomer the lane widths are primarily over 3.75m.• Poor lane widths from the junction with the N77 north for approx 9km• Intermittent poor visibilities to V=85kph and V=100kph design standards.• From the junction with the N77 at the end of the route north for approximately 8km has intermittently poor visibility and dips into the 20 to 120m range at a number of locations.• Fatal and serious accident rates below the national average.• Accidents more sporadic than in clusters.• Accident problem evident at 2km stretch approximately 5km north of the junction with the N77.• Approximately 50% of this corridor has a pavement condition index, IRI > 4.• Poor pavement condition for 3km south of Castlecomer.• Poor pavement condition for 7km north of N77 junction.		
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		58 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.029 €0.000	No	3.8
	Noise and vibration Landscape and visual quality		58 households affected in 2025	-€0.097	No	3.3
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section. Further, there is potential for indirect impacts to Esker Pits pNHA (000832) and Dunmore Cave pNHA (000401).			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two Fulacht Fia, an Enclosure, a Bridge and six NIAH Structures. The proposed realignments will primarily be within Agricultural Areas. The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section.			No	3.0
Safety	Accident reduction Security		0.5 accidents saved in 2025	€5.635		6.8
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				4.0
			94 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value	€6.142 €1.684 €0.000 €15.870 €1.186 €0.168	4.7 4.4 4.0
Accessibility and Social Inclusion	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Transport integration Land-use integration Geographical integration Integration with other government policies		6 CLAR zones experience improved access to Hub/Gateway			4.6
						6.0
						4.3
						4.1
						4.0
				NPV BCR	-€1.181 0.93	Total Red Flagged
						4.6 Yes

N78.d.1.T3			Name: Castlecomer to N77 near Kilkenny					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119297	3.164	74.5	0.7	0.0	3305	3.164	3.037	0.186	0.059	0.949
119298	3.462	72.5	1.0	0.0	3307	3.462	3.576	0.334	0.100	1.039
92004	4.710	72.5	1.0	0.0	3307	4.710	4.865	0.454	0.136	1.413
Castlecomer to N77 near Kilkenny	Total 11.336					Total 11.336				
<p>Notes:</p> <p>This route is quite bendy and is hilly and narrow in places. The alignment is to below Type 3 standard in most places due to bendiness, though widths are close to Type 3 standard, and overtaking is substandard. The option to improve to Type 3 standard should focus on reducing the bendiness of the existing corridor. There is however a 1.35km section south of Castlecomer at Dysart Glebe that is to Type 1 standard. This section has been removed from the costs of this scheme.</p> <p>The Dinin River is environmentally designated as a Special Area of Conservation and runs parallel to this route for the majority of this section. The Douglas River is also designated as an SAC and this route crosses the Douglas River north of Corbetstown.</p> <p>The existing Dysart Bridges are located at the Type 1 section mentioned above and will not need to be upgraded as part of this scheme.</p> <p>The existing stone bridge Douglas River crossing will need to be widened / replaced as part of this upgrade.</p> <p>Large stone walls in front of forest area at Ballyraftern (approx 600m)</p> <p>4 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	11.479	0.975	0.296	3.401
						Any special costs	0.200 -1.367	-0.116	-0.035	-0.405
						Grand Total	14.428			

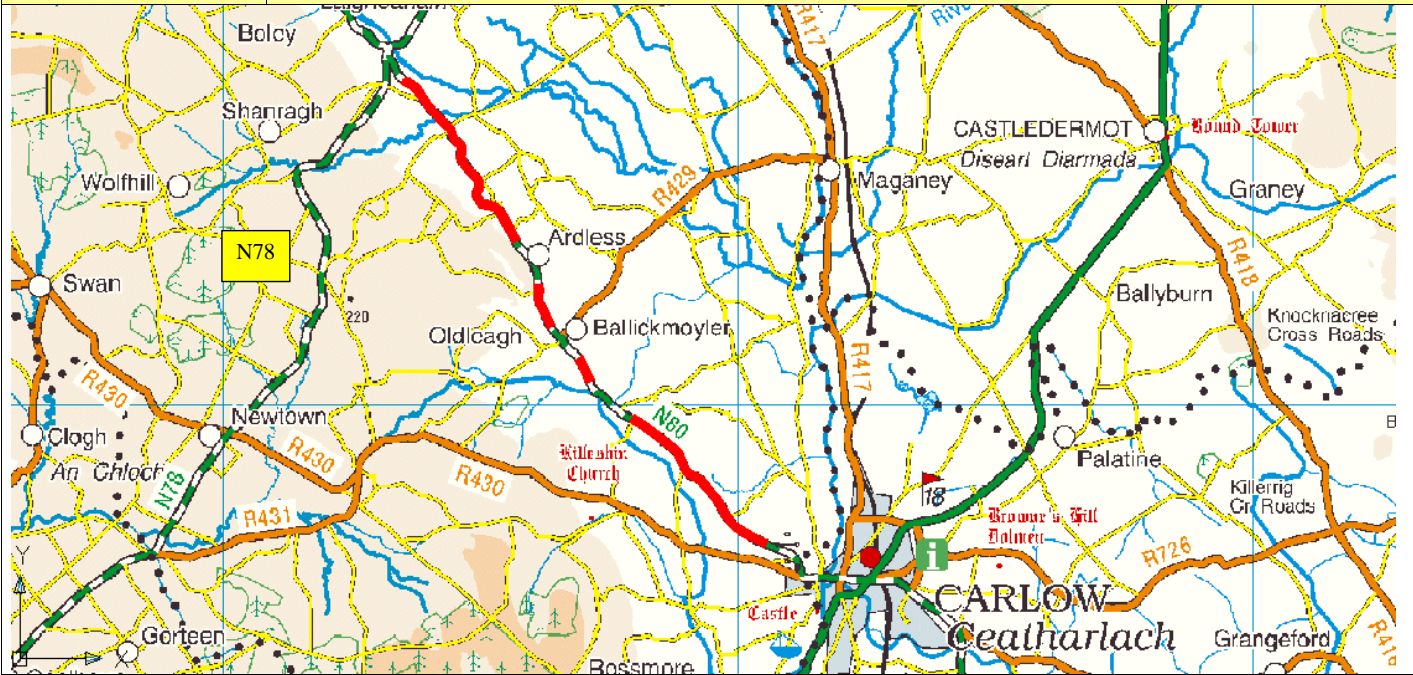
PABS Appraisal Summary Table - N78d.1.T3						
Scheme Option: N78 Castlecomer to N77 near Kilkenny		Description: 11.336km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths remain in the 3.0 to 3.5m range for approximately 85% of this corridor but dip to the 2.75 to 3.0m range on one occasion. • For the first approx 5km out of Castlecomer the lane widths are primarily over 3.75m. • Poor lane widths from the junction with the N77 north for approx 9km • Intermittent poor visibilities to V=85kph and V=100kph design standards. • From the junction with the N77 at the end of the route north for approximately 8km has intermittently poor visibility and dips into the 20 to 120m range at a number of locations. • Fatal and serious accident rates below the national average. • Accidents more sporadic than in clusters. • Accident problem evident at 2km stretch approximately 5km north of the junction with the N77. • Approximately 50% of this corridor has a pavement condition index, IRI > 4. • Poor pavement condition for 3km south of Castlecomer. • Poor pavement condition for 7km north of N77 junction. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		58 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.013 €0.000	No	3.8
	Noise and vibration Landscape and visual quality	Not assessed	58 households affected in 2025	€0.000	No	4.0
	Biodiversity	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section. Further, there is potential for indirect impacts to Esker Pits pNHA (000832) and Dunmore Cave pNHA (000401).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two Fulacht Fia, an Enclosure, a Bridge and six NIAH Structures.			Yes	2.5
	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	3.0
Safety	Water resources	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section.			No	4.0
	Accident reduction				Yes	2.5
Economy	Security	No additional facility for walkers and cyclists is to be provided.	0.1 accidents saved in 2025	€0.154		4.1
	Transport Efficiency and Effectiveness					4.0
			31 vehicle-hours per day in travel time saved in 2025	€1.942 €0.521 €0.000		4.4
Accessibility and Social Inclusion	Other economic impacts			Non-work Work Active travel		
	Funding	Not assessed	Imperfect competition effects	PVC Residual value		
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.		€0.341 €0.548 €0.052		4.2
Integration	Transport integration		4 CLAR zones experience improved access to Hub/Gateway			4.3
	Land-use integration					6.0
	Geographical integration					4.3
	Integration with other government policies					4.1
						4.0
						4.4
				NPV	-€6.138	4.2
				BCR	0.34	Yes
				Total		Red Flagged

N78.r.2.T2			Name: Castlecomer Relief Road					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120931	1.861	N/A	N/A	0.0	3303	1.861	4.280	1.303	0.242	0.558	
120932	1.247	N/A	N/A	0.0	3303	1.247	2.868	0.873	0.162	0.374	
120933	2.577	N/A	N/A	0.0	3303	2.577	5.927	1.804	0.335	0.773	
Castlecomer Relief Road						Total 5.685					
Notes: This route passes to the northwest of Castlecomer and bypasses a number of bad bends and junctions within Castlecomer. The Route connects with the R426 and the R694. It will be necessary to construct new roundabouts at either end of this route to connect back in to the existing N78. This route crosses the River Dinin which is environmentally designated as a Special Area of Conservation. 1 No. River Dinin crossing (medium structure) (add cost) 1 No. River Dinin tributary crossing. Steep sideslopes at this crossing location. (medium to large structure) (add cost). 1 No. junction with the R426 1 No. junction with the R694. 6 no. junctions with local roads. Crosses 2 No. local accesses. Passes through approx 400m of forest area at Ardra. High Traffic Good Subgrade – Maintenance Category 1 Split links 119296 (n78 nth) @ 255,500 174,570 (now 120923 & 120924) 92761 (R426) @ 253,030 174,060 (now 120925 & 120926) 92672 (R694) @ 252,430 173,060 (now 120927 & 120928) 119297 (N78 sth) @ 253,330 171,500 (now 120929 & 120930) Pro rata total scheme length among the 3 Section							TOTAL:	13.076	3.980	0.739	1.706
							Any special costs	0.800	0.000	0.000	0.000
							Grand Total	20.301			

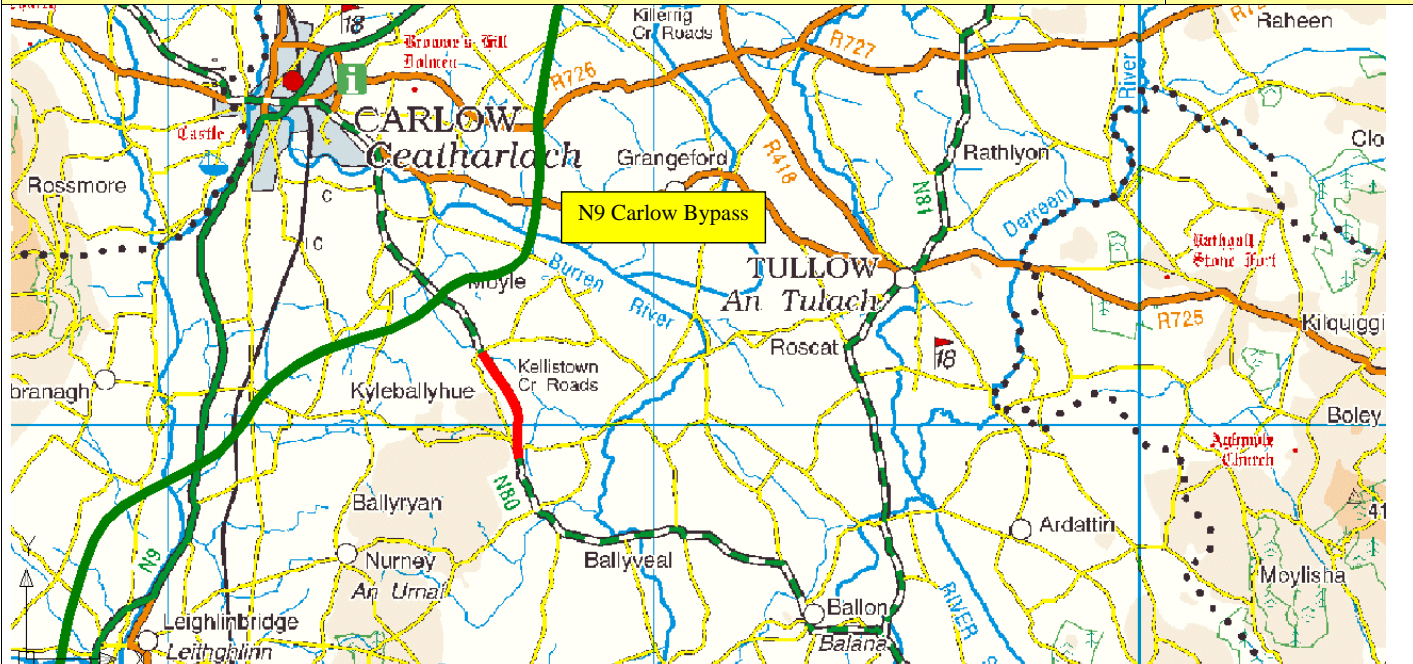
PABS Appraisal Summary Table - N78r.2.T2						
Scheme Option: N78 Castlecomer Relief Road		Description: 5.685km upgrade to S2 Type 2 standard	Problems Identified:			
						Budget Cost (million) €20.30
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and no sites are within 100m of the realignment. The proposed realignments will primarily be within Agricultural Areas one section is through existing Artificial Surfaces and one section is through a Forest Semi Natural Area.			No	4.0
	Water resources	The proposed realignments in this section of the N78 will cross the Dinin River which is designated under the River Barrow and River Nore SAC (002162).			No	4.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	-€0.231	Yes	2.5
Economy	Transport Efficiency and Effectiveness		125 vehicle-hours per day in travel time saved in 2025	Non-work Work €10.528 €7.238 €0.000		5.8
	Other economic impacts			PVC Residual value €14.814 €1.187		
	Funding	Not assessed	Imperfect competition effects	€0.724		6.0
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Accessibility and Social Inclusion			4 CLAR zones experience improved access to Hub/Gateway			4.4
Integration	Transport integration					5.0
	Land-use integration					4.3
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV	€4.631	Total
				BCR	1.31	Red Flagged
						4.7
						Yes

N80.d.1.T2			Name: N78 to Carlow					Type: S2 Type 2		
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119350 (Improvement to part of link)	1.378 used (Full length of link1.933)	73.5	3.2	1.6	3304	1.356	2.218	0.430	0.089	0.413
119353	2.705	67	5.6	3.2	3305	2.619	5.303	1.391	0.273	0.812
Break at Arles										
119355	0.895	67	5.6	3.2	3305	0.866	1.754	0.460	0.090	0.269
Break at Ballickmoyler										
119359 (Improvement to part of link)	0.587 used (Full length of link0.855)	67	5.6	3.2	3305	0.568	1.151	0.302	0.059	0.176
119358 (Improvement to part of link)	3.659 used (Full length of link4.482)	76	2.2	0.7	3303	3.633	5.232	0.754	0.164	1.098
N78 to Carlow	Total 9.244					Total 9.042				
Notes: The first approx 555m of this route from the junction with the N78 is to Type 2 standard or better and is therefore not proposed for upgrade here. From here until the Arles the route is narrow and bendy with only one moderate overtaking opportunity. This route is quite bendy and narrow in generally and has little overtaking opportunity. Between Arles and Ballickmoyler the route is narrow and bendy with no overtaking opportunity. South of Ballickmoyler the route is bendy and narrow at first and then widens out to between Type 2 and Type 1 standard for approx 1.091km. The route then reverts to being bendy and narrow with poor overtaking for the remainder until the roundabout on the outskirts of Carlow. The Fushoge River parallels the route to the south east from Ballickmoyler to Carlow. This river is environmentally designated as a Social Area of Conservation. 4 No. stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	15.658	3.337	0.674	2.767
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	22.436			

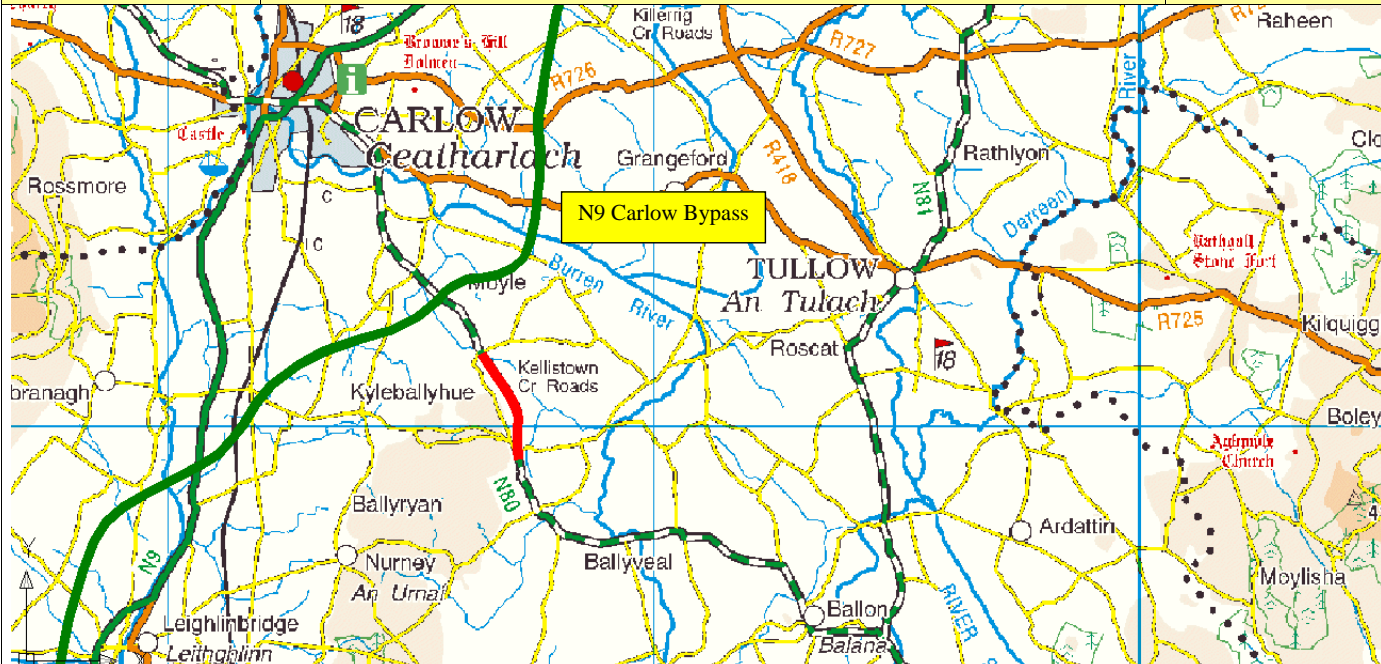
PABS Appraisal Summary Table - N80d.1.T2						
Scheme Option: N80 N78 to Carlow	Description: 9.042km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> For this corridor, 24% has lane widths less than 3.0m and 55% less than 3.5m. Significant amount of short locations where the sight distance drops below 160m. Junction proliferation is greater than 1 per km. The rate of accidents is less than the average for the NSRN There is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data Accident problem evident north of the junction with the R429. Relatively good pavement condition with only approximately 6% of the route with IRI > 4. 	Budget Cost (million) €2.44			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		57 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.064 €0.000	No	3.5
	Noise and vibration Landscape and visual quality	Not assessed	57 households affected in 2025	-€0.084	No	3.3
	Biodiversity	The proposed realignment may directly impact on the River Barrow and River Nore SAC (002162).			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will come close to a number of sites already within 100m of the route including an NIAH site, a Castle-Mottle and Bailey and an Enclosure.			Yes	2.5
	Landuse Water resources	The proposed realignments will be within Agricultural Areas. The proposed realignments in this section of the N80 will cross Douglas River which discharges to the River Barrow and River Nore SAC (002162) but also may directly impact on the River Barrow and River Nore SAC (002162) itself.			No	3.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.8 accidents saved in 2025	€4.927		6.6
Economy	Transport Efficiency and Effectiveness		116 vehicle-hours per day in travel time saved in 2025	€7.284 €6.514		4.0
	Other economic impacts			€0.000		5.4
Accessibility and Social Inclusion	Funding	Not assessed				
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				
Integration	Transport integration					
	Land-use integration					
	Geographical integration					
	Integration with other government policies					
				NPV	€5,291	Total
				BCR	1.35	Red Flagged
						5.4
						Yes

N80.d.1.T3			Name: N78 to Carlow					Type: S2 Type 3			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
119350 (Improvement to part of link)	1.378 used (Full length of link1.933)	73.5	1.1	0.1	3306	1.377	1.374	0.108	0.033	0.413	
119353	2.705	67	2.3	0.6	3309	2.689	3.234	0.492	0.140	0.812	
Break at Arles											
119355	0.895	67	2.3	0.6	3309	0.890	1.070	0.163	0.046	0.269	
Break at Ballickmoyler											
119359 (Improvement to part of link)	0.587 used (Full length of link0.855)	67	2.3	0.6	3309	0.583	0.702	0.107	0.030	0.176	
119358 (Improvement to part of link)	3.659 used (Full length of link4.482)	76	0.5	0.0	3304	3.659	3.294	0.104	0.038	1.098	
N78 to Carlow	Total 9.244					Total 9.198					
Notes: The first approx 555m of this route from the junction with the N78 is to Type 2 standard or better and is therefore not proposed for upgrade here. From here until the Arles the route is narrow and bendy with only one moderate overtaking opportunity. This route is quite bendy and narrow in generally and has little overtaking opportunity. Between Arles and Ballickmoyler the route is narrow and bendy with no overtaking opportunity. South of Ballickmoyler the route is bendy and narrow at first and then widens out to between Type 2 and Type 1 standard for approx 1.091km. The route then reverts to being bendy and narrow with poor overtaking for the remainder until the roundabout on the outskirts of Carlow. The Fushoge River parallels the route to the south east from Ballickmoyler to Carlow. This river is environmentally designated as a Social Area of Conservation. 4 No. stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1							TOTAL:	9.673	0.974	0.288	2.767
							Any special costs	0.000	0.000	0.000	0.000
							Grand Total	13.702			

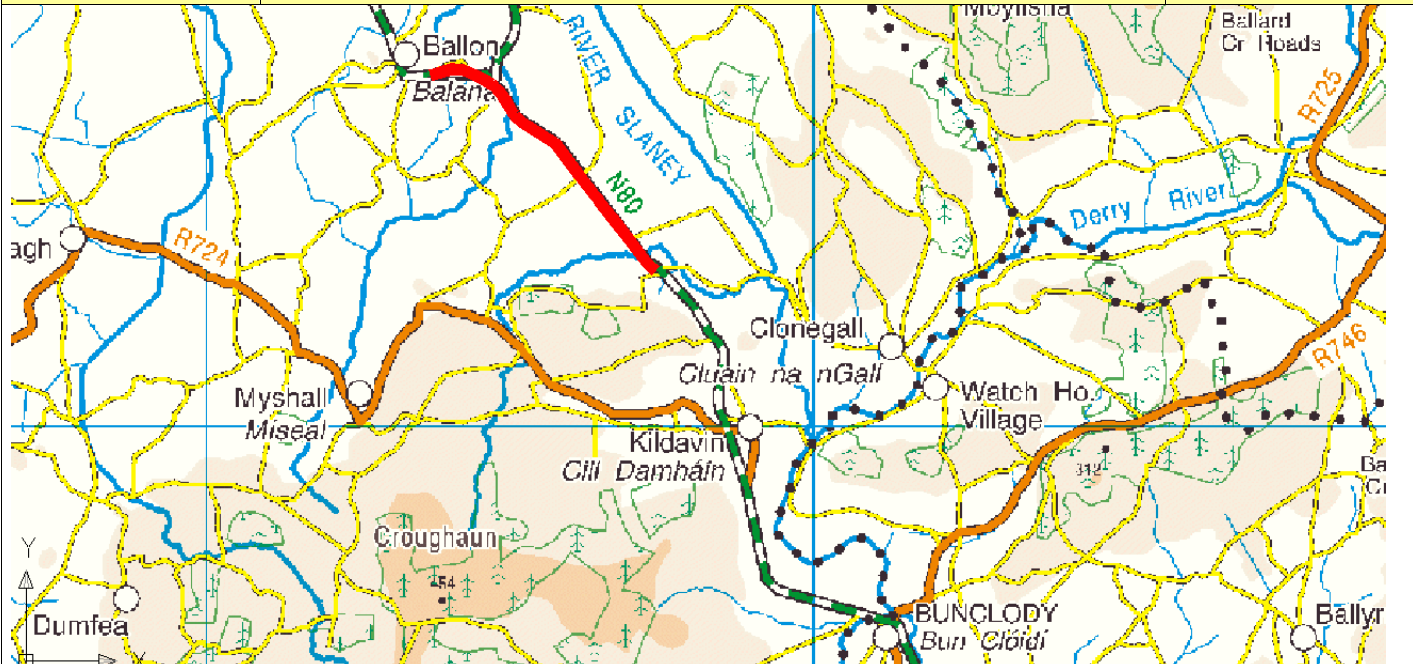
PABS Appraisal Summary Table - N80d.1.T3						
Scheme Option: N80 N78 to Carlow	Description: 9.198km upgrade to S2 Type 3 standard	Problems Identified: · For this corridor, 24% has lane widths less than 3.0m and 55% less than 3.5m. · Significant amount of short locations where the sight distance drops below 160m. · Junction proliferation is greater than 1 per km. · The rate of accidents is less than the average for the NSRN · There is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data · Accident problem evident north of the junction with the R429. · Relatively good pavement condition with only approximately 6% of the route with IRI > 4.			Budget Cost (million) €3.70	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		57 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.031 €0.000	No	3.6
	Noise and vibration Landscape and visual quality		57 households affected in 2025	-€0.036	No	3.5
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may directly impact on the River Barrow and River Nore SAC (002162).			Yes	2.5
	Landuse Water resources	The proposed realignments will come close to a number of sites already within 100m of the route including an NIAH site, a Castle-Mottle and Bailey and an Enclosure. The proposed realignments will be within Agricultural Areas. The proposed realignments in this section of the N80 will cross Douglas River which discharges to the River Barrow and River Nore SAC (002162) but also may directly impact on the River Barrow and River Nore SAC (002162) itself.			No	3.0
Safety	Accident reduction		0.2 accidents saved in 2025	€0.314		4.3
	Security	No additional facility for walkers and cyclists is to be provided.				4.0
Economy	Transport Efficiency and Effectiveness		49 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.326 €2.382 €0.000		5.0
	Other economic impacts Funding		Imperfect competition effects	PVC Residual value €8.956 €0.541		
Accessibility and Social Inclusion	Vulnerable groups	Not assessed		€0.238		5.1
	Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration			0 CLAR zones experience improved access to Hub/Gateway			2.4
	Transport integration					6.0
	Land-use integration					7.0
	Geographical integration					4.2
	Integration with other government policies					4.1
				NPV BCR	Total	5.0
				-€2.222	0.75	Red Flagged Yes

N80.e.1.T1			Name: Carlow to Ballon					Type: S2 Type 1			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120913 (Former link no. 119363)	0.852 (Former link length2.218)	70 assumed (Former link score 79)	N/A	0.0	3301	0.852	2.641	0.767	0.111	0.256	
120914 (Former link no. 119365)	1.512 (Former link length4.671)	70 assumed (Former link score 77)	N/A	0.0	3301	1.512	4.687	1.361	0.197	0.454	
Carlow to Ballon	Total 2.364					Total 2.364					
<p>Notes:</p> <p>This route is generally to a good standard and the majority of the existing route is somewhere in between Type 1 and Type 2 standard. There is good overtaking over much of this corridor. From the speed limit restriction at Carlow until Castletown Cross Roads to the east of the N9 Carlow Bypass interchange the route is to close to Type 1 standard. It is not proposed to upgrade this section further. From Castletown Cross Roads to east of Graiguenaspiddoge Cross the route is narrower and bendy with relatively poor overtaking opportunity. This section is proposed to be upgraded here. From east of Graiguenaspiddoge Cross to the outskirts of Ballon the route is once again to a good standard and is somewhere in between Type 1 and Type 2. It is not proposed to upgrade this section further either.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. stream crossing.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>Split links 119363 @ 276,450 171,500 remainder s/b 1.366 km (from 2.218)</p> <p>Split links 119365 @ 277,200 169,340 remainder s/b 3.159 km (from 4.671).</p>						TOTAL:	7.328	2.128	0.307	0.709	
						Any special costs	0.000	0.000	0.000	0.000	
						Grand Total					10.472

PABS Appraisal Summary Table - N80e.1.T1							
Scheme Option: N80 Carlow to Ballon		Description: 2.364km upgrade to S2 Type 1 standard	Problems Identified: · Carriageway width data suggests the cross-sectional requirement would be mostly met for the anticipated standards. · Sight distances are reasonably good throughout this corridor. · Short sections of sub-standard cross-section are noted just north of the N81 for about 4km and a section of about 1.5km midway along this section of the route. · For this corridor, 2% has lane widths less than 3.0m and 1.3% less than 3.5m. · There are local sight distance deficiencies noted at the two locations mentioned above also. · Junction proliferation is less than 1 per km. · The rate for fatal accidents is greater than the average for the NSRN · A couple of lower standard sections are present within the generally good standard of this corridor. · There is some correlation with the accident data and these poor standard sections. · Accident problems evident at the following locations: north and east of Thryland; west of the junction with the N81 at Ballon. · Relatively good pavement condition with only approximately 5% of the route with IRI > 4.	Budget Cost (million) €0.47			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		40 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.018 €0.000	No	3.7	
	Noise and vibration		40 households affected in 2025	-€0.012	No	3.8	
	Landscape and visual quality	Not assessed			Not assessed	4.0	
	Biodiversity	The proposed realignments will not impact on any European or Nationally designated sites in this section.			No	4.0	
	Cultural Heritage / archaeology	The proposed realignment will come close to 2 NIAH sites already within 100m of the route.			No	3.0	
	Landuse	The proposed realignments will be within Agricultural Areas.			No	4.0	
	Water resources	The proposed realignments in this section of the N80 does not cross or impact on any water bodies.			No	4.0	
Safety	Accident reduction	No additional facility for walkers and cyclists is to be provided.	0.2 accidents saved in 2025	€3.497		7.0	
Economy	Security					4.0	
	Transport Efficiency and Effectiveness		26 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel P/V Residual value	€2.525 €1.034 €0.000 €7.087 €0.631 €0.103	4.8	
Accessibility and Social inclusion	Other economic impacts		Imperfect competition effects			4.6	
	Funding	Not assessed				4.0	
Integration	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0	
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0	
Integration	Transport integration					5.0	
	Land-use integration					7.0	
	Geographical integration					4.5	
	Integration with other government policies					4.2	
				NPV	€0.674	Total	5.3
				BCR	1.10	Red Flagged	No

N80.e.1.T2			Name: Carlow to Ballon					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120913 (Former link no. 119363)	0.852 (Former link length2.218)	70 assumed (Former link score 79)	0.9	0.2	3302	0.851	0.852	700	0.852	700
120914 (Former link no. 119365)	1.512 (Former link length4.671)	70 assumed (Former link score 77)	1.6	0.4	3303	1.506	1.512	700	1.512	700
Carlow to Ballon	Total 2.364					Total 2.357				
Notes: This route is generally to a good standard and the majority of the existing route is somewhere in between Type 1 and Type 2 standard. There is good overtaking over much of this corridor. From the speed limit restriction at Carlow until Castletown Cross Roads to the east of the N9 Carlow Bypass interchange the route is to close to Type 1 standard. It is not proposed to upgrade this section further. From Castletown Cross Roads to east of Graiguenaspiddoge Cross the route is narrower and bendy with relatively poor overtaking opportunity. This section is proposed to be upgraded here. From east of Graiguenaspiddoge Cross to the outskirts of Ballon the route is once again to a good standard and is somewhere in between Type 1 and Type 2. It is not proposed to upgrade this section further either. There are no environmentally designated areas in the vicinity of this route. 1 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1 Recycle split nodes from N80e.1.T1: copy variant and amend link distance and road link type.						TOTAL:	4.301	1.026	0.205	0.709
						Any special costs	0.000	0.000	0.000	0.000


PABS Appraisal Summary Table - N80e.1.T2						
Scheme Option: NN80 Carlow to Ballon		Description: 2.357km upgrade to S2 Type 2 standard	Problems Identified:			Budget Cost (million) €6.24
			<ul style="list-style-type: none">Carriageway width data suggests the cross-sectional requirement would be mostly met for the anticipated standards.Sight distances are reasonably good throughout this corridor.Short sections of sub-standard cross-section are noted just north of the N81 for about 4km and a section of about 1.5km midway along this section of the route.For this corridor, 2% has lane widths less than 3.0m and 13% less than 3.5m.There are local sight distance deficiencies noted at the two locations mentioned above also.Junction proliferation is less than 1 per km.The rate for fatal accidents is greater than the average for the NSRNA couple of lower standard sections are present within the generally good standard of this corridor.There is some correlation with the accident data and these poor standard sections.Accident problems evident at the following locations: north and east of Tinnyland; west of the junction with the N81 at Ballon.Relatively good pavement condition with only approximately 5% of the route with IRI > 4.			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		40 households affected in 2025	-€0.006	No	3.8
	Noise and vibration		0 tonnes of carbon saved in 2025	€0.000	No	3.8
	Landscape and visual quality		40 households affected in 2025	-€0.006	Not assessed	4.0
	Biodiversity	Not assessed			No	4.0
	Cultural Heritage / archaeology	The proposed realignments will not impact on any European or Nationally designated sites in this section.			No	3.0
	Landuse	The proposed realignment will come close to 2 NIAH sites already within 100m of the route.			No	4.0
Safety	Water resources	The proposed realignments will be within Agricultural Areas.			No	4.0
	Accident reduction	The proposed realignments in this section of the N80 does not cross or impact on any water bodies.			No	7.0
Economy	Security	No additional facility for walkers and cyclists is to be provided.	0.1 accidents saved in 2025	€1.988		4.0
	Transport Efficiency and Effectiveness		17 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.100 €0.533 €0.000		4.6
				PVC Residual €4.145 €0.335		
			Imperfect competition effects		€0.053	4.5
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			
	Transport integration					5.0
	Land-use integration					7.0
	Geographical integration					4.5
	Integration with other government policies					4.2
				NPV BCR	Total 5.233	
				-€0.149 0.96	Red Flagged	No

N80.f.1.T1			Name: Ballon to Buncloody (Kildavin)				Type: S2 Type 1			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
62496	1.070	77.5	N/A	0.0	3301	1.070	3.317	0.963	0.139	0.321
62498	0.630	75.5	N/A	0.0	3301	0.630	1.953	0.567	0.082	0.189
120916 (Former link no. 119367)	3.482 (Former link length6.364)	70 assumed (Former link score 75.5)	N/A	0.0	3301	3.482	10.794	3.134	0.453	1.045
Ballon to Buncloody (Kildavin)	Total 5.182					Total 5.182				
<p>Notes:</p> <p>From Ballon to south of Whitemill Bridge this route is circa T3 standard and is bendy and hilly in places with limited overtaking opportunity. From just south of Whitemill bridge to Buncloody the route is of a good standard and is between Type 1 and Type 2, has some moderate overtaking opportunity and also has a northbound climbing lane for approx 1.5km at Kildavin. It is therefore not proposed to upgrade this section further.</p> <p>This route crosses the Clashavey River at Whitemill Bridge. The Clashavey River is environmentally designated as a Special Area of Conservation. This route also parallels the River Slaney from Ballon to Buncloody. The River Slaney is environmentally designated as both an NHA and an SAC.</p> <p>The existing stone bridge (Whitemill Bridge) over the Clashavey River is quite narrow and will need to be widened / replaced as part of this upgrade.</p> <p>2 No. stream crossings.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>Split link 119367 @ 287,390 162,590 Remainder s/b 2.882 km (from 6.364km).</p>						TOTAL:	16.064	4.664	0.674	1.555
						Any special costs	0.300	0.000	0.000	0.000
						Grand Total	23.257			


PABS Appraisal Summary Table - N80f.1.1f						
Scheme Option: N80 Ballon to Bunclody (Kildavin)		Description: 5.182km upgrade to S2 Type 1 standard	Problems Identified:			
			<ul style="list-style-type: none"> Significant sections of the route have a cross-section width < 3.5m, which does not meet the engineering design standard for the corridor. For this corridor, 11% has lane widths less than 3.0m and 49% less than 3.5m. Sections where the visibility reduces below the standards required for a design speed of 85 kph and also significant sections where the visibility is good Junction proliferation less than 1 per km. The rate for fatal accidents is greater than the average for the NSRN There is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data. Accident problem evident at the following locations: approximately 3km south east of junction with the N81; west of Clohamon; and west of Ballycarney. Relatively good pavement condition with only approximately 7% of the route with IRI > 4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		42 households affected in 2025	-€0.043	No	3.7
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	3.3
	Landscape and visual quality	Not assessed	42 households affected in 2025	-€0.098	Not assessed	4.0
	Biodiversity	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	4.0
	Cultural Heritage / archaeology	The proposed realignment will not bring any sites within 100m of the route.			No	4.0
Safety	Landuse	The proposed realignments will be primarily within Agricultural Areas and a small part of Artificial Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0
	Accident reduction		0.6 accidents saved in 2025	€10.481		7.0
Economy	Security	No additional facility for walkers and cyclists is to be provided.				4.0
	Transport Efficiency and Effectiveness		95 vehicle-hours per day in travel time saved in 2025	Non-work Work €6.692 €3.879		5.0
				Active travel €0.000		
				PVC €16.045		
				Residual €1.396		
Accessibility and Social Inclusion	Other economic impacts	Imperfect competition effects		€0.388		5.0
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport integration					6.0
Integration	Land-use integration					7.0
	Geographical integration					4.7
	Integration with other government policies					4.2
				NPV	€6.650	Total
				BCR	1.41	Red Flagged
						5.4
						Yes

