

APPENDIX 5

COST BENEFIT ANALYSIS



N5 SCRAMOGE TO BALLAGHADERREEN ROAD SCHEME

Cost Benefit Analysis Report (Phase 3 – Route Option Selection)

Issue

03 Final

NRA Project Code

RN04250
RN06450

Client

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Courthouse,
Roscommon

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1 Introduction

1.1 Introduction

This Cost/ Benefit Analysis (CBA) report has been prepared for the N5 Scramoge to Ballaghaderreen Road Scheme (N5 Strategic Corridor) in accordance with the NRA Project Appraisal Guidelines (March 2008).

This CBA is for the Route Corridor Selection Stage (Phase 3 of the Project Management Guidelines¹) and includes all seven route corridor options that were considered as part of the overall scheme assessment process.

The Cost Benefit Analysis (CBA) report provides an economic assessment of the costs and benefits of the scheme in order to determine if the scheme is economically worthwhile. In particular, it presents the economic efficiency of the various scheme options based upon Option Comparison Cost estimates. All of the impacts of the scheme which can be given a monetary value are included in this assessment. The traffic flow and assignments have been based on the Traffic Modelling Report.

CBA serves a number of functions including:

- At the **Individual Project Level** –
 - Indicates whether a scheme is economically viable;
 - Provides an economic comparison of alternative options within a project;
- At the **National (Government) Level** –
 - The outputs from CBA allow different schemes to be compared and enable the schemes that provide best economic value to be identified.

1.2 Options Considered

Transport proposals are designed to meet specific objectives and are termed “Do-Something” scenario. Their appraisal involves measuring their performance over a period of time against a “Do-Minimum” scenario.

Since this project is at the Route Corridor Selection Stage, seven different “Do-Something” options were considered and their performance measured against the “Do-minimum” scenario in each case. This allowed the economic viability of each option to be assessed and simultaneously comparing the relative economic position of each option.

1.3 Description of the Proposed Development

Corridor 1 is approx. 33.7km long. It is located north of the existing N5 along its entire length. This option passes just north of Frenchpark where it crosses the R361 (Boyle) Regional Road. It remains north of Bellanagare and Tulsk, crossing the N61 (Athlone to Boyle) road near Shankill Cross. This option continues north of the existing N5 and north of Clooncullaan Lough before crossing the R368 (Elphin to Strokestown) at Lugboy townland and veering south to bypass Strokestown on the north and east.

Corridor 1A is approx. 34.2km long. This option commences south of the existing N5 but, just west of Bellanagare, it crosses to the northern side of the N5 and follows the same route as Option 1. This option passes just south of Frenchpark where it crosses the R361 (Boyle)

¹ National Roads Project Management Guidelines, National Roads Authority, 2000

Regional Road. It crosses the N5 at Cashel Townland west of Bellanagare. It proceeds north of Bellanagare where it follows the same route as Option 1 from Corry West Townland eastwards.

Corridor 2 is approx. 34.6km long. This option weaves north and south of the existing N5. It follows substantially the same path as option 1A from the western tie-in to Tonaknick (north of Bellanagare). This option crosses the R369 (Bellanagare to Elphin) Road at Kilvoy Townland, the N61 at Castleland Townland and continues along the existing N5 between Ardkeenagh (Plunkett) Townland and Ardakillin Townland from where it veers south to bypass Strokestown.

Corridor 2A is approx. 35.0km long. This option is similar to Option 2 except that it veers further south between its western tie-in and the R361 crossing south of Frenchpark.

Corridor 2B is approx. 34.5km long. This option is similar to Option 2 except that between the crossing point of the N61 at Castleland Townland and the crossing point of the N5 at Ardakillin, the route is north of and parallel to the existing N5 as opposed to along it.

Corridor 3 is approx. 35.7km long. This option represents the “Do-Minimum” option.

Corridor 4 is approx. 38.0km long. It is located south of the existing N5 along its entire length. This option follows the approximate line of Option 1, 2 and 2B as far as the crossing of the R361 south of Frenchpark. From here it veers further south crossing the R367 (Ballintober to Tulsk) road at Mullygollan Townland and the N61 at Sheegeeragh Townland. The route then veers north eastwards towards the existing N5 at Lissaphuca Townland and follows a similar route as Options 2, 2A and 2B to bypass Strokestown on the southern side.

The proposed road type is Standard Single S2 as per NRA TD 27/07.

1.4 Options Comparison Estimate Costs

The Option Comparison Estimate Base Costs, for each route option, was prepared by Roscommon NRDO and agreed with the NRA’s Cost Estimation Unit. In addition, the Cost Estimation Unit added allowances for Inflation and NRA Programme Risk. The resulting Option Comparison Estimate for each option is given in Table 1.1 below.

Option	1	1A	2	2A	2B	3	4
OCE (€million)	€272.5	€261.1	€262.7	€288.9	€267.5	€276.5	€275.2

Table 1.1 Option Comparison Estimates

2 Software Specification

2.1 COBA Software

The CBA for the N5 Scramoge to Ballaghaderreen Road Project, Phase 3 – Route Corridor Selection, was carried out using TRL Limited's COBA 11 Release 8 (Irish Version) computer program in accordance with the National Roads Authority publication, Project Appraisal Guidelines, March 2008.

3 COBA Network

3.1 COBA Network Data

The CoBA network model includes links and junctions in the study area that are deemed to be affected by the scheme. The network is made up of Entry links (signifying the extent of where the scheme will have an effect), Links (connecting Nodes) and Nodes (junctions where the Links meet). There is a network model for both the “Do-Minimum” and each of the “Do-Something” scenarios – See Drawing RN04250-12-369, Appendix 4.

The geometric characteristics required for the Links and Junctions (Nodes) include the following:

- Link Data;
 - Type of link; Length; Width; Hilliness; Bendiness; No. of junctions; Visibility; Degree of development; Sight distances; and Speed limits.
- Junction (Node) Type;
 - Junction type; Roundabouts, and Priority junctions.

The COBA Network Data was determined from Ordnance Survey Mapping and other Topographical Survey information and design reports.

4 Data Collection

4.1 Introduction

The data requirements for the carrying out of a Cost Benefit Analysis (CBA) can be grouped under five headings:

- Link and Junction Data;
- Accident Data;
- Economic Values;
- Traffic Data; and
- Scheme Costs.

The Link and Junction Data has been described above under “COBA Network”. The COBA default Accident Data has been used in this CBA. The default Economic Values have been used with a discount rate of 4%.

The remaining data requirements are discussed below.

4.2 Traffic Data

A detailed Traffic Modelling Report has been prepared for the N5 Scramoge to Ballaghaderreen Road Project in accordance with the NRA Project Appraisal Guidelines (March 2008) (PAG).

Traffic surveys were carried out during 2007 and 2008 and included the following:

- Origin - Destination Roadside Interview Surveys;
- Automatic Number Plate Recognition;
- Automatic Traffic Counts;
- Manually Classified Junction Counts;
- Vehicle Journey Time Surveys.

This information was used to build and validate the 2007 base year traffic model - with the Saturn Suite of Computer Programs – for the do-minimum and each of the do-something options.

This traffic model was used to provide link flows, turning proportions and vehicle mix proportions for use in the CBA.

This model was then used with NRA Traffic Growth Figures, in accordance with NRA guidelines the NRA Future Traffic Forecasts 2002-2040 (August 2003), to develop traffic flow forecasts for 2015 (Opening), 2030 (Design) and 2040 (horizon year). High growth and low growth scenarios were considered.

4.3 Scheme Costs

The Option Comparison Estimates for each of the seven route corridor options has been developed in accordance with the NRA Cost Management Manual, 2007. The Estimate Level is between 1 and 2 and is based on four principal sources:

- The NRA Roadworks Unit Rate Database, Version 2 – Base Date May 2007;
- Preliminary Design Estimates prepared for the N5 Ballaghaderreen Bypass Road Scheme (currently at CPO Stage);
- The N4 Dromod-Roosky Road Scheme (substantially completed);

- The N4 Edgeworthstown Inner Relief Road Tender Analysis.

The estimate was submitted to and approved by the NRA Cost Management Section which has provided the Option Comparison Estimate Total Cost (includes inflation and NRA Programme Risk) for each option.

This OCE Total Cost was used in the NRA Economics Section's COBA Cost Conversion Spreadsheet (Appraisal Phases) to determine the cost inputs for the CBA (see Appendix 1).

5 CBA Input Assumptions

The costs taken into account in COBA are the construction, land and property costs involved in carrying out the improvement, including preparation and supervision costs. An estimate for the scheme cost has been prepared and agreed with the NRA. The costs were prepared for inclusion into the analysis as set out in the Guidelines for Cost Benefit Analysis. Input costs exclude VAT, as per NRA Guidelines (excluded by using the NRA COBA Cost Conversion Spreadsheet).

All general parameters such as traffic growth rates, accident rates and costs, value of time growth rates, vehicle occupancy rates, and maintenance costs were derived from the NRA National Parameters Value Sheets in the Project Appraisal Guidelines – March 2008.

6 CBA Validation

Journey Time Surveys were carried out, using the moving observer method, along the existing N5 Route at AM-Peak, PM-Peak and off-peak times. The survey was carried out on a mid-week day in both directions. No major incidents or accidents occurred that could have disrupted traffic during the surveys.

Table 6.1 below compares the average Journey Time (as established by survey) with the Journey time derived from the COBA Output File. The percentage difference in observed and modelled travel times is well within the normal range and in particular, the AM Peak observed journey times correlate very closely with the modelled travel times.

Link Description	Journey Time Survey (Sec)	COBA Journey Time (Sec)	Difference (Sec)	Difference (%)
Rathkeery to Scramoge (Average)	1889	2045	156	8.2
Rathkeery to Scramoge (AM Peak)	1999	2061	62	3.1

Table 6.1 Observed and Modelled Journey Time Comparisons

7 Impact on Public Accounts

7.1 Present Value of Costs

Impact	Table Ref.	Totals
<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0
Net Impact		0
<u>Central Government Funding</u>		
Operating Costs		4,556
Investment Costs		113,459
Developer and Other Contributions		0
Indirect Tax Revenues		-97
Net Impact	(8)	117,918
Present Value of Costs (PVC)	(9)	117,918
This analysis is based on Default High Traffic Growth and Default High Economic Growth Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%		

Table 7.1 Public Accounts Table for Option 1

Impact	Table Ref.	Totals
<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0
Net Impact		0
<u>Central Government Funding</u>		
Operating Costs		4,503
Investment Costs		108,719
Developer and Other Contributions		0
Indirect Tax Revenues		-12
Net Impact	(8)	113,210
Present Value of Costs (PVC)	(9)	113,210
This analysis is based on Default High Traffic Growth and Default High Economic Growth Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%		

Table 7.2 Public Accounts Table for Option 1A

Impact	Table Ref.	Totals
<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0
Net Impact		0
<u>Central Government Funding</u>		
Operating Costs		4,618
Investment Costs		109,414
Developer and Other Contributions		0
Indirect Tax Revenues		-10
Net Impact	(8)	114,022
Present Value of Costs (PVC)	(9)	114,022
This analysis is based on Default High Traffic Growth and Default High Economic Growth Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%		

Table 7.3 Public Accounts Table for Option 2

Impact	Table Ref.	Totals
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<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0
Net Impact		0
<u>Central Government Funding</u>		
Operating Costs		4,650
Investment Costs		120,267
Developer and Other Contributions		0
Indirect Tax Revenues		70
Net Impact	(8)	124,986
Present Value of Costs (PVC)	(9)	124,986
<p>This analysis is based on Default and High Traffic Growth and Default High Economic Growth</p> <p>Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%</p>		

Table 7.4 Public Accounts Table for Option 2A

Impact	Table Ref.	Totals
<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0
Net Impact		0
<u>Central Government Funding</u>		
Operating Costs		4,604
Investment Costs		111,410
Developer and Other Contributions		0
Indirect Tax Revenues		63
Net Impact	(8)	116,076
Present Value of Costs (PVC)	(9)	116,076
<p>This analysis is based on Default and High Traffic Growth and Default High Economic Growth</p> <p>Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%</p>		

Table 7.5 Public Accounts Table for Option 2B

Impact	Table Ref.	Totals
<u>Local Government Funding</u>		
Operating Costs		0
Investment Costs		0
Developer and other contributions	(7)	0

Net Impact		0
Central Government Funding		
Operating Costs		5,094
Investment Costs		114,645
Developer and Other Contributions		0
Indirect Tax Revenues		-205
Net Impact	(8)	119,534
Present Value of Costs (PVC)	(9)	119,534
<p>This analysis is based on Default High Traffic Growth and Default High Economic Growth</p> <p>Costs in 2002 prices in multiples of a thousand euro, and discounted to 2002 Evaluation Period 30 years First Scheme Year 2018 Current Year 2004 Discount Rate 4.0% for 30 years thereafter 4.0% for 46 years thereafter 4.0%</p>		

Table 7.6 Public Accounts Table for Option 4

Option	1	1A	2	2A	2B	4
PVC (€1000s)	€117,918	€113,210	€114,022	€124,986	€116,076	€119,534

Table 7.7 Summary Public Accounts

8 CBA Results

8.1 COBA Scenarios

Two separate scenarios are considered:

- High Traffic Growth; and
- Low Traffic Growth.

Both scenarios are coded into COBA using separate Input Files for each Scenario. In each case, all seven Route Corridor Options are considered within a single run of the programme which generates an Output File with economic data for each route corridor option.

At the Route Corridor Selection Stage, the Option Comparison Estimate (OCE) for each option is used in COBA. The OCE includes both Inflation and NRA derived Risk allowances.

8.2 Interpreting the COBA Output File

All costs and benefits have been discounted to 2002.

The Present Value of Costs (PVC) is the total cost of the scheme (planning, construction, land and maintenance) discounted to 2002 prices and excluding VAT.

The Present Value of Benefits (PVB) is the total benefits of the scheme (time, operating, accidents, and carbon) discounted to 2002 prices and excluding VAT.

The Net Present Value (NPV) of the scheme is the difference between NPB and NPC and again is in 2002 prices.

The Benefit to Cost Ratio (BCR) is the ratio of NPB to NPC and is a measure of the anticipated Return on Investment as a result of providing the proposed road scheme.

8.3 COBA High Growth Scenario

Table 8.1 below shows the results obtained for each of the Route Corridor Options from the COBA output file for the High Growth Scenario based on the Options Comparison Estimates.

Parameter	Option 1	Option 1A	Option 2	Option 2A	Option 2B	Option 4
Consumer User Benefits	€51.091m	€57.820m	€55.509m	€56.123m	€56.117m	€34.774m
Business Benefits	€65.501m	€76.649m	€73.463m	€76.508m	€76.337m	€40.810m
Private Sector Provider Benefits	€0	€0m	€0m	€0m	€0m	€0m
Accident Benefits	€4.910m	€6.237m	€5.951m	€6.018m	€5.981m	€1.560m
Emissions Benefits	€-0.480m	€-0.098m	€-0.095m	€0.271m	€0.240m	€-0.974m
Residual Benefits	€18.5m	€17.8m	€17.9m	€19.7m	€18.2m	€18.9m
Present Value of Costs (PVC)	€117.918m	€113.210m	€114.022m	€124.986m	€116.076m	€119.534m
Present Value of Benefits (PVB) ^{including residual values}	€139.522m	€158.408m	€152.729m	€158.620m	€156.875m	€95.07m
Net Present Value (NPV)	€21.604m	€44.898m	€38.707m	€33.634m	€40.799m	€-24.464m
Benefit to Cost Ratio (BCR)	1.183	1.400	1.340	1.269	1.351	0.795

Table 8.1 COBA Output Summary – High Growth

8.4 COBA Low Growth Scenario

Table 8.2 below shows the results obtained for each of the Route Corridor Options from the COBA output file for the High Growth Scenario based on the Options Comparison Estimates.

Parameter	Option 1	Option 1A	Option 2	Option 2A	Option 2B	Option 4
Consumer User Benefits	€48.069	€54.514	€52.339	€52.929	€52.915	€32.467
Business Benefits	€61.429	€72.036	€69.063	€71.975	€71.762	€37.963
Private Sector Provider Benefits	€0	€0	€0	€0	€0	€0
Accident Benefits	€4.690	€5.958	€5.685	€5.749	€5.714	€1.490
Emissions Benefits	€-0.479	€-0.118	€-0.112	€0.237	€0.207	€-0.944
Residual Benefits	€18.5	€17.8	€17.9	€19.7	€18.2	€18.9
Present Value of Costs (PVC)	€117.918	€113.208	€114.020	€124.982	€116.072	€119.538
Present Value of Benefits (PVB) ^{including residual values}	€132.209	€150.189	€144.875	€150.549	€148.798	€89.876
Net Present Value (NPV)	€14.291	€36.981	€30.855	€25.567	€32.726	€-29.662
Benefit to Cost Ratio (BCR)	1.121	1.327	1.271	1.205	1.282	0.752

Table 8.2 COBA Output Summary – Low Growth

9 CBA Conclusions

The results of the CBA show that Route Corridor Options 1, 1A, 2, 2A and 2B each produce a Benefit to Cost Ratio greater than 1 indicating that each of these options will provide a return on investment.

Option 1A produces the highest Benefit to Cost Ratio under both the High Growth and Low Growth scenarios and is the preferred route corridor.

The economic viability of a scheme is confirmed when the Net Present Value is positive and the Benefit to Cost Ratio is greater than 1. These results confirm that the preferred route corridor for the N5 Scramoge to Ballaghaderreen Road Project produces a BCR of 1.400 and a positive Net Present Value confirming that the project is economically viable.

Appendix 1 Cost Estimate Summary

Year	Costs to be entered into COBA in units of €1,000 (2002 factor prices, RPF applied)									
	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10
2002 (and before)	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2003	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2004	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2005	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2006	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2007	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2008	€ 1,237	€ 1,255	€ 1,270	€ 1,285	€ 1,266	€ 1,311	€ 1,395	#DIV/0!	#DIV/0!	#DIV/0!
2009	€ 1,845	€ 1,862	€ 1,874	€ 1,887	€ 1,871	€ 1,789	€ 1,981	#DIV/0!	#DIV/0!	#DIV/0!
2010	€ 1,031	€ 1,046	€ 1,058	€ 1,071	€ 1,055	€ 1,092	€ 1,162	#DIV/0!	#DIV/0!	#DIV/0!
2011	€ 1,031	€ 1,046	€ 1,058	€ 1,071	€ 1,055	€ 1,092	€ 1,162	#DIV/0!	#DIV/0!	#DIV/0!
2012	€ 1,546	€ 1,569	€ 1,587	€ 1,606	€ 1,583	€ 1,638	€ 1,743	#DIV/0!	#DIV/0!	#DIV/0!
2013	€ 6,242	€ 6,285	€ 6,315	€ 6,350	€ 6,308	€ 5,866	€ 6,591	#DIV/0!	#DIV/0!	#DIV/0!
2014	€ 6,779	€ 6,825	€ 6,862	€ 6,896	€ 6,849	€ 8,761	€ 7,172	#DIV/0!	#DIV/0!	#DIV/0!
2015	€ 29,064	€ 27,454	€ 27,612	€ 31,039	€ 28,267	€ 26,306	€ 28,728	#DIV/0!	#DIV/0!	#DIV/0!
2016	€ 42,782	€ 41,095	€ 41,387	€ 45,395	€ 42,103	€ 49,612	€ 43,620	#DIV/0!	#DIV/0!	#DIV/0!
2017	€ 42,782	€ 41,095	€ 41,387	€ 45,395	€ 42,103	€ 49,612	€ 43,620	#DIV/0!	#DIV/0!	#DIV/0!
2018	€ 37,486	€ 35,288	€ 35,481	€ 40,084	€ 36,372	€ 32,562	€ 36,819	#DIV/0!	#DIV/0!	#DIV/0!
2019	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2020	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2021	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2022	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2023	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2024	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2025	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2026	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2027	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!
2028	€ -	€ -	€ -	€ -	€ -	€ -	€ -	#DIV/0!	#DIV/0!	#DIV/0!