N80.f.1.T2			Name: Ballon to Bunclody (Kildavin)				Type: S2 Type 2			
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
62496	1.070	77.5	1.4	0.4	3303	1.066	1.402	0.145	0.033	0.321
62498	0.630	75.5	2.0	0.4	3304	0.627	0.925	0.144	0.031	0.189
120916 (Former link no. 119367)	3.482 (Former link length 6.364)	70 assumed (Former link score 75.5)	2.0	0.4	3304	3.468	6.335	1.512	0.302	1.045
Ballon to Bunclody (Kildavin)	Total 5.182					Total 5.161				
<p>Notes:</p> <p>From Ballon to south of Whitemill Bridge this route is circa T3 standard and is bendy and hilly in places with limited overtaking opportunity. From just south of Whitemill bridge to Bunclody the route is of a good standard and is between Type 1 and Type 2, has some moderate overtaking opportunity and also has a northbound climbing lane for approx 1.5km at Kildavin. It is therefore not proposed to upgrade this section further.</p> <p>This route crosses the Clashavey River at Whitemill Bridge. The Clashavey River is environmentally designated as a Special Area of Conservation. This route also parallels the River Slaney from Ballon to Bunclody. The River Slaney is environmentally designated as both an NHA and an SAC.</p> <p>The existing stone bridge (Whitemill Bridge) over the Clashavey River is quite narrow and will need to be widened / replaced as part of this upgrade.</p> <p>2 No. stream crossings.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>Recycle split link from variant N80f.1.T1, Copy variant and change Link types and dist as above.</p> <p>Split link 119367 @ 287,390 162,590 Remainder s/b 2.882 km (from 6.364km).</p>						TOTAL:	8.662	1.800	0.367	1.555
						Any special costs	0.300	0.000	0.000	0.000

PABS Appraisal Summary Table - N80f.1.T2							
Scheme Option: N80 Ballon to Bunclody (Kildavin)		Description: 5.161km upgrade to S2 Type 2 standard		Problems Identified:		Budget Cost (million) €12.68	
				<ul style="list-style-type: none">Significant sections of the route have a cross-section width < 3.5m, which does not meet the engineering design standard for the corridor.For this corridor, 11% has lane widths less than 3.0m and 49% less than 3.5m.Sections where the visibility reduces below the standards required for a design speed of 85 kph and also significant sections where the visibility is goodJunction proliferation less than 1 per km.The rate for fatal accidents is greater than the average for the NSRNThere is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data.Accident problem evident at the following locations: approximately 3km south east of junction with the N81; west of Clohamon; and west of Ballycarney.Relatively good pavement condition with only approximately 7% of the route with IRI > 4.			
Objective	Sub-objective	Qualitative impacts		Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality			42 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.010 €0.000	No	3.9
	Noise and vibration			42 households affected in 2025	-€0.020	No	3.7
	Landscape and visual quality	Not assessed				Not assessed	4.0
	Biodiversity	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).				Yes	4.0
	Cultural Heritage / archaeology	The proposed realignment will not bring any sites within 100m of the route.				No	4.0
Safety	Landuse	The proposed realignments will be primarily within Agricultural Areas and a small part of Artificial Areas.				No	4.0
	Water resources	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).				Yes	3.0
	Accident reduction	No additional facility for walkers and cyclists is to be provided.		0.2 accidents saved in 2025	€4.231		7.0
Economy	Security						4.0
	Transport Efficiency and Effectiveness			42 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.363 €1.833 €0.000		4.9
	Other economic impacts				PVC Residual value €8.524 €0.644		
Accessibility and Social Inclusion	Funding	Not assessed			€0.183		4.9
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.					4.0
	Deprived geographic areas			0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration						6.0
	Land-use integration						7.0
	Geographical integration						4.7
	Integration with other government policies						4.2
					NPV €1,700	Total	5.4
					BCR 1.20	Red Flagged	Yes

N80.r.7.T1			Name: Ballon Relief Road					Type: S2 Type 1		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120990	2.849	N/A	N/A	0.0	3301	2.849	8.832	2.564	0.370	0.855
Ballon Relief Road						Total 2.849				
<p>Notes:</p> <p>This route passes to the northeast of Ballon through agricultural land. It bypasses the centre of Ballon and a number of junctions and bends within the town. It connects with the N81 to the east of Ballon where it rejoins the N80. This could be accomplished by amending the existing T-junction or by constructing a new roundabout at this location. There are no environmentally designated areas in the vicinity of this route.</p> <p>2 No. local road junctions.</p> <p>2 No. stream crossings.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Split links</p> <p>119364 (N80 west) @ 282,510 167,150</p> <p>119417 (N81) @ 284,720 165,700</p> <p>62498 (N80 east) @ 284,800 165,550</p> <p>Build by pass via new links and</p> <p>Delete link now existing between node 31451 and node created on (N80 east)</p> <p>Pro rata total scheme among the Two sections.</p>						TOTAL:	8.832	2.564	0.370	0.855
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	12.621			

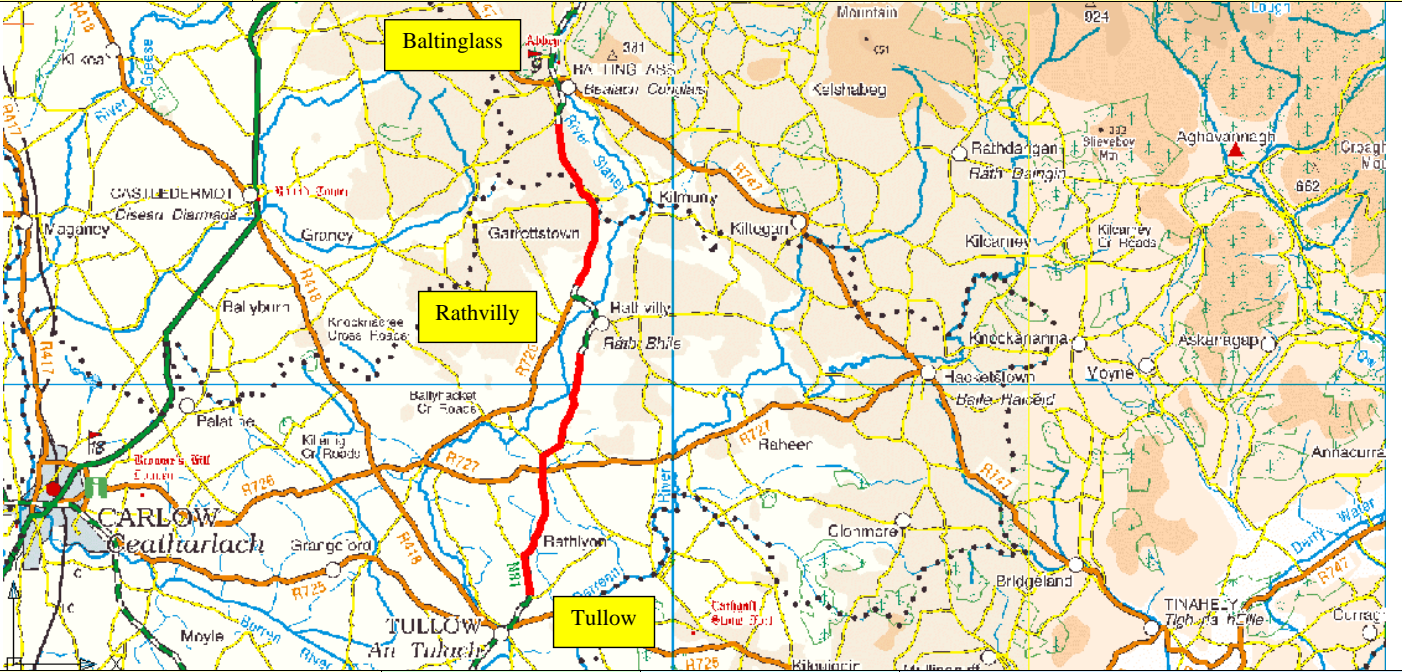
PABS Appraisal Summary Table - N80r.7.T1							
Scheme Option: N80 Ballon Relief Road		Description: 2.849km upgrade to S2 Type 1 standard		Problems identified:		Budget Cost (million) €12.62	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0	3.4
	Noise and vibration		0 households affected in 2025	€0.000	No	4.0	
	Landscape and visual quality	Not assessed			Not assessed	4.0	
	Biodiversity	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0	
	Cultural Heritage / archaeology	The proposed realignment will come close to a number of sites already within 100m of the route including Ringfort (Rath), 2 Enclosures and a Barrow (Ring-Barrow).			No	3.0	
	Landuse	The proposed realignments will be within Agricultural Areas.			No	4.0	
	Water resources	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0	
Safety	Accident reduction		2.5 accidents saved in 2025	€11.283		7.0	6.7
Economy	Security		No additional facility for walkers and cyclists is to be provided.			4.0	
	Transport Efficiency and Effectiveness		381 vehicle-hours per day in travel time saved in 2025	Non-work Work €26.276 €11.835		7.0	7.0
				Active travel €0.000			
				PVC €9.849 Residual €0.761			
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€1.183		7.0	
	Funding	Not assessed				4.0	
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0	4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0	
Integration	Transport integration					5.0	6.3
	Land-use integration					7.0	
	Geographical integration					4.5	
	Integration with other government policies					4.2	
				NPV	€41.495	Total	6.1
				BCR	5.21	Red Flagged	Yes

N80.r.7.T2			Name: Ballon Relief Road					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120990	2.849	N/A	N/A	0.0	3301	2.849	6.553	1.994	0.370	0.855
Ballon Relief Road						Total 2.849				
<p>Notes:</p> <p>This route passes to the northeast of Ballon through agricultural land. It bypasses the centre of Ballon and a number of junctions and bends within the town. It connects with the N81 to the east of Ballon where it rejoins the N80. This could be accomplished by amending the existing T-junction or by constructing a new roundabout at this location. There are no environmentally designated areas in the vicinity of this route.</p> <p>2 No. local road junctions.</p> <p>2 No. stream crossings.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Recycle variant used for N80r.7.T1.</p>						TOTAL:	6.553	1.994	0.370	0.855
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	9.772			

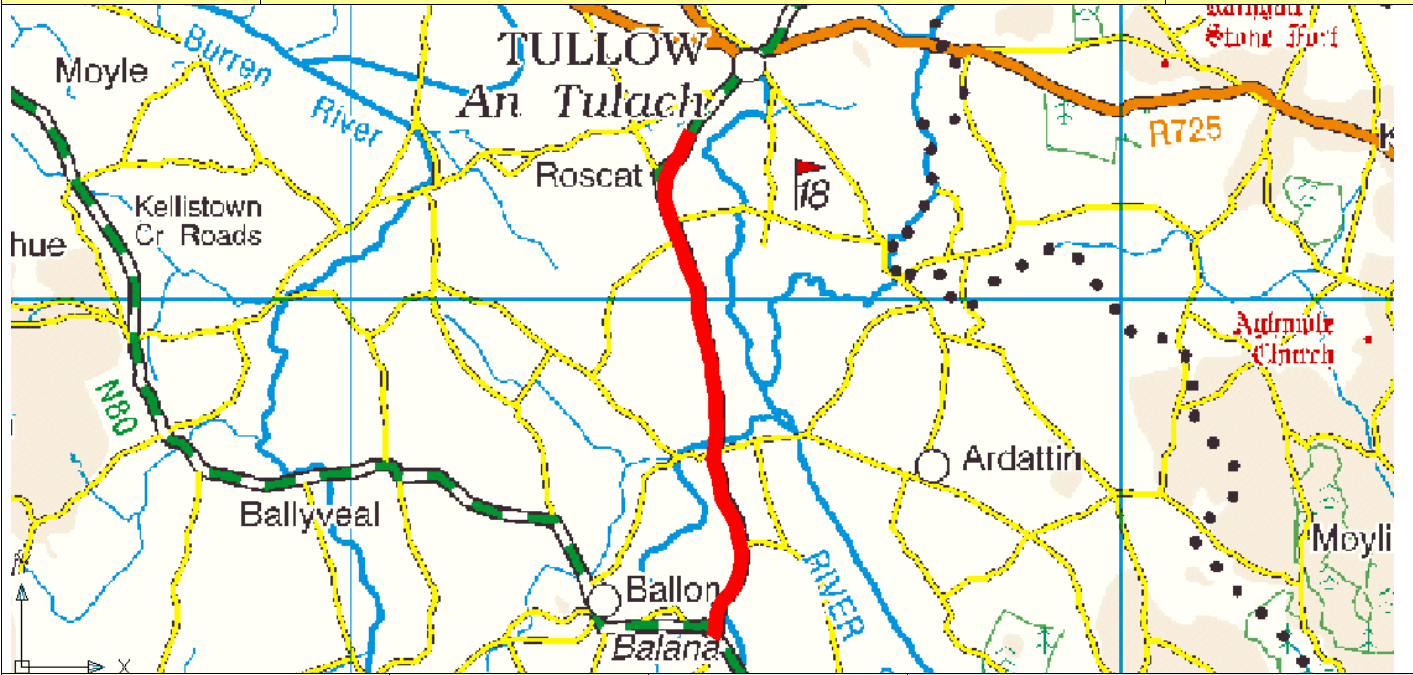
PABS Appraisal Summary Table - N80r.7.T2						
Scheme Option: N80 Ballon Relief Road		Description: 2.849km upgrade to S2 Type 2 standard		Problems Identified:		Budget Cost (million) €9.77
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration		0 households affected in 2025	€0.000	No	4.0
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0
	Cultural Heritage / archaeology	The proposed realignment will come close to a number of sites already within 100m of the route including Ringfort (Rath), 2 Enclosures and a Barrow (Ring-Barrow).			No	3.0
Safety	Landuse	The proposed realignments will be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0
	Accident reduction	No additional facility for walkers and cyclists is to be provided.	2.3 accidents saved in 2025	€8.351		7.0
Economy	Security					4.0
	Transport Efficiency and Effectiveness		355 vehicle-hours per day in travel time saved in 2025	Non-work Work €24.704 €11.067		7.0
				Active travel €0.000		
				PVC Residual €7.589 €0.579		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€1.107		7.0
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport integration					5.0
Integration	Land-use integration					7.0
	Geographical integration					4.5
	Integration with other government policies					4.2
				NPV BCR	€38.219 6.04	Total Red Flagged

N80.r.8.T2			Name: Bunclody Relief Road					Type: S2 Type 2		
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
121000	3.925	N/A	N/A	0.0	3303	3.925	9.028	2.748	0.510	1.178
Bunclody Relief Road						Total 3.925				
<p>Notes:</p> <p>This route passes to the southwest of Bunclody through mainly agricultural land, however it also passes through a small forest area as it crosses Barkers Stream. It bypasses the centre of Bunclody and a number of junctions and bends within the town. It connects with the R746 to the south of Bunclody.</p> <p>The area around Barkers Stream is environmentally designated as a both and NHA and an SAC. The River Clody is environmentally designated as a Special Area of Conservation.</p> <p>4 No. local road junctions.</p> <p>1 No. Barkers Stream crossing. (medium structure).</p> <p>1 No. Clody River crossing. (medium structure).</p> <p>1 No. stream crossing.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>Split links</p> <p>119369 (N80 nth) @ 289,100 157,940</p> <p>119369 (R746) @ 291,370 155,900</p> <p>Connect on to Node 59727 for N80 (sth) end of scheme.</p>						TOTAL:	9.028	2.748	0.510	1.178
						Any special costs	0.600	0.000	0.000	0.000

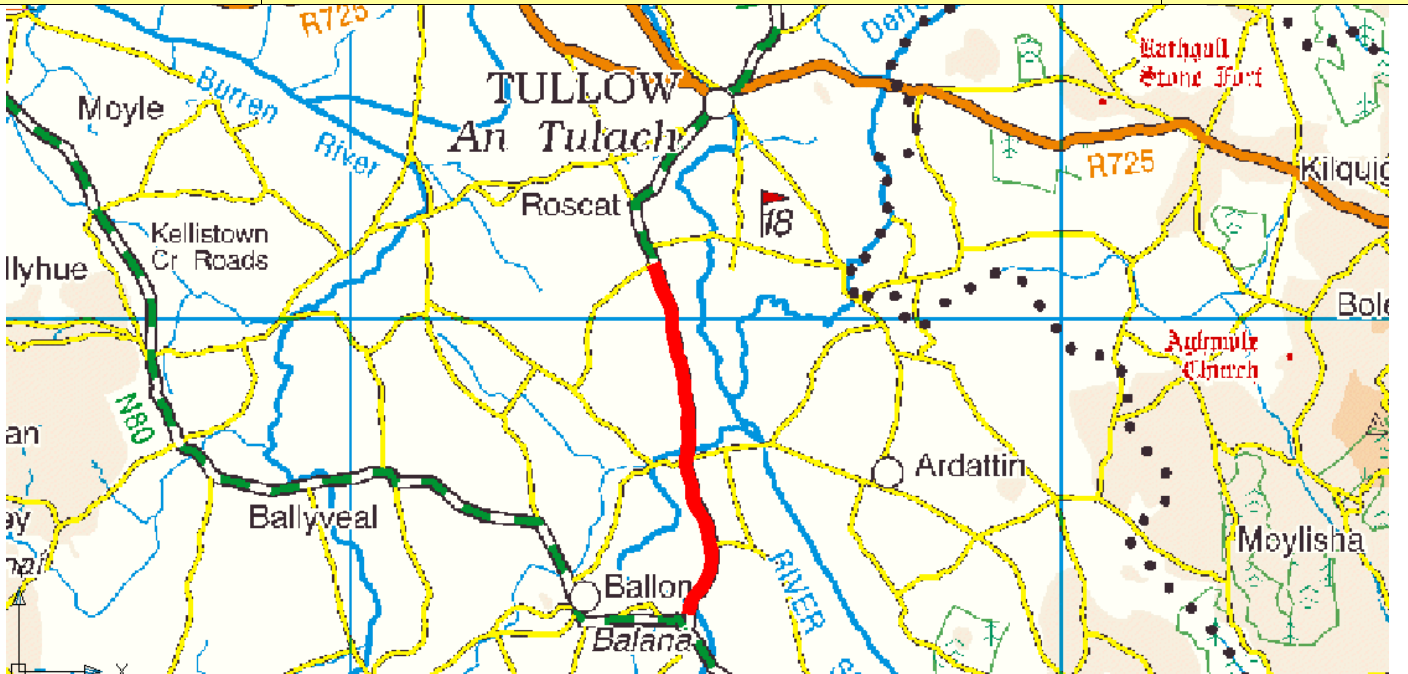
PABS Appraisal Summary Table - N80r.8.T2							
Scheme Option: N80 Bunclody Relief Road		Description: 3.925km upgrade to S2 Type 2 standard		Problems Identified:		Budget Cost (million) €14.06	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000 €0.000	No	4.0	3.6
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0	
	Biodiversity	Not assessed			Not assessed	4.0	
	Cultural Heritage / archaeology	The proposed realignment may indirectly and directly impact on the Slaney River Valley SAC and pNHA (000781).			Yes	2.5	
	Landuse	The proposed realignment will not bring any sites within 100m of the route.			No	4.0	
	Water resources	The proposed realignments will be primarily within Agricultural Areas and smaller sections of Forest and Semi-Natural Area and existing Artificial Surfaces. The proposed realignments in this section of the N80 will cross Clody River which is a tributary of the Slaney River Valley SAC (000781) and may indirectly and directly impact on the Slaney River Valley SAC and pNHA (000781).			No	4.0	
Safety	Accident reduction Security		0.7 accidents saved in 2025	€1.928	Yes	2.5	5.4
Economy	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.	144 vehicle-hours per day in travel time saved in 2025	Non-work Work €9.628 €6.813 €0.000		5.6 4.0 6.5	6.5
	Other economic impacts			PVC Residual value €9.883 €0.822			
	Funding	Not assessed	Imperfect competition effects	€0.681		6.8 4.0	
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	1 CLAR zones experience improved access to Hub/Gateway			4.0 4.4	4.2
Accessibility and Social Inclusion	Transport integration						
	Land-use integration					6.0 7.0	6.4
	Geographical integration					4.7	
	Integration with other government policies					4.2	
				NPV BCR	€9.989 2.01	Total Red Flagged	5.8 Yes

N81.e.1.T3			Name: Baltinglass to Tullow					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119425	4.098	72.5	1.3	0.1	3307	4.094	4.233	0.395	0.119	1.229
119426	0.828	69.5	1.9	0.2	3308	0.826	0.935	0.121	0.035	0.248
Break at Rathvilly										
62578	3.65	69.5	1.9	0.2	3308	3.643	4.119	0.534	0.155	1.095
62947	0.02	69.5	1.9	0.2	3308	0.020	0.023	0.003	0.001	0.006
119420	0.38	69.5	1.9	0.2	3308	0.379	0.429	0.056	0.016	0.114
119422	3.289	66.5	3.3	1.0	3309	3.256	3.971	0.620	0.176	0.987
Baltinglass to Tullow	Total 12.265					Total 12.218				
Notes: This route has an extremely poor horizontal alignment. It is bendy and narrow in places and has only a few short overtaking opportunities. These short overtaking opportunities are hampered further by the vertical alignment. There are a number of very bad bends along this route as outlined below. The River Slaney is environmentally designated as a Special Area of Conservation and it parallels the route to the east from Baltinglass to Rathvilly and then to the west from Rathvilly to Tullow. There is also a small lake that is designated as a combined SAC and NHA to the east of the route at Holdenstown Upper. The vertical alignment hinders the overtaking opportunity at the straight sections at Clogh Lower and Cloghcastle. The existing bridge just north of Yellowford Cross Roads at the Wicklow border is wide enough to accommodate this upgrade. Sequence of tree lined bad bends north of Rathvilly (add cost) Sequence of bad bends between Rathvilly and Ballybit Big (add cost) The narrow stone bridge (Ballyoliver Bridge) over a stream north of Ballybit Little may have to be widened / replaced as it occurs on a bad bend. (add cost). Very bad bend at Ballybit Cross Roads Very bad bend at Judy Lea's Cross Roads. The narrow bridge over a stream just north of Coppengh Cross Roads will have to be widened / replaced as it occurs within a sequence of bad bends. (add cost) There are a number of very bad bends between the R727 junction and Coppengh Cross Roads. (add cost) Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	13.710	1.729	0.501	3.680
						Any special costs	0.400 1.000	0.000	0.000	0.000
Grand Total						21.020				


PABS Appraisal Summary Table - N81e.1.T3						
Scheme Option: N81 Baltinglass to Tullow	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Description: 12.218km upgrade to S2 Type 3 standard Problems Identified: <ul style="list-style-type: none"> • Lane width in the 2.75 to 3.0m range for the majority of this corridor • Poor visibilities to V=85kph and V=100kph design standards at certain locations, particularly from approx 3km south of Baltinglass through to Tullow • No major accident clusters located along this corridor, relatively low incidence of accidents. • Relatively good pavement condition with a significant proportion of the route with and IR<4. 	Air Quality		83 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.002 €0.000	No	4.0
	Noise and vibration Landscape and visual quality		83 households affected in 2025	-€0.103	No	3.1
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and the Holdenstown Bog SAC (001757) and pNHA. Direct impacts on the Dereen Freshwater Pearl Mussel catchment.			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Standing Stone, Burials and an NIAH Structure.			No	3.0
	Water resources	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and direct impacts on the Dereen Freshwater Pearl Mussel catchment.			No	4.0
	Accident reduction		0.1 accidents saved in 2025	-€1.063	Yes	2.5
	Security	No additional facility for walkers and cyclists is to be provided.				3.4
	Transport Efficiency and Effectiveness		25 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.867 -€1.651 €0.000		4.0
	Other economic impacts		Imperfect competition effects	PVC Residual value €14.086 €0.878		3.5
Accessibility and Social Inclusion Integration	Funding	Not assessed		-€0.165		4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport integration					5.0
	Land-use integration					4.3
	Geographical integration					4.3
	Integration with other government policies					4.2
						4.0
				NPV	-€14.325	Total
				BCR	-0.02	Red Flagged
						4.0
						Yes

N81.f.1.T2			Name: Tullow to N80 junction near Ballon					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119418	1.236	66.5	7.1	4.4	3305	1.182	2.448	0.649	0.127	0.371
119417	5.636	73	4.2	1.8	3303	5.535	9.258	1.868	0.384	1.691
Tullow to N80 junction near Ballon	Total 6.872					Total 6.717				
<p>Notes:</p> <p>This route is very bendy and narrow and is also hilly in places. Overtaking is extremely limited. There are a number of very bad bends along this route and there is an accident black spot at Aghade.</p> <p>The River Slaney parallels this route to the east and is environmentally designated as a both an NHA and an SAC.</p> <p>There are a number of bad bends either side of Aghade.</p> <p>The existing stone 'Bang Up' bridge over the Douglas River is narrow and may need to be widened as part of this upgrade.</p> <p>The bridge over the Douglas River near the N80 junction is wide enough to accommodate this upgrade.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	11.705	2.517	0.511	2.062
						Any special costs	0.300	0.000	0.000	0.000
						Grand Total	17.095			

PABS Appraisal Summary Table - N81f.1.T2						
Scheme Option: N81 Tullow to N80 junction near Ballon		Description: 6.717km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €7.10	
			<ul style="list-style-type: none"> Lane width < 3.0m for most of this corridor. Lane width > 3.75 for the last 3.5km only. Poor visibilities to V=85kph and V=100kph design standards at certain locations, particularly from the junction with the N80 near Ballon at the end of the route. Relatively low incident of accidents. Major accident cluster located at the junction with the minor road to Ballon Relatively good pavement condition with a significant proportion of the route with and IRI<4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		42 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.013 €0.000	No	3.9
	Noise and vibration Landscape and visual quality	Not assessed	42 households affected in 2025	-€0.181	No	2.1
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and the Ardristan Fen pNHA (000788).			Yes	3.0
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including three Standing Stones, a Church, an NIAH Structure and a Holed Stone. The proposed realignments will primarily be within Agricultural Areas. The proposed realignments in this section of the N81 will cross the Douglas River which discharges to the Slaney River Valley SAC (000781) and pNHA.			No	3.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.1 accidents saved in 2025	€2.635		5.8
Economy	Transport Efficiency and Effectiveness		43 vehicle-hours per day in travel time saved in 2025	€2.823 €2.316 €0.000		4.7
	Other economic impacts Funding		Imperfect competition effects	PVC Residual value €11.547 €0.880 €0.232		4.8
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Accessibility and Social Inclusion	Transport integration Land-use integration Geographical integration Integration with other government policies		0 CLAR zones experience improved access to Hub/Gateway			4.0
				NPV BCR	-€2.855 0.75	4.5 Yes

N81.f.1.T3			Name: Tullow to N80 junction near Ballon					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119417 (Improvement to part of link)	5.133 used (Full length of link 5.636)	73	1.6	0.2	3305	5.123	5.212	0.449	0.136	1.540
Tullow to N80 junction near Ballon	Total 5.133					Total 5.123				
<p>Notes:</p> <p>This route is very bendy and narrow and is also hilly in places. Overtaking is extremely limited. There are a number of very bad bends along this route and there is an accident black spot at Aghade. The first 1.504km south of the speed limit restriction at Tullow has been upgraded recently and is thought to be to Type 3 standard. The last 235m before the junction with the N80 is also to Type 3 standard. Both of these sections are therefore not proposed to be upgraded here.</p> <p>The River Slaney parallels this route to the east and is environmentally designated as a both an NHA and an SAC.</p> <p>There are a number of bad bends either side of Aghade.</p> <p>The existing stone 'Bang Up' bridge over the Douglas River is narrow and may not need to be widened as part of this upgrade.</p> <p>The bridge over the Douglas River near the N80 junction is wide enough to accommodate this upgrade.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	5.212	0.449	0.136	1.540
						Any special costs	0.000	0.000	0.000	0.000
						Grand Total	7.337			

PABS Appraisal Summary Table - N81f.1.T3						
Scheme Option: N81 Tullow to N80 junction near Ballon		Description: 5.123km upgrade to S2 Type 3 standard	Problems Identified:			Budget Cost (million) €7.34
			<ul style="list-style-type: none"> Lane width < 3.0m for most of this corridor. Lane width > 3.75 for the last 3.5km only. Poor visibilities to V=85kph and V=100kph design standards at certain locations, particularly from the junction with the N80 near Ballon at the end of the route. Relatively low incident of accidents. Major accident cluster located at the junction with the minor road to Ballon Relatively good pavement condition with a significant proportion of the route with and IRI<4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		32 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.9
	Noise and vibration Landscape and visual quality		32 households affected in 2025	-€0.035	No	3.1
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and the Ardristan Fen pNHA (000788).			Yes	3.0
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Standing Stone and a Holed Stone. The proposed realignments will primarily be within Agricultural Areas. The proposed realignments in this section of the N81 will cross the Douglas River which discharges to the Slaney River Valley SAC (000781) and pNHA.			No	3.0
Safety	Accident reduction Security	No additional facility for walkers and cyclists is to be provided.	0.1 accidents saved in 2025	€1.300		6.2
Economy	Transport Efficiency and Effectiveness		13 vehicle-hours per day in travel time saved in 2025	€1.163 €0.719 €0.000		4.6
	Other economic impacts Funding		Imperfect competition effects	PVC Residual value €4.742 €0.279 €0.072		4.6
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Accessibility and Social Inclusion	Transport integration		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Land-use integration					6.0
	Geographical integration					4.3
Integration	Integration with other government policies					4.2
						4.0
						4.0
				NPV	Total	4.5
				BCR	Red Flagged	Yes
					0.74	

N81.r.2.T3			Name: Rathvilly Relief Road				Type: S2 Type 3				
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120913	0.433	N/A	N/A	0.0	3305	0.433	0.758	0.217	0.056	0.130	
120914	1.397	N/A	N/A	0.0	3305	1.397	2.445	0.699	0.182	0.419	
Rathvilly Relief Road						Total 1.830					
<p>Notes:</p> <p>This route passes to the west of Rathvilly through agricultural land and bypasses the narrow streets within the town as well as a number of junctions. This proposed upgrade connects with and runs on top of the existing R726 for approx 600m. The R726 will have to be widened over this 600m section.</p> <p>This route crosses the River Slaney which is environmentally designated as a Special Area of Conservation.</p> <p>1 No. River Slaney Crossing. (medium / large structure) (add cost)</p> <p>1 No. junction with the R726</p> <p>1 No junctions with local access.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>Split link: 62560 (R726) @ 287,010 182,100: (now links 120913 & 120912)</p> <p>Upgrade portion between new node and node 31532 to class 3305:</p> <p>Southern end of scheme to connect on to node 31490</p> <p>Pro-rata scheme length of 1.83km among both links.</p>						TOTAL:	3.203	0.915	0.238	0.549	
						Any special costs	0.400	0.000	0.000	0.000	
						Grand Total					5.305

PABS Appraisal Summary Table - N81r.2.T3						
Scheme Option: N81 Rathvilly Relief Road		Description: 1.83km upgrade to S2 Type 3 standard	Problems Identified:			
						Budget Cost (million) €3.31
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the Slaney River Valley SAC (000781).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Ringfort – Rath.			No	3.0
Safety	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Accident reduction	The proposed realignments in this section of the N81 will cross the Slaney River Valley SAC (000781).			Yes	2.5
Economy	Security		0.2 accidents saved in 2025	€0.033		4.1
	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				4.0
			55 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.048 €2.070 €0.000		5.8
				PVC Residual €4.312 €0.289		
	Other economic impacts		Imperfect competition effects	€0.207		5.9
Accessibility and Social Inclusion	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			3.9
	Transport integration					5.0
	Land-use integration					4.3
Integration	Geographical integration					4.2
	Integration with other government policies					4.0
				NPV	€1,336	Total
				BCR	1.31	Red Flagged
						4.7
						Yes

N81.r.3.T2			Name: Tullow Relief Road					Type: S2 Type 2		
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
120925	2.157	N/A	N/A	0.0	3303	2.157	4.961	1.510	0.281	0.647
120924	0.627	N/A	N/A	0.0	3303	0.627	1.442	0.439	0.082	0.188
120923	2.166	N/A	N/A	0.0	3303	2.166	4.982	1.516	0.282	0.650
Tullow Relief Road						Total 4.950				
Notes: This route passes to the west of Tullow through agricultural land and bypasses the congested streets within the town as well as a number of junctions. The route connects with the R418 and the R725 to the west of Tullow. It is proposed to connect the route at either end by constructing new roundabouts. This route crosses the River Slaney which is environmentally designated as a Special Area of Conservation. 1 No. River Slaney Crossing. (medium / large structure) (add cost) 1 No. junction with the R418. 1 No. junction with the R725. 5 No junctions with local roads. High Traffic Good Subgrade – Maintenance Category 2						TOTAL:	11.385	3.465	0.644	1.485
						Any special costs	0.400	0.000	0.000	0.000
						Grand Total	17.379			

PABS Appraisal Summary Table - N81r.3.T2						
Scheme Option: N81 Tullow Relief Road		Description: 4.95km upgrade to S2 Type 2 standard	Problems Identified:			
						Budget Cost (million) €17.38
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		0 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000	No	4.0
	Noise and vibration Landscape and visual quality		0 households affected in 2025	€0.000	No	4.0
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the Slaney River Valley SAC (000781) and pNHA, and on the Dereen Freshwater Pearl Mussel catchment.			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including four NIAH Structures and a Mill - Unclassified.			No	3.0
Safety	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Accident reduction	The proposed realignment will impact directly on the Slaney River Valley SAC (000781) and pNHA, and on the Dereen Freshwater Pearl Mussel catchment.			Yes	2.5
Economy	Security		0.1 accidents saved in 2025	-€0.145		3.9
	Transport Efficiency and Effectiveness	No additional facility for walkers and cyclists is to be provided.				4.0
			30 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.967 €0.370 Active travel €0.000		4.3
Accessibility and Social Inclusion	Other economic impacts			PVC €12.332 Residual €1.022		
	Funding	Not assessed	Imperfect competition effects	€0.037		4.1
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Integration	Transport integration		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Land-use integration					5.0
	Geographical integration					4.3
	Integration with other government policies					4.2
				NPV	Total	4.1
				BCR	Red Flagged	Yes
					0.26	

8 RECOMMENDATIONS FOR THE NSR NETWORK

8.1 APPROACH

Having appraised each individual scheme option identified by the study, there was then a process of bringing these together into a coherent programme for development of the NSR network that could be taken forward by the NRA.

This process involved three steps:

- In the first instance, options which are mutually exclusive (i.e. a Type 2 and Type 3 design standard for the same section of route) were compared using an incremental analysis,
- Then in the second stage schemes were ranked by their Multiple Criteria Analysis (MCA) score.
- Thirdly, those schemes with scores above a threshold value were recommended to be taken forward.

The following sections describe the process in more detail.

8.2 CHOICE BETWEEN MUTUALLY-EXCLUSIVE OPTIONS

A standard economic approach would compare the increase in benefits - from moving from a lower-cost option (e.g. a Type 3 design standard) to a higher-cost option (e.g. a Type 2 design standard) – with the corresponding increase in cost. If the ratio of the marginal benefit to the marginal cost compares favourably with a threshold BCR, then the higher-cost option is justified.

Ideally the threshold BCR should be set so as to reflect the BCR of a marginal scheme within the programme as a whole. This is because, given any particular level of budget constraint, in effect the decision to be made is whether better value for money is obtained by building a smaller number of schemes to a higher standard or more schemes to a lowest-cost standard.

For this study, the same general principle was followed, but the incremental analysis employed was based on MCA scores, in order to take full account of the non-monetisable impacts of each scheme.

For each scheme with multiple options, an incremental MCA score was derived, taking account of the change in economic performance of the scheme and the changes in scores for all the other criteria which result from a shift from the lower to the higher standard.

Where this incremental MCA score was greater than 5.5, which represents the threshold score above which the top 50% of good schemes lies – then the higher cost option (e.g. the Type 2 design standard) was selected as the preferred option for a particular improvement scheme. If the incremental MCA score was less than this threshold, then the lower cost option was preferred.

This gave a sound basis for assessing the likely contribution of each individual scheme to the cost of the overall programme, for the purposes of NRA strategic planning. The appropriate road standard for different sections of route is a question that will as a matter of course be reconsidered for each individual scheme at Preliminary Design stage.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

8.3 SCHEME RANKINGS

Once all the mutually-exclusive scheme options had been reduced to a single preferred scheme option for each length of route, these schemes were divided into two groups - rural routes and bypasses of urban settlements. These two groups were considered as (in effect) separate sub-programmes, as they would be subject to different management arrangements by the NRA.

Prioritisation between schemes was undertaken on the basis of the highest project score. The project score was derived by deriving a weighted average of the different sub-criteria scores as follows:

- The scores for each sub-criterion are combined into a weighted average for that criterion. These weightings are based on a view of the likely importance of each impact in decision-makers eyes. In some instances monetary values are used as a proxy for decision-makers preferences.
- The criteria scores are then combined into a project score using another weighted averaging process.

The results from the appraisal of 405 individual scheme options were analysed using a spreadsheet, which carries out the mutual exclusion and ranks the schemes based on the MCA score.

The results of the mutual exclusion are summarised in Tables 8.1 and 8.2, which have a total of 265 schemes, split into two groups. Table 8.1 contains the 182 rural schemes and Table 8.2 contains the 83 possible bypass or relief roads (for this study the terms were used interchangeably).

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Table 8.1: Preferred Options for Each Route Length ordered by Route Number – Rural Schemes

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N51a.1.T2	Drogheda (M1) to Slane (N2)	T2	27.240	13601	Yes
N51b.1.T3	Slane (N2) to Navan (N3)	T3	8.487	10256	Yes
N51c.1.T3	Navan (N3) to Athboy	T3	15.265	15151	Yes
N51d.1.T3	Athboy to Delvin (N52)	T3	21.358	8390	Yes
N52b.1.T2	M1 to Ardee (N2)	T2	28.450	4304	Yes
N52c.1.T2	Ardee (N2) to Kells	T2	50.519	13290	Yes
N52d.1.T2	Kells (N3) to Delvin (N51)	T2	40.000	5605	Yes
N52e.1.T1	Delvin (N51) to Mullingar (N4)	T1	60.253	14891	Yes
N52f.1.T1	Mullingar(N4) Tyrrellspass (N6)	T1	26.013	13127	Yes
N52g.1.T1	Kilbeggan (N6) to Tullamore Bypass	T1	17.586	17796	No
N52i.1.T3	Birr (N62) to Borrisokane (N65)	T3	19.070	6597	No
N52j.1.T2	Borrisokane (N65) to Nenagh Bypass	T2	20.457	13457	Yes
N53a.1.T2	Dundalk (tie-in to M1 interchange) to Northern Ireland Border	T2	11.567	8544	Yes
N54a.1.T2	Monaghan Town to Smithborough	T2	14.170	11339	No
N54a.2.T2	Smithborough to Clones	T2	7.051	6091	No
N54b.1.T3	Northern Ireland border to Butlers Bridge	T3	10.454	7296	Yes
N55a.1.T2	Bellanagh to Granard	T2	34.776	5346	No
N55c.1.T3	Edgeworthstown (N4) to Ballymahon	T3	21.102	6665	No
N55c.2.T3	Ballymahon to Glassan	T3	16.157	13387	Yes
N55c.3.T2	Glassan to Ballykeeran	T2	5.230	13924	Yes
N56a.1.T2	Coolboy to Kilmacrenan	T2	8.853	14980	Yes
N56a.2.T3	Kilmacrenan to Creeslough	T3	16.229	5838	Yes
N56a.3.T2	Creeslough to Portnablathy	T2	9.701	2732	Yes
N56b.1.T3	Dunfanaghy to Gortahork (break at Falcarragh)	T3	22.383	4085	Yes
N56b.2.T3	Gortahork to Crolly (Gweedore)	T3	13.994	4243	Yes
N56c.1.T3	Crolly to Dunglow (break at Loughanure)	T3	16.471	4255	Yes
N56d.1.T3	Dunglow to Lettermacaward	T3	21.323	4711	Yes
N56d.2.T3	Lettermacaward to Glenties	T3	24.119	2885	Yes
N56e.1.T3	Glenties to Ardara	T3	9.349	3623	Yes
N56e.2.T3	Ardara to Killybegs (R263 junction)	T3	22.514	2698	Yes
N56f.1.2.T1	Killybegs (Junction with R263) to Inver	T1	40.755	5006	No
N56f.2.T1	Inver to Mountcharles	T1	12.192	10097	No
N58a.1.T2	Bellavary to Foxford	T2	21.075	6799	Yes
N59a.1.T2	Ballysadare to Dromore West	T2	36.619	5750	Yes
N59a.2.T2	Dromore West to Ballina	T2	36.742	4878	Yes
N59b.1.T2	Ballina to Crossmolina	T2	11.688	5434	Yes
N59b.2.T3	Crossmolina to Bellacorrick	T3	25.884	2051	Yes
N59b.3.T3	Bellacorrick to Bangor	T3	20.676	2050	Yes
N59c.1.T3	Bangor to Ballycroy	T3	26.607	1756	Yes
N59c.2.T3	Ballycroy to Mallaranny	T3	24.501	1756	Yes
N59c.3.T3	Mallaranny to Newport	T3	17.093	3401	Yes
N59c.4.T3	Newport to Westport	T3	18.662	2746	Yes
N59d.1.T3	Westport to Leenaun	T3	53.611	3854	Yes
N59d.2.T3	Leenaun to Letterfrack	T3	37.945	663	Yes

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N59d.3.T3	Letterfrack to Cliften	T3	24.771	3088	Yes
N59e.1.T3	Cliften to Maam Cross	T3	45.368	3326	Yes
N59e.2.T2	Maam Cross to Oughterard	T2	40.383	7200	Yes
N59e.3.T1	Oughterard to Moycullen	T1	56.655	14814	Yes
N59e.4.T1	Moycullen to Galway	T1	11.115	18677	Yes
N60a.1.T2	Balla to Claremorris	T2	8.356	10464	Yes
N60b.1.T2	Claremorris to Ballyhaunis	T2	29.324	3528	No
N60c.1.T2	Ballyhaunis to Ballinlough	T2	12.768	4034	No
N60c.2.T2	Ballinlough to Castlerea	T2	9.993	3915	Yes
N60d.1.T3	Castlerea to Ballymoe	T3	7.691	4613	Yes
N60d.2.T3	Ballymoe to Roscommon	T3	13.589	6690	No
N61a.1.T3	Boyle to Tulsk	T3	28.387	3383	No
N61b.1.T2	Tulsk to Roscommon	T2	31.030	6470	Yes
N61c.1.1.T1	Roscommon to south of Knockcroghery	T1	39.880	12962	Yes
N62a.1.T3	Athlone (N6) to Ferbane	T3	13.947	7353	Yes
N62a.2.T3	Ferbane to Birr	T3	21.737	3860	Yes
N62b.1.T2	Birr to Roscrea (N7)	T2	18.946	7178	No
N62c.1.T2	Roscrea (N7) to Templemore	T2	19.846	6206	Yes
N62d.1.T3	Templemore to Thurles	T3	12.436	6321	No
N62e.1.T2	Thurles to Horse & Jockey (N8)	T2	8.015	12737	Yes
N63a.1.T2	Longford to Lanesborough	T2	19.234	4846	No
N63b.1.T2	Lanesborough to the crossroads at Moneen	T2	5.301	5975	Yes
N63c.1.T3	Roscommon to Ballygar	T3	14.391	4263	Yes
N63c.2.1.T3	Ballygar to Moylough (with Newbridge Relief Road)	T3	23.966	6114	Yes
N63c.3.T3	Moylough to Abbey	T3	19.188	8030	Yes
N63c.4.T2	Abbey to Ardnasodan (approx tie-in to N17/N18 Gort to Tuam proposed scheme)	T2	10.772	8102	Yes
N63c.5.T3	Ardnasodan (approx tie-in to N17/N18 Gort to Tuam proposed scheme) to Turloughmore	T3	3.112	5238	No
N63c.6.T3	Turloughmore to Carnoneen (Lackagh)	T3	2.301	5238	Yes
N65a.1.T3	Borrisokane to Portumna	T3	16.077	7038	Yes
N65b.1.T3	Portumna to Killimor	T3	8.869	3877	No
N65b.2.T3	Killimor to Loughrea (N6)	T3	4.450	4793	Yes
N66a.1.T3	Gort to Kilchreest	T3	21.027	3381	Yes
N66a.2.T3	Kilchreest to Loughrea	T3	6.894	2042	Yes
N67a.1.T3	Kilcolgan to Kinvara	T3	4.767	7307	Yes
N67a.2.T3	Kinvara to Ballyvaghan	T3	31.317	2155	Yes
N67a.3.1.T3	Ballyvaghan to Lisdoonvarna (break at Corkscrew Hill)	T3	29.317	1618	Yes
N67b.1.T3	Lisdoonvarna to Ennistimon	T3	17.448	3130	Yes
N67c.1.T3	Ennistimon to Milltown Malbay	T3	17.762	2787	Yes
N67d.1.T3	Milltown Malbay to Doonbeg	T3	25.691	2891	Yes
N67d.2.T3	Doonbeg to Kilkee	T3	13.429	1254	Yes
N67e.1.T2	Kilkee to Kilrush	T2	13.285	3472	Yes
N67f.1.T3	Kilrush to Tarbert	T3	9.865	35	Yes
N68a.1.T3	Kilrush to Lissycasey	T3	4.137	4783	No

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N68a.2.T2	Lissycasey to Ennis	T2	8.730	8526	No
N69a.1.T1	Mungret to west of Kilcornan (with bypasses of Clarina, New Kildimo & Kilcornan)	T1	64.115	13000	Yes
N69a.2.T2	Kilcornan to Askeaton Bypass	T2	7.810	9300	Yes
N69b.1.T2	Askeaton Bypass to Foynes	T2	12.380	6050	Yes
N69c.1.T3	Foynes to Loghill	T3	10.438	3200	Yes
N69c.2.T3	Loghill to Glin	T3	8.237	3150	Yes
N69c.3.T3	Glin to Tarbert	T3	8.079	2750	Yes
N69d.1.T3	Tarbert to Listowel	T3	17.855	6150	Yes
N69e.1.T2	Listowel to Tralee	T2	38.826	9700	Yes
N70a.1.T1	Tralee to Castlemaine	T1	59.232	6800	Yes
N70a.2.T2	Castlemaine To Milltown	T2	4.178	9000	Yes
N70a.3.T2	Milltown to Killorglin	T2	14.012	8400	Yes
N70b.1.T2	Killorglin to Glenbeigh	T2	26.316	11000	Yes
N70b.2.T3	Glenbeigh to Cahersiveen	T3	47.406	7300	Yes
N70c.1.T3	Cahersiveen to Waterville	T3	19.736	1400	Yes
N70d.1.T3	Waterville to Caherdaniel	T3	31.682	2200	Yes
N70d.2.T3	Caherdaniel to Castlecove	T3	11.846	2200	Yes
N70d.3.T3	Castlecove to Sneem	T3	26.510	2200	Yes
N70e.1.1.T3	Sneem to Kenmare (without major Blackwater Bridge)	T3	47.180	2900	Yes
N71b.1.T1 D	N28 to existing N71 Dualling	T1 D	12.885	24804	No
N71b.2.T2 D	Overbridge west of Ballynoe to Roundabout at Halfway	T2 D	29.792	20455	No
N71c.1.T1	Innishannon to Bandon	T1	7.531	13558	No
N71d.1.T2	Bandon to Ballinascarty	T2	23.596	9658	No
N71e.1.T2	Clonakilty to Lissavard	T2	8.896	10416	Yes
N71e.2.T2	Lissavard to Ross Carbery	T2	10.798	8930	No
N71e.3.T2	Ross Carbery to Connonagh (tie in to climbing lane outside of Connonagh)	T2	6.005	4632	No
N71e.4.T2	Connonagh to Leap	T2	2.640	4630	No
N71e.5.T2	Leap to Skibbereen	T2	16.050	8982	Yes
N71f.1.T2	Skibbereen to Aghadown	T2	26.476	5133	No
N71f.2.T2	Ballydehob to Junction with R586	T2	35.154	6007	No
N71g.1.T3	Bantry to Ballylicky	T3	5.146	3326	No
N71g.2.T3	Ballylicky to Glengarriff	T3	15.375	2522	Yes
N71g.3.T3	Glengarriff to Kenmare	T3	49.440	1040	Yes
N71h.1.T3	Kenmare to Killarney	T3	60.346	3890	Yes
N72a.1.T2	Junction with N25 (Dungarvan) to Cappoquin	T2	28.924	8710	Yes
N72b.1.T2	Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)	T2	57.172	6843	Yes
N72c.1.T3	Fermoy to Ballyhooly	T3	10.898	2612	Yes
N72c.2.T3	Ballyhooly to Castletownroche	T3	7.822	2591	Yes
N72c.3.T3	Castletownroche to Junction with N73	T3	16.236	2630	Yes
N72c.4.T2	Junction with N73 to Mallow	T2	7.902	12160	Yes
N72d.1.T2	Mallow to Dromagh	T2	44.842	8589	Yes
N72d.2.T2	Lislehane to Rathmore	T2	16.389	4526	Yes
N72d.3.T2	Church View to Barraduff	T2	21.467	5400	Yes
N72d.4.T2	Barraduff to Junction with N22	T2	12.612	4035	Yes
N72e.1.T2	Beaufort to Killorglin	T2	22.374	12579	Yes

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N73a.1.T2	Junction with N72 to Kildorrery (incorporating Farahy Relief Road)	T2	45.400	8605	Yes
N73b.1.T2	Kildorrery to Glennahulla	T2	3.833	6916	Yes
N73b.2.T2	Glennahulla to Michelstown Relief Road	T2	10.282	6923	Yes
N74a.1.T3	Tipperary to Golden	T3	16.319	6710	Yes
N74b.1.T2	Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)	T2	11.362	5270	Yes
N75a.1.T2	Thurles to M8/N8 Interchange	T2	7.799	8939	Yes
N76a.1.T2	Kilkenny Ring Road to Callan Bypass	T2	13.728	9193	Yes
N76a.2.T2	Callan Bypass (R692 junction) to Ninemilehouse	T2	12.153	5626	No
N76a.3.T2	Ninemilehouse to Clonmel (junction with N24)	T2	23.365	5910	Yes
N77a.1.T1	Kilkenny Ring Road Extension to the junction with the N78	T1	15.027	21587	Yes
N77a.2.T2	Junction with the N78 to Durrow	T2	22.923	17022	Yes
N78a.1.T2	Kilcullen to Rock	T2	13.110	10703	No
N78b.1.T2	Athy to N80	T2	10.839	5994	Yes
N78c.1.T3	N80 to Newtown	T3	8.494	1620	No
N78c.2.T3	Coolbaun to Castlecomer	T3	2.492	3463	Yes
N78d.1.T3	Castlecomer to N77 near Kilkenny	T3	14.428	5516	Yes
N80a.1.T1	Woodfield to Clara	T1	6.951	18608	No
N80b.1.T1	Killeigh to Mountmellick	T1	58.416	16722	Yes
N80b.2.T1	Mountmellick to Portlaoise (M7)	T1	19.223	19058	No
N80c.1.T2	Portlaoise (M7) to Stradbally	T2	7.194	10657	No
N80c.2.T2	Stradbally to N78	T2	17.315	5155	Yes
N80d.1.T2	N78 to Carlow	T2	22.436	7127	Yes
N80e.1.T2	Carlow to Ballon	T2	6.241	9448	No
N80f.1.T2	Ballon to Bunclody (Kildavin)	T2	12.684	11793	Yes
N81d.1.T1	Blessington to Hollywood Cross	T1	43.912	8028	Yes
N81d.2.T3	Hollywood Cross to Baltinglass	T3	17.034	5442	Yes
N81e.1.T3	Baltinglass to Tullow	T3	21.020	2279	Yes
N81f.1.T3	Tullow to N80 junction near Ballon	T3	7.337	2747	Yes
N83a.1.T3	Knock (N17) to Tooreen	T3	9.761	585	Yes
N83a.2.T3	Tooreen to Ballyhaunis (proposed N60/N83 Ballyhaunis Outer Bypass)	T3	5.504	550	Yes
N83b.1.T3	Ballyhaunis (proposed N60/N83 Ballyhaunis Outer Bypass) to Cloonfad	T3	9.781	997	Yes
N83b.2.T3	Cloonfad to Dunmore	T3	9.506	1641	Yes
N83b.3.T3	Dunmore to Tuam	T3	14.320	3300	Yes
N84a.1.T2	N6 Galway City Outer Bypass to Cloonboo	T2	10.539	15396	Yes
N84a.2.T2	Cloonboo to Headford	T2	19.968	7925	Yes
N84a.3.T3	Headford to Shrule	T3	8.173	3356	Yes
N84a.4.T3	Shrule to Kilmaine	T3	8.564	3275	Yes
N84a.5.T3	Kilmaine to Ballinrobe	T3	8.322	4259	Yes
N84b.1.T3	Ballinrobe to Partry	T3	5.226	5715	Yes
N84b.2.T2	South of Ballyhean (Creevagh) to Castlebar	T2	10.900	3513	No

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N85a.1.T2	Ennis to Inagh	T2	22.745	7033	Yes
N85a.2.T2	Inagh to Ennistimon	T2	24.069	8018	Yes
N86a.1.T3	Blennerville to Camp	T3	17.077	5750	Yes
N86a.2.T3	Camp to Anascaul	T3	24.447	1450	Yes
N86a.3.T3	Anascaul to Lispole	T3	14.789	2300	No
N86a.4.T3	Lispole to Dingle	T3	10.682	2600	No
N87a.1.T3	Belturbet to Ballyconnell	T3	10.132	3024	Yes
N87b.1.T3	Ballyconnell to Bawnboy	T3	7.793	2094	No
N87b.2.T3	Bawnboy to Swanlibar	T3	14.657	1380	No
N87b.3.T3	Swanlibar to N.I. Border	T3	1.910	128	No

Table 8.2: Preferred Options Ordered by Route Number – Bypass Schemes

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N51r.1.T2	Slane Relief Road	T2	11.347	6153	Yes
N51r.2.T2	Athboy Relief Road	T2	14.433	2403	Yes
N52r.1.T2	Ardee Relief Road	T2	17.653	3061	No
N52r.2.T2	Carlanstown Relief Road	T2	4.635	6545	Yes
N52r.3.T2	Clonmellon Relief Road	T2	3.981	4719	Yes
N52r.4.T2	Delvin Relief Road	T2	8.354	6656	Yes
N52r.5.T2	Kilcormac Relief Road	T2	9.492	6067	No
N54r.1.T1	Monaghan Town Relief Road (south)	T1	18.406	1874	No
N54r.2.T2	Smithborough Relief Road	T2	10.762	6091	No
N54r.3.T2	Clones Relief Road	T2	10.530	4005	Yes
N55r.1.T2	Bellanagh Relief Road	T2	6.314	8612	No
N55r.2.T2	Granard Relief Road	T2	8.115	3345	No
N55r.3.T1	Edgworthstown Relief Road	T1	4.740	2460	No
N55r.4.T3	Ballymahon Relief Road	T3	5.811	6603	No
N55r.5.T1	Glassan Relief Road	T1	7.504	13934	Yes
N55r.6.T1	Ballykeeran Relief Road	T1	6.327	13941	Yes
N56r.1.T2	Creelough Relief Road	T2	7.213	3844	Yes
N56r.2.T2	Dunglow Relief Road	T2	5.353	1662	Yes
N58r.1.T2	Foxford Relief Road (West)	T2	6.245	5126	Yes
N59r.1.2.T2	Ballina Relief Road (south - connecting N26)	T2	40.987	4806	Yes
N59r.3.T2	Westport Relief Road	T2	22.113	2228	Yes
N59r.4.T1	Oughterard Relief Road	T1	22.007	4747	Yes
N59r.5.T1	Moycullen Relief Road	T1	16.435	12396	Yes
N59r.6.T3 D	Oughterard to Galway Relief Road	T3 D	105.688	15709	Yes
N60r.1.T2	Castlerea Relief Road	T2	10.493	2048	Yes
N60r.2.T2	Ballymoe Relief Road	T2	6.493	4623	Yes
N61r.1.T2	Boyle Relief Road/N61 Boyle Town Bypass – NRA scheme (Preliminary Design Stage)	T2	13.192	5473	No
N61r.2.T2	Roscommon Relief Road	T2	36.207	14192	Yes
N62r.1.T2	Ferbane Relief Road	T2	9.047	7480	Yes
N62r.2.T1	Birr Relief Road	T1	16.992	7732	No
N62r.3.T1	Roscrea Relief Road	T1	8.879	5064	No
N62r.4.T1	Templemore Relief Road	T1	22.770	2800	No
N62r.5.T1	Thurles Relief Road	T1	30.544	696	Yes
N63r.1.T1	Longford Relief Road	T1	15.092	2466	Yes
N63r.2.T2	Killashee Relief Road	T2	3.929	4930	No
N63r.3.T2	Athleague Relief Road	T2	7.776	5792	Yes
N63r.4.T2	Newbridge Relief Road	T2	5.023	4762	No
N63r.5.T3	Mountbellew Relief Road	T3	7.129	42	Yes
N63r.6.T3	Abbey Relief Road	T3	6.765	5135	Yes
N65r.1.T3	Borrisokane Relief Road	T3	10.973	8246	Yes
N65r.2.T2	Portumna Relief Road	T2	7.187	6062	No
N66r.1.T2	Loughrea Relief Road (N66 Gort Link)	T2	5.961	969	No
N69r.1.T2	Listowel Relief Road	T2	12.353	4100	Yes
N70r.1.T2	Castlemaine Relief Road	T2	10.462	9500	Yes
N70r.2.T2	Milltown Relief Road	T2	8.318	8400	No
N70r.3.T2	Castlemaine/Milltown Relief Road	T2	19.494	8400	Yes

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	AADT 2025	Red Flag
N70r.4.T2	Killorglin Relief Road	T2	21.232	8700	Yes
N71r.1.T1	Innishannon Relief Road	T1	8.911	14357	No
N71r.2.T2	Clonakilty Relief Road	T2	19.092	1716	Yes
N71r.3.T2	Killarney Relief Road	T2	12.196	674	Yes
N72r.1.1.T2	Cappoquin Relief Road	T2	13.508	6650	Yes
N72r.3.T3	Tallowbridge Relief Road	T3	6.352	1176	Yes
N72r.4.T3	Castletownroche Relief Road	T3	9.594	3401	Yes
N72r.5.T2	Mallow Relief Road	T2	16.231	3883	Yes
N72r.6.T2	Dromagh Relief Road	T2	13.137	4986	Yes
N72r.7.T2	Rathmore Relief Road	T2	15.283	1607	Yes
N72r.8.T3	Barraduff Relief Road	T3	12.977	4448	Yes
N72r.9.T2	Killorglin East Relief Road	T2	11.491	7945	Yes
N74r.1.T2	Tipperary Relief Road	T2	17.395	5191	No
N74r.2.T3	Golden Relief Road	T3	4.276	5303	Yes
N77r.1.T2	Ballyragget Relief Road	T2	6.973	13148	Yes
N78r.1.T1	Athy Relief Road	T1	21.250	3782	Yes
N78r.2.T2	Castlecomer Relief Road	T2	20.301	2988	Yes
N80r.1.T2	Clara Relief Road	T2	15.440	10084	No
N80r.2.T2	Killeigh Relief Road	T2	5.404	15977	No
N80r.3.T1	Mountmellick Relief Road	T1	15.015	18389	Yes
N80r.4.T2	Portlaoise Northern Relief Road	T2	19.025	1652	No
N80r.5.T2	Stradbally Relief Road	T2	20.208	5609	Yes
N80r.6.T2	Ardless and Ballickmoyler Relief Road	T2	12.554	4892	Yes
N80r.7.T1	Ballon Relief Road	T1	12.621	10147	Yes
N80r.8.T2	Bunclody Relief Road	T2	14.064	4078	Yes
N81r.1.T2	Baltinglass Relief Road	T2	16.116	1192	Yes
N81r.2.T3	Rathvilly Relief Road	T3	5.305	2408	Yes
N81r.3.T2	Tullow Relief Road	T2	17.379	4381	Yes
N83r.1.T2	N60 / N83 Ballyhaunis Outer Bypass	T2	19.145	1107	Yes
N83r.2.T2	Dunmore Relief Road	T2	5.162	318	Yes
N84r.1.T1	Cloonboo Relief Road	T1	10.858	190	Yes
N84r.2.T2	Headford Relief Road	T2	10.900	5034	Yes
N84r.3.T3	Shrulle Relief Road	T3	6.251	3770	Yes
N84r.4.T3	Kilmaine Relief Road	T3	2.927	4410	No
N84r.5.T2	Ballinrobe Relief Road East	T2	19.630	1144	No
N84r.6.T2	Partry Relief Road	T2	4.997	3501	Yes
N86r.1.T2	Blennerville Relief Road (to connect to N70)	T2	17.609	5300	Yes

8.4 RECOMMENDATIONS

It should be noted that a project whose average score is 4.0 has an overall impact of zero, despite the expenditure of capital on construction and maintenance. This clearly represents poor value for money.

With a weighted MCA it is not possible to identify a definitive threshold above which value for money is achieved. It is however estimated that an overall score in excess of 5.2 is needed to achieve value for money, based on an analysis of typical MCA scores corresponding with different levels of economic score.

Therefore the rural scheme options recommended for the Priority 1 basket of schemes in the National Secondary Road Network investment programme are those schemes where the MCA score is greater than 5.2 as these schemes represent value for money to the public sector. The remainder of the rural scheme options will be part of the Priority 2 basket of schemes.

8.4.1 Priority 1 Rural Schemes

Of the 182 rural schemes, 65 schemes have an MCA score greater than 5.2. The 7 schemes listed in Table 8.3 in ascending order of route number are the Priority 1 Schemes identified for the South East Region.

Table 8.3: Recommended Priority 1 Schemes in South East Region Ordered by Route Number

Ref Number	Scheme Name	Road Standard	Budget Cost (May 09) €m	Red Flag
N52j.1.T2	Borrisokane (N65) to Nenagh Bypass	T2	20.457	Yes
N76a.3.T2	Ninemilehouse to Clonmel (junction with N24)	T2	23.365	Yes
N77a.1.T1	Kilkenny Ring Road Extension to the junction with the N78	T1	15.027	Yes
N77a.2.T2	Junction with the N78 to Durrow	T2	22.923	Yes
N80d.1.T2	N78 to Carlow	T2	22.436	Yes
N80e.1.T2	Carlow to Ballon	T2	6.241	No
N80f.1.T2	Ballon to Buncloody (Kildavin)	T2	12.684	Yes

8.4.2 Possible Relief Road Schemes

Of the 83 relief road schemes identified, there are 50 schemes with an MCA score greater than 5.2, with an estimated total cost of implementation of €0.683 billion.

These 50 bypass schemes are recommended for inclusion in the major projects programme of the NRA. The management and prioritisation of that programme is beyond the remit of this study; different budget constraints and different relative weighting of impacts may be appropriate. Thus it does not follow that all such schemes would automatically be Priority 1 within that programme. Like all proposed road improvements, these would be subject to more detailed analysis as the scheme progresses.

The 7 bypass schemes in the South East Region are listed in Table 8.4 in order of Route Number.

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

Table 8.4: Possible Relief Roads for Consideration as Major Projects in South East Region – Ordered by Route Number

Ref Number	Scheme Name	Road Standard	Budget Cost (May 09) €m	Red Flag
N62r.3.T1	Roscrea Relief Road	T1	8.879	No
N65r.1.T3	Borrisokane Relief Road	T3	10.973	Yes
N74r.1.T2	Tipperary Relief Road	T2	17.395	No
N74r.2.T3	Golden Relief Road	T3	4.276	Yes
N77r.1.T2	Ballyragget Relief Road	T2	6.973	Yes
N80r.7.T1	Ballon Relief Road	T1	12.621	Yes
N80r.8.T2	Bunclody Relief Road	T2	14.064	Yes

8.4.3 Priority 2 Schemes

Those schemes with an MCA score less than or equal to 5.2 do not represent value for money under this analysis, which assumes an opening year of 2015. These Priority 2 schemes are therefore not recommended for immediate entry to the programme of improvements being taken forward by the NRA.

Over time, the economic case for taking forward these schemes will improve, due to a combination of deteriorating condition of the present road, rising traffic levels, and rising values of time with economic growth. They should therefore be seen as longer-term improvements.

In the shorter term it is recommended that the NRA consider:

- more localised remedial measures to address existing major deficiencies (such as sections with a history of road accidents)
- localised improvements to address deficiencies in width or alignment, as a possible condition of NRA approval for appropriate development, as part of a strategy for responding to development proposals along NSRs that distinguishes urban and rural locations
- Safeguarding from development any proposed alignments where land-take would be required

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
Appraisal**Recommendations**Cycling &
walking

Table 8.5: Priority 2 Schemes in South East Region Ordered by Route Number

Ref Number	Description	Road Standard	Budget Cost (May 09) €m	Red Flag
N52i.1.T3	Birr (N62) to Borrisokane (N65)	T3	19.070	No
N62b.1.T2	Birr to Roscrea (N7)	T2	18.946	No
N62c.1.T2	Roscrea (N7) to Templemore	T2	19.846	Yes
N62d.1.T3	Templemore to Thurles	T3	12.436	No
N62e.1.T2	Thurles to Horse & Jockey	T2	8.015	Yes
N65a.1.T3	Borrisokane to Portumna	T3	16.077	Yes
N72a.1.T2	Junction with N25 (Dungarvan) to Cappoquin	T2	28.924	Yes
N72b.1.T2	Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)	T2	57.172	Yes
N74a.1.T3	Tipperary to Golden	T3	16.319	Yes
N74b.1.T2	Golden to Cashel (ties into N74 Link Road at Tipperary Road roundabout)	T2	11.362	Yes
N75a.1.T2	Thurles to M8/N8 Interchange	T2	7.799	Yes
N76a.1.T2	Kilkenny Ring Road to Callan Bypass	T2	13.728	Yes
N76a.2.T2	Callan Bypass (R692 junction) to Ninemilehouse	T2	12.153	No
N78c.2.T3	Coolbaun to Castlecomer	T3	2.492	Yes
N78d.1.T3	Castlecomer to N77 near Kilkenny	T3	14.428	Yes
N81e.1.T3	Baltinglass to Tullow	T3	21.020	Yes
N81f.1.T3	Tullow to N80 junction near Ballon	T3	7.337	Yes

8.5 CONCLUSION – EMERGING NSR PROGRAMME

8.5.1 Programme Size

The overall size of the recommended National Secondary Road Priority 1 investment programme comprises 65 rural schemes with an estimated cost of €1.558 billion excluding VAT.

8.5.2 Programme Risk

A risk workshop was held which identified and quantified risks associated with the NSR Investment Programme. A simulation model was carried out and quantified to produce a range of values with commensurate % levels of confidence, known as probability levels or P values. These P values identify costs in addition to the estimated cost of €1.558 billion for the Priority 1 Schemes. The summary outputs are:

- P50 output value is €199.0m
- P80 output value €263.7m
- P90 output value is €299.2m.

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

8.5.3 Geographical Distribution of Programme

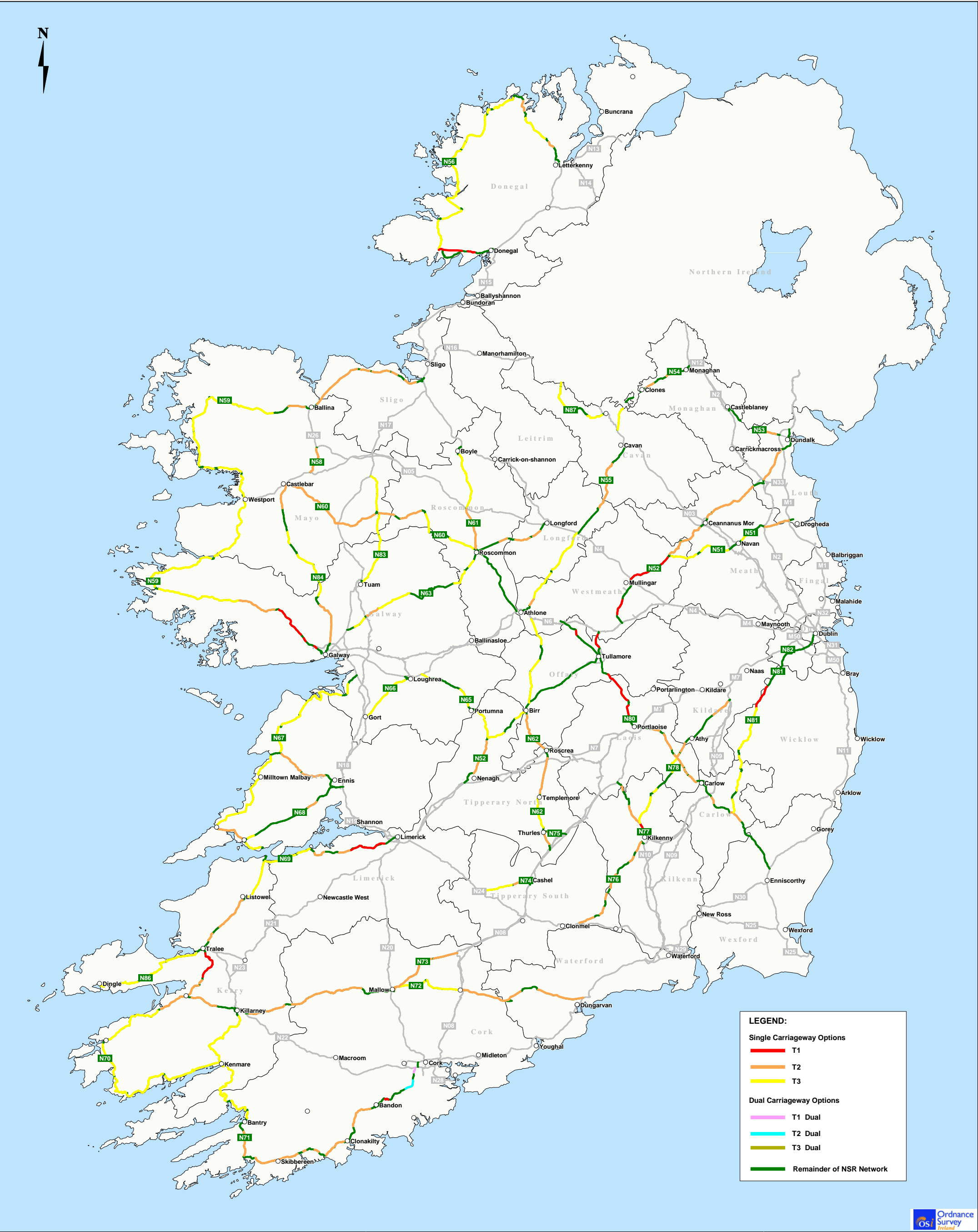
Figure 8.1 maps all of the 182 rural scheme options on the NSR network.



Figure 8.2 maps all of the 182 rural scheme options under three categories:

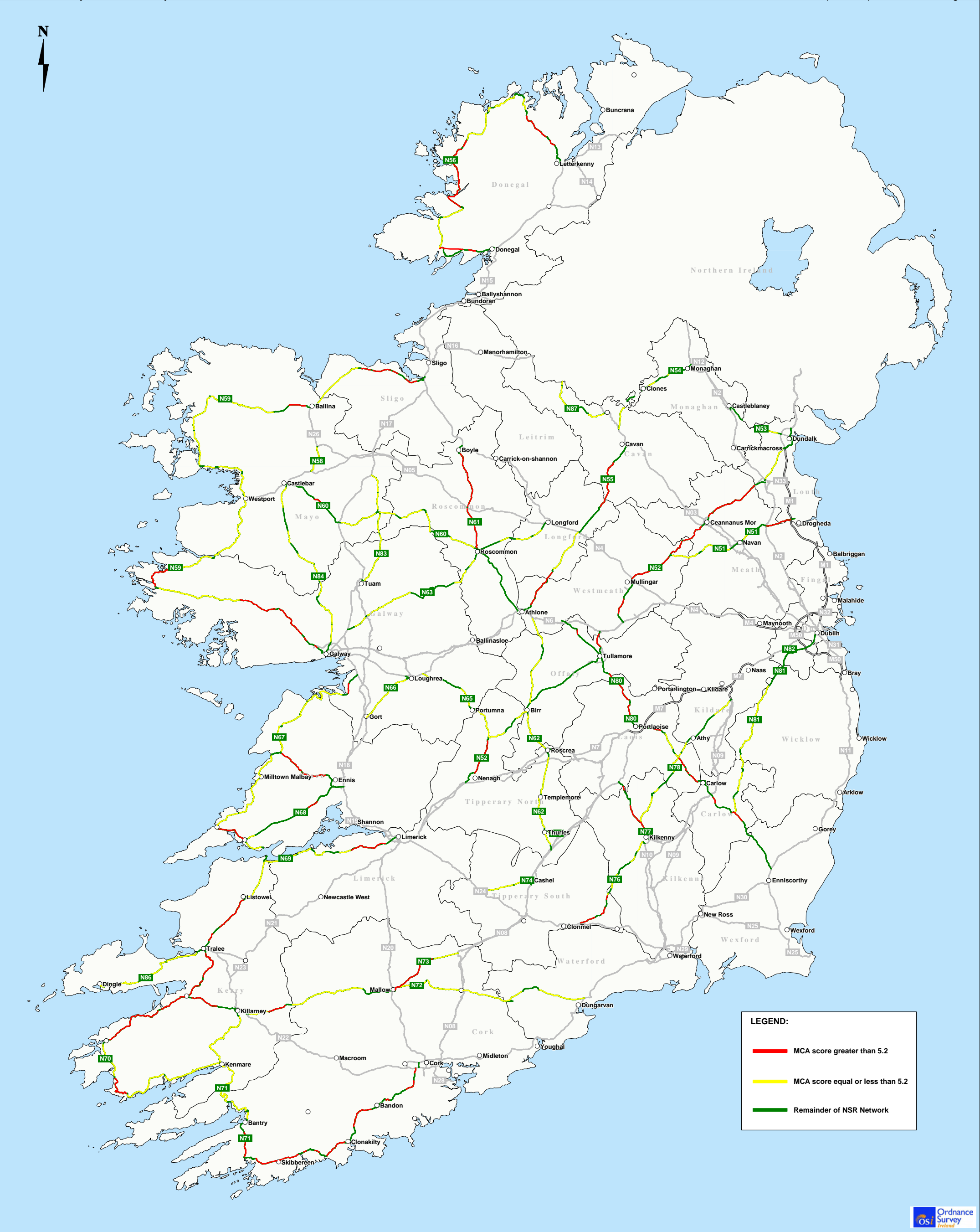
- Those with an MCA score greater than 5.2, that comprise the Priority 1 programme
- Those with an MCA score equal to or less than 5.2, that comprise the Priority 2 programme
- The remainder of the NSR network, consisting of urban links, and those links which have recently been improved and were therefore not considered for further improvement.