Table A1.1 COBA Cost Input Data

Appendix 2 COBA Input Files

GENERAL TITLE Scramoge to Ballaghadereen (RN06450)

PRINT PHASE DCO 1X 2X 3X 4X 5X 6X 7X 8X 9X 10X 11X 12X 13X 14X 15X 16X
 YEARS FOR THIS SCHEME - FIRST LAST PRES-VAL JOURNEY TIME
 2018 2047 2002 2007
 NTWRK CLASSIFICATION TF-PERIOD TF-YEAR TF-MONTH ACCIDENTS TIDALITY
 TNB AADT 2015 COM
 OPTIONS TRAFFIC ECONOMIC FUELCOST
 DEFH DEFH DEFH
 TRAFFIC PROPNS YEAR PER CAT-1 CAT-2 CAT-3 CAT-4 CAT-5 CAT-6
 2009 24 0.72 0.15 0.050 0.070 0.000
 F-GROUP MULTS FGNO FGTYPE HOURS d n c m k YEAR
 1 1 4600 0.404 2000
 2 1 3660 1.568
 3 2 0 0.000
 4 3 500 2.320

9999
 FLGROUP FACT CLASS HFG CAT-2 CAT-3 CAT-4 CAT-5 CAT-6 BLOCKTIME
 TNB 2 0.96 1.18 0.95 1.20
 TNB 3 1.00 1.00 1.00 1.00
 TNB 4 0.68 0.61 0.59 1.64

9999
 END OF BASIC DATA ++++++

SCHEME TITLE DO MINIMUM NRA HIGH TRAFFIC GROWTH

NODE-LINK DATA NODE LINK LINK LINK LINK LINK
 600 6001 6021
 602 6021 6041
 604 6041 6042 6061 6043
 606 6061 6081
 608 6081 6101
 610 6101 6121
 612 6121 6122 6141
 614 6141 6142 6161 6144
 616 6161 6162 6181
 618 6181 6182 6201 6184
 620 6201 6202 6221 6204
 622 6221 6241
 624 6241 6242 6261 6244
 626 6261 6281
 628 6281 6301
 630 6301 6302 6303 6321
 632 6321 6341 6324
 634 6341 6351
 635 6351 6361
 636 6361 6363

99999
 END OF NODE-LINK DATA ++++++

FLOW ON LINK VMG1 VMG2 VMG3 INTO NODE

6001 7086
 6021 7086
 6041 7086
 6042 4822
 6061 5386
 6043 3136
 6081 5386
 6101 5010
 6121 5010
 6122 854
 6141 4283
 6142 119
 6161 4542
 6144 661
 6162 100
 6181 4542
 6182 100
 6201 6702
 6184 2037
 6202 3743
 6221 5314
 6204 4726
 6241 5314
 6242 300
 6261 5291
 6244 300
 6281 5291
 6301 5291
 6302 3067
 6303 300
 6321 9026
 6341 6654
 6324 2693
 6351 6489
 6361 6000
 6363 4852

99999

RURAL ROAD LINK C AT DES LENGTH CWID HILLS DOWN BEND SWID VWID JUNC VISI MAXS
 6001 1 4 0.5 5.5 15 0 75 1 1 1 100 100
 6021 1 4 4.9 5.5 15 0 75 1 1 2.7 100 100
 6042 1 4 0.5 5.5 15 0 75 1 1 4.0 100 50
 6043 1 4 1.0 5.5 15 0 75 1 1 4.0 100 50
 6081 1 4 3.4 5.5 15 0 75 1 1 2.1 100 100
 6122 1 4 0.5 5.5 15 0 0 0.5 1 0 200 80
 6141 1 4 4.9 5.5 15 0 75 1 1 2.3 100 100
 6142 1 4 0.5 5.5 15 0 75 0 1 0 100 80
 6161 1 4 4.5 5.5 15 0 75 1 1 1.9 100 100
 6144 1 4 0.5 5.5 15 0 75 0 1 0 100 80
 6162 1 4 0.5 5.5 15 0 75 0 1 0 100 80
 6182 1 4 0.5 5.5 15 0 75 0 1 0 100 80
 6184 1 4 0.5 5.5 15 0 75 0 1 0 100 80
 6202 1 4 0.5 5.5 15 0 75 1 1 0 100 60
 6204 1 4 0.5 5.5 15 0 75 1 1 0 100 60
 6241 1 4 2.7 5.5 15 0 75 1 1 2.7 100 100
 6242 1 4 0.5 5.5 15 0 75 0.5 1 0 100 80
 6261 1 4 1.6 9.0 15 0 75 1 2 2.7 100 100
 6244 1 4 0.5 5.5 15 0 75 0.5 1 0 100 80
 6281 1 4 4.8 5.5 15 0 150 0.5 0.5 2.9 100 100
 6302 1 4 0.5 5.5 15 0 75 1 1 0 100 50
 6303 1 4 0.5 7.0 15 0 75 1 1 0 100 50
 6324 1 4 0.5 5.5 15 0 75 1 1 0 100 50
 6351 1 4 1.5 5.5 15 0 75 1 1 3.1 100 60
 6361 1 4 1.5 5.5 15 0 75 1 1 3.0 100 100
 6363 1 4 0.5 7.5 15 0 0 1 2.5 1 600 100

99999
 URBAN ROAD LINK C AT S/D LENGTH WIDTH HILLS VOBS DEVEL INT QOBS
 6041 9 4 1 .3 7.5 15 90 5
 6061 9 4 1 0.6 7.5 15 90 5
 6101 9 4 1 1.1 8.0 15 90 5

6121	9	4	1	.80	8.0	15	60	5
6181	9	4	1	.75	8.0	15	50	5
6201	9	4	1	0.4	8.0	15	90	5
6221	9	4	1	1.0	8.0	15	90	5
6321	9	4	1	0.4	6.5	15	90	5
6301	9	4	1	1.20	6.5	15	90	5
6341	9	4	1	0.80	6.5	15	90	5

9999

ROUNDA	BOUT	RST	RT	LINK	A-WID	E-WID	E-RAD	F-LEN	DIAM	FI	GSI	DCPK	DCOPK	GD	MXD
630	210		2									0	0	0	300
				6301	3.5	4	15	5	33	26	0				
				6302	3.5	4	15	5	33	26	0				
				6303	3.5	4	15	5	33	26	0				
				6321	3.5	4	15	5	33	26	0				

99999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630	F			6301	6302	6303	6321					
				6301	250	50	2222					
				6302	250	50	1163					
				6303	50	50	50					
				6321	2222	1163	50	0				

9999

MAJORM	MINOR	RST	JT	LINK	L-WID	R-WID	L-VIS	R-VIS	C-WID	T-WID	S	V	MXD
604	210		1								0	1	300
				6041	0	0	0	0	0	10.0			
				6042	5.0	5.0	29	29	0	0			
				6061	0	0	0	0	0	10.0			
				6043	2.8	2.9	22	22	0	0			

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604	F			6041	6042	6061	6043					
				6041	0	1000	2000	342				
				6042	800	0	267	1200				
				6061	2000	120	0	100				
				6043	300	1000	121	0				

9999

MAJORM	MINOR	RST	JT	LINK	L-WID	R-WID	L-VIS	R-VIS	C-WID	T-WID	S	V	MXD
620	210		1								0	1	300
				6201	0	0	0	0	0	10.0			
				6202	5.0	5.0	29	29	0	0			
				6221	0	0	0	0	0	10.0			
				6204	2.8	2.9	22	22	0	0			

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
620	F			6201	6202	6221	6204					
				6201	0	251	2500	600				
				6202	251	0	185	1355				
				6221	2700	185	0	200				
				6204	800	1568	300	0				

9999

END OF SCHEME DATA =====

SCHEME TITLE Route Corridor Option 1

LINKS TO BE ADDED	LINK	JOINS	NODE	TO	NODE
	1101		600		110
	1102		110		
	1151		110		115
	1152		115		
	1201		115		120
	1202		120		
	1253		120		636

9999

END OF NODE-LINK DATA ++++++

COSTS	YEAR	CAPITAL-COST	CONSTR-DELAY	MAINT-CAPITL	MAINT-DELAY
	2012	1546			
	2013	6242			
	2014	6779			
	2015	29064			
	2016	42782			
	2017	42782			
	2018	37486			