The Priority 1 programme - all of the schemes with an MCA score greater than 5.2 only - are indicated on Figure 8.3, with those schemes with an MCA score less than or equal to 5.2 mapped on Figure 8.4

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking



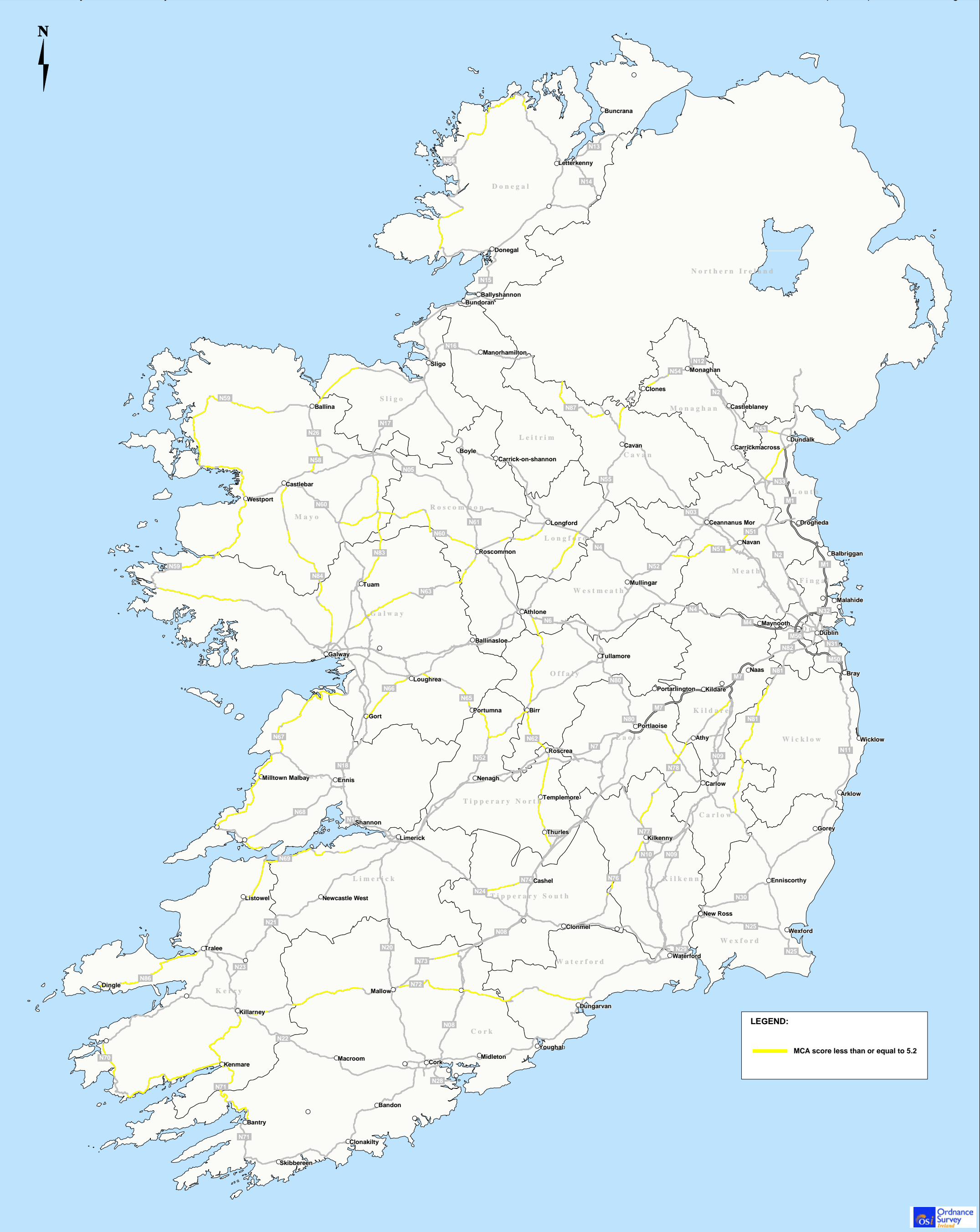
Title	Project	Issue Details			
Figure 8.1 - National Secondary Roads Options	National Secondary Road Needs Study	Drawn by: S. Khan		Project No. MDT0436	
		Checked by: A. Grady		File Ref.	
		Approved by: xxx		MDT0436Mi0087D03	
	  <div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div> <div>T +353 (0)1 2884499 F +353 (0)1 2835676 E ireland@rpsgroup.com W rpsgroup.com/ireland</div>	Scale: 1: 650,000 @ A1		Drawing No.	Rev.
		Date: 11/11/2010		Mi0087	D03
		Notes			
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Title		Project		Issue Details	
Figure 8.2 - MCA Score		National Secondary Road Needs Study		Drawn by: S. Khan	Project No. MDT0436
				Checked by: A. Grady	File Ref.
				Approved by: xxxx	MDT0436MI0084D02
				Scale: 1: 650,000 @ A1	Drawing No. Rev.
				Date: 11/11/2010	MI0084 D02
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Title	Project	Issue Details		
<div>Figure 8.3</div> <div>Priority 1 - MCA Score greater than 5.2</div>	National Secondary Road Needs Study	Drawn by: S. Khan	Project No. MDT0436	
		Checked by: A. Grady	File Ref.	
		Approved by: xxxx	MDT0436Mi0083D02	
	Scale: 1: 650,000 @ A1	Drawing No.	Rev.	
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Title	Project	Issue Details			
Figure 8.4 Priority 2 - MCA Score less than or equal to 5.2	National Secondary Road Needs Study	Drawn by: S. Khan		Project No. MDT0436	
		Checked by: A. Grady		File Ref.	
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	Notes				
<div><div><div><div>NRA</div><div>National Roads Authority</div><div>An tArdáil um Soláthraíocht</div></div><div><div>RPS</div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div></div><div><div>T</div><div>+353 (0)1 2884499</div></div><div><div>F</div><div>+353 (0)1 2835676</div></div><div><div>E</div><div>ireland@rpsgroup.com</div></div><div><div>W</div><div>rpsgroup.com/ireland</div></div></div></div>		1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent. 2. All levels are referred to Ordnance Datum, Malin Head. 3. Ordnance Survey Ireland Licence EN 0005010 ©Copyright Government of Ireland.			

9 APPRAISAL OF CYCLING & WALKING

9.1 POLICY CONTEXT

In response to government “Smarter Travel” policy to increase the amount of walking and cycling in Ireland, the NRA asked the National Secondary Road (NSR) Needs Study to considering the merits of rural NSR improvement scheme options that would include a footpath and cycleway.

This analysis was carried out as an add-on to the initial identification and appraisal of NSR improvement schemes, and builds on the conclusions from the previous chapter.

9.2 SCHEMES TO BE APPRAISED

It was not considered necessary to re-appraise the full list of 405 scheme options that had been identified. This was for three reasons:

- The Type 1 single carriageway standard includes a wide verge within which a footpath and cycleway could easily be included. Since inclusion of a footpath and cycleway would not significantly increase the cost of such schemes (if designed in from the beginning), the decision as to whether to include such a facility was considered to be a policy / design issue for the NRA that did not require detailed appraisal. The same was taken to apply to dual-carriageway schemes.
- Where the previous appraisal had included more than one upgrade option for the same stretch of National Secondary Road, the marginal costs and benefits of footpath and cycleway provision were considered to be fairly similar, whether the proposed standard was Type 2 or Type 3. Therefore the decision on appropriate road standard and the decision on whether to provide a footpath and cycleway can be taken as independent decisions. It follows that appraisal of footpath and cycleway provision can be applied to the preferred standard emerging from the previous analysis.
- Some of the schemes identified are bypasses, with the function of removing through traffic from towns and villages. Such schemes of themselves improve conditions for walkers and cyclists within the bypassed settlement, which is likely to be an origin or destination of many of the local walking and cycling trips. They offer environmental and safety benefits relating to the separation of the main traffic flows from the activity within the town or village. It was therefore considered that it would not be appropriate to provide for walking and cycling along such bypass schemes.

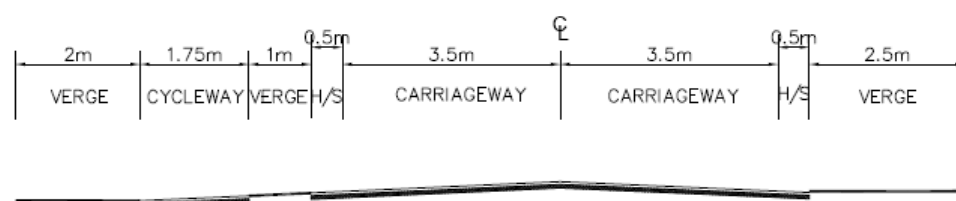
Appraisal of footpath and cycleway schemes was therefore restricted to the preferred options for non-bypass single-carriageway schemes to Type 2 or Type 3 standard.

9.3 FOOTPATH & CYCLEWAY STANDARD

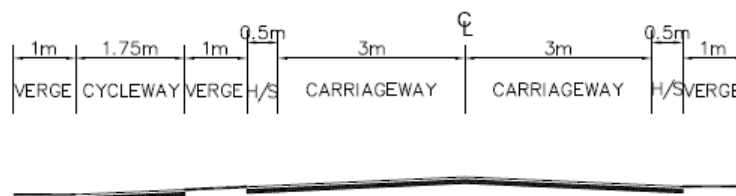
The study considered the type of footpath and cycleway provision likely to be appropriate for rural areas. In a few locations there will be a disused railway track or quiet lane running parallel to the NSR. In these cases, an off-road footpath and cycle trail may be able to be constructed along this parallel alignment, offering a more attractive route for walkers and cyclists at a low cost.

However, in the majority of locations, the design option likely to offer best value for money was considered to be a two-way footpath and cycleway on one side of the carriageway and separated from it by a grass verge.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Figure 9.1: Type 2 and 3 Single Carriageway with Cycleway Cross Sections

Type 2 Single Carriageway With Cycleway



Type 3 Single Carriageway With Cycleway

Figure 9.1

Type 2 and 3 Single Carriageway with Cycleway Cross Sections

This type of provision was therefore assumed for appraisal purposes; other options might be considered at scheme design stage.

Having regard to likely additional land requirements for such a footpath and cycleway, and drawing on cost information from current schemes, the estimated marginal cost of provision was considered to be of the order of €235,000 per km.

For simplicity, the option of footpath and cycleway provision was taken to apply to the full length of each scheme option. Clearly there are cases where an improvement scheme (which might be of considerable length) has an urban area at one end with correspondingly higher walking and cycling demand for a part of the length of the scheme. Options of partial provision would be appropriately considered at scheme design stage.

9.4 APPRAISAL CRITERIA

The application of the appraisal framework to reflect cycling and walking impacts was as follows:

Environment – no change. It was considered that the environmental impacts from changes in traffic level from mode-switching to cycling and walking are negligible at the level of accuracy of a strategic study such as this.

Safety – the change in accident rates for existing and new cyclists and walkers is included in the mortality rates that are part of a calculation of health benefits. These health benefits are monetised, and included under the Economy criterion, so in order to minimise double counting it was considered appropriate not to alter the accident calculation.

There is a potential additional benefit to do with fear of accidents, which it is appropriate to take account of under the “security” heading of the appraisal framework. There are no monetised values available for this. For simplicity, each scheme was scored as 7.0 for options where a facility is provided and 4.0 where no facility is provided. This subcriterion was given a small but non-zero weight in the overall appraisal calculation.

Economy - five economic impacts of footpath and cycleway provision are identified in the WebTAG guidance - health benefits, reduction in absenteeism, improvements to journey ambience, de-congestion benefits and journey time savings to walkers and cyclists. De-congestion benefits were not modelled, being considered to be negligible within the accuracy of the traffic model. The other four impacts were taken account of in a cycling and walking appraisal spreadsheet developed for the purpose.

There may be an unavoidable element of double counting here, as journey ambience is likely to include some element of reduction in perceived danger. Journey ambience is derived from the “value” that survey respondents gave cycle facilities (compared to no facilities) and people often cite “safety” as a problem that cycle facilities might address (so they might reasonably be taking this into account in their valuation).

Provision of walking and cycling facilities affects both the cost and benefit elements of the Transport Economic Efficiency of the scheme.

Accessibility – under the heading of “vulnerable groups” there was considered to be a benefit from provision of a footpath and cycleway, accruing to non-car-available people who live within walking/cycling distance of a settlement. For simplicity, each with-cycleway scheme option was scored as 7.0 under this criterion if it served a town (taken to be a settlement of 1500+ population) and 5.0 otherwise. This sub-criterion is not assessed for options without cycling and walking facilities and is therefore scored neutral (4.0).

Integration – an additional question was introduced under “Transport Policy Integration” according to whether the route section in question is identified in the National Cycle Policy.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

This sub-criterion then has 3 questions, so a positive response to each question increases the MCA score by 1.0.

Table 9.1: Example of Comparative Appraisal with and without Footpath / Cycleway

		Initial Appraisal Score	With-cycleway Appraisal Score	
Environment	Air Quality and climate	4.6	4.6	
	Noise	4.0	4.0	
	Landscape	4.0	4.0	
	Biodiversity	3.0	3.0	
	Cultural Heritage	3.0	3.0	
	Landuse	4.0	4.0	
	Water	4.0	4.0	
Safety	Accident reduction	4.03	4.03	
	Security	4.0	7.0	(1)
Economy	Transport Efficiency and Effectiveness	5.4	5.2	(2)
	Wider Impacts	5.0	5.0	
	Funding	4.0	4.0	
Accessibility & Social Inclusion	Vulnerable Groups	4.0	5.0	(3)
	Deprived geographic areas	4.9	4.9	
Integration	Transport Interchange	5.0	6.0	(4)
	Land-Use Policy	7.0	7.0	
	Geographical	4.1	4.1	
	Other Govt Policies	4.05	4.05	

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

Notes:

- 1) Security score is an automatic 7.0 for all with-cycleway options
- 2) TEE score may go down as well as up, depending on the balance of costs and benefits
- 3) Score for a scheme where the facility does not provide access to a settlement of 1500+ population
- 4) The transport integration subcriterion has three questions, one of which refers to integration with the National Cycle Policy. So any scheme with no cycle facilities has a score of 4, 5, or 6; any scheme with such facilities has a score of 5, 6, or 7 under this heading

Greyed-out cells indicate an automatic nominal score of 4 for sub-criteria which are considered not to be of use in differentiating between schemes.
All numbers are illustrative.

9.5 MODELLING DEMAND FOR WALKING & CYCLING

The calculation of economic benefit requires quantification of the numbers of walkers and cyclists likely to benefit from provision of facilities.

9.5.1 Initial approach

The approach initially adopted for estimating demand was based on Census POWCAR data, being the best existing data source on levels of cycling and how these vary across Ireland. The POWCAR dataset covers cycling for commuting purposes only.

A high-level strategic cycling model was constructed, allocating POWCAR cycle trips to NSR corridors depending on whether the corridor could be said to connect the origin and destination Enumeration Districts (EDs).

Use of NSRs for commuter cycling was then factored up by a series of factors in order to estimate use for cycling for all trip purposes combined.

In order to validate this approach, a more detailed model was constructed of the N86 corridor, dividing EDs into smaller zones, linking each zone to the road network, and assigning each POWCAR cycling trip to the shortest route.

This exercise indicated that the high-level approach was not suitable for scheme appraisal purposes. In the high-level approach, the N86 corridor came out as having relatively high levels of cycling. But looked at in greater geographical detail, it became clear that there are significant amounts of cycling in and around Tralee, but that little of it uses the N86, and cycling levels along most of the route are low.

An alternative approach was therefore adopted.

9.5.2 Survey-based approach

9.5.2.1 Surveys

The aim of the surveys was to collect data which could be used to derive a demand model for cycling and walking and also to estimate the “value” that people attach to such facilities (this was used in the calculations of improvements to journey ambience). Data was collected from three different locations, two of which had existing walking and cycling facilities similar to the type of facilities proposed. A questionnaire was used to carry out both household surveys and intercept surveys on the walking and cycling facilities themselves. The questionnaire asked about:

- Household cycling and walking trips on the facility if one existed. In the case where a facility did not exist, more general questions about walking and cycling trips were asked and also whether these would change if a facility did exist
- How the household’s walking and cycling trip making behaviour has or might change in response to the new facility
- The respondent’s propensity to walk and cycle for different types of trip
- For every respondent who stated that they do or would gain a benefit from the facility, their maximum willingness to pay, per trip, for the use of the facility. This was immediately followed by a question about their certainty about the value they have given
- Personal and socio economic details of the respondent

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

An analysis of the socio-economic details of the 607 respondents showed that they represented a reasonable cross section of the population, apart from under representation from the extreme ends of the social class spectrum and a slight under-representation of non-car owners. Outlying responses with very large numbers of trips or unreported trip purposes were removed (53 cases) which left 554 cases.

9.5.2.2 Household-based models

Three different types of model were used to study the relationship between the factors collected as part of the survey which might affect demand and the actual number of household walking and cycling trips in both summer and winter.

An Ordinary Least Squares (OLS) regression model was found to perform better than a Poisson model and a Negative Binomial regression model. The OLS model was developed by including all possible variables, then repeatedly dropping the least significant coefficient and re-estimating the model until all the remaining coefficients of the variables were statistically significant at the 5% level. The four resulting parsimonious models are shown in Table 9.2. For each model the range of significant variables were found to be similar, except for small differences (the models were adjusted to ensure comparability). The models for walking and cycling are only slightly different. Demand is given in terms of household trips per month.

Table 9.2: Regression Models Used

	Walking summer	Walking winter	Cycling summer	Cycling winter
Constant	12.76	8.742	4.384	0.489
Sample area dummy Tullamore	18.497	16.238	4.925	4.549
3 or more cars in the household (percentage)	16.405	12.652	8.985	6.56
Number of children between 4 and 17	8.042	6.608	3.952	3.879
In a city or large town	13.958	13.416	0	0
In a small town or village	0	0	7.294	5.362
Within walking distance of a small town or village	35.524	18.497	8.714	2.322
Distance from nearest town	-2.168	-1.82	-1.34	-0.491

9.5.2.3 Application

These household-based models were applied to each scheme option using GIS techniques. The average of summer and winter levels was used.

Geodirectory data was used to select for each scheme the set of buildings within a radius of 250m from the scheme. This radius was chosen because the survey data had indicated that the majority of people using the surveyed cycling and walking facilities lived within one quarter of a kilometre of the facility. An uplift factor was applied to the results to account for the small proportion of users living further away.

Buildings which according to the Geodirectory dataset were vacant or derelict or had no residential delivery points were discarded. Each selected dwelling was weighted according to the number of residential delivery points; for dwellings flagged as holiday homes this weight was then halved.

Each dwelling was then given three attributes by a process of GIS matching of datasets:

- the ED in which the dwelling is located
- the distance from the nearest town (settlement of 1500+ population)
- a category variable representing type of area (whether the dwelling was within or within walking distance of two different sizes of settlement)

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dations**Cycling &
walking**

The distance variable was capped at a maximum of 10km, this being the effective maximum distance observed in the survey data.

Using the ED variable, average household characteristics for the ED (number of children, likelihood of having 3+ cars) were imputed to the household, taken from 2006 Census data.

This enabled the above models to be applied individually to each household. Numbers of walking and cycling trips were summed over all households within 250m of the scheme, to give estimates of what cycling and walking demand would be with a footpath and cycleway facility in place, and these demands were used in the calculation of economic benefits.

9.5.2.4 Validation

The estimates of demand from this approach were also validated against the detailed N86 corridor model based on POWCAR data.

Based on results from other questions in the survey, the survey-based estimates of total cycling demand were scaled back to represent without-facility levels of cycling, and factored down to represent commuting trips only, so as to be comparable with the results from the local N86 model.

The results of this comparison showed the survey-based models to be giving answers of the correct order of magnitude.

The survey-based models give figures of 1.7 and 1.9 commuter cycling trips per day for schemes in the central part of the N86 corridor, rising to 6.3 commuter cycling trips per day for the scheme nearest to Tralee. The POWCAR-based model gives figures of 2.0 for the rural sections, rising to 4.6 near Tralee.

These figures all represent very small volumes of cycling. But the surveys – a combination of observed usage where similar facilities exist and stated likely usage along NSR corridors – indicate that provision of such facilities induces significant proportions of trips, and that commuting use is only a small proportion of the total.

9.5.2.5 Cycle Tourism

Failte Ireland¹⁹ estimate that there are 114,000 cycling visitors to Ireland each year, and that on average they cycle for two-thirds of a two-week holiday. Based on this information, a broad estimate was derived of the additional cycling demand from non-residents of the area around each NSR. Assuming that one-quarter of this demand is longer-distance cycling along the proposed 2905km of long-distance cycle routes, which amounts to around 20 trips per day on those NSRs that serve attractive tourist areas.

This additional component of cycling demand was added to the survey-based estimate of demand for walking and cycling by residents, and was considered to apply to the N56, N59, N67, N70, N71 and N86.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

¹⁹ See <http://www.failteireland.ie/Business-Supports/Tourism-Sector-Development/> Activities/Cycling

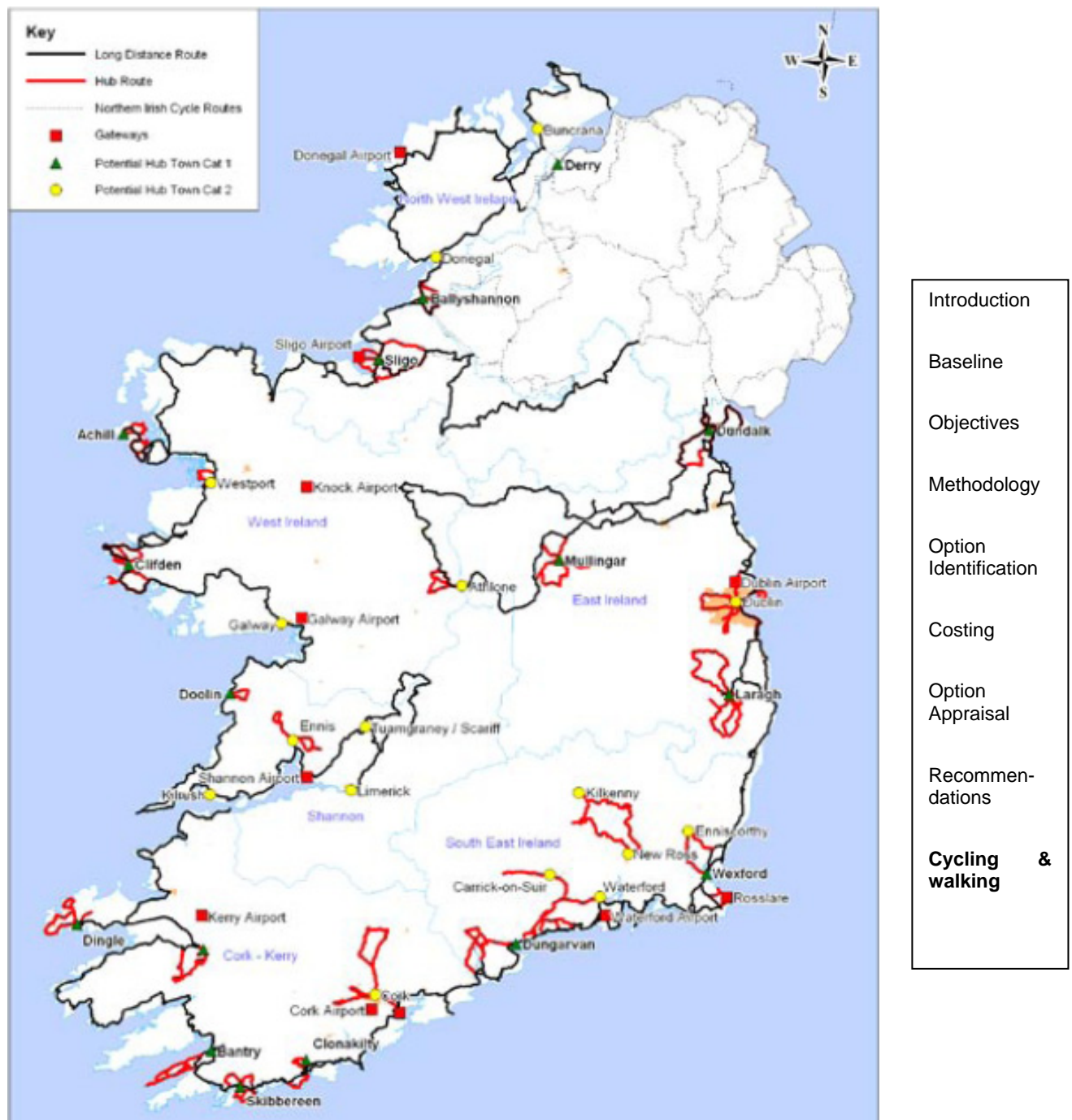


Figure 9.2: Proposed Long-Distance Cycle Routes (source: "A strategy for the development of Irish Cycle Tourism", Sustrans, March 2007)

9.6 APPRAISAL RESULTS

With this approach, modelled demand for cycling and walking is strongly related to the number of occupied dwellings along each route corridor, and also related to proximity of the route to urban settlements.

Under the multi-criteria assessment, all schemes scored more highly with walking and cycling facilities included. But in many cases the gain in MCA score was marginal.

All of the cycling/walking options considered are presented on a scheme sheet and Project Appraisal Balance Sheet (PABS) in Appendix C. The scheme sheets are similar to those in Chapter 7 for the non-cycling options, but provide the additional costs associated with the proposed cycleway. The appraisal results are presented as a one-page tabular summary for each option, based on the Project Appraisal Balance Sheet (PABS). Each row of the PABS table corresponds to one of the appraisal subcriteria. Where an estimate of the monetised value of the impact is available, this is presented, with such qualitative or quantitative supporting information as can reasonably be fitted into a small space. The right-hand columns give the score for that scheme option against each subcriterion.

In a similar way to the treatment of choice between alternative carriageway standards, the scheme option with walking and cycling facilities provided was selected as the preferred option for the purposes of the study only where the gain in MCA score exceeded a certain threshold, corresponding to an improvement in value for money for the programme as a whole.

Of the 265 schemes assessed, this test was met for 141 schemes. For these schemes, the assessment scores carried forward were the with-cycleway scores. For the remaining schemes, the assessment scores carried forward to inform decision-making were the without-cycleway scores.

For all schemes, decisions on the extent of provision of such facilities will be taken at scheme design stage. The concern here was to take appropriate account of the costs and benefits of such facilities in assessing the value for money of the proposed programme.

The schemes for which – at this strategic level – it seems likely that walking and cycling facilities would be economically justified are shown in Table 9.3 below.

Of the 182 rural schemes, 81 schemes now have an MCA score greater than 5.2, which is an additional 16 schemes for the Priority 1 Programme, relative to the set identified in Chapter 8. The additional 16 schemes are listed in Table 9.4. These are schemes with scores that were close to the threshold for Priority 1 status in the previous analysis, so that the small additional benefit from cycling and walking provision improves the overall case enough to bring them into the higher priority category.

The estimated budget cost of implementing these schemes is €2.039 billion. This cost comprises the €1.558 billion for the Priority 1 schemes identified in Chapter 8, the additional cost of €0.154 billion for providing cycleways and €0.327 billion for the cost of the additional 16 schemes which now have an MCA score greater than 5.2.

Figure 9.3 maps all of the schemes with an MCA score greater than 5.2 and distinguishes between those with and without cycleways.

The relevant schemes in the South East Region are listed in Table 9.5 ordered by Route number.

Introduction
Baseline
Objectives
Methodology
Option Identification
Costing
Option Appraisal
Recommendations
Cycling & walking

Table 9.3: Schemes Reassessed with Walking and Cycling Facilities ordered by Route Number

Scheme Identification data		Incremental Cost (€m)
N51a.1.C2	Drogheda (M1) to Slane (N2)	1.964
N51b.1.C3	Slane (N2) to Navan (N3)	1.395
N52b.1.C2	M1 to Ardee (N2)	3.134
N52c.1.C2	Ardee (N2) to Kells	5.07
N52d.1.C2	Kells (N3) to Delvin (N51)	3.705
N52i.1.C3	Birr (N62) to Borrisokane (N65)	2.657
N52j.1.C2	Borrisokane (N65) to Nenagh Bypass	3.133
N54a.1.C2	Monaghan Town to Smithborough	1.426
N55a.1.C2	Ballanagh to Granard	4.517
N55c.2.C3	Bllymahon to Glassan	2.759
N55c.3.C2	Glassan to Ballykeeran	0.583
N56a.1.C2	Coolboy to Kilmacrenan	0.662
N56a.2.C3	Kilmacrenan to Creeslough	2.784
N56c.1.C3	Crolly to Dunglow (break at Loughanure)	2.208
N56d.1.C3	Dunglow to Lettermacaward	2.657
N56d.2.C3	Lettermacaward to Glenties	2.739
N59a.1.C2	Bayysadare to Dromore West	5.56
N59a.2.C2	Dromore West to Ballina	4.85
N59b.1.C2	Ballina to Crossmolina	1.486
N59c.4.C3	Newport to Westport	2.289
N59d.3.C3	Letterfrack to Clifden	2.922
N59e.2.C2	Maam Cross to Oughterard	3.673
N60a.1.C2	Balla to Claremorris	1.03
N61a.1.C3	Boyle to Tulsk	5.076
N61b.1.C2	Tulsk to Roscommon	3.853
N62a.1.C3	Athlone (N6) to Ferbane	2.43
N62b.1.C2	Birr to Roscrea (N7)	3.614
N62e.1.C2	Thurles to Horse & Jockey (N8)	0.963
N67a.1.C3	Kilcolgan to Kinvara	0.871
N67e.1.C2	Kilkee to Kilrush	2.518
N68a.1.C3	Kilrush to Lissycasey	0.61
N68a.2.C2	Lissycasey to Ennis	0.916
N69e.1.C2	Listowel to Tralee	3.983
N70a.2.C2	Castlemaine To Milltown	0.368
N70a.3.C2	Milltown to Killorglin	1.28
N70b.1.C2	Killorglin to Glenbeigh	2.494
N70b.2.C3	Glenbeigh to Caharsiveen	5.875
N70d.1.C3	Waterville to Caherdaniel	2.742
N70e.1.1.C3	Sneem to Kenmare (without Blackwater Bridge)	5.586
N71d.1.C2	Bandon to Ballinascarty	2.626
N71e.1.C2	Clonakilty to Lissavard	0.999
N71e.2.C2	Lissavard to Ross Carbery	1.015
N71e.3.C2	Ross Carbery to Connonagh (tie in to climbing lane outside of Connonagh)	0.435
N71e.4.C2	Coonagh to Leap	0.23
N71e.5.C2	Leap to Skibbereen	1.789
N71f.1.C2	Skibbereen to Aghadown	2.129
N71f.2.C2	Ballydehob to Junction with R586	2.379
N71g.1.C3	Bantry to Ballylicky	0.587

Introduction

Baseline

Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dations**Cycling &
walking**

Scheme Identification data		Incremental Cost (€m)
N71h.1.C3	Kenmare to Kilaarney	6.556
N72c.4.C2	Junction with N73 to Mallow	0.589
N72d.3.C2	Church View to Barraduff	1.563
N72e.1.C2	Beaufort to Killorglin	2.41
N73a.1.C2	Junction with N72 to Kildorrery (incorporating Farahy Relief Road)	4.174
N76a.1.C2	Kilkenny Ring Road to Callan Bypass	1.483
N76a.3.C2	Ninemilehouse to Clonmel (junction with N24)	2.396
N77a.2.C2	Junction with the N78 to Durrow	2.218
N78a.1.C2	Kilcullen to Rock	1.779
N80c.1.C2	Portlaoise (M7) to Stradbally	0.736
N80d.1.C2	N78 to Carlow	2.125
N80e.1.C2	Carlow to Ballon	0.554
N80f.1.C2	Ballon to Bunclody (Kildavin)	1.213
N85a.1.C2	Ennis to Inagh	2.161
N85a.2.C2	Inagh to Ennistimon	2.394
N86a.1.C3	Blennerville to Camp	2.905
		153.83

Table 9.4: Additional 16 Schemes with MCA Score >5.2 as a result of the Provision of Walking and Cycling Facilities – ordered by Route Number

Ref Number	Scheme Name	Road Standard	Cycle facilities	Red Flag	Budget Cost Without Cycling €m
N51b.1.C3	Slane (N2) to Navan (N3)	C3	Yes	Yes	8.487
N52b.1.C2	M1 to Ardee (N2)	C2	Yes	Yes	28.45
N52i.1.C3	Birr (N62) to Borrisokane (N65)	C3	Yes	No	19.07
N54a.1.C2	Monaghan Town to Smithborough	C2	Yes	No	14.17
N59a.2.C2	Dromore West to Ballina	C2	Yes	Yes	36.742
N59c.4.C3	Newport to Westport	C3	Yes	Yes	18.662
N62a.1.C3	Athlone (N6) to Ferbane	C3	Yes	Yes	13.947
N62b.1.C2	Birr to Roscrea (N7)	C2	Yes	No	18.946
N62e.1.C2	Thurles to Horse & Jockey (N8)	C2	Yes	Yes	8.015
N68a.1.C3	Kilrush to Lissycasey	C3	Yes	No	4.137
N70e.1.1.C3	Sneem to Kenmare (without major Blackwater Bridge)	C3	Yes	Yes	47.18
N71g.1.C3	Bantry to Ballylicky	C3	Yes	No	5.146
N71h.1.C3	Kenmare to Killarney	C3	Yes	Yes	60.346
N76a.1.C2	Kilkenny Ring Road to Callan Bypass	C2	Yes	Yes	13.728
N78a.1.C2	Kilcullen to Rock	C2	Yes	No	13.11
N86a.1.C3	Blennerville to Camp	C3	Yes	Yes	17.077
Total					325.213

Introduction

Baseline

Objectives

Methodology

Option Identification

Costing

Option Appraisal

Recommendations

Cycling & walking

Table 9.5: Schemes with MCA Score >5.2 including those with Walking and Cycling Facilities in South East Region ordered by Route Number

Ref Number	Scheme Name	Road Standard	Cycle facilities	Red Flag
N52i.1.C3	Birr (N62) to Borrisokane (N65)	C3	Yes	No
N52j.1.C2	Borrisokane (N65) to Nenagh Bypass	C2	Yes	Yes
N62b.1.C2	Birr to Roscrea (N7)	C2	Yes	No
N62e.1.C2	Thurles to Horse & Jockey (N8)	C2	Yes	Yes
N76a.1.C2	Kilkenny Ring Road to Callan Bypass	C2	Yes	Yes
N76a.3.C2	Ninemilehouse to Clonmel (junction with N24)	C2	Yes	Yes
N77a.1.T1	Kilkenny Ring Road Extension to the junction with the N78	T1	No	Yes
N77a.2.C2	Junction with the N78 to Durrow	C2	Yes	Yes
N80d.1.C2	N78 to Carlow	C2	Yes	Yes
N80e.1.C2	Carlow to Ballon	C2	Yes	No
N80f.1.C2	Ballon to Buncloody (Kildavin)	C2	Yes	Yes

Introduction

Baseline

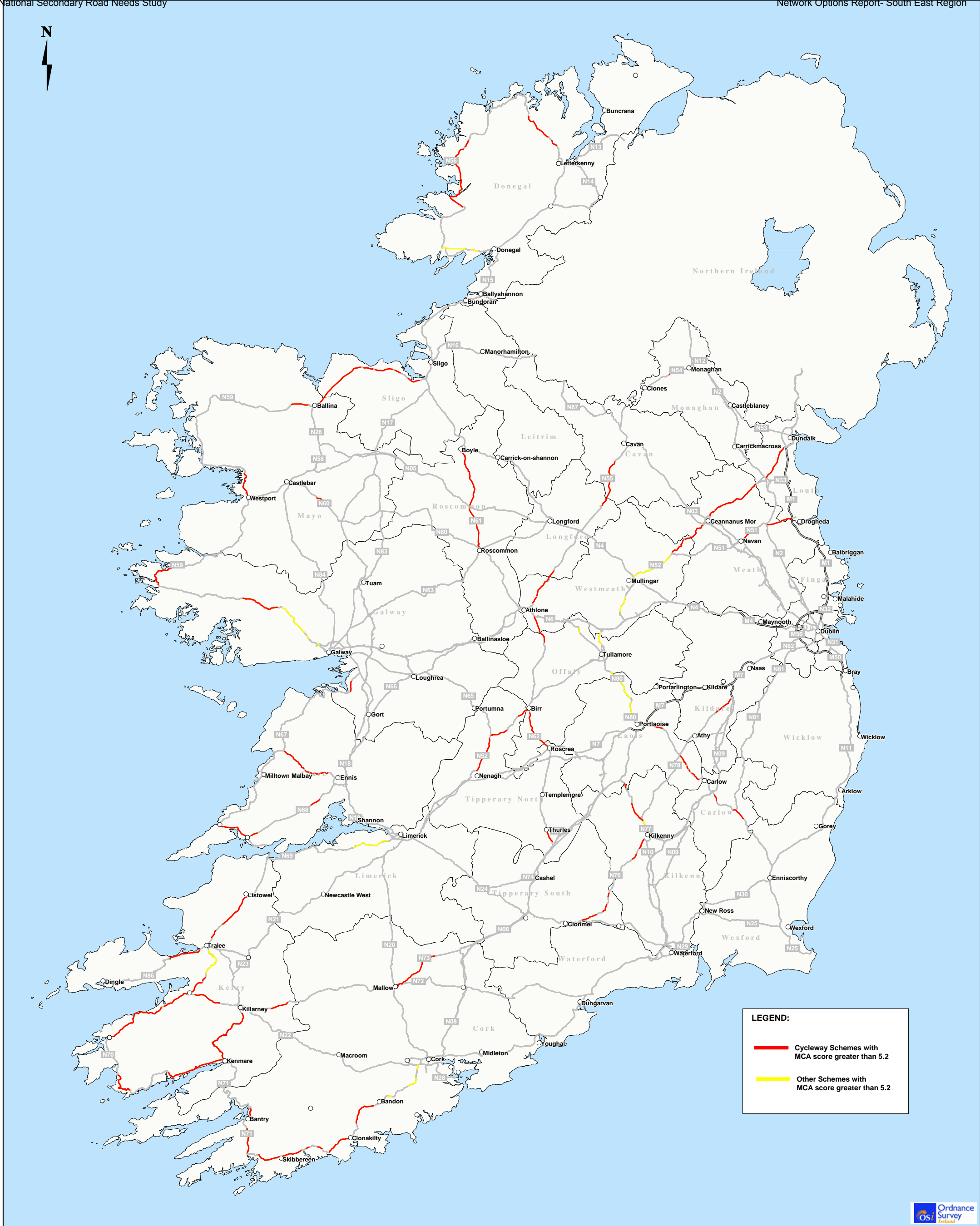
Objectives

Methodology

Option
Identification

Costing

Option
AppraisalRecommen-
dations**Cycling &
walking**



Title	Project	Issue Details			
<div>Figure 9.3</div> <div>Cycleway Schemes with MCA Score greater than 5.2</div>	National Secondary Road Needs Study	Drawn by:	S. Khan	Project No.	MDT0436
		Checked by:	A. Grady	File Ref.	
		Approved by:	xxxx	MDT0436Mi0090D01	
	<div><div><div><div>NRA</div><div>National Roads Authority</div><div>An tArdsteirí na Bóithre Náisiúnta</div></div><div><div>RPS</div></div><div><div>West Pier Business Campus, Dun Laoghaire, Co. Dublin Ireland</div><div><div>T +353 (0)1 2884499 F +353 (0)1 2835676 E ireland@rpsgroup.com W rpsgroup.com/ireland</div></div></div></div></div>	Scale:	1: 650,000 @ A1	Drawing No.	Rev.
		Date:	11/11/2010	Mi0083	D01
		<div>Notes</div> <div>1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.</div> <div>2. All levels are referred to Ordnance Datum, Malin Head.</div> <div>3. Ordnance Survey Ireland Licence EN 0005010 ©Copyright Government of Ireland.</div>			