9999

FLOW ON	LINK	VMG1	VMG2	VMG3	INTO	NODE
	6001	7086				
	6021	1276				
	6041	1276				
	6042	4802				
	6061	1276				
	6043	2216				
	6081	1276				
	6101	900				
	6121	900				
	6122	308				
	6141	760				
	6142	153				
	6161	943				
	6144	943				
	6162	100				
	6181	943				
	6182	100				
	6201	3623				
	6184	2037				
	6202	4373				
	6221	1756				
	6204	4726				
	6241	1756				
	6242	417				
	6261	1718				
	6244	617				
	6281	1718				
	6301	1718				
	6302	6665				
	6303	300				
	6321	5729				
	6341	778				
	6324	2179				
	6351	778				
	6361	778				
	6363	4862				
	1101	7086				
	1102	1320				
	1151	4125				
	1152	492				
	1201	3915				
	1202	1198				
	1253	6312				

9999

RURAL ROAD LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
1101	1	4	1	5.4	7.3	5	0	6	1	4	0	700	100
1102	1	4	1	0.5	7.3	5	0	6	1	4	0	700	100
1151	1	4	1	13.1	7.3	5	0	6	1	4	0	700	100
1152	1	4	1	0.5	7.3	5	0	6	1	4	0	700	100
1201	1	4	1	9.8	7.3	5	0	7.5	1	4	0	700	100
1202	1	4	1	0.5	7.3	5	0	6	1	4	0	700	100
1253	1	4	1	4.4	7.3	5	0	23	1	4	0	700	100

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630	F			6301	6302	6303	6321					
			6301	0	1000	101	4100					
			6302	1000	0	67	2000					
			6303	50	50	0	32					
			6321	5000	4000	26	0					

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604	F			6041	6042	6061	6043					
			6041	0	800	350	225					
			6042	800	0	50	458					
			6061	350	50	0	28					
			6043	127	458	126	0					

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
620	F			6201	6202	6221	6204					
			6201	0	200	1249	500					
			6202	200	0	50	1558					
			6221	1249	50	0	48					
			6204	700	1568	48	0					

9999

END OF SCHEME DATA =====

SCHEME TITLE Route Corridor Option 1A

LINKS TO BE ADDED	LINK JOINS	NODE	TO NODE
	2051	600	205
	2052	205	
	2151	205	215
	2152	215	
	2201	215	220
	2203	220	
	2253	220	636

9999

END OF NODE-LINK DATA +++++

COSTS	YEAR	CAPITAL-COST	CONSTR-DELAY	MAINT-CAPITL	MAINT-DELAY
	2012	1569			
	2013	6285			
	2014	6825			
	2015	27454			
	2016	41095			
	2017	41095			
	2018	35288			

9999

FLOW ON	LINK	VMG1	VMG2	VMG3	INTO	NODE
	6001	7086				
	6021	999				
	6041	999				
	6042	4802				
	6061	999				
	6043	2216				
	6081	999				
	6101	622				
	6121	622				
	6122	307				
	6141	484				
	6142	153				
	6161	667				
	6144	667				
	6162	100				
	6181	667				
	6182	100				
	6201	3898				
	6184	2037				
	6202	4649				
	6221	1756				
	6204	4746				
	6241	1756				
	6242	417				
	6261	1718				
	6244	617				
	6281	1718				
	6301	1718				
	6302	6715				
	6303	300				
	6321	5729				
	6341	778				
	6324	2179				
	6351	778				
	6361	778				
	6363	4862				
	2051	7086				
	2052	1320				
	2151	4407				
	2152	492				
	2201	3915				
	2203	1198				
	2253	6312				

9999

RURAL ROAD LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
2051	1	4	1	4.8	7.3	5	0	6	1	4	0	700	100
2052	1	4	1	0.500	7.3	5	0	0	1	4	0	700	100
2151	1	4	1	13.9	7.3	5	0	6.6	1	4	0	700	100
2152	1	4	1	.500	7.3	5	0	0	1	4	0	700	100
2201	1	4	1	9.8	7.3	5	0	7.5	1	4	0	700	100
2203	1	4	1	.500	7.3	5	0	0	1	4	0	700	100
2253	1	4	1	3.8	7.3	5	0	23	1	4	0	700	100

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630	F			6301	6302	6303	6321					
			6301	0	385	50	384					
			6302	385	0	50	2052					
			6303	50	50	0	50					
			6321	384	2052	50	0					

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604	F			6041	6042	6061	6043					
			6041	0	800	350	225					
			6042	800	0	50	458					
			6061	350	50	0	28					

```

9999          6043      127      458      126      0
TURNF NODE F/P FROM TO 1 TO 2 TO 3 TO 4 TO 5 TO 6 INFL AMPI PMPI
      620 F      6201 6201 6202 6221 6204
      6201      0      200 1249 500
      6202      200      0      50 1558
      6221 1249 50 0 48
      6204      700 1568 48 0
  
```

```

9999
END OF SCHEME DATA =====
SCHEME TITLE      Route Corridor Option 2
  
```

```

LINKS TO BE ADDED          LINK JOINS NODE TO NODE
                              3101      600      310
                              3103      310
                              3151      310      315
                              3153      315
                              3401      315      340
                              3453      340      636
  
```

```

9999
END OF NODE-LINK DATA =====
  
```

```

COSTS YEAR      CAPITAL-COST  CONSTR-DELAY  MAINT-CAPITL  MAINT-DELAY
      2012      1587
      2013      6315
      2014      6862
      2015      27612
      2016      41387
      2017      41387
      2018      35481
  
```

```

9999
FLOW ON          LINK VMG1  VMG2  VMG3 INTO NODE
      6001 7086
      6021 1531
      6041 1531
      6042 4802
      6061 1531
      6043 2216
      6081 1531
      6101 1154
      6121 1154
      6122 796
      6141 485
      6142 119
      6161 744
      6144 744
      6162 100
      6181 744
      6182 100
      6201 4093
      6184 2037
      6202 3756
      6221 1670
      6204 4746
      6241 1670
      6242 462
      6261 1618
      6244 617
      6281 1618
      6301 1618
      6302 3003
      6303 300
      6321 6449
      6341 4802
      6324 2179
      6351 778
      6361 778
      6363 4862
      3101 7086
      3103 1320
      3151 3855
      3153 495
      3401 3721
      3453 6312
  
```

```

9999
RURAL ROAD LINK C AT DES LENGTH  CWID  HILLS DOWN BEND SWID VWID JUNC VISI MAXS
      3101 1 4 1 4.9 7.3 5 0 6 1 4 0 700 100
      3103 1 4 1 0.5 7.3 5 0 0 1 4 0 700 100
      3151 1 4 1 15.270 7.3 5 0 6 1 4 0 700 100
      3153 1 4 1 0.5 7.3 5 0 0 1 4 0 700 100
      3401 1 4 1 10.840 7.3 5 0 8 1 4 0 700 100
      3453 1 4 1 2.650 7.3 5 0 10 1 4 0 700 100
  
```

```

9999
TURNF NODE F/P FROM TO 1 TO 2 TO 3 TO 4 TO 5 TO 6 INFL AMPI PMPI
      630 F      6301 6301 6302 6303 6321
      6301      0 1000 101 617
      6302 1000 0 67 2000
      6303 50 50 0 32
      6321 2500 4000 26 0
  
```

```

9999
TURNF NODE F/P FROM TO 1 TO 2 TO 3 TO 4 TO 5 TO 6 INFL AMPI PMPI
      604 F      6041 6041 6042 6061 6043
      6041      0 800 350 225
      6042 800 0 50 458
      6061 350 50 0 28
      6043 127 458 126 0
  
```

```

9999
TURNF NODE F/P FROM TO 1 TO 2 TO 3 TO 4 TO 5 TO 6 INFL AMPI PMPI
      620 F      6201 6201 6202 6221 6204
      6201      0 200 1249 500
      6202 200 0 50 1558
      6221 1249 50 0 48
      6204 700 1568 48 0
  
```

```

9999
END OF SCHEME DATA =====
SCHEME TITLE      Route Corridor Option 2A
  
```

```

LINKS TO BE ADDED          LINK JOINS NODE TO NODE
                              4101      600      410
                              4103      410
                              4151      410      415
                              4153      415
                              4201      415      420
                              4353      420      636
  
```

```

9999
END OF NODE-LINK DATA =====
  
```

```

COSTS YEAR      CAPITAL-COST  CONSTR-DELAY  MAINT-CAPITL  MAINT-DELAY
  
```

2012 1606
 2013 6350
 2014 6896
 2015 31039
 2016 45395
 2017 45395
 2018 40084

9999

FLOW ON LINK VMG1 VMG2 VMG3 INTO NODE
 6001 7086
 6021 1414
 6041 1414
 6042 4822
 6061 1414
 6043 2216
 6081 1414
 6101 1037
 6121 1037
 6122 687
 6141 478
 6142 119
 6161 478
 6144 661
 6162 100
 6181 737
 6182 100
 6201 4100
 6184 2037
 6202 3903
 6221 2708
 6204 4746
 6241 2708
 6242 462
 6261 2645
 6244 617
 6281 2625
 6301 2625
 6302 3161
 6303 300
 6321 6493
 6341 4121
 6324 2179
 6351 3965
 6361 778
 6363 4862
 4101 7086
 4103 1320
 4151 3972
 4153 495
 4201 2534
 4353 6312

9999

RURAL ROAD LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
4101	1	4	1	4.83	7.3	5	0	6	1	4	0	700	100
4103	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100
4151	1	4	1	15.410	7.3	5	0	6	1	4	0	700	100
4153	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100
4201	1	4	1	13.300	7.3	5	0	8	1	4	0	700	100
4353	1	4	1	0.360	7.3	5	0	10	1	4	0	700	100

9999

TURNF NODE F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630 F	6301	6302	6303	6321						
	6301	1000	101	4100						
	6302	1000	67	2000						
	6303	50	0	32						
	6321	5000	4000	26	0					

9999

TURNF NODE F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604 F	6041	6042	6061	6043						
	6041	0	800	350	225					
	6042	800	0	50	458					
	6061	350	50	0	28					
	6043	127	458	126	0					

9999

TURNF NODE F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
620 F	6201	6202	6221	6204						
	6201	0	200	1249	500					
	6202	200	0	50	1558					
	6221	1249	50	0	48					
	6204	700	1568	48	0					

9999

END OF SCHEME DATA =====
 SCHEME TITLE Route Corridor Option 2B

LINKS TO BE ADDED	LINK	JOINS	NODE	TO	NODE
	5101		600		510
	5103		510		
	5151		510		515
	5153		515		
	5201		515		520
	5263		520		636

9999

END OF NODE-LINK DATA ++++++

COSTS	YEAR	CAPITAL-COST	CONSTR-DELAY	MAINT-CAPITL	MAINT-DELAY
	2012	1583			
	2013	6308			
	2014	6849			
	2015	28267			
	2016	42103			
	2017	42103			
	2018	36392			

9999

FLOW ON LINK VMG1 VMG2 VMG3 INTO NODE
 6001 7086
 6021 1414
 6041 1414
 6042 4822
 6061 1414
 6043 2216
 6081 1414
 6101 1037
 6121 1037
 6122 687
 6141 478
 6142 119
 6161 478
 6144 661

6162 100
 6181 737
 6182 100
 6201 4100
 6184 2037
 6202 3969
 6221 2634
 6204 4726
 6241 2634
 6242 462
 6261 2572
 6244 617
 6281 2572
 6301 2572
 6302 3095
 6303 300
 6321 6353
 6341 3981
 6324 2179
 6351 3888
 6361 778
 6363 4862
 5101 7086
 5103 1320
 5151 3972
 5153 495
 5201 2673
 5263 6312

9999

RURAL ROAD	LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
5101	1	4	1	4.93	7.3	5	0	6	1	4	0	700	100	
5103	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100	
5151	1	4	1	15.185	7.3	5	0	6	1	4	0	700	100	
5153	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100	
5201	1	4	1	12.950	7.3	5	0	8	1	4	0	700	100	
5263	1	4	1	0.495	7.3	5	0	10	1	4	0	700	100	

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630	F			6301	6302	6303	6321					
				6301	0	1000	101	4100				
				6302	1000	0	67	2000				
				6303	50	50	0	32				
				6321	5000	4000	26	0				

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604	F			6041	6042	6061	6043					
				6041	0	800	350	225				
				6042	800	0	50	458				
				6061	350	50	0	28				
				6043	127	458	126	0				

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
620	F			6201	6202	6221	6204					
				6201	0	200	1249	500				
				6202	200	0	50	1558				
				6221	1249	50	0	48				
				6204	700	1568	48	0				

9999

END OF SCHEME DATA =====
 SCHEME TITLE Route Corridor Option 4

LINKS TO BE ADDED	LINK	JOINS	NODE	TO	NODE
	7101		600		710
	7103		710		
	7151		710		715
	7153		715		
	7201		715		720
	7303		720		636

9999

END OF NODE-LINK DATA ++++++

COSTS	YEAR	CAPITAL-COST	CONSTR-DELAY	MAINT-CAPITL	MAINT-DELAY
2012		1743			
2013		6591			
2014		7172			
2015		28728			
2016		43620			
2017		43620			
2018		36819			

9999

FLOW ON	LINK	VMG1	VMG2	VMG3	INTO	NODE
	6001	7086				
	6021	2502				
	6041	2502				
	6042	4822				
	6061	2502				
	6043	2216				
	6081	2502				
	6101	2125				
	6121	2125				
	6122	888				
	6141	1365				
	6142	119				
	6161	1624				
	6144	661				
	6162	100				
	6181	1624				
	6182	100				
	6201	3784				
	6184	2037				
	6202	3681				
	6221	1955				
	6204	4238				
	6241	1955				
	6242	432				
	6261	1932				
	6244	617				
	6281	1932				
	6301	1932				
	6302	3095				
	6303	300				
	6321	6702				
	6341	4804				
	6324	2179				
	6351	4804				
	6361	778				
	6363	4862				
	7101	7086				
	7103	1320				

7151 2885
 7153 1320
 7201 3265
 7303 6312

9999

RURAL ROAD LINK	C	AT	DES	LENGTH	CWID	HILLS	DOWN	BEND	SWID	VWID	JUNC	VISI	MAXS
7101	1	4	1	4.95	7.3	5	0	6	1	4	0	700	100
7103	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100
7151	1	4	1	20.115	7.3	5	0	6	1	4	0	700	100
7153	1	4	1	0.5	7.3	5	0	0	1	4	0	700	100
7201	1	4	1	11.000	7.3	4	0	6	1	4	0	700	100
7303	1	4	1	1.170	7.3	5	0	10	1	4	0	700	100

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
630	F		6301	6302	6303	6321						
			6301	0	1000	101	4100					
			6302	1000	0	67	2000					
			6303	50	50	0	32					
			6321	5000	4000	26	0					

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
604	F		6041	6042	6061	6043		TO 5	TO 6			
			6041	0	800	350	225					
			6042	800	0	50	458					
			6061	350	50	0	28					
			6043	127	458	126	0					

9999

TURNF	NODE	F/P	FROM	TO 1	TO 2	TO 3	TO 4	TO 5	TO 6	INFL	AMPI	PMPI
620	F		6201	6202	6221	6204						
			6201	0	200	1249	500					
			6202	200	0	50	1558					
			6221	1249	50	0	48					
			6204	700	1568	48	0					

9999

END OF SCHEME DATA =====
 FINISH

Appendix 3 COBA Output Summaries

Scramoge to Ballaghaderreen (RN06450)

```

*****
*
*      CCC      OOO      BBBB      AAA
*      C  C      O  O      B  B      A  A
*      C          O  O      B  B      A  A
*      C          O  O      BBBB     AAAAA
*      C          O  O      B  B      A  A
*      C  C      O  O      B  B      A  A
*      CCC      OOO      BBBB      A  A
*
*****
*      DEPARTMENT FOR TRANSPORT,
*
*      INTEGRATED TRANSPORT ECONOMICS AND
*      APPRAISAL DIVISION,
*      GREAT MINSTER HOUSE
*      76 MARSHAM STREET, LONDON SW1P 4DR
*
*****
*      C O B A 11 R8 GENERATED 26-FEB-2008
*      IRISH VERSION
*
*****
    
```

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH
CONSUMER USER BENEFITS					
Travel time		51,518	51,518	-	0
Vehicle operating costs		-427	-427	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	51,091	51,091	-	0
BUSINESS USERS					
User Benefits					
Travel Time		65,825	29,389	36,436	0
Vehicle Operating costs		-324	-88	-235	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	65,501	29,301	36,201	0
Private Sector Provider Impacts					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	65,501	29,301	36,201	0
TOTAL					
Present Value of Transport Economic Efficiency* Benefits	(6)	116,592			
THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002 EVALUATION PERIOD 30 YEARS FIRST SCHEME YEAR 2018 CURRENT YEAR 2004 DISCOUNT RATE 4.0 PERCENT FOR 30 YEARS THEREAFTER 4.0 PERCENT FOR 46 YEARS THEREAFTER 4.0 PERCENT					

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1

TABLE 15B PUBLIC ACCOUNTS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include Local Government Funding, Central Government Funding, and Present Value of Costs. Includes a section for analysis assumptions: THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

```

*****
*                                     *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF *
*                                     *
* TEE Benefits                       *      *
* =====                           *      *
*   Consumer User Benefits           * (1) * 51,091 *
*   Business Benefits                * (2) * 65,501 *
*   Private Sector Provider Impacts  * (3) * 0 *
*   Accident Benefits                 * (10) * 4,910 *
*   =====                           *      *
*   Emissions Benefits               * (11) * -480 *
*   =====                           *      *
* Present Value of Benefits           (PVB) * (12) * 121,022 *
*                                     *      *
*                                     *
* Government Funding                 *      *
* =====                           *      *
*   Present Value of Costs           (PVC) * (9) * 117,918 *
*                                     *      *
*                                     *
* Overall Impact                     *      *
* =====                           *      *
*   Net Present Value                 (NPV) * (12)-(9) * 3,105 *
*   Benefit to Cost Ratio             (BCR) * (12)/(9) * 1.026 *
*                                     *
*                                     *
* THIS ANALYSIS IS BASED ON  DEFAULT  HIGH TRAFFIC GROWTH
* AND  DEFAULT  HIGH ECONOMIC GROWTH
*
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002
*
* EVALUATION PERIOD 30 YEARS  FIRST SCHEME YEAR 2018  CURRENT YEAR 2004
*
* DISCOUNT RATE 4.0 PERCENT  FOR 30 YEARS THEREAFTER 4.0 PERCENT FOR 46 YEARS
* THEREAFTER 4.0 PERCENT
*
*
* NOTE: There may also be other significant costs and benefits, some of which cannot
* be presented in monetised form. Where this is the case, the analysis
* presented above does NOT provide a good measure of value for money and
* should not be used as the sole basis for decisions.
*****
    
```