APPENDIX A

Figures and Summary of Baseline Data

Table A.1: Lane Width Standards on National Secondary Roads

WIDTH <3m			WIDTH <3m			WIDTH <3m		
Route	Length (m)	%	Route	Length (m)	%	Route	Length (m)	%
N51	58,588	53.3%	N63	117,656	62.0%	N75	426	2.4%
N52	139,826	35.0%	N65	46,514	57.3%	N76	7,670	8.8%
N53	7,270	20.0%	N66	35,999	73.0%	N77	10,999	20.2%
N54	15,919	22.4%	N67	208,553	80.6%	N78	15,665	12.6%
N55	72,776	45.9%	N68	45,349	55.5%	N80	44,353	16.0%
N56	180,127	57.6%	N69	45,255	22.4%	N81	45,217	26.4%
N58	9,972	44.2%	N70	224,092	78.5%	N82		0.0%
N59	397,989	66.7%	N71	140,358	36.9%	N83	71,000	78.5%
N60	45,292	24.5%	N72	102,989	31.1%	N84	74,674	50.4%
N61	54,940	32.5%	N73	36,310	64.5%	N85	34,987	54.2%
N62	85,071	90.5%	N74	10,054	25.0%	N86	66,173	52.0%
						N87	43,318	77.2%
						TOTAL	2,495,379	46.8%

Table A.2: Skid Resistance on National Secondary Roads

MSSC_40 in 2008		
Route	MSSC_40 (%)	Length (m)
N51	5	72,795
N51	6	2,401
N51	10	38,987
N51	11	2,597
N51	14	3,400
N51	15	26,396
N51	16	1,001
N51	19	3,400
N51	20	18,404
N51	21	1,599
N51	24	2,200
N51	25	14,999
N51	29	1,999
N51	30	11,603
N51	33	3,601
N51	35	7,599
N51	40	8,198
N51	42	1,003
N51	45	6,400
N51	48	1,001
N51	55	4,598
N51	65	4,004
N51	75	2,599
N51	79	200
N52	7	1,800
N52	8	2,200
N52	12	2,000
N52	22	799
N52	31	600
N52	32	1,000
N52	39	201
N52	44	599
N52	47	1,001
N52	50	4,000
N52	60	2,800
N52	62	1,000
N52	80	4,202
N52	81	800
N52	85	801
N52	95	1,402
N52	100	4,597
N54	53	400
N55	36	202
N55	43	1,000

MSSC_40 in 2007		
Route	MSSC_40 (%)	Length (m)
N62	5	50,217
N62	7	1,000
N62	10	24,803
N62	15	12,606
N62	19	2,001
N62	25	9,203
N62	30	5,403
N62	50	2,399
N62	55	2,399
N62	60	2,001
N62	75	1,401
N62	100	6,201
N65	27	200
N65	58	199
N65	63	200
N65	70	2,803
N65	94	200
N66	31	200
N66	86	200
N67	8	400
N67	18	200
N67	24	1,001
N67	26	200
N67	33	1,000
N67	46	200
N67	52	400
N67	90	1,202
N68	32	401
N69	22	200
N69	78	200
N70	9	800
N70	16	600
N74	56	401
N74	83	200
N76	48	800
N76	65	1,802
N77	17	801
N78	12	399
N78	14	1,401
N78	45	3,600
N78	84	200
N80	11	1,599
N80	13	799
N80	29	1,201

MSSC_40 in 2008		
Route	MSSC_40 (%)	Length (m)
N55	56	799
N55	70	1,999
N55	90	1,797
N56	9	200
N56	17	600
N56	18	599
N56	23	601
N56	26	796
N56	27	1,002
N56	38	1,802
N56	46	400
N56	52	200
N56	57	1,399
N56	71	400
N56	82	200
N56	86	600
N56	88	200
N58	67	600
N59	13	401
N59	37	400
N59	41	201
N59	58	200
N59	68	200
N59	76	399
N59	78	201
N60	54	400
N84	63	200
N84	83	200
Total		289,380

MSSC_40 in 2007		
Route	MSSC_40 (%)	Length (m)
N80	38	800
N80	53	401
N80	62	800
N80	71	200
N80	73	200
N80	80	1,600
N80	95	1,600
N81	6	1,199
N81	20	9,602
N81	21	1,001
N81	35	4,401
N81	37	599
N81	40	3,802
N81	57	400
N81	67	600
N81	81	200
N81	85	799
N85	43	200
Total		172,050

Table A.3: Roughness on National Secondary Roads

IRI >=4		IRI >=4		IRI >=4	
Route	Length (m)	Route	Length (m)	Route	Length (m)
N51	19,437	N63	25,401	N75	2,404
N52	37,197	N65	14,214	N76	10,602
N53	1,391	N66	16,601	N77	6,800
N54	2,401	N67	76,936	N78	8,599
N55	12,608	N68	13,798	N80	10,001
N56	63,206	N69	18,630	N81	8,713
N58	4,400	N70	79,694	N82	200
N59	155,795	N71	101,212	N83	23,640
N60	34,798	N72	65,734	N84	44,804
N61	9,404	N73	18,005	N85	4,673
N62	23,754	N74	5,200	N86	22,601
				N87	6,199

Table A.4 – Number of junctions per road and frequency per km

ROAD	Junction Number	Junction / km	ROAD	Junction Number	Junction / km	ROAD	Junction Number	Junction / km
N51	78	1.42	N63	146	1.54	N75	14	1.56
N52	304	1.52	N65	47	1.16	N76	54	1.24
N53	37	2.04	N66	30	1.22	N77	44	1.62
N54	74	2.08	N67	183	1.42	N78	104	1.67
N55	129	1.63	N68	52	1.27	N80	227	1.64
N56	166	1.06	N69	129	1.28	N81	186	2.17
N58	13	1.15	N70	166	1.16	N82	17	6.69
N59	314	1.05	N71	279	1.47	N83	49	1.08
N60	115	1.24	N72	173	1.05	N84	86	1.16
N61	119	1.41	N73	35	1.24	N85	32	0.99
N62	135	2.87	N74	27	1.34	N86	53	0.83
						N87	56	2.00
						Total	3,673	

APPENDIX B

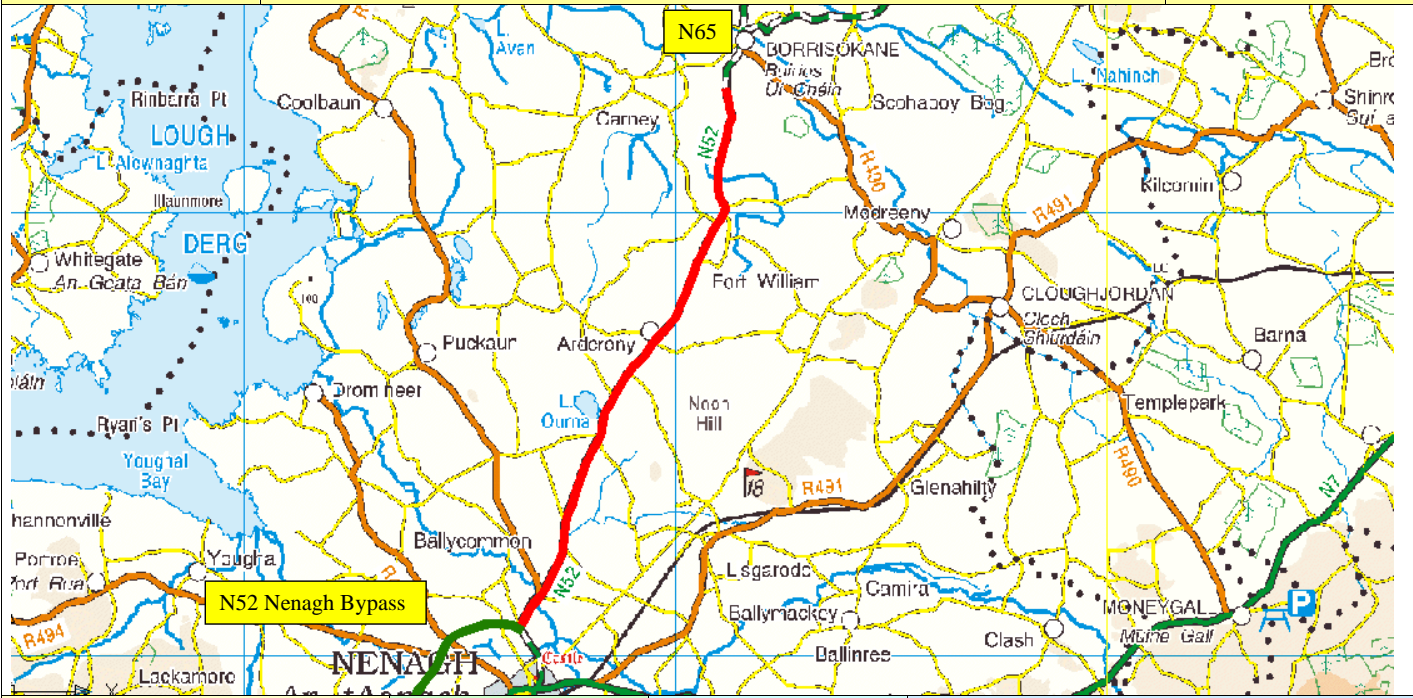
Illustration of Problems and Illustration of Possible Solutions

APPENDIX C

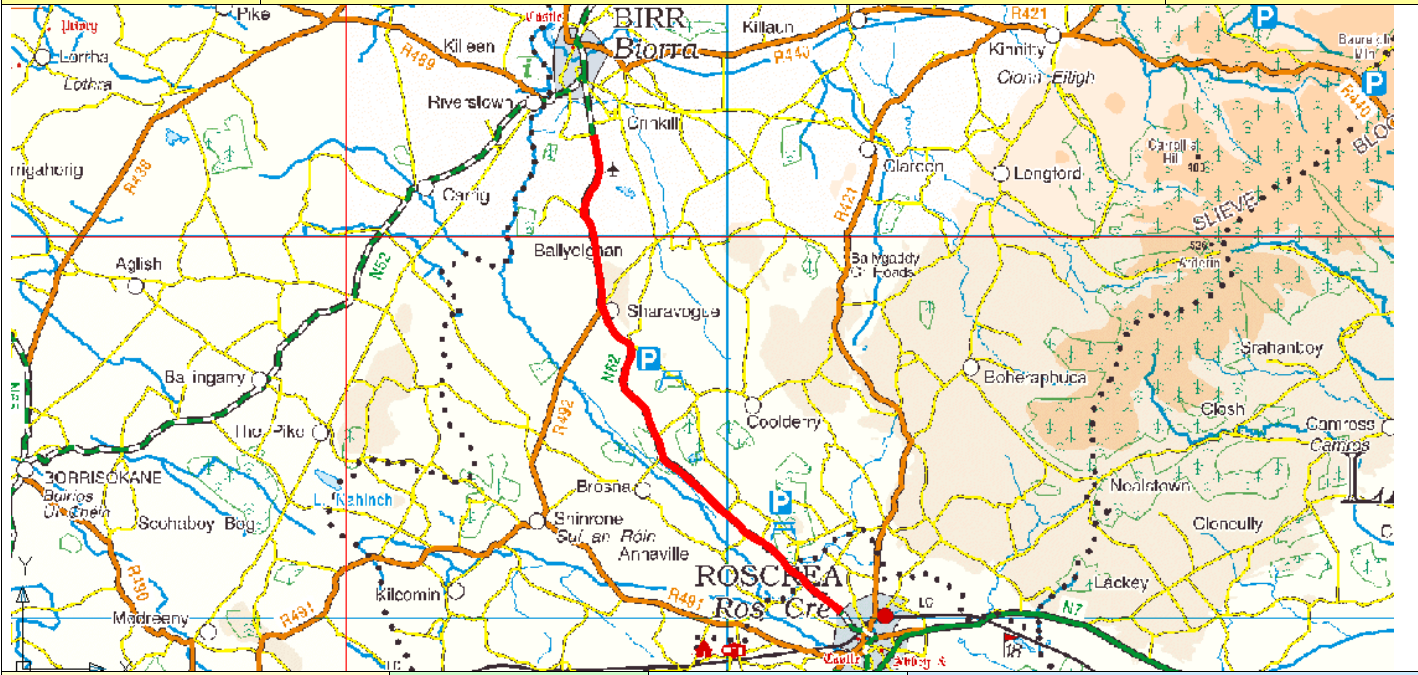
Scheme Sheets & PABS for Cycling and Walking

N52.i.1.C3			Name: Birr (N62) to Borrisokane (N65)							Type: S2 Type 3	
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118820 (Improvement to part of link)	0.286 used (Full length of link0.832)	71.5	1.9	0.2	3306	0.285	0.305	0.033	0.010	0.086	
New (around Riverstown)	1.372	N/A	1.9	0.0	3306	1.372	2.401	0.686	0.178	0.412	
118819 (Improvement to part of link)	0.247 used (Full length of link0.681)	71.5	1.9	0.2	3306	0.247	0.263	0.028	0.008	0.074	
118814	2.850	71.5	1.9	0.2	3306	2.844	3.040	0.325	0.096	0.855	
Break from Carrig to Ballingarry											
118835	2.728	70	2.1	0.2	3307	2.723	3.039	0.378	0.110	0.818	
118834	3.851	68.5	2.4	0.4	3308	3.836	4.455	0.621	0.179	1.155	
Birr (N62) to Borrisokane (N65)	Total 11.334					Total 11.307					
Notes: This existing route varies in standard. It has bendy and hilly sections as well as straight sections with some overtaking opportunity. The section between Birr and Riverstown is quite urbanised in nature and has very large stone walls along some of the section therefore an off-line route is proposed in this area to relieve Riverstown. South of Riverstown there is a decent overtaking section at Stonestown followed by a hilly and bendy section until Carrig. From Carrig to Ballingarry the existing route is roughly to Type 3 standard with some decent overtaking opportunity and this 6.018km section is therefore not considered for upgrade here. South of Ballingarry there is a short section to Type 3 standard (0.43km) and this section has therefore been removed from the costs. The remainder of this route to Borrisokane has an extremely poor alignment and is very bendy, hilly and narrow in places with only one overtaking opportunity (west of Lismaline). There are also a number of very bad bends at the approach to Borrisokane. A new bridge over the Little Brosna River will need to be constructed (add cost) There are no environmentally designated areas in the vicinity of this route. 1 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	13.503	2.071	0.581	3.400	
						Any special costs	0.200 -0.479	-0.060	-0.017	-0.129	
						Sub Total Cycling Grand Total	19.070 <u>+2.657</u> 21.727				

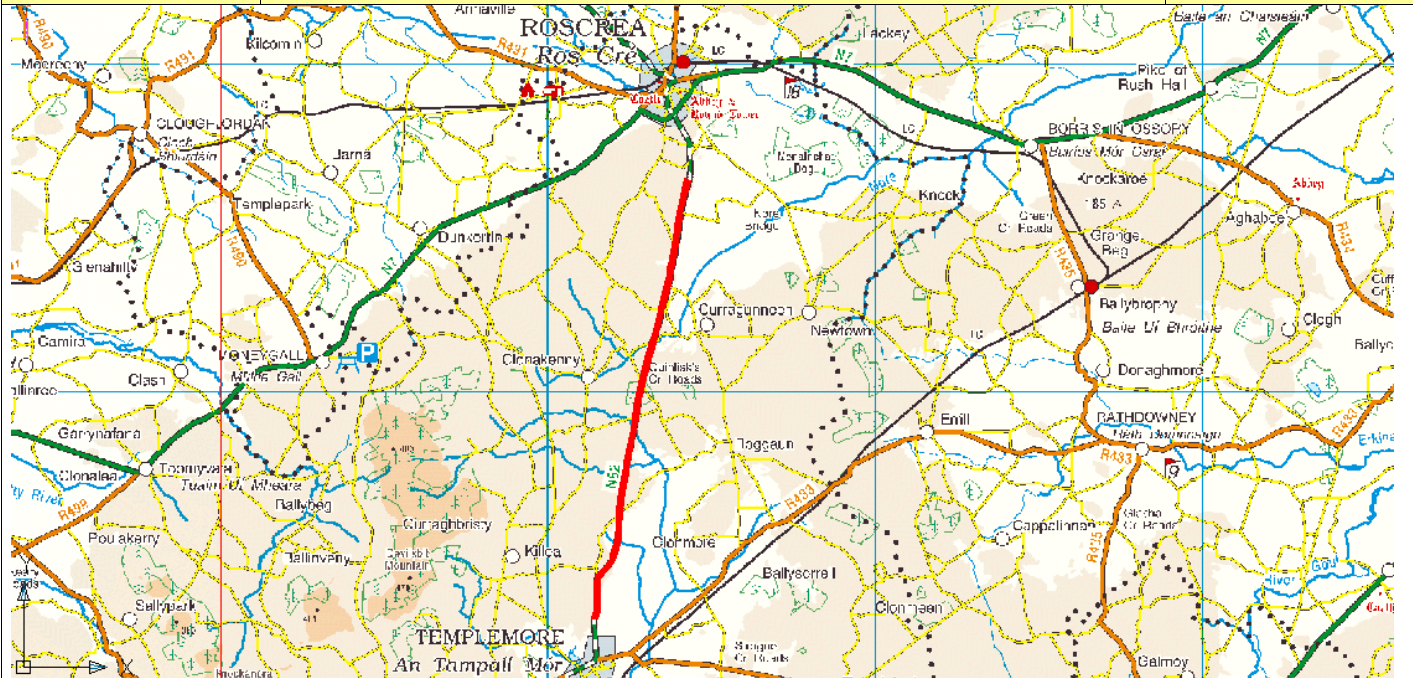
PABS Appraisal Summary Table - N521.1.C3							
Scheme Option: N52 Birr (N62) to Borrisokane (N65)		Description: 11.307km upgrade to S2 Type 3 standard	Problems Identified: • Lane width < 3m for 94% of the corridor and less than 3.5m for 98% of the corridor. These deficiencies occur generally along the corridor. • Visibilities are poor for both standards west of Birr and on the approaches to Borrisokane. • Historical accident cluster at the junction with the N65 at Borrisokane.				Budget Cost (million) €1.73
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		81 households affected in 2025	-€0.015	No	3.9	
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	2.2	
	Landscape and visual quality	Not assessed	81 households affected in 2025	-€0.199	Not assessed	4.0	
	Biodiversity				No	3.0	
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on Kileen Bog NHA (000648). No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five NIAH Structures, a Ringfort and an Enclosure.			No	3.0	
	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0	
	Water resources	The proposed realignments in this section of the N52 will cross the Little Brosna River.			No	3.0	
Safety	Accident reduction		0.4 accidents saved in 2025			3.8	
	Security	A facility for walkers and cyclists is to be provided where none previously existed.		-€0.312		7.0	
Economy	Transport Efficiency and Effectiveness		57 vehicle-hours per day in travel time saved in 2025	Non-work €3.245 Active travel €3.647 €3.466		5.1	
				PVC €13.517 Residual €1.021			
	Other economic impacts		Imperfect competition effects	€0.365		5.1	
	Funding	Not assessed				4.0	
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				7.0	
	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			4.1	
Integration	Transport integration					7.0	
	Land-use integration					6.7	
	Geographical integration					4.3	
	Integration with other government policies					4.2	
				NPV	-€2.299	Total	5.3
				BCR	0.83	Red Flagged	No

N52.j.1.C2			Name: Borrisokane (N65) to Nenagh Bypass						Type: S2 Type 2		
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118801	2.874	68.5	5.6	2.6	3304	2.799	5.444	1.371	0.271	0.862	
118804	3.051	76	2.0	0.4	3303	3.039	4.363	0.629	0.136	0.915	
118805 (through Ardcroney)	0.698	76 assumed		0.0		0.698	0.998	0.144	0.031	0.209	
118802	1.701	76	2.0	0.4	3303	1.694	2.432	0.351	0.076	0.510	
118807	1.019	76	2.0	0.4	3303	1.015	1.457	0.210	0.046	0.306	
118806	3.298	77.5	3.0	1.5	3301	3.249	4.321	0.445	0.103	0.989	
105090	0.090	77.5	3.0	1.5	3301	0.089	0.118	0.012	0.003	0.027	
104837	0.760	77.5	3.0	1.5	3301	0.749	0.996	0.103	0.024	0.228	
Borrisokane to Nenagh Bypass	Total 13.491					Total 13.332					
<p>Notes:</p> <p>This section of the existing route is to quite varying standards. It is hilly and narrow in some places and is to Type 2 or 3 standard with some overtaking opportunity at other places. There are some bad bends but also a number of decent straight sections. There is a short overtaking section south of Borrisokane before Gaulross. South of Gaulross there is also decent overtaking opportunity although it is hampered somewhat by the vertical alignment. This is followed by a hilly and narrow section at Ballinderry. There is also a number of bad bends at this location. Between Ballinderry and south of Lisgarraff there is a section with good overtaking opportunity. At Lisgarraff there is a 1.245km section that is to Type 2 standard or perhaps a bit better. This section is therefore removed from the costs of this upgrade. It is possible to continue this upgrade through the village of Ardcroney to provide some alignment improvements. It is proposed however that the speed limit restrictions at Ardcroney remain in place. South of Ardcroney at Sedgemoor (Lough Eorna) there is a 2.435km section that is thought to be already to Type 2 standard. This section is also removed from the costs for this scheme.</p> <p>Lough Eorna is close to this route south of Ardcroney and is environmentally designated as a Natural Heritage Area.</p> <p>The existing Grange Bridge over a Nenagh River tributary is wide enough to accommodate this upgrade.</p> <p>The existing Nenagh Bridge over the Nenagh River is wide enough to accommodate this upgrade.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.6 to 5 – Maintenance Bracket 3</p>						TOTAL:	20.128	3.265	0.690	4.047	
						Any special costs	-5.490	-0.891	-0.188	-1.104	
						Sub Total	20.457				
						Cycling	+3.133				
						Grand Total	23.590				

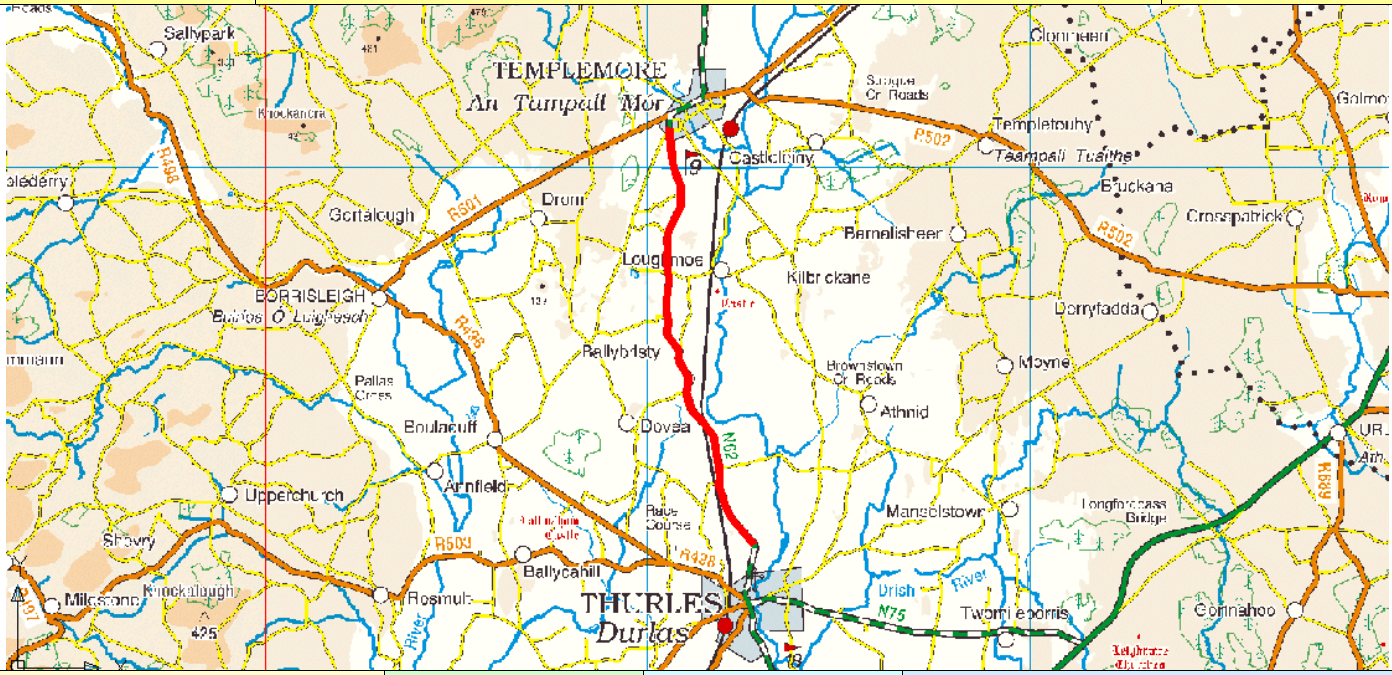
PABS Appraisal Summary Table - N52J1.C2						
Scheme Option: N52 Borrisokane (N65) to Nenagh Bypass	Description: 13.332km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> • Lane width < 3m for 25% of the corridor and less than 3.5m for 53% of the corridor. These deficiencies occur south of Borrisokane. • Visibilities are somewhat deficient on the section of the route south of Borrisokane. • Accident cluster noted just north of Ardrony. 	Budget Cost (million) €23.59			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		116 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.064 €0.000	No	3.5
	Noise and vibration Landscape and visual quality		116 households affected in 2025	-€0.184	No	2.6
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on Lough Ourna pNHA (000850) and may impact indirectly on Lough Derg pNHA (000011) and Lough Derg SPA (004058).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including an Enclosure, four Ringforts, a Castle – Tower House, a Church, a Graveyard, Bawn, three NIAH Structures and a Bridge. The proposed realignments will primarily be within Agricultural Areas but one section is through Wetlands.			No	3.0
Safety	Water resources	The proposed realignments in this section of the N52 will cross the Nenagh River which discharges to Lough Derg pNHA (000011) and Lough Derg SPA (004058).			No	4.0
	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	1.0 accidents saved in 2025	€14.533	Yes	2.5
Economy	Transport Efficiency and Effectiveness					7.0
			200 vehicle-hours per day in travel time saved in 2025	€10.715 €1.127 €0.622		6.2
				Non-work Work Active travel PVC Residual value €15.267 €1.166 €1.113		6.3
Accessibility and Social Inclusion	Other economic impacts Funding	Not assessed	Imperfect competition effects			6.9
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		7 CLAR zones experience improved access to Hub/Gateway			7.0
Integration						6.4
						6.0
						6.7
Integration						6.5
						6.6
						6.6
				NPV	€23.761	Total
				BCR	2.56	Red Flagged
						6.2
						Yes

N62.b.1.C2			Name: Birr to Roscrea (N7)					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
118711	0.461	72	2.8	1.1	3305	0.456	0.786	0.170	0.035	0.138	
118710	0.313	72	2.8	1.1	3305	0.310	0.534	0.115	0.023	0.094	
118712	2.455	72	2.8	1.1	3305	2.429	4.187	0.904	0.184	0.737	
118713	1.505	75	2.3	0.9	3304	1.491	2.265	0.377	0.080	0.452	
118714	3.515	75	2.3	0.9	3304	3.482	5.289	0.880	0.186	1.055	
118715	1.481	77.5	1.4	0.4	3303	1.475	1.940	0.200	0.046	0.444	
112758	3.250	77.5	1.4	0.4	3303	3.237	4.258	0.439	0.101	0.975	
118717	1.494	77.5	1.4	0.4	3303	1.488	1.957	0.202	0.047	0.448	
118716	1.011	78	1.3	0.1	3303	1.010	1.282	0.111	0.027	0.303	
Birr to Roscrea (N7)	Total 15.485					Total 15.378					
<p>Notes:</p> <p>In general the horizontal alignment over this section is not too bad. There are however a large number of medium radius bends and the overtaking is therefore quite poor along this section. There is a lack of decent straight sections leading to a number of very short overtaking opportunities but none of real significance. From Crinkill to Ballyegan is quite bendy. There is a 4.485km section from Boveen to Eagle Hill that is considered to be fully to Type 2 standard and this section has been removed from the costs. The remaining 5.284km of the section from south of Sharavogue to Roscrea is to Type 3 standard and quite close to Type 2 standard and so a reduction has been made to the cost over this section.</p> <p>The road markings are inaccurate at some locations from Boveen to Sharavogue and indicate that overtaking is permitted where the forward visibility is clearly not adequate. i.e. around short radius bends.</p> <p>There is a collection of small forest areas to the north of Roscrea that are environmentally designated as an Natural Heritage Area. Some if these areas are in close proximity to the route.</p> <p>1 No stream crossing.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p>						TOTAL:	22.498	3.398	0.729	4.646	
						Any special costs	-1.550 -7.047	-0.580 -1.064	-0.032 -0.228	-0.369 -1.455	
						Sub Total	18.946				
						Cycling	+3.614				
						Grand Total	22.560				

PABS Appraisal Summary Table - N62b.1.C2						
Scheme Option: N62 Birr to Roscrea (N7)		Description: 15.378km upgrade to S2 Type 2 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths are less than 3.5m wide for 45% of the corridor. • On corridor 62b, approximately 5km south of Birr for approx 4km the visibility is also in the 20 to 120m range also. • Approx 3km south of Birr there is a cluster of 3 fatal and 1 serious accident however this area represents an area of good visibility. • Just north of Roscrea there is a large cluster of accidents. This location represents a relatively straight section of road with good visibility. The road width is also relatively good at this location. 			
			Budget Cost (million) €22.56			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		102 households affected in 2025	-€0.031	No	3.7
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	3.1
	Landscape and visual quality	Not assessed	102 households affected in 2025	-€0.105	Not assessed	4.0
	Biodiversity	The proposed realignment may impact indirectly on Drumakeenan, Eagle Hill and Perry's Mill pNHA (000900) and on Golden Grove Woods pNHA (000903)			No	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Fulacht Fia, seven NIAH Structures, two Enclosures, two Souterrain and a Barrow – Ring Barrow.			No	3.0
Landuse		The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces.			No	4.0
	Water resources	The proposed realignments in this section of the N62 will cross the Golden Grove Stream.			No	3.0
	Accident reduction		0.7 accidents saved in 2025	€7.812		7.0
Safety	Security	A facility for walkers and cyclists is to be provided where none previously existed.				4.0
Economy	Transport Efficiency and Effectiveness		120 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €7.569 €6.768 €1.575		5.6
				PVC Residual value €14.667 €1.069		
	Other economic impacts		Imperfect competition effects	€0.677		5.8
	Funding	Not assessed				4.0
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				7.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.1
	Transport integration					6.0
Integration	Land-use integration					4.6
	Geographical integration					4.5
	Integration with other government policies					5.3
				NPV	€10.667	Total
				BCR	1.73	Red Flagged
						5.2
						No

N62.c.1.C2			Name: Roscrea (N7) to Templemore					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
New Link (south of Roscrea)	1.246	78.5 assumed	N/A	0.0		1.246	1.526	0.105	0.027	0.374	
118688	2.272	78.5	1.0	0.0	3303	2.271	2.783	0.192	0.049	0.682	
118689	0.347	78.5	1.0	0.0	3303	0.347	0.425	0.029	0.007	0.104	
118686	2.209	78.5	1.0	0.0	3303	2.208	2.706	0.187	0.047	0.663	
118719	3.946	78.5	1.0	0.0	3303	3.945	4.835	0.334	0.085	1.184	
118718	3.829	75.5	1.0	0.0	3303	3.828	5.620	0.875	0.187	1.149	
Roscrea (N7) to Templemore	Total 13.849					Total 13.849					
Notes: This route is narrow, bendy and hilly in places but also has a number of straight sections with significant overtaking opportunity. On the straight sections along this route there is some overtaking however it is restricted by the poor vertical alignment. The first 955m south of the speed limit restriction at Roscrea is to Type 2 standard and is therefore not included in this upgrade. There is a further 2.480km section from Corrigan to Clonakenny that is to circa Type 2 standard and the costs have been adjusted to allow for this section. There are a number of bad bends over the 2.5km north of the speed restriction at Templemore. There are no environmentally designated areas in the vicinity of this route. 9 no. stream crossings. The existing Killough Bridge and the bridge of similar construction approx 1km north of it appear to have been recently upgraded and should be wide enough to accommodate this upgrade. Low Traffic Good Subgrade – Maintenance Category 1 IRI 2.6 to 3.5 – Maintenance Bracket 2						TOTAL:	17.896	1.722	0.402	4.155	
						Any special costs	-3.205	-0.308	-0.072	-0.744	
						Sub Total	19.846				
						Cycling	+3.255				
						Grand Total	23.101				

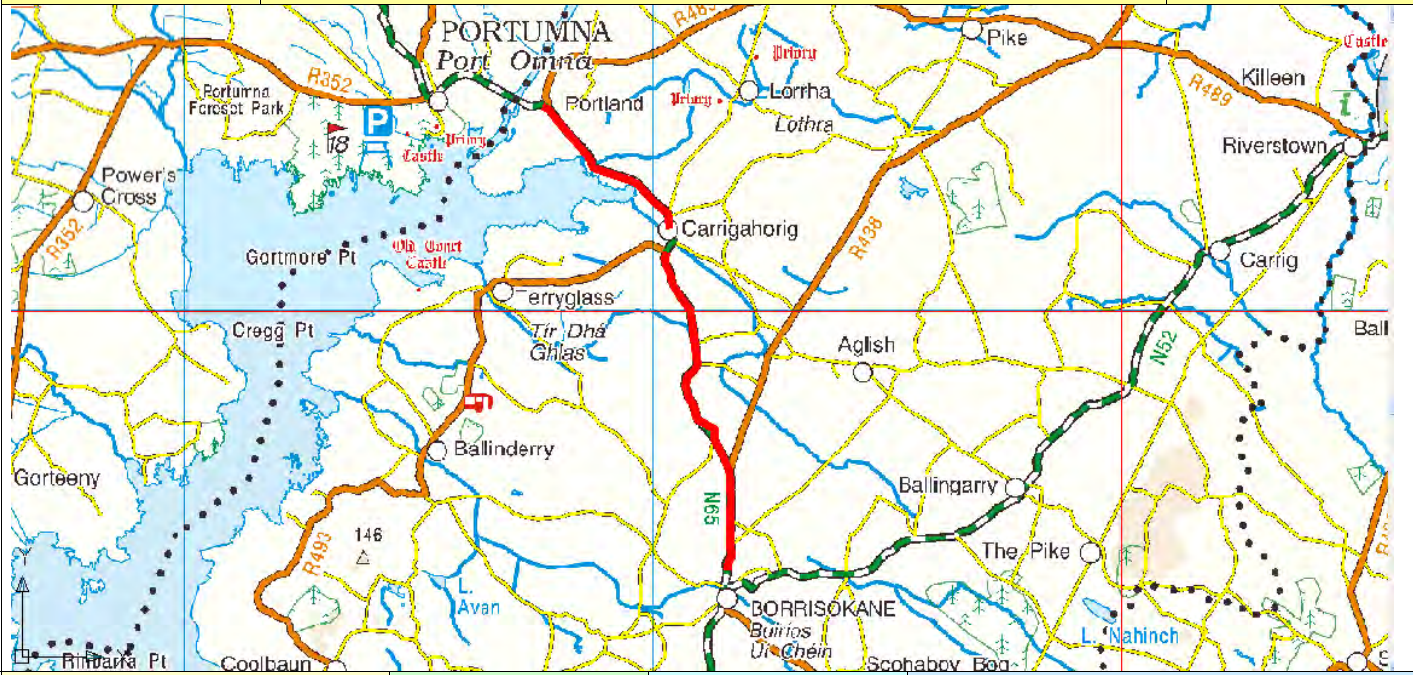
PABS Appraisal Summary Table - N62c.1.C2						
Scheme Option: N62 Roscrea (N7) to Templemore		Description: 13.849km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €23.10	
			<ul style="list-style-type: none"> Lane widths are less than 3m wide for 52% of the corridor and are less than 3.5m for 79% of the corridor. Between Roscrea and Templemore there is a small accident cluster at the junction of the N62 with the road to Clonakenny. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		74 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.071 €0.000	No	3.4
	Noise and vibration Landscape and visual quality		74 households affected in 2025	-€0.146	No	2.8
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Nore Freshwater Pearl Mussel Catchment. There is potential for indirect impacts to Sheehills Esker pNHA (000938), Aghsmear House pNHA (002060) and Templemore Wood pNHA (000942).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two NIAH Structures and a Ringfort. The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area.			No	3.0
Safety	Water resources	The proposed realignment will impact directly on the River Nore Freshwater Pearl Mussel Catchment. Further, the proposed route directly crosses the River Nore and the River Suir.			Yes	2.5
	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	0.2 accidents saved in 2025	€5.118		6.7
Economy	Transport Efficiency and Effectiveness		74 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value		4.0
	Other economic impacts		Imperfect competition effects	€4.676 €4.181 €0.807 €14.991 €1.023 €0.418		5.0
	Funding	Not assessed				5.1
	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	2 CLAR zones experience improved access to Hub/Gateway			4.0
Accessibility and Social Inclusion	Transport integration					7.0
	Land-use integration					4.6
	Geographical integration					4.3
	Integration with other government policies					4.3
				NPV	€1.015	Total
				BCR	1.07	Red Flagged
						4.9
						Yes