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1A

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM
IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH
CONSUMER USER BENEFITS					
Travel time		57,059	57,059	-	0
Vehicle operating costs		761	761	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	57,820	57,820	-	0
BUSINESS USERS					
User Benefits					
Travel Time		75,368	32,548	42,820	0
Vehicle Operating costs		1,281	157	1,123	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	76,649	32,706	43,943	0
Private Sector Provider Impacts					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	76,649	32,706	43,943	0
TOTAL					
Present Value of Transport Economic Efficiency Benefits	(6)	134,469			
THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH					
COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002					
EVALUATION PERIOD	30 YEARS	FIRST SCHEME YEAR	2018	CURRENT YEAR	2004
DISCOUNT RATE	4.0 PERCENT	FOR 30 YEARS THEREAFTER	4.0 PERCENT	FOR 46 YEARS	THEREAFTER
	4.0 PERCENT				

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1A

TABLE 15B PUBLIC ACCOUNTS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include Local Government Funding, Central Government Funding, and Present Value of Costs. Includes a section for analysis assumptions like traffic and economic growth.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 1A

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

```

*****
*                                     *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF   *
*                                     *
* TEE Benefits                       *       *
* =====                           *       *
*   Consumer User Benefits           * (1)   * 57,820 *
*   Business Benefits                * (2)   * 76,649 *
*   Private Sector Provider Impacts  * (3)   * 0       *
*   Accident Benefits                * (10)  * 6,237  *
*   =====                           *       *
*   Emissions Benefits              * (11)  * -98    *
*   =====                           *       *
* Present Value of Benefits          * (PVB) * (12)   * 140,608 *
*                                     *
*****
*                                     *
* Government Funding                 *       *
* =====                           *       *
*   Present Value of Costs           * (PVC) * (9)    * 113,210 *
*                                     *
*****
* Overall Impact                     *       *
* =====                           *       *
*   Net Present Value                * (NPV) * (12)-(9) * 27,398 *
*   Benefit to Cost Ratio            * (BCR) * (12)/(9) * 1.242  *
*                                     *
*****
* THIS ANALYSIS IS BASED ON  DEFAULT  HIGH TRAFFIC GROWTH *
*                            AND  DEFAULT  HIGH ECONOMIC GROWTH *
*
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002 *
*
* EVALUATION PERIOD 30 YEARS      FIRST SCHEME YEAR 2018      CURRENT YEAR 2004 *
*
* DISCOUNT RATE 4.0 PERCENT     FOR 30 YEARS THEREAFTER 4.0 PERCENT FOR 46 YEARS *
*
* THEREAFTER 4.0 PERCENT
*
*****
*
* NOTE: There may also be other significant costs and benefits, some of which cannot *
*
* be presented in monetised form. Where this is the case, the analysis *
*
* presented above does NOT provide a good measure of value for money and *
*
* should not be used as the sole basis for decisions. *
*
*****
    
```

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH

CONSUMER USER BENEFITS					
=====					
Travel time		54,663	54,663	-	0
Vehicle operating costs		846	846	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	55,509	55,509	-	0

BUSINESS USERS					
=====					
User Benefits					
=====					
Travel Time		72,116	31,166	40,950	0
Vehicle Operating costs		1,347	175	1,172	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	73,463	31,341	42,122	0
Private Sector Provider Impacts					
=====					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
=====					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	73,463	31,341	42,122	0

TOTAL					
Present Value of Transport Economic Efficiency* Benefits	(6)	128,972			

THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH					
AND DEFAULT HIGH ECONOMIC GROWTH					
COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002					
EVALUATION PERIOD	30 YEARS	FIRST SCHEME YEAR	2018	CURRENT YEAR	2004
DISCOUNT RATE	4.0 PERCENT	FOR 30 YEARS THEREAFTER	4.0 PERCENT	FOR 46 YEARS	
THEREAFTER	4.0 PERCENT				

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2

TABLE 15B PUBLIC ACCOUNTS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include Local Government Funding, Central Government Funding, and Present Value of Costs. Includes a section for analysis assumptions: THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

```

*****
*                                     *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF   *
*                                     *
* TEE Benefits                       *       *
* =====                           *       *
*   Consumer User Benefits           * (1)  * 55,509 *
*   Business Benefits                 * (2)  * 73,463 *
*   Private Sector Provider Impacts   * (3)  * 0       *
*   Accident Benefits                 * (10) * 5,951 *
*   =====                           *       *
*   Emissions Benefits               * (11) * -95    *
*   =====                           *       *
* Present Value of Benefits           * (PVB) * (12) * 134,829 *
*                                     *
*                                     *
* Government Funding                 *       *
* =====                           *       *
*   Present Value of Costs           * (PVC) * (9)  * 114,022 *
*                                     *
*                                     *
* Overall Impact                     *       *
* =====                           *       *
*   Net Present Value                 * (NPV) * (12)-(9) * 20,807 *
*   Benefit to Cost Ratio             * (BCR) * (12)/(9) * 1.182 *
*                                     *
* THIS ANALYSIS IS BASED ON          *
*   DEFAULT HIGH TRAFFIC GROWTH      *
* AND   DEFAULT HIGH ECONOMIC GROWTH *
*
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002
*
* EVALUATION PERIOD 30 YEARS          * FIRST SCHEME YEAR 2018          * CURRENT YEAR 2004 *
*
* DISCOUNT RATE 4.0 PERCENT          * FOR 30 YEARS THEREAFTER 4.0 PERCENT * FOR 46 YEARS *
*
* THEREAFTER 4.0 PERCENT
*
*****
*
* NOTE: There may also be other significant costs and benefits, some of which cannot
*
* be presented in monetised form. Where this is the case, the analysis
*
* presented above does NOT provide a good measure of value for money and
*
* should not be used as the sole basis for decisions.
*
*****
    
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Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2A

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH

CONSUMER USER BENEFITS					
=====					
Travel time		54,274	54,274	-	0
Vehicle operating costs		1,849	1,849	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	56,123	56,123	-	0

BUSINESS USERS					
=====					
User Benefits					
=====					
Travel Time		73,819	30,968	42,851	0
Vehicle Operating costs		2,689	382	2,307	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	76,508	31,351	45,157	0
Private Sector Provider Impacts					
=====					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
=====					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	76,508	31,351	45,157	0

TOTAL					
Present Value of Transport Economic Efficiency* Benefits	(6)	132,631			

THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH					
AND DEFAULT HIGH ECONOMIC GROWTH					
COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002					
EVALUATION PERIOD	30 YEARS	FIRST SCHEME YEAR	2018	CURRENT YEAR	2004
DISCOUNT RATE	4.0 PERCENT	FOR 30 YEARS THEREAFTER	4.0 PERCENT	FOR 46 YEARS	
THEREAFTER	4.0 PERCENT				

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2A

TABLE 15B PUBLIC ACCOUNTS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include Local Government Funding, Central Government Funding, and Present Value of Costs. Includes a section for analysis assumptions: THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2A

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include TEE Benefits (Consumer User, Business, Private Sector, Accident, Emissions), Present Value of Benefits (PVB), Government Funding, Present Value of Costs (PVC), Overall Impact, Net Present Value (NPV), and Benefit to Cost Ratio (BCR). Includes a note about analysis assumptions and limitations.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2B

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH

CONSUMER USER BENEFITS					
=====					
Travel time		54,365	54,365	-	0
Vehicle operating costs		1,752	1,752	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	56,117	56,117	-	0

BUSINESS USERS					
=====					
User Benefits					
=====					
Travel Time		73,773	31,018	42,755	0
Vehicle Operating costs		2,563	362	2,201	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	76,337	31,381	44,956	0
Private Sector Provider Impacts					
=====					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
=====					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	76,337	31,381	44,956	0

TOTAL					
Present Value of Transport Economic Efficiency* Benefits	(6)	132,453			

THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH					
AND DEFAULT HIGH ECONOMIC GROWTH					
COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002					
EVALUATION PERIOD	30 YEARS	FIRST SCHEME YEAR	2018	CURRENT YEAR	2004
DISCOUNT RATE	4.0 PERCENT	FOR 30 YEARS THEREAFTER	4.0 PERCENT	FOR 46 YEARS	
THEREAFTER	4.0 PERCENT				

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2B

TABLE 15B P U B L I C A C C O U N T S

```

*****
*                                     * * * * *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF *
*                                     * * * * *
* Local Government Funding           * * * * *
* =====                           * * * * *
*   Operating Costs                  * * * * * 0 *
*   Investment Costs                  * * * * * 0 *
*   Developer and Other Contributions * (7) * * * * * 0 *
*   NET IMPACT                        * * * * * 0 *
*
* Central Government Funding         * * * * *
* =====                           * * * * *
*   Operating Costs                  * * * * * 4,604 *
*   Investment costs                  * * * * * 111,410 *
*   Developer and Other Contributions * * * * * 0 *
*   Indirect Tax Revenues             * * * * * 63 *
*   NET IMPACT                        * (8) * * * * * 116,076 *
*
* Present Value of Costs              (PVC) * (9) * * * * * 116,076 *
*                                     * * * * *
*****
* THIS ANALYSIS IS BASED ON  DEFAULT  HIGH TRAFFIC GROWTH *
* AND  DEFAULT  HIGH ECONOMIC GROWTH *
*
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002 *
*
* EVALUATION PERIOD 30 YEARS  FIRST SCHEME YEAR 2018  CURRENT YEAR 2004 *
*
* DISCOUNT RATE 4.0 PERCENT  FOR 30 YEARS THEREAFTER 4.0 PERCENT FOR 46 YEARS *
*
* THEREAFTER 4.0 PERCENT *
*****
    
```

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 2B

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

```

*****
*                                     *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF   *
*                                     *
* TEE Benefits                       *       *
* =====                           *       *
*   Consumer User Benefits           * (1)  * 56,117 *
*   Business Benefits                 * (2)  * 76,337 *
*   Private Sector Provider Impacts   * (3)  *      0 *
*   Accident Benefits                 * (10) * 5,981 *
*   =====                           *       *
*   Emissions Benefits               * (11) *    240 *
*   =====                           *       *
* Present Value of Benefits           * (PVB) * (12) * 138,675 *
*                                     *
*                                     *
* Government Funding                 *       *
* =====                           *       *
*   Present Value of Costs           * (PVC) * (9)  * 116,076 *
*                                     *
*                                     *
* Overall Impact                     *       *
* =====                           *       *
*   Net Present Value                 * (NPV) * (12)-(9) * 22,598 *
*   Benefit to Cost Ratio             * (BCR) * (12)/(9) * 1.195 *
*                                     *
* THIS ANALYSIS IS BASED ON          *
*   DEFAULT HIGH TRAFFIC GROWTH      *
* AND   DEFAULT HIGH ECONOMIC GROWTH *
*
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002
*
* EVALUATION PERIOD 30 YEARS          * FIRST SCHEME YEAR 2018          * CURRENT YEAR 2004 *
*
* DISCOUNT RATE 4.0 PERCENT          * FOR 30 YEARS THEREAFTER 4.0 PERCENT * FOR 46 YEARS *
*
* THEREAFTER 4.0 PERCENT
*
*****
*
* NOTE: There may also be other significant costs and benefits, some of which cannot
*
* be presented in monetised form. Where this is the case, the analysis
*
* presented above does NOT provide a good measure of value for money and
*
* should not be used as the sole basis for decisions.
*
*****
    
```

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 4

TABLE 15A ECONOMIC EFFICIENCY OF THE ROAD SYSTEM IN MARKET PRICES

IMPACT	TABLE REF	TOTAL	CARS AND PRIVATE LGVs	GOODS VEHICLES AND BUSINESS LGVs	BUS AND COACH

CONSUMER USER BENEFITS					
=====					
Travel time		36,733	36,733	-	0
Vehicle operating costs		-1,959	-1,959	-	-
Travel time and vehicle operating costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
NET CONSUMER USER BENEFITS	(1)	34,774	34,774	-	0

BUSINESS USERS					
=====					
User Benefits					
=====					
Travel Time		43,264	20,954	22,310	0
Vehicle Operating costs		-2,454	-405	-2,049	-
Travel Time and Vehicle Operating Costs:					
During construction		0	-	-	-
During maintenance		0	-	-	-
Subtotal	(2)	40,810	20,549	20,261	0
Private Sector Provider Impacts					
=====					
Operating Costs	(3)	0	-	-	0
Other Business Impacts					
=====					
Developer and other contributions	(4)	0			
NET BUSINESS IMPACT	(5)	40,810	20,549	20,261	0

TOTAL					
Present Value of Transport Economic Efficiency* Benefits	(6)	75,584			

THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH					
AND DEFAULT HIGH ECONOMIC GROWTH					
COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002					
EVALUATION PERIOD	30 YEARS	FIRST SCHEME YEAR	2018	CURRENT YEAR	2004
DISCOUNT RATE	4.0 PERCENT	FOR 30 YEARS THEREAFTER	4.0 PERCENT	FOR 46 YEARS	
THEREAFTER	4.0 PERCENT				

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 4

TABLE 15B PUBLIC ACCOUNTS

Table with columns for IMPACT, TABLE REF, and TOTALS. Rows include Local Government Funding, Central Government Funding, and Present Value of Costs. Includes a section for analysis assumptions: THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH AND DEFAULT HIGH ECONOMIC GROWTH.

Scramoge to Ballaghaderreen (RN06450)
Route Corridor Option 4

TABLE 15C ANALYSIS OF MONETISED COSTS AND BENEFITS

```

*****
*                                     *
* IMPACT                             * TABLE * TOTALS *
*                                     * REF *
*                                     *
* TEE Benefits                       *      *
* =====                           *      *
*   Consumer User Benefits           * (1) * 34,774 *
*   Business Benefits                * (2) * 40,810 *
*   Private Sector Provider Impacts  * (3) * 0 *
*   Accident Benefits                * (10) * 1,560 *
*   =====                           *      *
*   Emissions Benefits              * (11) * -974 *
*   =====                           *      *
* Present Value of Benefits          (PVB) * (12) * 76,169 *
*                                     *
*****
*                                     *
* Government Funding                 *      *
* =====                           *      *
*   Present Value of Costs           (PVC) * (9) * 119,534 *
*                                     *
*****
*                                     *
* Overall Impact                     *      *
* =====                           *      *
*   Net Present Value                (NPV) * (12)-(9) * -43,364 *
*   Benefit to Cost Ratio            (BCR) * (12)/(9) * 0.637 *
*                                     *
*****
* THIS ANALYSIS IS BASED ON DEFAULT HIGH TRAFFIC GROWTH *
* AND DEFAULT HIGH ECONOMIC GROWTH *
* COSTS IN 2002 PRICES IN MULTIPLES OF A THOUSAND EUROS, AND DISCOUNTED TO 2002 *
* EVALUATION PERIOD 30 YEARS FIRST SCHEME YEAR 2018 CURRENT YEAR 2004 *
* DISCOUNT RATE 4.0 PERCENT FOR 30 YEARS THEREAFTER 4.0 PERCENT FOR 46 YEARS *
* THEREAFTER 4.0 PERCENT *
*****
*
* NOTE: There may also be other significant costs and benefits, some of which cannot *
* be presented in monetised form. Where this is the case, the analysis *
* presented above does NOT provide a good measure of value for money and *
* should not be used as the sole basis for decisions. *
*****

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Appendix 4 COBA Schematic Network Diagrams

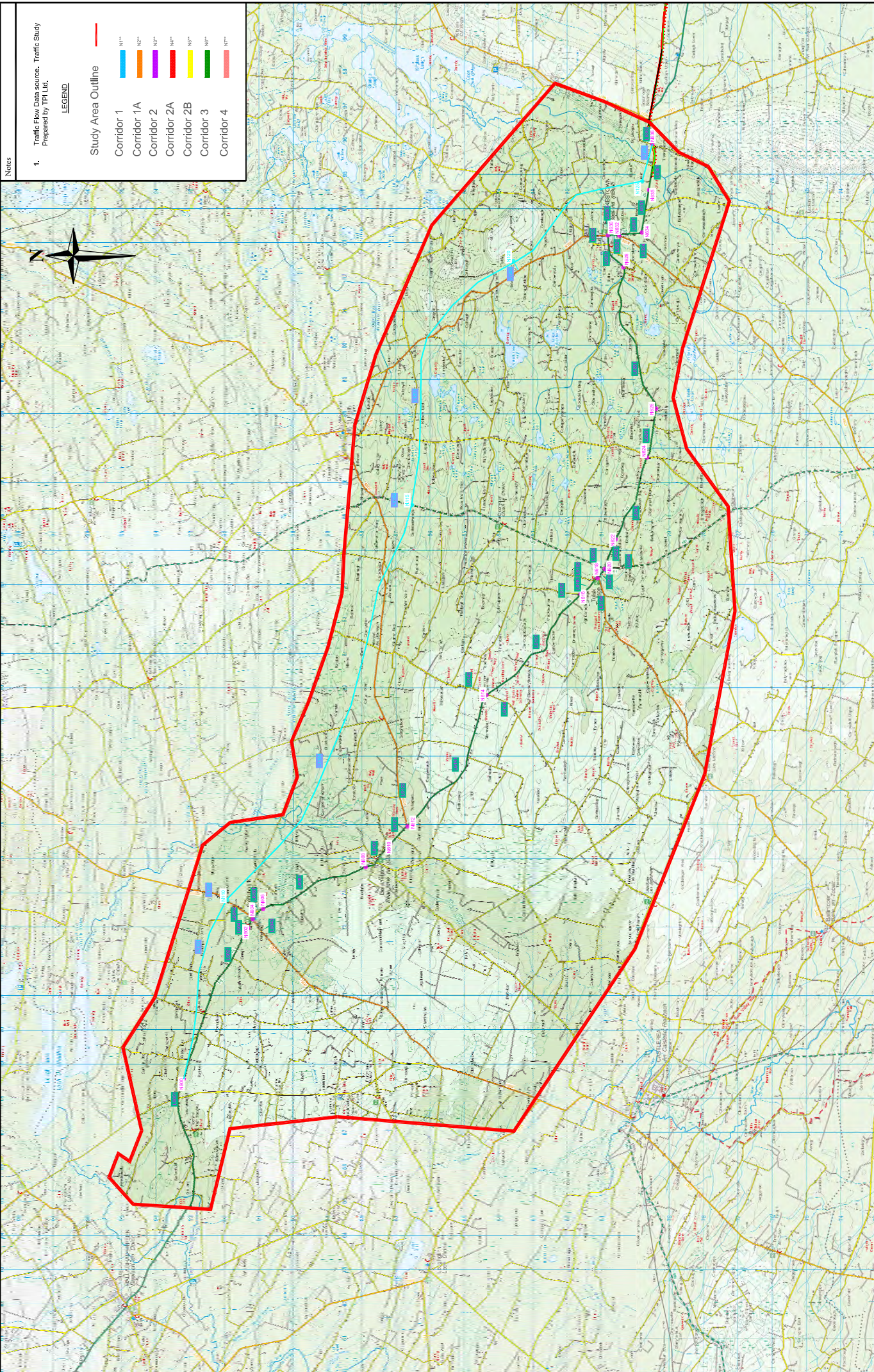
Notes

1. Traffic Flow Data source, Traffic Study Prepared by TPI Ltd.

LEGEND


Study Area Outline

- Corridor 1
- Corridor 1A
- Corridor 2
- Corridor 2A
- Corridor 2B
- Corridor 3
- Corridor 4