N62.d.1.C3			Name: Templemore to Thurles					Type: S2 Type 3				
												
Scheme Definition			Modelled as		OT Input		Scheme Cost €m					
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S		
118721	3.899	75.5	0.6	0.0	3305	3.899	3.589	0.151	0.051	1.170		
118723	3.111	71.5	1.5	0.1	3306	3.108	3.319	0.355	0.105	0.933		
120296 (Former link no. 118722)	4.674 (Former link length 5.221)	74	1.1	0.0	3306	4.674	4.575	0.321	0.100	1.402		
Templemore to Thurles	Total 11.684					Total 11.681						
<p>Notes:</p> <p>This route is varied in standard but is generally quite bendy and has intermittent short straight sections between bends. There is a 1.77km section from Whitefield to Carrickloughmore Cross Roads that is to Type 2 standard already. The costs have been amended to reflect this. From Carrickloughmore Cross Roads to Ballybrist the route is quite bendy and hilly and only has a few short straight sections. There is a further 1.09km section to Type 3 standard from Ballybrist to Clonamuckoge Beg and this section has been removed from the costs. The route is also quite narrow in places, particularly at Grange north of Thurles. Here the width on straight sections may be hampering the overtaking opportunity. Some recent footpath construction and road resurfacing / widening has occurred just inside the speed limit at Thurles.</p> <p>There is an environmentally designated NHA to the west of the route immediately north of Thurles at Grange.</p> <p>The pavement condition is also quite poor at places along this route.</p> <p>The existing bridge south of Templemore at Forest may need to be widened for this upgrade as it is quite narrow.</p> <p>The existing railway bridge at Clonamuckoge Bed is narrow and humped and has bends either side of it. This bridge will need to be widened / replaced as part of this upgrade.</p> <p>Tree lined for approx 700m south of the speed limit at Templemore.</p> <p>4 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.5 to 5 – Maintenance Bracket 3</p> <p>Recycle variant N62.d.1.C2</p>						TOTAL:	11.483	0.826	0.256	3.505		
						Any special costs	0.300 -2.811	-0.202	-0.063	-0.858		
											Sub Total	12.436
											Cycling	+2.745
					Grand Total	15.181						

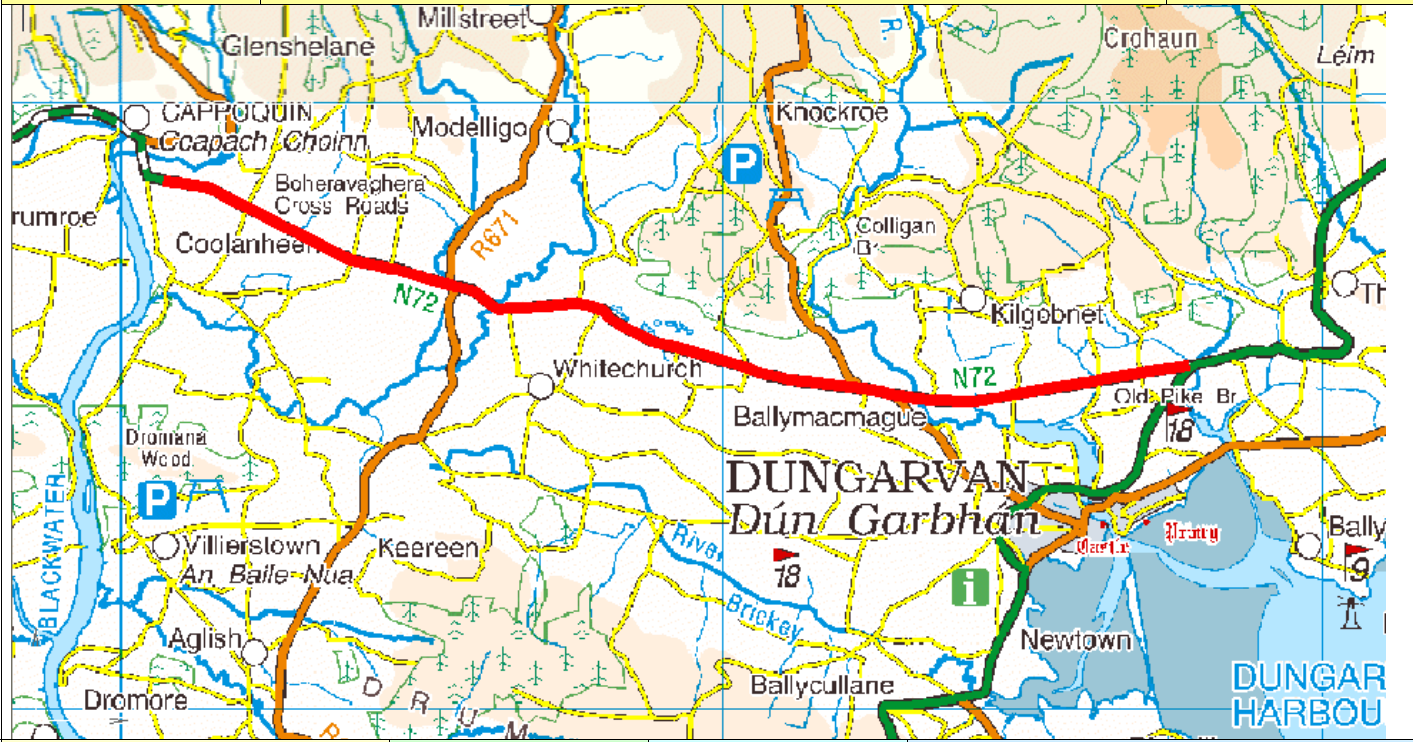
PABS Appraisal Summary Table - N62d.1.C3							
Scheme Option: N62 Templemore to Thurles		Description: 11.681km upgrade to S2 Type 3 standard		Problems Identified:		Budget Cost (million) €5.18	
				<ul style="list-style-type: none">• Lane widths are less than 3m wide for 52% of the corridor and are less than 3.5m for 79% of the corridor.• On corridor 62d, between Templemore and Thurles there are a number of areas with visibility in the 20 to 120 m range. Two of note include a section of approx 2km beginning 2km south of Templemore. A further section begins approx 5km south of Templemore and stretches for approx 3km.• The corridor between Templemore and Thurles has 6 fatal accidents recorded over the recent accident history data, indicating there may be a significant accident problem on this corridor.			
Objective	Sub-objective	Qualitative impacts		Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality			79 households affected in 2025 0 tonnes of carbon saved in 2025	€0.002 €0.000	No	4.0
	Noise and vibration			79 households affected in 2025	-€0.064	No	3.2
	Landscape and visual quality		Not assessed			Not assessed	4.0
	Biodiversity		The proposed realignment may impact indirectly on Templemore Wood pNHA (000942) and on Cabragh Wetlands pNHA (001934).			No	3.0
	Cultural Heritage / archaeology		No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including Earthworks, an Enclosure and two NIAH Structures.			No	3.0
	Landuse		The proposed realignments will primarily be within Agricultural Areas but with one section through a Forest Semi Natural Area and some existing Artificial Surfaces.			No	4.0
Safety	Water resources		The proposed realignment may impact indirectly on the River Suir.			No	3.0
	Accident reduction		A facility for walkers and cyclists is to be provided where none previously existed.	0.2 accidents saved in 2025	€2.645		6.3
Economy	Security						4.0
	Transport Efficiency and Effectiveness			65 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.734 €3.245 €1.590		5.4
Accessibility and Social Inclusion	Other economic impacts			Imperfect competition effects	PVC Residual value €3.168 €0.636		
	Funding		Not assessed		€0.325		5.4
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas			0 CLAR zones experience improved access to Hub/Gateway			7.0
Integration	Transport integration						4.0
	Land-use integration						6.0
	Geographical integration						4.6
	Integration with other government policies						4.3
				NPV	€2.945	Total	
				BCR	1.32	Red Flagged	
							5.0
						No	

N62.e.1.C2			Name: Thurles to Horse & Jockey (N8)					Type: S2 Type 2							
Scheme Definition			Modelled as		OT Input		Scheme Cost €m								
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S					
120297 (Former link no. 112906)	0.705 (Former link length2.370)	75	N/A	0.0	3303	0.705	1.061	0.177	0.037	0.212					
105457	3.410	76.5	1.8	0.5	3303	3.391	4.743	0.624	0.137	1.023					
Thurles to Horse & Jockey (N8)	Total 4.115					Total 4.096									
<p>Notes:</p> <p>From the tie in to the Interchange with the recently opened M8/N8 Cullahill to Cashel Scheme this route is to approx Type 2 standard until Pouldine. This section is not therefore proposed to be upgraded further here. The remainder of the scheme is close to Type 2 standard. There are some short overtaking opportunities and one decent one at the approach to Thurles.</p> <p>The existing Turtulla Bridge over the over the River Suir is wide enough to accommodate this upgrade.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. stream crossing.</p> <p>High Traffic Good Subgrade – Maintenance Category 2</p> <p>IRI 2.6 to 3.5– Maintenance Bracket 2</p> <p>Split link 112906 @ approx (214957, 153926) – resulting link 120297</p>						TOTAL:	5.804	0.801	0.175	1.235					
						Any special costs	0.000	0.000	0.000	0.000					
											Sub Total	8.015			
											Cycling	+0.963			
						Grand Total	8.978								

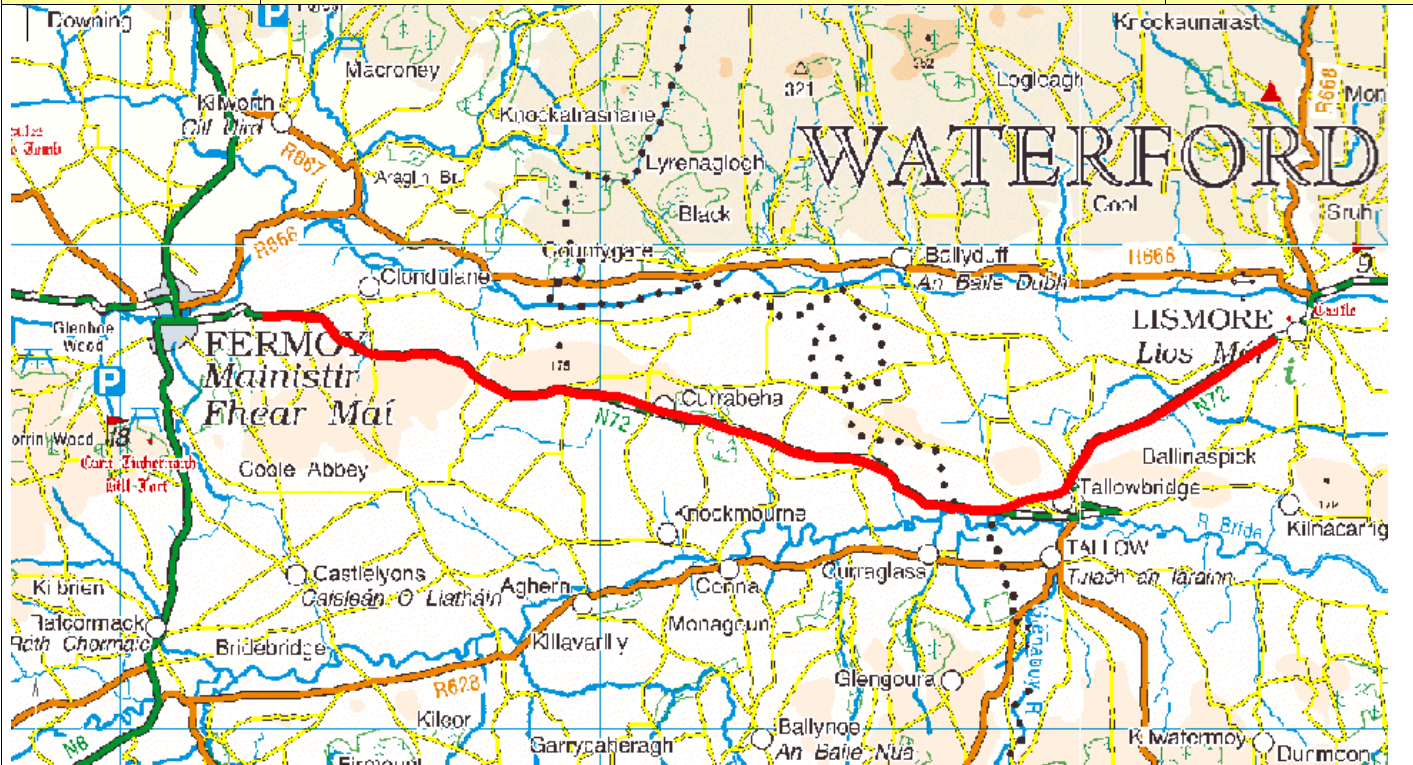
PABS Appraisal Summary Table - N62e.1.C2						
Scheme Option: N62 Thurles to Horse & Jockey (N8)		Description: 4.096km upgrade to S2 Type 2 standard	Problems Identified:		Budget Cost (million) €3.98	
			<ul style="list-style-type: none"> Lane widths are less than 3m wide for 11% of the corridor and are less than 3.5m for 35% of the corridor. Between Thurles and the Horse and Jockey there are a number of accidents but they do not seem to be established in clusters. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		66 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.011 €0.000	No	3.8
	Noise and vibration Landscape and visual quality		66 households affected in 2025	-€0.327	No	1.0
		Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignment may impact indirectly on the Lower River Suir SAC (002137).			Yes	3.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Water Mill, an NIAH Structure, an Enclosure and a Ringfort – Rath.			No	3.0
Landuse		The proposed realignments will primarily be within Agricultural Areas but with one section through existing Artificial Surfaces.			No	4.0
	Water resources	The proposed realignments in this section of the N62 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			Yes	3.0
Safety	Accident reduction Security		0.2 accidents saved in 2025	€4.192		7.0
Economy	Transport Efficiency and Effectiveness	A facility for walkers and cyclists is to be provided where none previously existed.				4.0
			54 vehicle-hours per day in travel time saved in 2025	Non-work Work €2.844 €3.376		6.3
				Active travel €2.849		
				PVC €5.868		
				Residual value €0.422		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.338		6.3
	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				7.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport Integration					7.0
	Land-use integration					4.6
	Geographical integration					4.2
	Integration with other government policies					4.2
				NPV	€7.815	Total
				BCR	2.33	Red Flagged
						5.4
						Yes

N65.a.1.C3			Name: Borrisokane to Portumna					Type: S2 Type 3									
																	
Scheme Definition			Modelled as		OT Input		Scheme Cost €m										
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S							
104409	2.160	70	1.9	0.2	3307	2.156	2.406	0.299	0.087	0.648							
118797	2.772	70	1.9	0.2	3307	2.766	3.088	0.384	0.112	0.832							
118796	2.412	72	1.7	0.1	3306	2.409	2.533	0.254	0.076	0.724							
Break at Carrigahorig																	
118795	2.339	72	1.7	0.1	3306	2.336	2.456	0.246	0.073	0.702							
118793	1.591	75	0.6	0.0	3305	1.591	1.496	0.078	0.025	0.477							
Borrisokane to Portumna	Total 11.274					Total 11.258											
Notes: This route is predominantly narrow and is bendy in places. The vertical alignment is relatively flat although there are some local hilly sections. The pavement condition is also very poor in places especially immediately south of Carrigahorig and also between Ballyeiragh Bridge and the junction with the R489. There is relatively poor overtaking along this route. There are a number of short overtaking sections but only one of any great length which is located just south of the junction with the R489. There is a short section (approx 610m) at the junction with the R438 that is already to Type 2 standard approx and has therefore been removed from the costs of this scheme. The section from Portumna Bridge to Portumna Town is not included for upgrade here as it is within a speed limit restriction and is also quite built up and has existing footpaths. This section would however benefit from resurfacing. This route passes close to Lough Derg and the River Shannon near Portumna. These are environmentally designated as SPA's, NHA's and SAC's. The route also passes between two small lakes near Drum. These lakes are environmentally designated as Natural Heritage Areas. Existing stone bridges at Ballycasey are wide enough to accommodate this upgrade. 1 No. stream crossing. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	11.979	1.262	0.373	3.382							
						Any special costs	-0.648	-0.068	-0.020	-0.183							
												Sub Total	16.077				
												Cycling	+2.646				
						Grand Total	18.723										

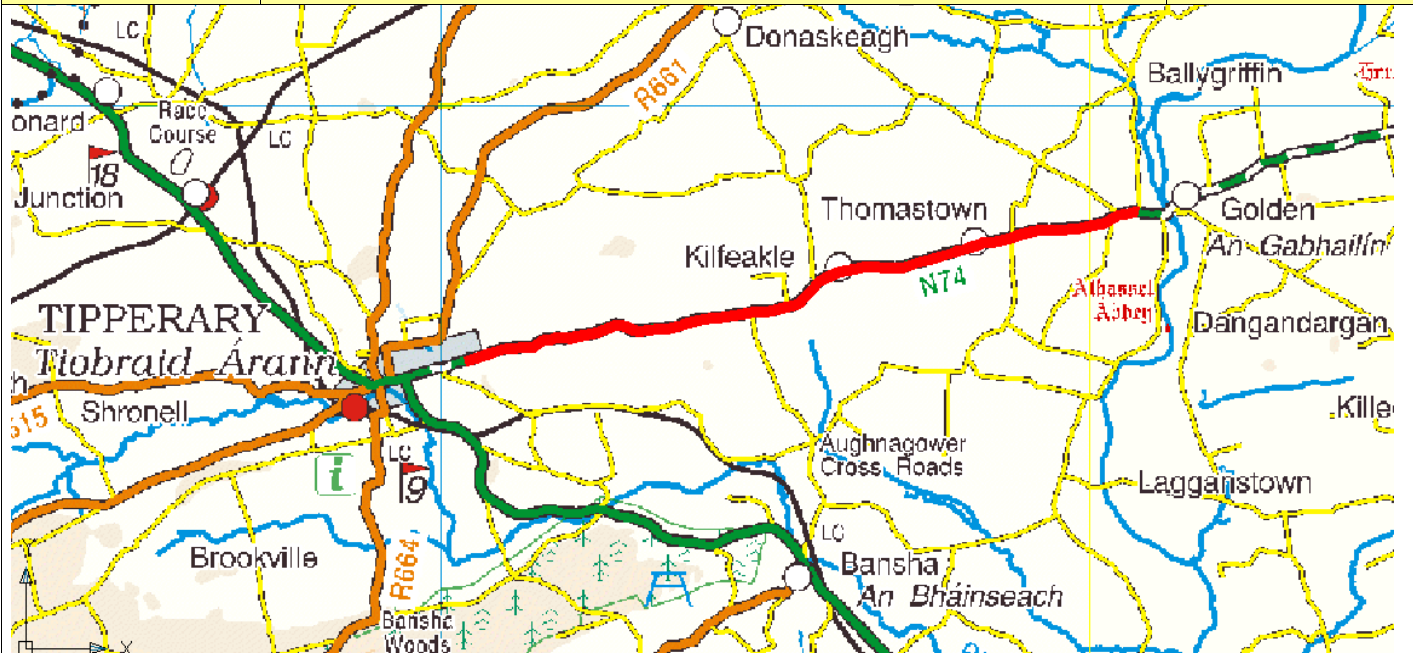
PABS Appraisal Summary Table - N65a.1.C3							
Scheme Option: N65 Borrisokane to Portumna		Description: 11.258km upgrade to S2 Type 3 standard		Problems Identified: · Some 57.3 % of the route, is below the desirable minimum of 3m with 75.6% has a lane width less than 3.5m. · Poor sightlines identified from Killimor north west towards Loughrea for approx 7km. · Poor sightlines identified from Portumna north towards Killimor for approximately 5km. · Poor sightlines identified from Carrigahorig south for approximately 7km to the junction with the R438 · Apparent accident cluster north of Portumna coinciding with a location of poor lane widths and visibility. · Some 16km of the route (40%) has an IRI > 4 indicating a high percentage of the route is below the intervention threshold.		Budget Cost (million) €18.72	
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score	
Environment	Air Quality		46 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.9	
	Noise and vibration Landscape and visual quality		46 households affected in 2025	-€0.054	No	3.4	
	Biodiversity				Not assessed	4.0	
		The proposed realignments may indirectly impact on Fiagh Bog pNHA (000932) and directly impact on Spring Park Wetlands pNHA (000941), and Lough Derg, North-East Shore SAC (002241), Lough Derg (Shannon) SPA (004058) and Lough Derg pNHA (000011).			Yes	1.0	
	Cultural Heritage / archaeology		There are no Heritage sites within the 100m of the proposed realignment.		No	4.0	
	Landuse		The proposed realignments will be primarily within Agricultural Areas, with a small section through Forest and Semi Natural Areas.		No	4.0	
Safety	Water resources				Yes	1.0	
	Accident reduction		0.2 accidents saved in 2025	-€0.097		3.9	
	Security		A facility for walkers and cyclists is to be provided where none previously existed.			4.0	
	Economy	Transport Efficiency and Effectiveness		53 vehicle-hours per day in travel time saved in 2025	Non-work €2.752 Work €3.160 Active travel €1.159		4.9
					PVC €11.402 Residual €0.815 value €0.316		
				Imperfect competition effects			5.1
Accessibility and Social Inclusion	Funding					4.0	
	Vulnerable groups		None of the route corridor is within 4km of a settlement of 1,500 people or more.			5.0	
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.1	
	Transport integration						
	Land-use integration					5.0	
	Geographical integration					4.3	
Integration	Integration with other government policies					4.9	
				NPV	-€3.359	Total	
				BCR	0.71	Red Flagged	
						4.5	
						Yes	

N72.a.1.C2			Name: Junction with N25 (Dungarvan) to Cappoquin							Type: S2 Type 2		
												
Scheme Definition			Modelled as		OT Input		Scheme Cost €m					
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S		
106580	5.050	78.5	1.1	0.1	3303	5.045	6.138	0.423	0.108	1.503		
106579	0.300	78.5	1.1	0.1	3303	0.300	0.368	0.025	0.006	0.09		
107670	2.550	78.5	1.1	0.1	3303	2.547	3.136	0.216	0.055	0.768		
119121	0.900	78.5	1.1	0.1	3303	0.899	1.103	0.076	0.019	0.27		
119120	3.802	75.0	2.2	0.7	3304	3.775	5.703	0.949	0.201	1.137		
106554	0.130	79.5	0.5	0.0	3302	0.130	0.159	0.004	0.002	0.042		
106979	1.240	79.5	0.5	0.0	3302	1.240	1.420	0.039	0.014	0.375		
119123	2.368	79.5	0.5	0.0	3302	2.368	2.682	0.074	0.027	0.708		
119125	1.487	76.5	1.9	0.6	3302	1.478	2.059	0.271	0.060	0.444		
Dungarvan to Cappoquin	Total 17.827					Total 17.783						
Notes: 5 No. Bridge widenings Alignment is relatively straight forward for most of the route from N20 but overtaking is limited due to vertical alignment in places. An objective to increase overtaking might be worth pursuing on this route 3 No pinch points with houses / out buildings close to the road. N72 does not have priority at Ballymacmague South Very bendy and hilly vertical section at the approach to Cappoquin (3 km) with no overtaking Note: existing Type 1 standard for approx 1km, circa 4km from Cappoquin – therefore discount applied High Traffic Good Subgrade – Maintenance Category 2 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	22.767	2.079	0.491	5.337		
						Any special costs	-1.750	0.000	0.000	0.000		
						Sub Total	28.924					
						Cycling	+4.170					
						Grand Total	33.094					

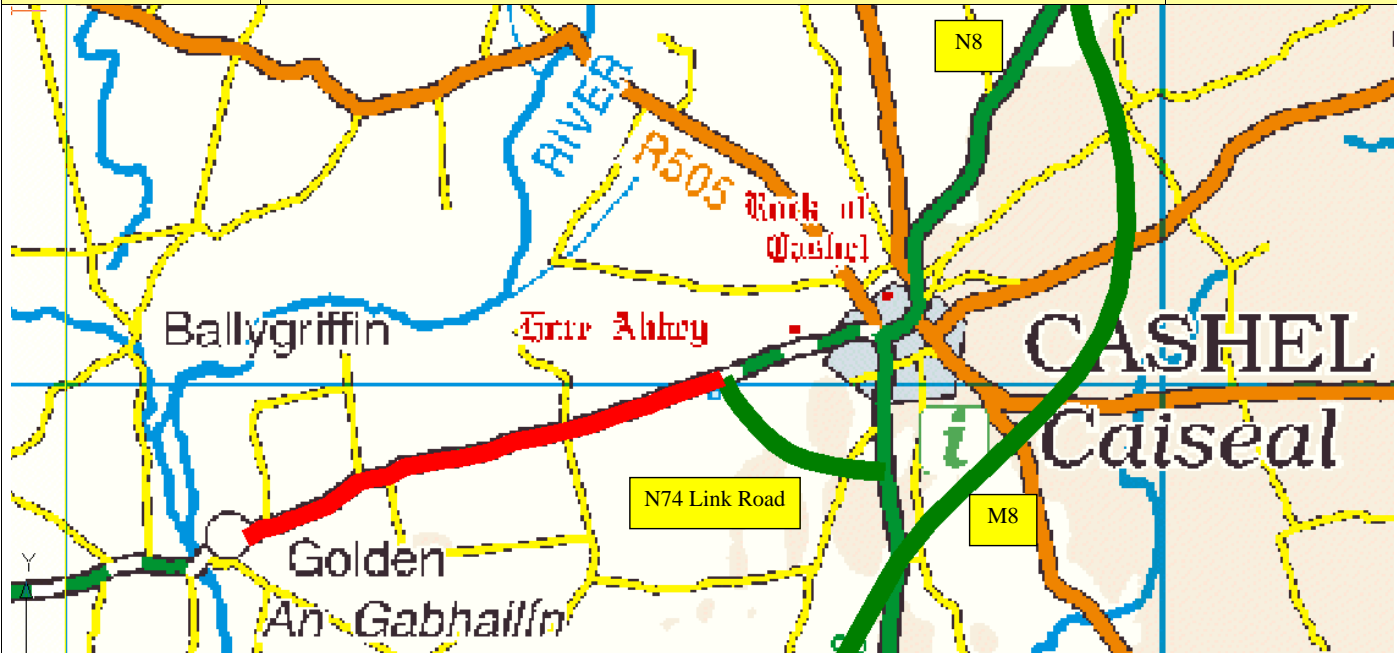
PABS Appraisal Summary Table - N72a.1.C2						
Scheme Option: N72 Junction with N25 (Dungarvan) to Cappoquin		Description: 17.783km upgrade to S2 Type 2 standard	Problems Identified: • The width is generally in excess of 3.0m for this corridor. Circa 50% of the corridor indicates a lane width of less than 3.5m. • The initial section of this scheme from Dungarvan to Lismore has an historical high frequency of serious accidents. This trend is also supported by the more recent data.			Budget Cost (million) €33.09
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		106 households affected in 2025 -3 tonnes of carbon saved in 2025	-€0.074 €0.000	No	3.6
	Noise and vibration Landscape and visual quality		106 households affected in 2025	-€0.111	No	3.4
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170). Care would be needed for any works in this area.			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments, however, a number of sites will be brought within 100m of the realigned section of the route which include a Mound Barrow, Battlefield, Castle – Tower House and a Cross Inscribed Stone.			No	3.0
Safety	Accident reduction	The proposed realignment will be within Agricultural Areas.			No	4.0
	Security	The proposed realignment of this section would cross 2 rivers. The Colligan River discharges to Dungarvan Harbour RAMSAR Site (839) and Dungarvan Harbour Shellfish waters, and the Finisk River is designated and forms part of the Blackwater River SAC (002170).			Yes	2.5
Economy	Transport Efficiency and Effectiveness	A facility for walkers and cyclists is to be provided where none previously existed.	-5.2 accidents saved in 2025	-€5.047		2.2
						4.0
			158 vehicle-hours per day in travel time saved in 2025	Non-work €3.929 Work €3.879 Active travel €1.928		5.4
				PVC €22.166 Residual €1.441		
	Other economic impacts Funding	Imperfect competition effects		€0.888		5.6
Accessibility and Social Inclusion	Vulnerable groups	Not assessed				4.0
	Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				7.0
	Transport integration	9 CLAR zones experience improved access to Hub/Gateway				4.7
	Land-use integration					7.0
	Geographical integration					4.6
Integration	Integration with other government policies					4.3
						4.2
				NPV	-€4.333	Total
				BCR	0.80	Red Flagged
						4.7
						Yes

N72.b.1.C2			Name: Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)					Type: S2 Type 2		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119131	5.308	78.0	1.2	0.2	3303	5.297	6.721	0.584	0.140	1.59
120049 (Former link nos. 119130 & 119133)	2.370 (Former link lengths 2.184 & 0.917)	N/A	N/A	0.0	3303	2.370	5.451	1.659	0.308	0.711
120037 (Former link no. 119135)	1.850 (Former link length 3.350)	71.0	3.8	0.0	3305	1.850	3.264	0.744	0.150	0.555
119137	6.915	75.5	2.2	0.2	3304	6.901	10.113	1.575	0.337	2.067
119139	6.942	73.5	3.1	0.8	3304	6.886	11.139	2.160	0.447	2.076
119138	1.198	67.5	6.9	5.0	3304	1.138	2.308	0.598	0.118	0.357
Lismore to Fermoy	Total 24.583					Total 24.443				
Notes: Route is at least Type 3 standard from Lismore to start of bends into Tullowcross. Bad hairpin at Tallowbridge is bypassed in this option Very bendy section for approx 2.5km west of Littlegrace Bendy section for approx 2km at Curragh Upper 3 No pinch points with buildings close to the road Moderate sidelong sections for approx 4.75km Forest area for 2km. Tree lined for approx 6km but not an environmentally designated area. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.5 – 5.0 – Maintenance Bracket 3 New link from node 59,610 to new node from splitting link below Split link 119135 for southern end of by pass.						TOTAL:	38.996	7.320	1.500	7.356
						Any special costs	2.000	0.000	0.000	0.000
						Sub Total	57.172			
Cycling	+5.730									
Grand Total	62.902									

PABS Appraisal Summary Table - N72b.1.C2						
Scheme Option: N72 Lismore to Fermoy (with bypass of bad hairpin at Tallowbridge)	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Description: 24.443km upgrade to S2 Type 2 standard	Air Quality		85 households affected in 2025 -30 tonnes of carbon saved in 2025	-€0.504 -€0.001	No	2.5
	Noise and vibration Landscape and visual quality	Not assessed	85 households affected in 2025	-€0.340	No	3.0
	Biodiversity	The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment and pNHA (001561).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and realignment will move closer to a number of sites already within 100m of the route including a Castle – Tower House, Bridge, Ringfort, Graveyard, Church, Fulacht Fia and Klin - Lime. Potential for construction impact.			Yes	2.5
	Landuse Water resources	The proposed realignments will primarily be within Agricultural Areas. The proposed realignment of this section of the route crosses the Owbeg River which is the tributary of the River Blackwater SAC (002170). Further the proposed route runs adjacent to the same SAC with significant potential to impact on this SAC. The southern end of this section is within the Munster Blackwater Freshwater Pearl Mussel catchment.			No	3.0
					No	4.0
					No	2.5
	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	0.4 accidents saved in 2025	€5.511		5.1
	Transport Efficiency and Effectiveness		425 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value		4.0
	Other economic impacts Funding	Not assessed	Imperfect competition effects	€26.716 €23.890 €1.401 €40.691 €3.175 €2.369		5.9
Accessability and Social Inclusion Integration	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	6 CLAR zones experience improved access to Hub/Gateway			6.0
	Transport integration					7.0
	Land-use integration					4.9
	Geographical integration					6.0
	Integration with other government policies					4.6
				NPV	€21.546	4.3
				BCR	1.53	4.2
				Total		5.1
				Red Flagged		Yes

N74.a.1.C3			Name: Tipperary to Golden					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119231	1.583	70	2.1	0.6	3307	1.574	1.763	0.219	0.064	0.475
119235	2.788	70	2.1	0.6	3307	2.771	3.105	0.386	0.112	0.836
119234	3.314	75.5	0.5	0.0	3305	3.314	3.051	0.128	0.044	0.994
119238	0.323	75.5	0.5	0.0	3305	0.323	0.297	0.013	0.004	0.097
119239	1.146	N/A	N/A	0.0	nc	1.146	2.016	0.576	0.150	0.346
119241	0.844	75.5	0.5	0.0	3305	0.844	0.777	0.033	0.011	0.253
119240	0.823	72	1.3	0.1	3307	0.822	0.864	0.087	0.026	0.247
Tipperary to Golden	Total 10.821					Total 10.794				
Notes: This route is quite bendy and hilly and is also narrow in places. Widths are broadly equivalent or better than Type 3. Thus, this route option represents alignment improvements. There are speed limit restrictions at Kilfeakle and again at Thomastown. It is proposed to continue this upgrade through these speed limit restrictions. There is very little overtaking opportunity along this route. This route is also characterised by the extent of dwellings accessed from the road. There are some brief sections where the existing cross section is to Type 2 standard or better in some places, one such section (420m long) west of Kilfeakle has been removed from the costs. The rest of these sections are very short however, the vertical and horizontal alignments are poor and are not therefore considered substantial enough to tie in to or adjust the costs. There are no environmentally designated areas in the vicinity of this route. 3 No. stream crossings. Stone walls present at Kilfeakle, Thomastown and at the approach to Golden. Low Traffic Good Subgrade – Maintenance Category 1 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	11.874	1.442	0.411	3.249
						Any special costs	-0.459	-0.056	-0.016	-0.126
						Sub Total	16.319			
							Cycling	+2.537		
							Grand Total	18.856		

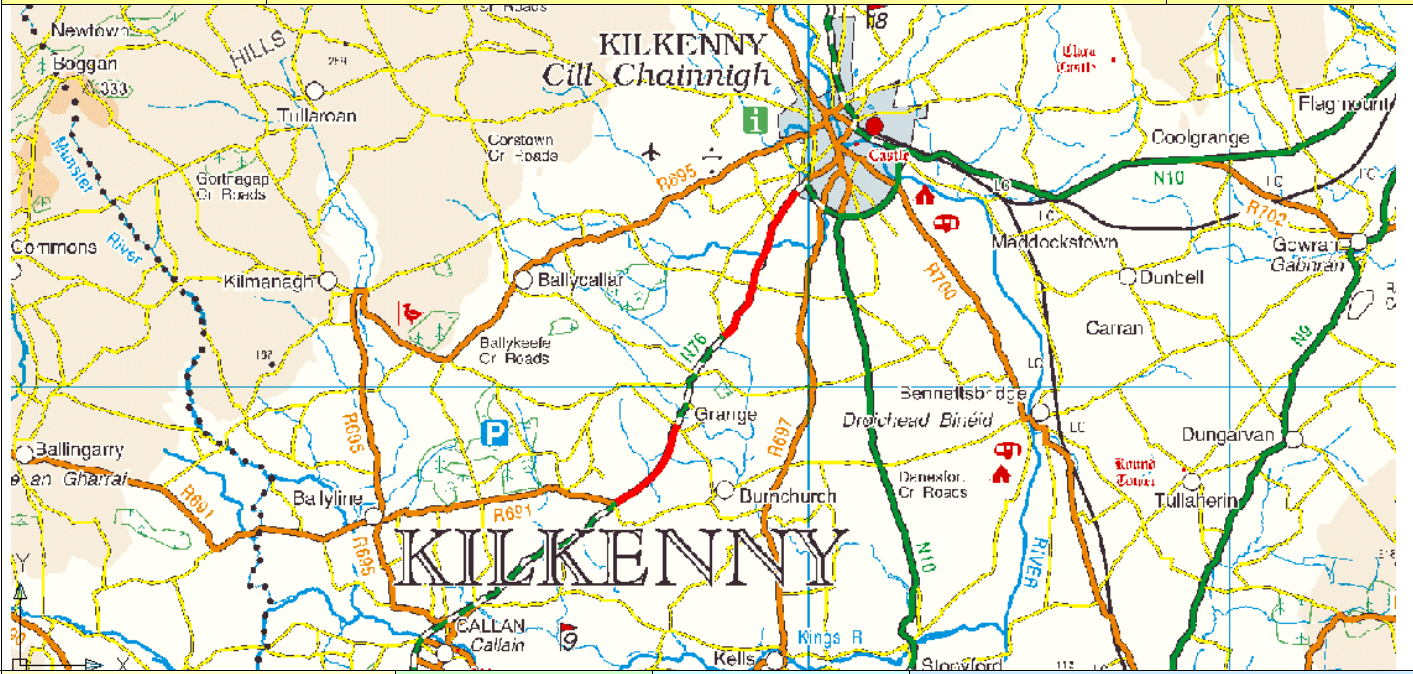
PABS Appraisal Summary Table - N74a.1.C3						
Scheme Option: N74 Tipperary to Golden		Description: 10.794km upgrade to S2 Type 3 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of it's length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €18.86
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		98 households affected in 2025	-€0.012	No	3.9
	Noise and vibration		-1 tonnes of carbon saved in 2025	-€0.000	No	3.5
	Landscape and visual quality	Not assessed	98 households affected in 2025	-€0.052	Not assessed	4.0
	Biodiversity	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Mound, two Enclosures, a Castle – Motte & Bailey, a Settlement Deserted – medieval, a Castle – unclassified and three NIAH Structures.			No	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas with two sections through existing Artificial Surfaces.			No	4.0
	Water resources	The proposed realignment will impact indirectly on the Lower River Suir SAC (002137).			Yes	3.0
Safety	Accident reduction		0.2 accidents saved in 2025			
	Security	A facility for walkers and cyclists is to be provided where none previously existed.		€0.447		4.3
Economy	Transport Efficiency and Effectiveness		88 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.314 €2.995 €2.345		5.1
	Other economic impacts			PVC Residual value €11.588 €0.841		
	Funding	Not assessed	Imperfect competition effects	€0.300		5.0
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		1 CLAR zones experience improved access to Hub/Gateway			7.0
Integration	Transport integration					4.1
	Land-use integration					5.0
	Geographical integration					4.3
	Integration with other government policies					4.1
				NPV	-€1.409	Total
				BCR	0.88	Red Flagged
						4.6
						Yes

N74.b.1.C2			Name: Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
105593	4.640	72	3.9	1.5	3304	4.570	7.914	1.708	0.348	1.392	
Golden to Cashel (N74 Link Road)	Total 4.640					Total 4.570					
<p>Notes:</p> <p>This route is quite bendy and is hilly in places. The widths are relatively consistent with circa Type 3 standard. There is virtually no overtaking opportunity along this section. The route is also characterised by the extent of dwellings directly accessing the road. This route finishes at the Tipperary Road Roundabout which was constructed in 2004 as part of the N74 Link Road.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No stream crossing.</p> <p>Large stone walls present on the north side of this route at Castletlake. Smaller stone walls present on the north side of this route at Horeabby (the approach to Cashel).</p> <p>Route is tree lined in places.</p> <p>Existing pavement condition is quite good.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	7.914	1.708	0.348	1.392	
						Any special costs	0.000	0.000	0.000	0.000	
						Sub Total Cycling Grand Total					11.362 <u>+1.074</u> 12.436

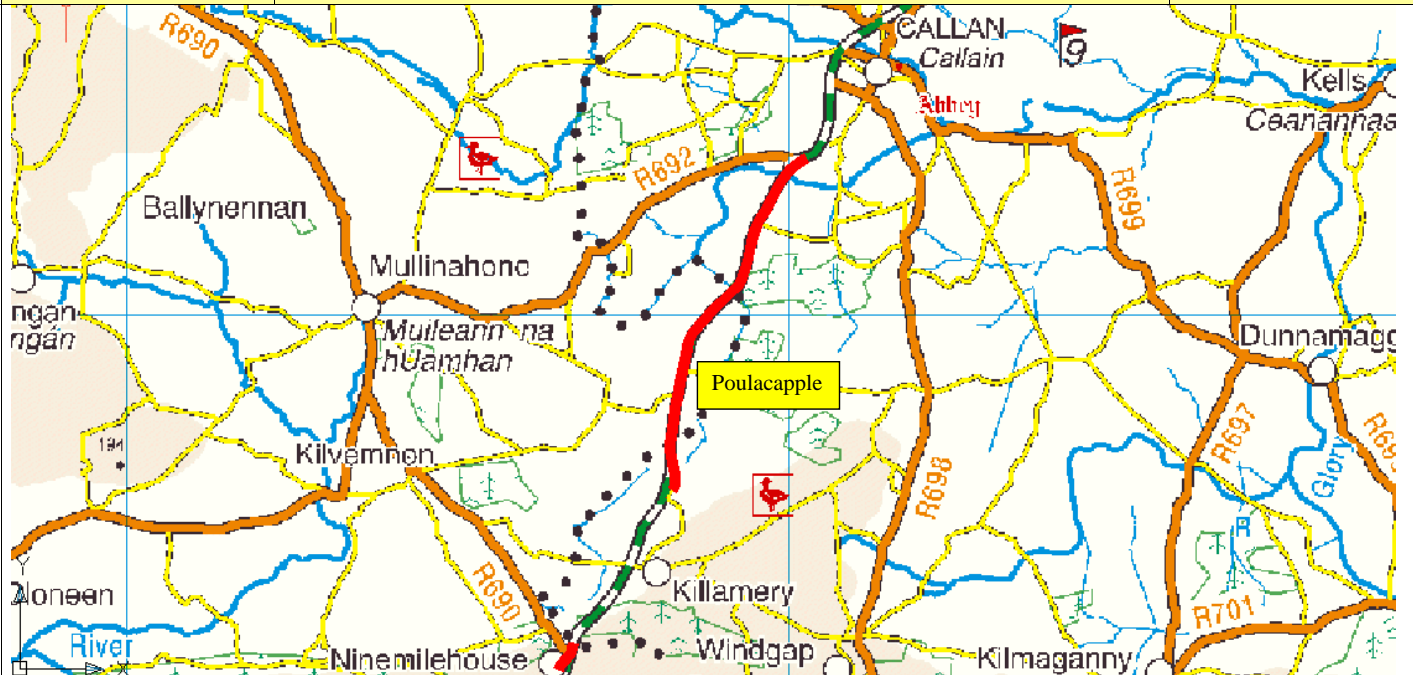
PABS Appraisal Summary Table - N74b.1.C2						
Scheme Option: N74 Golden to Cashel (ties in to N74 Link Road at Tipperary Road Roundabout)		Description: 4.57km upgrade to S2 Type 2 standard		Problems Identified: · According to the lane width data, the N74 has some 29% of it's length with a lane width less than 3.0m and 88% of it's length less than 3.5m. · The assessment of sight distance indicators would conclude that in general terms the forward visibility is a mix of good and bad along the route. This inconsistency can result in poor performance of the route. · Particular sections exhibiting a high degree of intermittent poor visibilities are at the western approach to Golden, at Golden village and on the western approach to Tipperary. · The frequency of fatal accidents between Cashel and Golden however far exceeds the National Secondary Network average rate. This could be indicative of a problem with road safety over this section. · The design standard of the N74 is relatively low and there is a mix of poor and poorer sections along the route. There is some correlation with the accident records between Golden and Cashel with two fatal accidents apparently recorded on the poorer stretches. Between Golden and Tipperary, the accidents are evenly spread out and the route standard is generally less inconsistent than between Golden and Cashel.		Budget Cost (million) €12.44
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		31 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.011 €0.000	No	3.8
	Noise and vibration		31 households affected in 2025	-€0.071	No	3.0
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignment will impact indirectly on the River Suir SAC (002137) and on the Knockroe Fox Covert pNHA (000964).			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including three Moated Sites, a Ringfort, a House – prehistoric and a Castle – Tower House.			No	3.0
Safety	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignment will impact indirectly on the River Suir SAC (002137).			Yes	3.0
	Accident reduction	A facility for walkers and cyclists is to be provided where none previously existed.	0.2 accidents saved in 2025	€2.947		6.8
Economy	Transport Efficiency and Effectiveness		87 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €3.147 €2.759 €1.245		5.3
				PVC Residual value €8.331 €0.658		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.276		5.3
	Funding	Not assessed				4.0
	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				7.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
	Transport integration					
Integration	Land-use integration					5.0
	Geographical integration					4.3
	Integration with other government policies					4.3
						4.1
				NPV	€2.617	Total
				BCR	1.31	Red Flagged
						4.9
						Yes

N75.a.1.C2			Name: Thurles to M8/N8 Interchange				Type: S2 Type 2			
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
105595	2.340	77.5	1.3	0.2	3303	2.335	3.065	0.316	0.073	0.702
112904 (Improvement to part of link)	2.051 used (Full length of link 2.290)	77.5	1.3	0.2	3303	2.047	2.687	0.277	0.064	0.615
Thurles to M8/N8 Interchange	Total 4.391					Total 4.382				
<p>Notes:</p> <p>In general this route has a relatively good vertical and horizontal alignment and is thought to be to Type 3 standard or better. The route is relatively straight and has some decent overtaking opportunities. The overtaking is however hampered by the vertical alignment on occasion. A proposed upgrade to this route would therefore primarily take the form of some local widening and improving the vertical alignment and thereby also improving the overtaking opportunity along the route.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. Drish River Crossing. (the existing Drish bridge is wide enough to accommodate this upgrade)</p> <p>2 No stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 3.6 to 5 – Maintenance Bracket 3</p>						TOTAL:	5.752	0.593	0.137	1.317
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	7.799			
						Cycling	+1.030			
						Grand Total	8.829			

PABS Appraisal Summary Table - N75a.1.C2						
Scheme Option: N75 Thurles to M8/N8 Interchange		Description: 4.382km upgrade to S2 Type 2 standard	Problems Identified:			Budget Cost (million) €8.83
			<ul style="list-style-type: none"> Between Thurles and the junction with the M8/N8 the lane widths are split roughly equally into the 3.0 to 3.5m range and the 3.75 to 9.0m range. The sections nearer Thurles and to the west of Twomileborris are generally in the 3.75 to 9.0m range. There are two main accident clusters along this route, the first is located approximately half way between Thurles and Twomileborris. It forms 3km stretch within which 2 fatal and 3 serious accidents have occurred. The second accident cluster is located immediately west of Twomileborris at the junction with a local road to Moynes. This accident cluster is now off the route due to N75 realignment as part of the M8/N8 Cashel to Cullinhill Scheme. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		50 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.9
	Noise and vibration Landscape and visual quality	Not assessed	50 households affected in 2025	-€0.036	No	3.2
	Biodiversity	The proposed realignments in this section of the N75 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and no sites will be brought within 100m of the realigned sections of the route.			Yes	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N75 will cross the River Suir, which discharges to the Lower River Suir SAC (002137).			No	4.0
Safety	Accident reduction		0.1 accidents saved in 2025	€2.091	Yes	3.0
Economy	Security	A facility for walkers and cyclists is to be provided where none previously existed.				7.0
	Transport Efficiency and Effectiveness		18 vehicle-hours per day in travel time saved in 2025	Non-work €1.072 Work €0.850 Active travel €0.674		4.0
	Other economic impacts			PVC €5.570 Residual value €0.391		4.7
	Funding	Not assessed	Imperfect competition effects	€0.085		4.6
Accessibility and Social Inclusion	Vulnerable groups	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.2
Integration	Transport integration					
	Land-use integration					6.0
	Geographical integration					4.3
	Integration with other government policies					4.1
				NPV -€0.450	Total	4.8
				BCR 0.92	Red Flagged	Yes

N76.a.1.C2			Name: Kilkenny Ring Road to Callan Bypass				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119272	3.953	73	3.2	1.5	3304	3.894	6.493	1.310	0.269	1.186
Break for section at Grange already to Type 1										
119270 (Improvement to part of link)	1.248 used (Full length of link 3.687)	77.5	1.2	0.3	3303	1.244	1.635	0.169	0.039	0.374
119267	1.177	76.5	1.7	0.5	3303	1.171	1.637	0.216	0.047	0.353
Kilkenny to Callan	Total 6.378					Total 6.309				
Notes: This route is predominantly bendy and narrow. There is very little overtaking opportunity over the sections proposed here for upgrade. There are some sections that are already to type 1 standard, namely; from Brownstown to Ballybur Lower (1.895km) and from the junction with the R691 to the Callan Bypass. These section are not included in this proposed upgrade. There are no environmentally designated areas in the vicinity of this route. 3 No. stream crossings. 1 No narrow stone bridge at Sunhill (to be widened / replaced) High Traffic Good Subgrade – Maintenance Category 2 IRI 3.6 to 5 – Maintenance Bracket 3						TOTAL:	9.765	1.694	0.356	1.913
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	13.728			
						Cycling	+1.483			
						Grand Total	15.211			

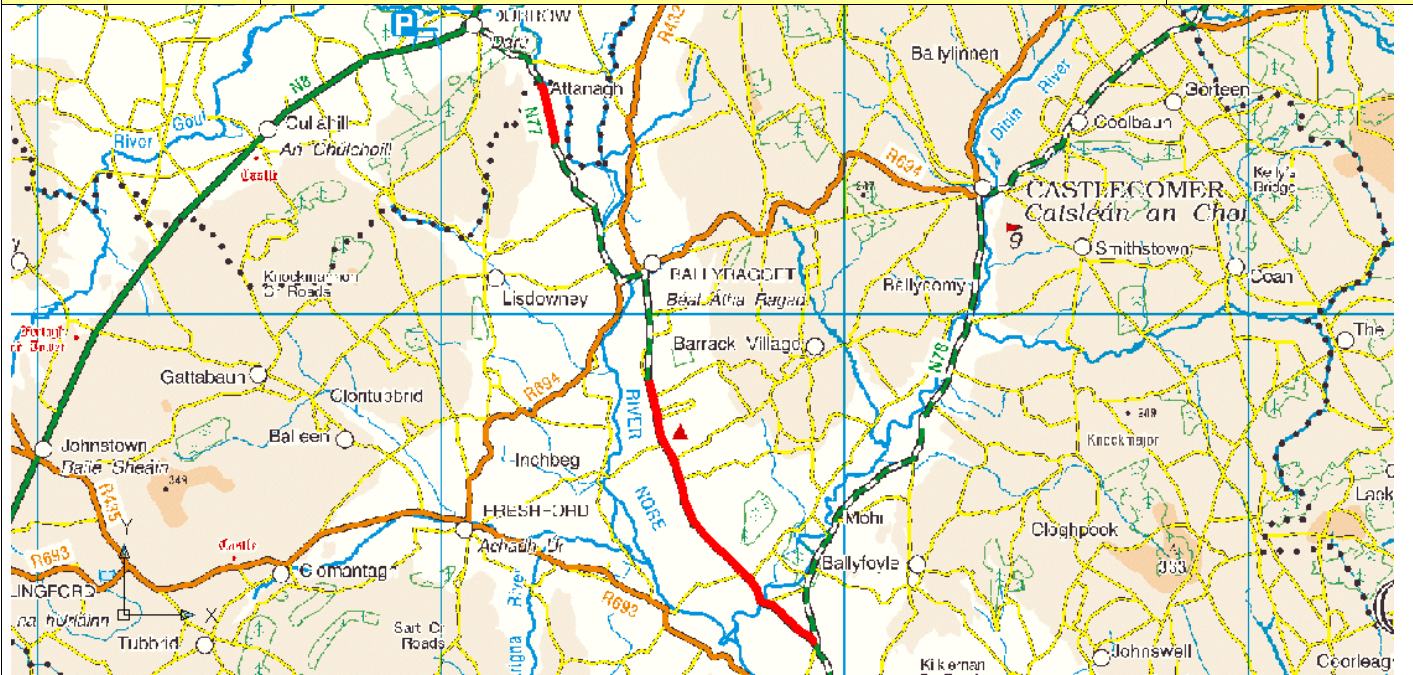
PABS Appraisal Summary Table - N76a.1.C2						
Scheme Option: N76 Kilkenny Ring Road to Callan Bypass		Description: 6.309km upgrade to S2 Type 2 standard	Problems Identified: · Approximately 9% of the route has lane widths < 2.75m · Approximately 50% of the route has lane widths > 3.75m · The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. · The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Route lane widths are less than 3.5m for 5km section south of Callan Bypass · Intermittent poor visibilities to V=85kph and V=100kph design standards. · Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. · Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. · Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. · Accident rate well above the national average for fatal accidents.			Budget Cost (million) €5.21
Objective	Sub-objective	Qualitative impacts	Qualitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		102 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.040 €0.000	No	3.5
	Noise and vibration		102 households affected in 2025	-€0.145	No	2.2
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity		The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).		Yes	3.0
	Cultural Heritage / archaeology		No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including two Enclosures and a Fulacht Fia.		No	3.0
	Landuse		The proposed realignments will primarily be within Agricultural Areas.		No	4.0
Safety	Water resources		The proposed realignments in this section of the N76 will cross the River Bregagh, which discharges to the River Barrow and River Nore SAC (002162).		Yes	3.0
	Accident reduction		0.2 accidents saved in 2025	€7.083		7.0
Economy	Security		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0
	Transport Efficiency and Effectiveness			Non-work Work Active travel PVC Residual value	€4.650 €5.014 €3.309 €9.834 €0.756	6.0
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.501		6.0
	Funding		Not assessed			4.0
	Vulnerable groups		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			7.0
	Deprived geographic areas					6.0
	Transport integration					
	Land-use integration					7.0
Integration	Geographical integration					4.6
	Integration with other government policies					4.1
						4.0
			NPV	€11.295	Total	5.4
			BCR	2.15	Red Flagged	Yes

N76.a.2.C2			Name: Callan Bypass (R692 junction) to Ninemilehouse				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
92122	0.290	76	1.9	0.4	3303	0.289	0.415	0.060	0.013	0.087
119263	3.533	76	1.9	0.4	3303	3.519	5.052	0.728	0.158	1.060
New (through Poulacapple)	0.573	(Qual score of 76 assumed)		0.0	Nc	0.573	0.819	0.118	0.026	0.172
119262 (Improvement to part of link)	1.393 used (Full length of link3.828)	77.5	1.3	0.3	3303	1.389	1.825	0.188	0.043	0.418
Break for existing section to Type 1										
119260 (Improvement to part of link)	0.239 used (Full length of link0.440)	75.5	1.3	0.3	3303	0.238	0.351	0.055	0.012	0.072
119255	0.236	75.5	1.3	0.3	3303	0.235	0.346	0.054	0.012	0.071
Callan Bypass to Ninemilehouse	Total 6.264					Total 6.243				
Notes: The route recommended for upgrade here is bendy and narrow in places with little overtaking opportunity. The section between Killtallaghan and just north of the junction with the R690 is already close to Type 1 standard and is not included for further upgrade here. There is a speed limit restriction at Poulacapple but it is proposed to carry this upgrade through this speed restricted area. There are no environmentally designated areas in the vicinity of this route. 1 No. Kilbride River crossing (narrow stone bridge to be replaced / widened). 1 No stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	8.808	1.203	0.263	1.879
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	12.153			
						Cycling	+1.467			
						Grand Total	13.620			

PABS Appraisal Summary Table - N76a.2.C2						
Scheme Option: N76 Callan Bypass (R692 junction) to Ninemilehouse	Description: 6.243km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> Approximately 9% of the route has lane widths < 2.75m Approximately 50% of the route has lane widths > 3.75m The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Route lane widths are less than 3.5m for 5km section south of Callan Bypass Intermittent poor visibilities to V=85kph and V=100kph design standards. Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Accident rate well above the national average for fatal accidents. 	Qualitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		36 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.015 -€0.000	No	3.8
	Noise and vibration Landscape and visual quality		36 households affected in 2025	-€0.033	No	3.6
	Biodiversity		Not assessed		Not assessed	4.0
	Cultural Heritage / archaeology		The proposed realignment will not impact directly or indirectly on any European or Nationally designated sites.		No	4.0
	Landuse		No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Graveyard, a Church, a Ritual Site – Holy Well, a Ringfort and two NIAH Structures.		No	3.0
	Water resources		The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area around Ninemilehouse.		No	4.0
Safety	Accident reduction		The proposed realignments in this section of the N76 will not cross any water courses.		Np	4.0
Economy	Security		0.1 accidents saved in 2025	€3.562		7.0
	Transport Efficiency and Effectiveness		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			4.0
			22 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel PVC Residual value	€1.346 €1.679 €0.752 €9.110 €0.639	4.6
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects		€0.168	4.7
	Funding		Not assessed			4.0
	Vulnerable groups Deprived geographic areas		Some of the route corridor is within 4km of a settlement of 1,500 people or more.			7.0
Integration	Transport integration		3 CLAR zones experience improved access to Hub/Gateway			4.7
	Land-use integration					5.0
	Geographical integration Integration with other government policies					4.6
						4.1
						4.0
				NPV	-€1.013	Total
				BCR	0.89	Red Flagged
						4.8
						No

N76.a.3.C2			Name: Ninemilehouse to Clonmel (junction with N24)				Type: S2 Type 2			
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119257	1.338	75.5	2.3	0.9	3304	1.326	1.964	0.306	0.065	0.401
Break for section already better than Type 2 standard.										
119250 (Improvement to part of link)	1.527 used (Full length of link1.851)	71.5					2.650	0.589	0.119	0.458
119273	1.803	71.5	3.4	1.7	3305	1.501				
			3.4	1.7	3305	1.772	3.129	0.695	0.141	0.541
Break for section already better than Type 2 standard										
119274 (Improvement to part of link)	0.719 used (Full length of link3.546)	74.5					1.108	0.195	0.041	0.216
			2.3	0.9	3303	0.713				
119248	0.387	74.5	3.6	1.4	3302	0.382	0.596	0.105	0.022	0.116
119244	2.619	74.5	3.6	1.4	3302	2.582	4.035	0.711	0.149	0.786
61750	0.110	74.5	3.6	1.4	3302	0.108	0.188	0.033	0.007	0.036
61752	0.060	74.5	3.6	1.4	3302	0.059	0.102	0.018	0.004	0.020
104054	0.380	74.5	3.6	1.4	3302	0.375	0.585	0.103	0.022	0.114
104912	1.380	74.5	3.6	1.4	3302	1.361	2.126	0.375	0.079	0.414
Ninemilehouse to Clonmel (N24)	Total 10.323					Total 10.179				
Notes: This route is narrow and bendy with little overtaking opportunity where proposed to be upgraded. There is however some overtaking opportunity between Ninemilehouse and Mullennaglogh. From Mullennaglogh to South Lodge (approx 2.8km) the existing route is to better than Type 2 standard and so is not included here. From here to the route is bendy and narrow and passes through a forest area. After this section there is a further section where the existing is to better than type 2 standard for approx 2.88km until Clashinisky. This section is also not included for upgrade here. From Clashinisky to the junction with the N24 the route is quite bendy and quite hilly in places with little overtaking opportunity. There is no speed restriction through the cross roads with the R706 so a new link has been added at this location. There are no environmentally designated areas in the vicinity of this route. 2 No. stream crossings. Forrest area at Brittas for approx 1.8km. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	16.483	3.131	0.649	3.102
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	23.365			
						Cycling	+2.396			
						Grand Total	25.761			

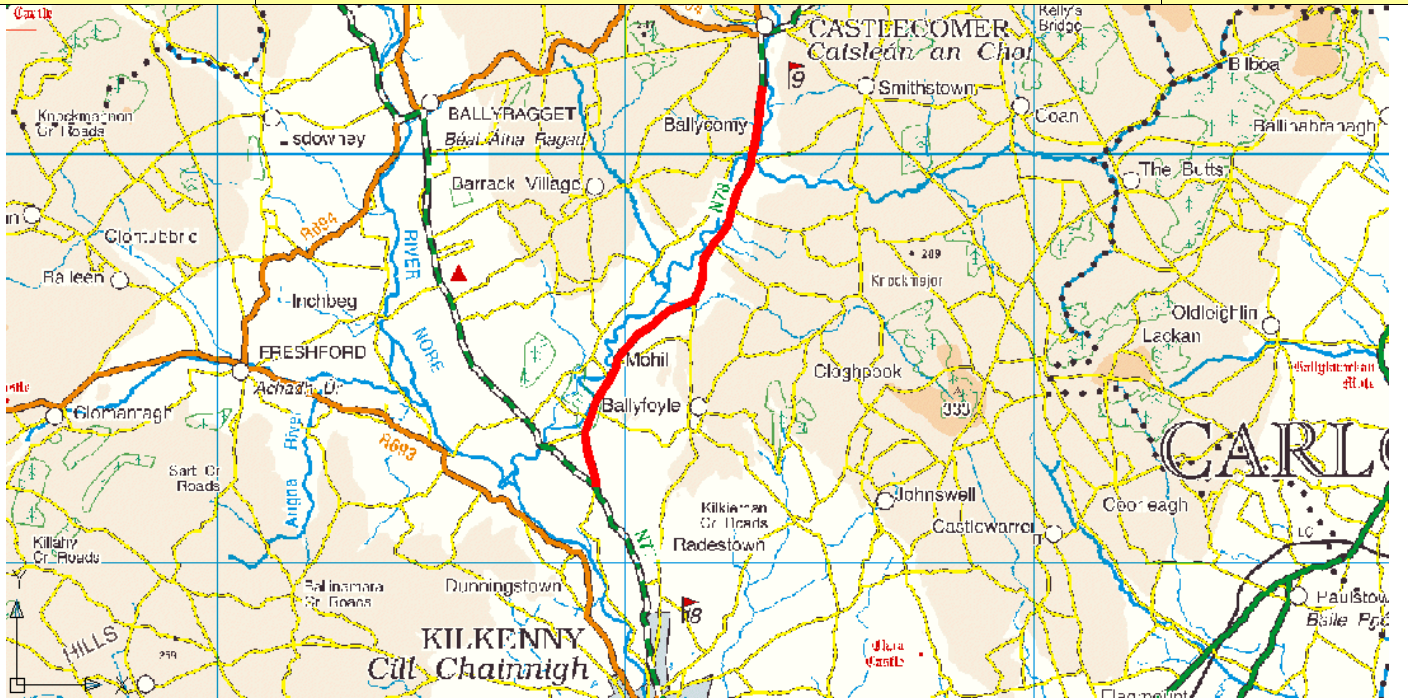
PABS Appraisal Summary Table - N76a.3.C2						
Scheme Option:	Sub-objective	Qualitative impacts	Qualitative assessment	Monetised (million 30 yrs)	Score	
					Red Flag	Score
Scheme Option: N76 Ninemilehouse to Clonmel (junction with N24)	Description: 10.179km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> Approximately 9% of the route has lane widths < 2.75m Approximately 50% of the route has lane widths > 3.75m The route lane widths are below standard for approximately 5km between the junction with the N24 and the junction with the road to Ballypatrick. The route lane widths are below standard for 3km from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Route lane widths are less than 3.5m for 5km section south of Callan Bypass Intermittent poor visibilities to V=85kph and V=100kph design standards. Pronounced sightline problem for the approx. 5km between the junction with the R706 to Kilsheelan and the junction with the local road to Ballypatrick. Pronounced sightline problem from approximately 1.5km south of the junction with the R696 to approximately 3km north of the same junction. Pronounced sightline problem over 3km stretch located from approximately 5km to 2km from the junction with the Kilkenny Ring Road. Accident rate well above the national average for fatal accidents. 	Budget Cost (million) €5.76			
Environment	Air Quality		81 households affected in 2025 -4 tonnes of carbon saved in 2025	-€0.138 €0.000	No	3.0
	Noise and vibration Landscape and visual quality	Not assessed	81 households affected in 2025	-€0.107	No	3.2
Safety	Biodiversity	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Not assessed	4.0
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments but a number of sites will be brought within 100m of the realigned sections of the route which including a Castle, an Enclosure and one NIAH Structure.			Yes	3.0
	Landuse	The proposed realignments will primarily be within Agricultural Areas but a section goes through a Forest / Semi- Natural Area.			No	4.0
	Water resources	The proposed realignment may impact indirectly on the River Suir SAC (002137) at a number of locations.			Yes	3.0
	Accident reduction Security	None of the route corridor is within 4km of a settlement of 1,500 people or more.	1.3 accidents saved in 2025	€12.418		7.0
Economy	Transport Efficiency and Effectiveness		255 vehicle-hours per day in travel time saved in 2025	Non-work Work €8.061 €26.211		7.0
	Other economic impacts			Active travel €0.753		
	Funding	Not assessed		PVC Residual value €16.526 €1.312		
	Vulnerable groups Deprived geographic areas	None of the route corridor is within 4km of a settlement of 1,500 people or more.	Imperfect competition effects	€2.621		7.0
Accessibility and Social Inclusion			3 CLAR zones experience improved access to Hub/Gateway			4.0
						5.0
Integration	Transport integration					5.4
	Land-use integration					6.0
	Geographical integration					4.6
	Integration with other government policies					4.1
				NPV	€34.607	Total
				BCR	3.09	Red Flagged
						5.6
						Yes

N77.a.2.C2			Name: Junction with the N78 to Durrow					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
92005	2.250	69.5	5.3	3.0	3305	2.182	4.152	1.010	0.201	0.675	
119283	0.398	69.5	5.3	3.0	3305	0.386	0.734	0.179	0.036	0.119	
119284	5.113	75	2.3	0.4	3304	5.093	7.694	1.281	0.271	1.534	
120906 (Former link no. 119282)	0.278 (Former link length1.845)	70 assumed (Former link score 79)	N/A	0.0	3304	0.278	0.506	0.121	0.024	0.083	
Break at Ballyragget											
120911 (Former link no. 119278)	1.516 (Former link length4.759)	70 assumed (Former link score 73.5)	2.9	1.2	3304	1.498	2.758	0.658	0.132	0.455	
Junction with the N78 to Durrow	Total 9.555					Total 9.437					
<p>Notes:</p> <p>From the junction with the N78 until approx 1.615km before Ballyragget the route is bendy and hilly and is quite narrow in places with little or no overtaking opportunity. The final 1.615km to the speed limit restriction at Ballyragget is to Type 1 standard and is therefore not included in this upgrade.</p> <p>From Ballyragget to Durrow the route is quite varied in standard. The first 1.862km north of the speed limit at Ballyragget is to Type 1 standard. The next 1.678km is to Type 2 standard already and therefore both of these sections are not proposed for upgrade here.</p> <p>There is then a narrow, hilly straight section for approx 1.52km that is proposed to be upgraded here (this may be similar to the N77 Ballynaslee Realignment scheme – currently at Prelim Design), there is no overtaking along this straight section due to the poor vertical alignment. North of this section there is a further section of 531m which is to Type 2 standard followed by a section (1.06km) which is to Type 1 standard up until the speed limit restriction at Durrow. These two final sections are not included in this upgrade also.</p> <p>The River Nore runs parallel to this route and in close proximity to it in places. The River Nore is environmentally designated as both an NHA and an SAC.</p> <p>1 No. new bridge over the Dinin River (Dinin Bridge) as the existing bridge is narrow and humped and is on a bad bend. (medium structure).</p> <p>High stone walls over much of the section from Jenkinson to the Dinin River crossing.</p> <p>High Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 2.6 to 3.5 – Maintenance Bracket 2</p> <p>Split links: 119282 @ 245,130 168,350. Remainder s/b 1.567 km> Original class change not reflecting facts on ground</p> <p>Split Link 119278 @ 242,430 175,710 (north end) AND 242,810 174,250 (south end) remainders to sum to 3.243 km: Use Pro-rata tool on lengtulator.</p>							TOTAL:	15.844	3.248	0.664	2.867
							Any special costs	0.300	0.000	0.000	0.000
							Sub Total	22.923			
Cycling	+2.218										
Grand Total	25.141										

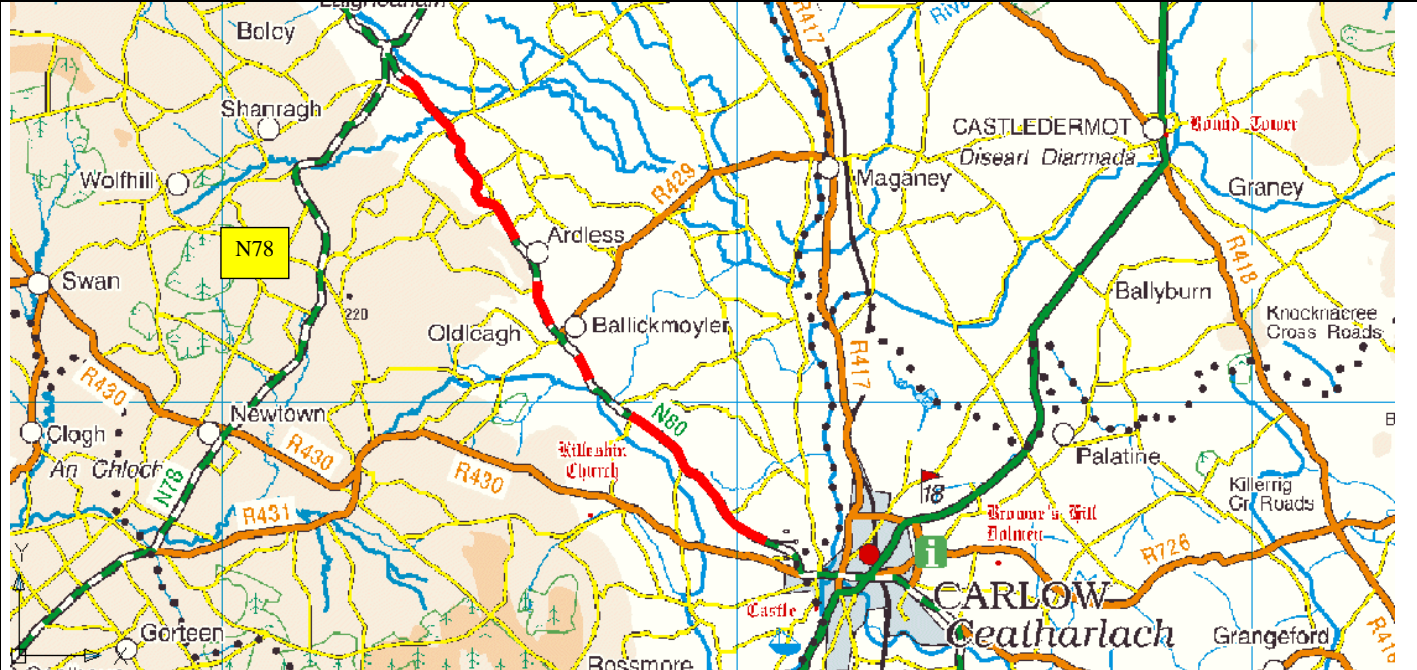
PABS Appraisal Summary Table - N77a.2.C2						
Scheme Option: N77 Junction with the N78 to Durrow		Description: 9.437km upgrade to S2 Type 2 standard	Problems Identified:			
			<ul style="list-style-type: none"> - Lane width > 3m for this section of the route and intermittently less than 3.5m wide. - Sightlines predominantly in the 20 to 120m range over this section. - Sightline problem identified for approximately 7km between the junction with the Kilkenny Ring Road Extension and the road to Threecastles. - Accident rate below the national average. - No major accident clusters over this section. - Poor pavement condition with approximately 95% of the route having a pavement condition indicator index, IRI > 4. 			
			Budget Cost (million) €5.14			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		91 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.039 €0.000	No	3.7
	Noise and vibration Landscape and visual quality	Not assessed	91 households affected in 2025	€0.037	No	4.3
	Biodiversity				Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162), the River Nore/Abbeyleix Woods Complex pNHA (002076) and the Nore Freshwater Pearl Mussel catchment, and may impact indirectly on Ardaloo pNHA (000821) and Inchbeg pNHA (000836).			Yes	2.5
	Landuse	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including five Enclosures, six Ring-Ditches and two NIAH protected structures.			No	3.0
Safety	Water resources	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Accident reduction	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) by crossing the River Dnin.			Yes	2.5
Economy	Security		1.6 accidents saved in 2025	€12.660		7.0
	Transport Efficiency and Effectiveness	A facility for walkers and cyclists is to be provided where none previously existed.				4.0
			333 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €19.402 €22.461 €1.087		7.0
				PVC Residual value €17.405 €1.306		
	Other economic impacts Funding	Not assessed	Imperfect competition effects	€2.246		7.0
Accessibility and Social Inclusion	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration		2 CLAR zones experience improved access to Hub/Gateway			4.6
	Geographical integration Integration with other government policies					6.0
						4.6
						5.3
				NPV BCR	€41.756 3.40	5.8
				Total	Red Flagged	Yes

N78.c.2.C3			Name: Coolbaun to Castlecomer				Type: S2 Type 3			
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119296	1.863	74.5	0.7	0.00	3305	1.863	1.788	0.110	0.035	0.559
Coolbaun to Castlecomer	Total 1.863					Total 1.863				
Notes: The last 1.863km of this route north of the speed limit restriction at Castlecomer is bendy and even though widths are circa Type 3 standard, there would be benefits to improving the bendiness under a Type 3 upgrade. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	1.788	0.110	0.035	0.559
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	2.492			
						Cycling	+0.438			
						Grand Total	2.930			

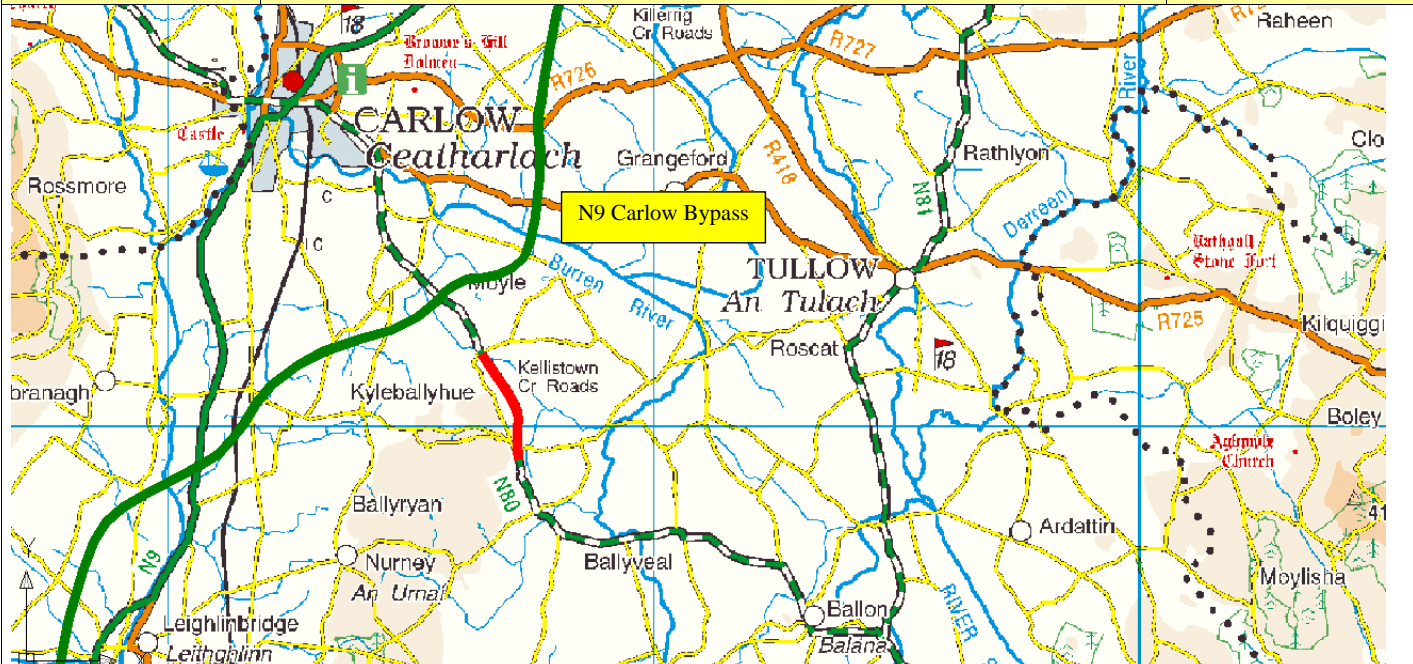
PABS Appraisal Summary Table - N78c.2.C3						
Scheme Option: N78 Coolbaun to Castlecomer		Description: 1.863km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane widths remain generally above 3.75m for approximately 50% of this corridor but dip to the 3.0 to 3.5m range and the 2.75 to 3.0m range at a number of locations. • Poor lane widths from the junction with the N80 south for approx 8km • Lane widths over the last 6.5km into Castlecomer are primarily in the 3.0 to 3.5m range. • Intermittent poor visibilities to V=85kph and V=100kph design standards. • South of the junction with the N80 for approximately 8km the visibility is sporadic and dips to the 120 to 180m range. • From Coolbaun to Castlecomer the visibility is particularly poor and is primarily in the 20 to 120m range. • Fatal and serious accident rates below the national average. • Accident problem evident at the junction with the local road to Swan, north of the village and the junction with the R430. • Accident problem evident at from Creityard south for approximately 3km. • Relatively good pavement condition. 			
Objective		Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Score
Environment						Red Flag
						Score
Environment	Air Quality			8 households affected in 2025 0 tonnes of carbon saved in 2025	€0.000 €0.000	No 4.0
	Noise and vibration Landscape and visual quality			8 households affected in 2025	€0.000	No 4.0
	Biodiversity		Not assessed			Not assessed 4.0
	Cultural Heritage / archaeology		The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162). No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including three NIAH Structures.			Yes 3.0
	Landuse		The proposed realignments will primarily be within Agricultural Areas with a section through existing Artificial Surfaces.			No 3.0
	Water resources		The proposed realignment may impact indirectly on the River Barrow and River Nore SAC (002162).			Yes 3.0
Safety	Accident reduction Security			0.0 accidents saved in 2025	€0.327	5.4 4.0
Economy	Transport Efficiency and Effectiveness		A facility for walkers and cyclists is to be provided where none previously existed.	2 vehicle-hours per day in travel time saved in 2025	Non-work Work €0.160 €0.087	4.5
Accessibility and Social Inclusion	Other economic impacts				Active travel €0.367	
	Funding				PVC Residual value €1.900 €0.117	
Integration	Vulnerable groups			Imperfect competition effects	€0.009	4.2 4.0
	Deprived geographic areas		Not assessed Some of the route corridor is within 4km of a settlement of 1,500 people or more.			7.0 4.1
	Transport integration			0 CLAR zones experience improved access to Hub/Gateway		
	Land-use integration					6.0 4.3
Integration	Geographical integration					4.1 4.0
	Integration with other government policies					
					NPV -€0.833	Total
					BCR 0.56	Red Flagged
						4.5 Yes

N78.d.1.C3			Name: Castlecomer to N77 near Kilkenny					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119297	3.164	74.5	0.7	0.0	3305	3.164	3.037	0.186	0.059	0.949
119298	3.462	72.5	1.0	0.0	3307	3.462	3.576	0.334	0.100	1.039
92004	4.710	72.5	1.0	0.0	3307	4.710	4.865	0.454	0.136	1.413
Castlecomer to N77 near Kilkenny	Total 11.336					Total 11.336				
<p>Notes:</p> <p>This route is quite bendy and is hilly and narrow in places. The alignment is to below Type 3 standard in most places due to bendiness, though widths are close to Type 3 standard, and overtaking is substandard. The option to improve to Type 3 standard should focus on reducing the bendiness of the existing corridor. There is however a 1.35km section south of Castlecomer at Dysart Glebe that is to Type 1 standard. This section has been removed from the costs of this scheme.</p> <p>The Dinin River is environmentally designated as a Special Area of Conservation and runs parallel to this route for the majority of this section. The Douglas River is also designated as an SAC and this route crosses the Douglas River north of Corbetstown.</p> <p>The existing Dysart Bridges are located at the Type 1 section mentioned above and will not need to be upgraded as part of this scheme.</p> <p>The existing stone bridge Douglas River crossing will need to be widened / replaced as part of this upgrade.</p> <p>Large stone walls in front of forest area at Ballyraftern (approx 600m)</p> <p>4 No. stream crossings.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	11.479	0.975	0.296	3.401
						Any special costs	0.200 -1.367	-0.116	-0.035	-0.405
						Sub Total	14.428			
						Cycling	+2.664			
						Grand Total	17.092			

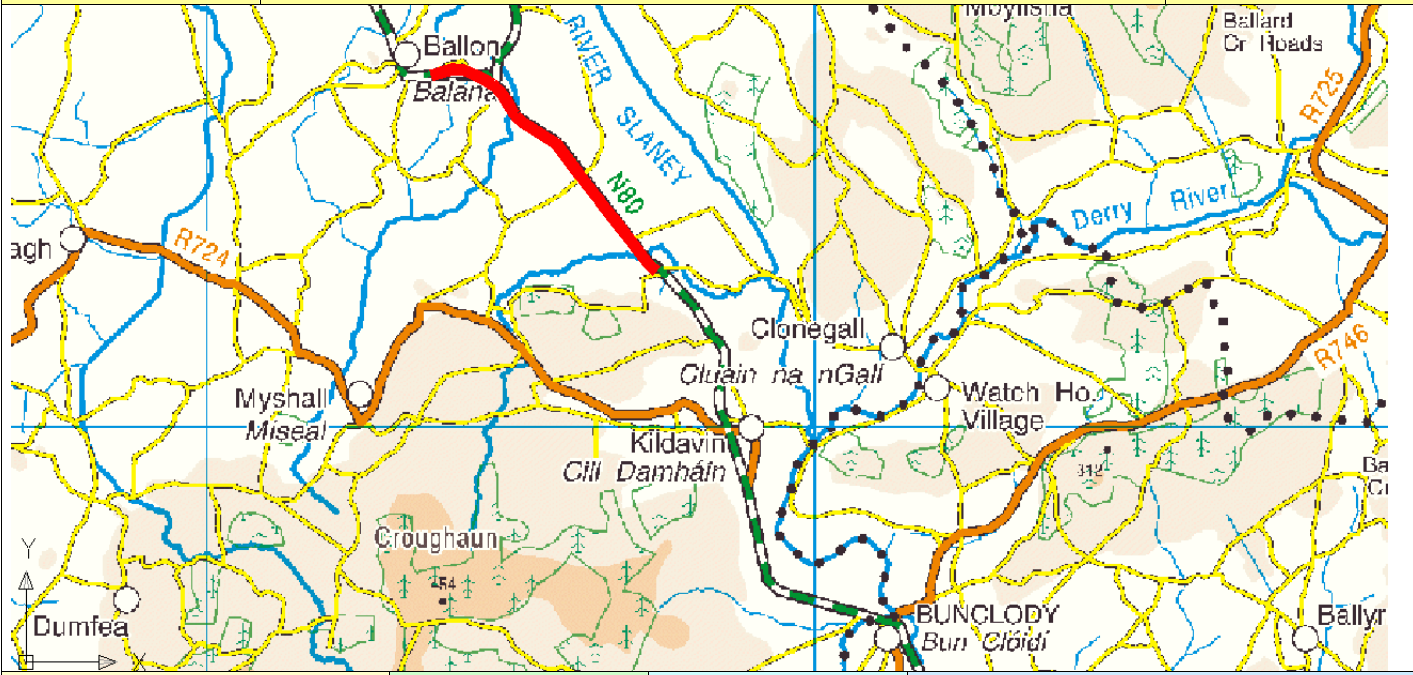
PABS Appraisal Summary Table - N78d.1.C3						
Scheme Option: N78 Castlecomer to N77 near Kilkenny		Description: 11.336km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> Lane widths remain in the 3.0 to 3.5m range for approximately 85% of this corridor but dip to the 2.75 to 3.0m range on one occasion. For the first approx 5km out of Castlecomer the lane widths are primarily over 3.75m. Poor lane widths from the junction with the N77 north for approx 9km Intermittent poor visibilities to V=85kph and V=100kph design standards. From the junction with the N77 at the end of the route north for approximately 8km has intermittently poor visibility and dips into the 20 to 120m range at a number of locations. Fatal and serious accident rates below the national average. Accidents more sporadic than in clusters. Accident problem evident at 2km stretch approximately 5km north of the junction with the N77. Approximately 50% of this corridor has a pavement condition index, IRI > 4. Poor pavement condition for 3km south of Castlecomer. Poor pavement condition for 7km north of N77 junction. 			
			Budget Cost (million) €17.09			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		58 households affected in 2025	-€0.013	No	3.9
	Noise and vibration		-1 tonnes of carbon saved in 2025	€0.000	No	4.0
	Landscape and visual quality	Not assessed	58 households affected in 2025	€0.000	Not assessed	4.0
	Biodiversity	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section. Further, there is potential for indirect impacts to Esker Pits pNHA (000832) and Dunmore Cave pNHA (000401).			Yes	2.5
	Cultural Heritage / archaeology	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including two Fulacht Fia, an Enclosure, a Bridge and six NIAH Structures.			No	3.0
Safety	Landuse	The proposed realignments will primarily be within Agricultural Areas.			No	4.0
	Water resources	The proposed realignment will impact directly on the River Barrow and River Nore SAC (002162) at numerous locations and travels adjacent to the route for the majority of this section.			Yes	2.5
Economy	Accident reduction		0.1 accidents saved in 2025	€0.154		4.1
	Security	A facility for walkers and cyclists is to be provided where none previously existed.				4.0
	Transport Efficiency and Effectiveness		31 vehicle-hours per day in travel time saved in 2025	€1.942		4.5
				Non-work		
				Work		
				Active travel		
Accessibility and Social Inclusion	Other economic impacts			PVC		
	Funding	Not assessed		Residual		
	Vulnerable groups		Imperfect competition effects	value		4.2
	Deprived geographic areas					4.0
Integration	Transport integration	Some of the route corridor is within 4km of a settlement of 1,500 people or more.	4 CLAR zones experience improved access to Hub/Gateway			7.0
	Land-use integration					4.3
	Geographical integration					4.1
	Integration with other government policies					4.0
				NPV	-€6.278	Total
				BCR	0.43	Red Flagged
						4.5
						Yes

N80.d.1.C2			Name: N78 to Carlow				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119350 (Improvement to part of link)	1.378 used (Full length of link1.933)	73.5	3.2	1.6	3304	1.356	2.218	0.430	0.089	0.413
119353	2.705	67	5.6	3.2	3305	2.619	5.303	1.391	0.273	0.812
Break at Arles										
119355	0.895	67	5.6	3.2	3305	0.866	1.754	0.460	0.090	0.269
Break at Ballickmoyler										
119359 (Improvement to part of link)	0.587 used (Full length of link0.855)	67	5.6	3.2	3305	0.568	1.151	0.302	0.059	0.176
119358 (Improvement to part of link)	3.659 used (Full length of link4.482)	76	2.2	0.7	3303	3.633	5.232	0.754	0.164	1.098
N78 to Carlow	Total 9.244					Total 9.042				
Notes: The first approx 555m of this route from the junction with the N78 is to Type 2 standard or better and is therefore not proposed for upgrade here. From here until the Arles the route is narrow and bendy with only one moderate overtaking opportunity. This route is quite bendy and narrow in generally and has little overtaking opportunity. Between Arles and Ballickmoyler the route is narrow and bendy with no overtaking opportunity. South of Ballickmoyler the route is bendy and narrow at first and then widens out to between Type 2 and Type 1 standard for approx 1.091km. The route then reverts to being bendy and narrow with poor overtaking for the remainder until the roundabout on the outskirts of Carlow. The Fushoge River parallels the route to the south east from Ballickmoyler to Carlow. This river is environmentally designated as a Social Area of Conservation. 4 No. stream crossings. Low Traffic Good Subgrade – Maintenance Category 1 IRI 0 to 2.5 – Maintenance Bracket 1						TOTAL:	15.658	3.337	0.674	2.767
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total	22.436			
						Cycling	+2.125			
						Grand Total	24.561			

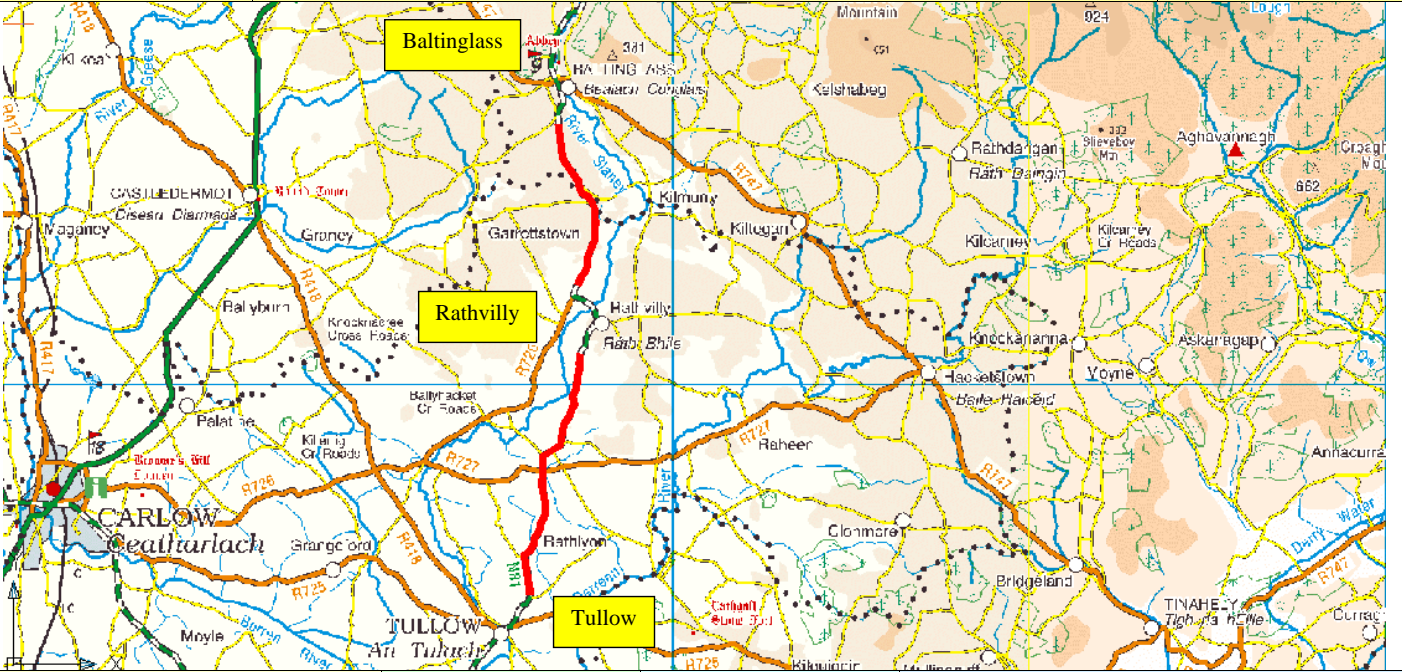
PABS Appraisal Summary Table - N80d1.C2						
Scheme Option: N80 N78 to Carlow	Description: 9.042km upgrade to S2 Type 2 standard	Problems Identified: <ul style="list-style-type: none"> For this corridor, 24% has lane widths less than 3.0m and 55% less than 3.5m. Significant amount of short locations where the sight distance drops below 160m. Junction proliferation is greater than 1 per km. The rate of accidents is less than the average for the NSRN There is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data Accident problem evident north of the junction with the R429. Relatively good pavement condition with only approximately 6% of the route with IRI > 4. 	Budget Cost (million) €4.56			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		57 households affected in 2025 -2 tonnes of carbon saved in 2025	-€0.064 €0.000	No	3.5
	Noise and vibration Landscape and visual quality	Not assessed	57 households affected in 2025	-€0.084	No	3.4
	Biodiversity	The proposed realignment may directly impact on the River Barrow and River Nore SAC (002162).			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment will come close to a number of sites already within 100m of the route including an NIAH site, a Castle-Mottle and Bailey and an Enclosure.			Yes	2.5
	Landuse Water resources	The proposed realignments will be within Agricultural Areas. The proposed realignments in this section of the N80 will cross Douglas River which discharges to the River Barrow and River Nore SAC (002162) but also may directly impact on the River Barrow and River Nore SAC (002162) itself.			No	3.0
Safety	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	0.8 accidents saved in 2025	€4.927		6.4
Economy	Transport Efficiency and Effectiveness		116 vehicle-hours per day in travel time saved in 2025	€7.284 €6.514 €0.906		5.3
	Other economic impacts		Imperfect competition effects	€16.497 €1.296		
	Funding	Not assessed		€0.651		5.6
Accessibility and Social Inclusion	Vulnerable groups Deprived geographic areas	Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
	Transport integration Land-use integration Geographical integration Integration with other government policies		0 CLAR zones experience improved access to Hub/Gateway			7.0
Integration						3.1
						7.0
						7.0
Integration						4.2
						4.1
				NPV	€4.931	Total
				BCR	1.30	Red Flagged
						5.6
						Yes

N80.e.1.C2			Name: Carlow to Ballon					Type: S2 Type 2			
											
Scheme Definition			Modelled as		OT Input		Scheme Cost €m				
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S	
120913 (Former link no. 119363)	0.852 (Former link length2.218)	70 assumed (Former link score 79)	0.9	0.2	3302	0.851	0.852	700	0.852	700	
120914 (Former link no. 119365)	1.512 (Former link length4.671)	70 assumed (Former link score 77)	1.6	0.4	3303	1.506	1.512	700	1.512	700	
Carlow to Ballon	Total 2.364					Total 2.357					
<p>Notes:</p> <p>This route is generally to a good standard and the majority of the existing route is somewhere in between Type 1 and Type 2 standard. There is good overtaking over much of this corridor. From the speed limit restriction at Carlow until Castletown Cross Roads to the east of the N9 Carlow Bypass interchange the route is to close to Type 1 standard. It is not proposed to upgrade this section further. From Castletown Cross Roads to east of Graiguenaspiddoge Cross the route is narrower and bendy with relatively poor overtaking opportunity. This section is proposed to be upgraded here. From east of Graiguenaspiddoge Cross to the outskirts of Ballon the route is once again to a good standard and is somewhere in between Type 1 and Type 2. It is not proposed to upgrade this section further either.</p> <p>There are no environmentally designated areas in the vicinity of this route.</p> <p>1 No. stream crossing.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p> <p>Recycle split nodes from N80e.1.T1: copy variant and amend link distance and road link type.</p>						TOTAL:	4.301	1.026	0.205	0.709	
						Any special costs	0.000	0.000	0.000	0.000	
						Sub Total Cycling Grand Total					6.241 +0.554 6.795

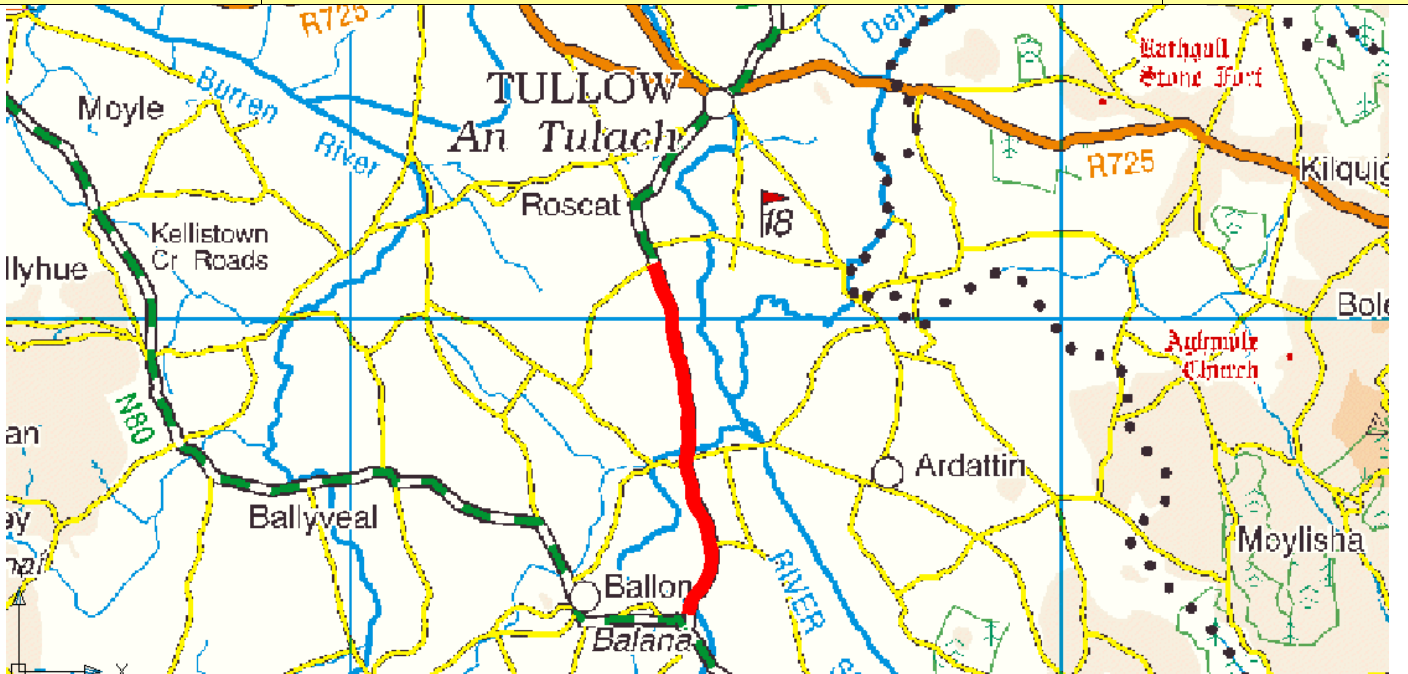
PABS Appraisal Summary Table - N80e.1.C2						
Scheme Option: N80 Carlow to Ballon	Description: 2.357km upgrade to S2 Type 2 standard	Problems Identified:	Budget Cost (million) €6.79			
			<ul style="list-style-type: none"> Carriageway width data suggests the cross-sectional requirement would be mostly met for the anticipated standards. Sight distances are reasonably good throughout this corridor. Short sections of sub-standard cross-section are noted just north of the N81 for about 4km and a section of about 1.5km midway along this section of the route. For this corridor, 2% has lane widths less than 3.0m and 13% less than 3.5m. There are local sight distance deficiencies noted at the two locations mentioned above also. Junction proliferation is less than 1 per km. The rate for fatal accidents is greater than the average for the NSRN A couple of lower standard sections are present within the generally good standard of this corridor. There is some correlation with the accident data and these poor standard sections. Accident problems evident at the following locations: north and east of Tinnyland; west of the junction with the N81 at Ballon. Relatively good pavement condition with only approximately 5% of the route with IRI > 4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		40 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.8
	Noise and vibration Landscape and visual quality		40 households affected in 2025	-€0.006	No	3.8
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignments will not impact on any European or Nationally designated sites in this section.			No	4.0
	Landuse	The proposed realignment will come close to 2 NIAH sites already within 100m of the route.			No	3.0
	Water resources	The proposed realignments will be within Agricultural Areas.			No	4.0
Safety	Accident reduction	The proposed realignments in this section of the N80 does not cross or impact on any water bodies.			No	4.0
Economy	Security		0.1 accidents saved in 2025	€1.988		7.0
	Transport Efficiency and Effectiveness	A facility for walkers and cyclists is to be provided where none previously existed.				4.0
			17 vehicle-hours per day in travel time saved in 2025	Non-work Work €1.100 €0.533 €0.346		4.7
				PVC Residual €4.511 €0.371		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.053		4.5
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				5.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration					
	Land-use integration					6.0
	Geographical integration					7.0
	Integration with other government policies					4.5
						4.2
				NPV	-€0.132	Total
				BCR	0.97	Red Flagged
						5.3
						No

N80.f.1.C2			Name: Ballon to Bunclody (Kildavin)				Type: S2 Type 2			
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
62496	1.070	77.5	1.4	0.4	3303	1.066	1.402	0.145	0.033	0.321
62498	0.630	75.5	2.0	0.4	3304	0.627	0.925	0.144	0.031	0.189
120916 (Former link no. 119367)	3.482 (Former link length 6.364)	70 assumed (Former link score 75.5)	2.0	0.4	3304	3.468	6.335	1.512	0.302	1.045
Ballon to Bunclody (Kildavin)	Total 5.182					Total 5.161				
Notes: From Ballon to south of Whitemill Bridge this route is circa T3 standard and is bendy and hilly in places with limited overtaking opportunity. From just south of Whitemill bridge to Bunclody the route is of a good standard and is between Type 1 and Type 2, has some moderate overtaking opportunity and also has a northbound climbing lane for approx 1.5km at Kildavin. It is therefore not proposed to upgrade this section further. This route crosses the Clashavey River at Whitemill Bridge. The Clashavey River is environmentally designated as a Special Area of Conservation. This route also parallels the River Slaney from Ballon to Bunclody. The River Slaney is environmentally designated as both an NHA and an SAC. The existing stone bridge (Whitemill Bridge) over the Clashavey River is quite narrow and will need to be widened / replaced as part of this upgrade. 2 No. stream crossings. High Traffic Good Subgrade – Maintenance Category 2 IRI 0 to 2.5 – Maintenance Bracket 1 Recycle split link from variant N80f.1.T1, Copy variant and change Link types and dist as above. Split link 119367 @ 287,390 162,590 Remainder s/b 2.882 km (from 6.364km).						TOTAL:	8.662	1.800	0.367	1.555
						Any special costs	0.300	0.000	0.000	0.000
						Sub Total Cycling Grand Total	12.684 +1.213 13.897			

PABS Appraisal Summary Table - N80f.1.C2						
Scheme Option: N80 Ballon to Bunclody (Kildavin)		Description: 5.161km upgrade to S2 Type 2 standard		Problems Identified: · Significant sections of the route have a cross-section width < 3.5m, which does not meet the engineering design standard for the corridor. · For this corridor, 11% has lane widths less than 3.0m and 49% less than 3.5m. · Sections where the visibility reduces below the standards required for a design speed of 85 kph and also significant sections where the visibility is good · Junction proliferation less than 1 per km. · The rate for fatal accidents is greater than the average for the NSRN · There is a mix of design standard along the route indicating some inconsistency and some correlation with the historic accident data. · Accident problem evident at the following locations: approximately 3km south east of junction with the N81; west of Clohamon; and west of Ballycarney. · Relatively good pavement condition with only approximately 7% of the route with IRI > 4.		Budget Cost (million) €13.90
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		42 households affected in 2025 -1 tonnes of carbon saved in 2025	-€0.010 €0.000	No	3.9
	Noise and vibration		42 households affected in 2025	-€0.020	No	3.7
	Landscape and visual quality	Not assessed			Not assessed	4.0
	Biodiversity	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	4.0
	Cultural Heritage / archaeology	The proposed realignment will not bring any sites within 100m of the route.			No	4.0
Safety	Landuse	The proposed realignments will be primarily within Agricultural Areas and a small part of Artificial Areas.			No	4.0
	Water resources	The proposed realignments in this section of the N80 may have indirect impacts on the Douglas River which is a tributary of the Slaney River Valley SAC (000781).			Yes	3.0
	Accident reduction	A facility for walkers and cyclists is to be provided where none previously existed.	0.2 accidents saved in 2025	€4.231		7.0
Economy	Security					4.0
	Transport Efficiency and Effectiveness		42 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel		4.9
				€3.363 €1.833 €0.622		
				€0.325 €0.723 value		
Accessibility and Social Inclusion	Other economic impacts		Imperfect competition effects	€0.183		4.8
	Funding	Not assessed				4.0
	Vulnerable groups	None of the route corridor is within 4km of a settlement of 1,500 people or more.				5.0
	Deprived geographic areas		0 CLAR zones experience improved access to Hub/Gateway			4.0
Integration	Transport integration					7.0
	Land-use integration					7.0
	Geographical integration					4.7
	Integration with other government policies					4.2
				NPV	€1,600	Total
				BCR	1.17	Red Flagged
						5.5
						Yes

N81.e.1.C3			Name: Baltinglass to Tullow					Type: S2 Type 3				
												
Scheme Definition			Modelled as		OT Input		Scheme Cost €m					
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S		
119425	4.098	72.5	1.3	0.1	3307	4.094	4.233	0.395	0.119	1.229		
119426	0.828	69.5	1.9	0.2	3308	0.826	0.935	0.121	0.035	0.248		
Break at Rathvilly												
62578	3.65	69.5	1.9	0.2	3308	3.643	4.119	0.534	0.155	1.095		
62947	0.02	69.5	1.9	0.2	3308	0.020	0.023	0.003	0.001	0.006		
119420	0.38	69.5	1.9	0.2	3308	0.379	0.429	0.056	0.016	0.114		
119422	3.289	66.5	3.3	1.0	3309	3.256	3.971	0.620	0.176	0.987		
Baltinglass to Tullow	Total 12.265					Total 12.218						
<p>Notes:</p> <p>This route has an extremely poor horizontal alignment. It is bendy and narrow in places and has only a few short overtaking opportunities. These short overtaking opportunities are hampered further by the vertical alignment. There are a number of very bad bends along this route as outlined below.</p> <p>The River Slaney is environmentally designated as a Special Area of Conservation and it parallels the route to the east from Baltinglass to Rathvilly and then to the west from Rathvilly to Tullow. There is also a small lake that is designated as a combined SAC and NHA to the east of the route at Holdenstown Upper.</p> <p>The vertical alignment hinders the overtaking opportunity at the straight sections at Clogh Lower and Cloghcastle.</p> <p>The existing bridge just north of Yellowford Cross Roads at the Wicklow border is wide enough to accommodate this upgrade.</p> <p>Sequence of tree lined bad bends north of Rathvilly (add cost)</p> <p>Sequence of bad bends between Rathvilly and Ballybit Big (add cost)</p> <p>The narrow stone bridge (Ballyoliver Bridge) over a stream north of Ballybit Little may have to be widened / replaced as it occurs on a bad bend. (add cost).</p> <p>Very bad bend at Ballybit Cross Roads</p> <p>Very bad bend at Judy Lea's Cross Roads.</p> <p>The narrow bridge over a stream just north of Coppengh Cross Roads will have to be widened / replaced as it occurs within a sequence of bad bends. (add cost)</p> <p>There are a number of very bad bends between the R727 junction and Coppengh Cross Roads. (add cost)</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>							TOTAL:	13.710	1.729	0.501	3.680	
							Any special costs	0.400	1.000	0.000	0.000	
							Sub Total Cycling Grand Total					21.020 <u>+2.871</u> 23.891

PABS Appraisal Summary Table - N81e-1.C3						
Scheme Option: N81 Balinglass to Tullow		Description: 12.218km upgrade to S2 Type 3 standard	Problems Identified:			
			<ul style="list-style-type: none"> • Lane width in the 2.75 to 3.0m range for the majority of this corridor • Poor visibilities to V=85kph and V=100kph design standards at certain locations, particularly from approx 3km south of Balinglass through to Tullow • No major accident clusters located along this corridor, relatively low incidence of accidents. • Relatively good pavement condition with a significant proportion of the route with and IR<4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		83 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.002 €0.000	No	4.0
	Noise and vibration Landscape and visual quality		83 households affected in 2025	-€0.103	No	3.2
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and the Holdenstown Bog SAC (001757) and pNHA. Direct impacts on the Dereen Freshwater Pearl Mussel catchment.			Yes	2.5
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Standing Stone, Burials and an NIAH Structure. The proposed realignments will primarily be within Agricultural Areas. The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and direct impacts on the Dereen Freshwater Pearl Mussel catchment.			No	3.0
Safety	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	0.1 accidents saved in 2025	-€1.063		3.5
Economy	Transport Efficiency and Effectiveness		25 vehicle-hours per day in travel time saved in 2025	Non-work Work Active travel €1.867 -€1.651 €1.205		4.1
	Other economic impacts Funding		Imperfect competition effects	PVC Residual value €15.986 €1.065		
	Vulnerable groups Deprived geographic areas	Not assessed Some of the route corridor is within 4km of a settlement of 1,500 people or more.		-€0.165		3.6
Accessibility and Social Inclusion	Transport integration Land-use integration Geographical integration Integration with other government policies		0 CLAR zones experience improved access to Hub/Gateway			4.0
						5.5
						4.3
						4.3
						4.2
						4.0
				NPV	-€14.833	Total
				BCR	0.07	Red Flagged
						4.2
						Yes

N81.f.1.C3			Name: Tullow to N80 junction near Ballon					Type: S2 Type 3		
										
Scheme Definition			Modelled as		OT Input		Scheme Cost €m			
Link	Length (Km)	DM_qual	S/F	Shorten (%)	New sf (Code)	New Len (Km)	Const	Land	Arch	P & S
119417 (Improvement to part of link)	5.133 used (Full length of link 5.636)	73	1.6	0.2	3305	5.123	5.212	0.449	0.136	1.540
Tullow to N80 junction near Ballon	Total 5.133					Total 5.123				
<p>Notes:</p> <p>This route is very bendy and narrow and is also hilly in places. Overtaking is extremely limited. There are a number of very bad bends along this route and there is an accident black spot at Aghade. The first 1.504km south of the speed limit restriction at Tullow has been upgraded recently and is thought to be to Type 3 standard. The last 235m before the junction with the N80 is also to Type 3 standard. Both of these sections are therefore not proposed to be upgraded here.</p> <p>The River Slaney parallels this route to the east and is environmentally designated as a both an NHA and an SAC.</p> <p>There are a number of bad bends either side of Aghade.</p> <p>The existing stone 'Bang Up' bridge over the Douglas River is narrow and may not need to be widened as part of this upgrade.</p> <p>The bridge over the Douglas River near the N80 junction is wide enough to accommodate this upgrade.</p> <p>Low Traffic Good Subgrade – Maintenance Category 1</p> <p>IRI 0 to 2.5 – Maintenance Bracket 1</p>						TOTAL:	5.212	0.449	0.136	1.540
						Any special costs	0.000	0.000	0.000	0.000
						Sub Total Cycling Grand Total	7.337 <u>+1.204</u> 8.541			

PABS Appraisal Summary Table - N81f.1.C3						
Scheme Option: N81 Tullow to N80 junction near Ballon		Description: 5.123km upgrade to S2 Type 3 standard	Problems Identified:			Budget Cost (million) €5.54
			<ul style="list-style-type: none"> Lane width < 3.0m for most of this corridor. Lane width > 3.75 for the last 3.5km only. Poor visibilities to V=85kph and V=100kph design standards at certain locations, particularly from the junction with the N80 near Ballon at the end of the route. Relatively low incident of accidents. Major accident cluster located at the junction with the minor road to Ballon Relatively good pavement condition with a significant proportion of the route with and IRI<4. 			
Objective	Sub-objective	Qualitative impacts	Quantitative assessment	Monetised (million 30 yrs)	Red Flag	Score
Environment	Air Quality		32 households affected in 2025 0 tonnes of carbon saved in 2025	-€0.006 €0.000	No	3.9
	Noise and vibration Landscape and visual quality		32 households affected in 2025	-€0.035	No	3.2
	Biodiversity	Not assessed			Not assessed	4.0
	Cultural Heritage / archaeology	The proposed realignment may impact indirectly on the Slaney River Valley SAC (000781) and pNHA, and the Ardristan Fen pNHA (000788).			Yes	3.0
	Landuse Water resources	No sites will be directly impacted by the proposed realignments and but a number of sites will be brought within 100m of the realigned sections of the route which including a Standing Stone and a Holed Stone. The proposed realignments will primarily be within Agricultural Areas. The proposed realignments in this section of the N81 will cross the Douglas River which discharges to the Slaney River Valley SAC (000781) and pNHA.			No	3.0
Safety	Accident reduction Security	A facility for walkers and cyclists is to be provided where none previously existed.	0.1 accidents saved in 2025	€1.300		5.9
Economy	Transport Efficiency and Effectiveness		13 vehicle-hours per day in travel time saved in 2025	€1.163 €0.719 €1.148		4.8
	Other economic impacts Funding		Imperfect competition effects	PVC Residual value €0.072		4.5
	Vulnerable groups Deprived geographic areas	Not assessed Some of the route corridor is within 4km of a settlement of 1,500 people or more.				4.0
Accessibility and Social Inclusion	Transport integration		0 CLAR zones experience improved access to Hub/Gateway			7.0
	Land-use integration					4.0
	Geographical integration					6.0
	Integration with other government policies					4.3
						4.2
						4.0
				NPV	Total	4.7
				BCR	Red Flagged	Yes
				0.85		