NATIONAL ROADS DESIGN OFFICE ROSCOMMON
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NRA
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Project No. & Desc: RN04250 N5 Strategic Corridor-Route Selection Report

Drawing Title: Economic Assessment - COBA Network - Option 1

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Drawn: Mark Mahoney

Scale: 1:10000

Scale V: 1:10000

Scale H: 1:10000

Legend: 1 of 7

Date: December 2022

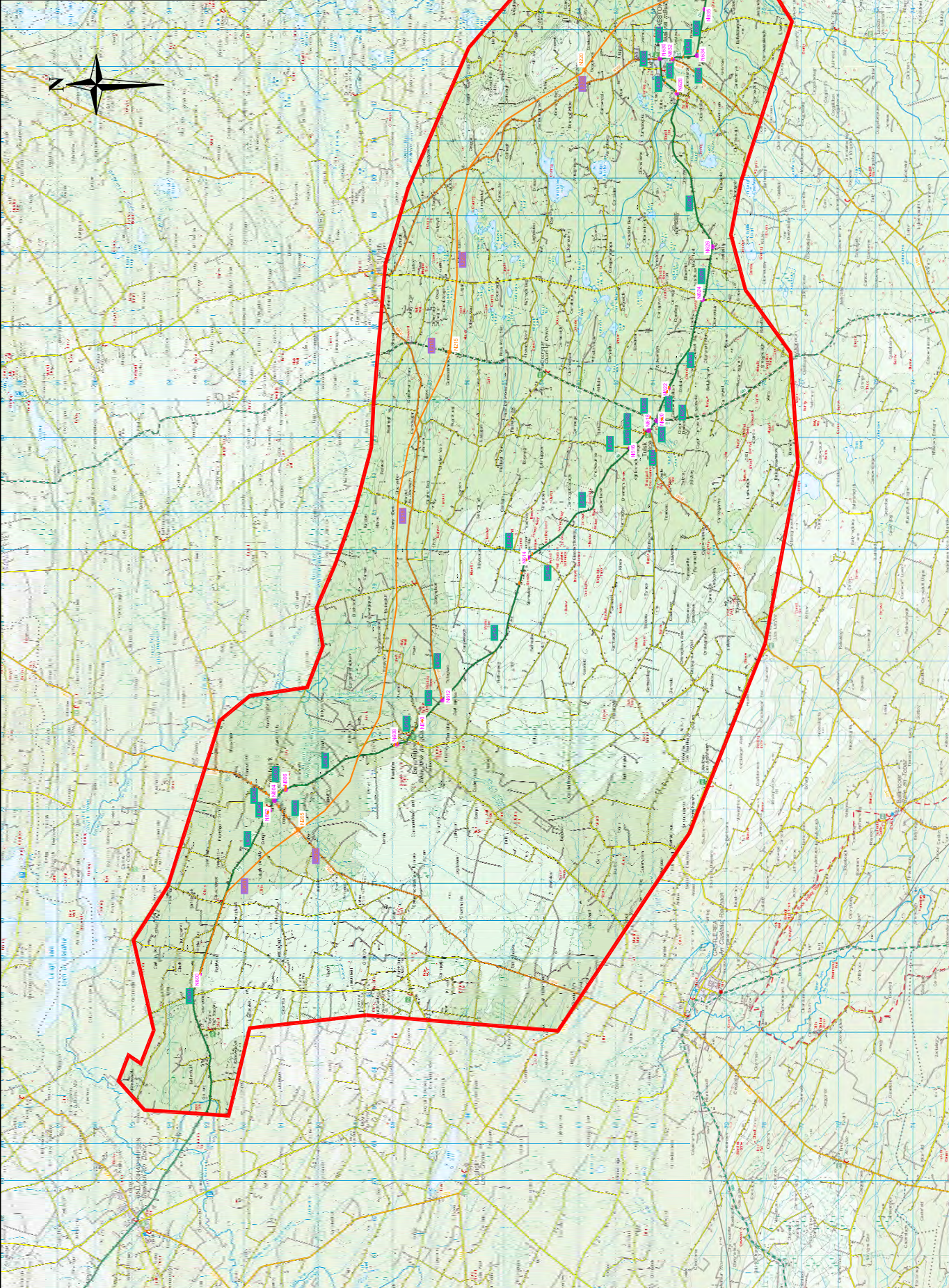
NOTES

1. Traffic Flow Data source = Traffic Study Prepared by TPI Ltd.

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Study Area Outline

- Corridor 1
- Corridor 1A
- Corridor 2
- Corridor 2A
- Corridor 2B
- Corridor 3
- Corridor 4



Project No. & Desc: RN04250 N5 Strategic Corridor-Route Selection Report

Drawing Title: Economic Assessment - COBA Network - Option 1A

File Author: R04250-12-388 Legend 2 of 7

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NDDP
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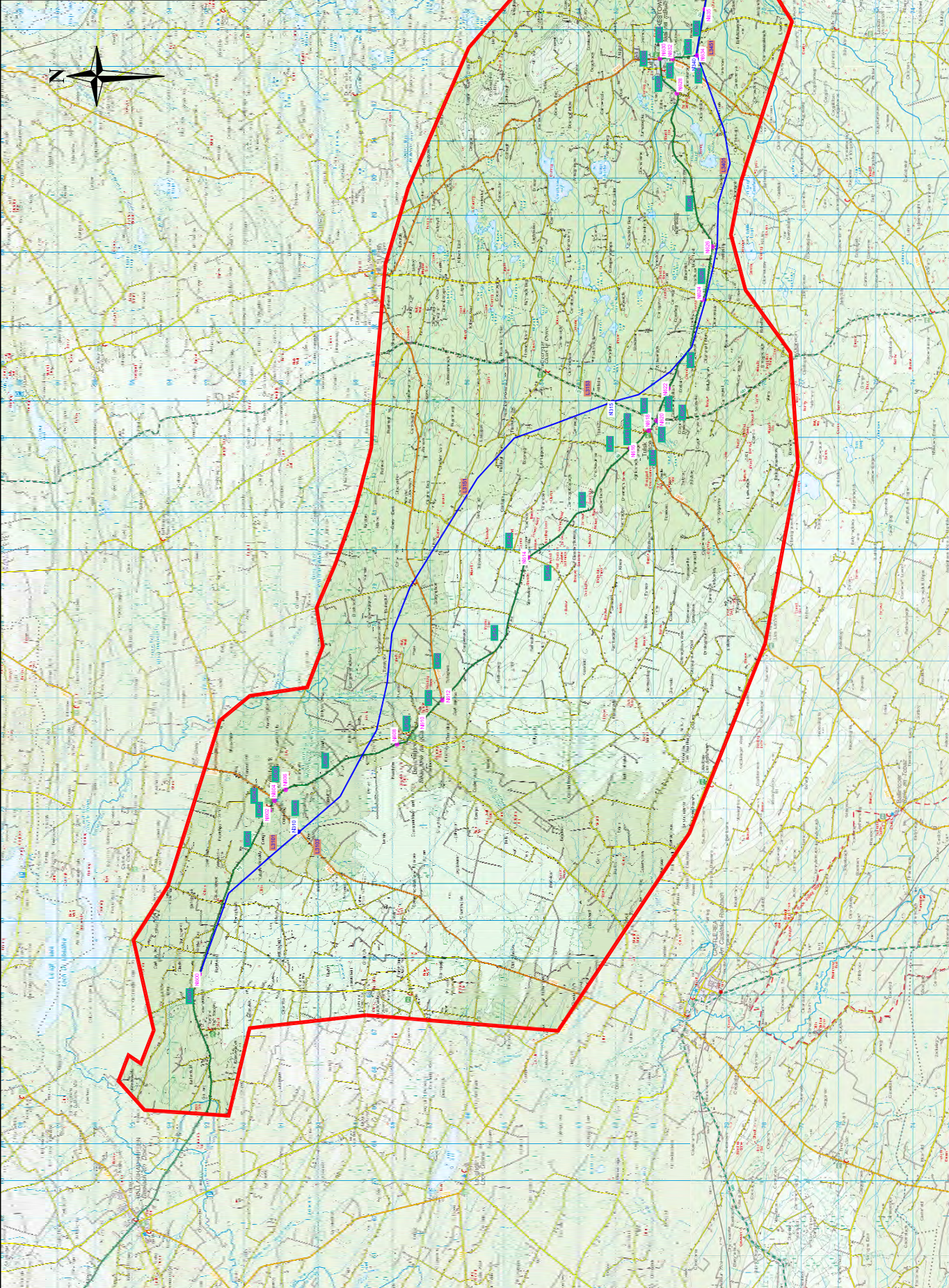
NOTES

1. Traffic Flow Data source = Traffic Study Prepared by TPI Ltd.

LEGEND

Study Area Outline

- Corridor 1
- Corridor 1A
- Corridor 2
- Corridor 2A
- Corridor 2B
- Corridor 3
- Corridor 4



Project No. & Desc: RN04250 N5 Strategic Corridor-Route Selection Report

Drawing Title: Economic Assessment - COBA Network - Option 2

File Folder: R04250-12-388

Drawn: Mark Mahony

Scale V: 1:10000


Date: December 2022

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Micella Hunt
Director of Services




NATIONAL ROADS DESIGN OFFICE ROSCOMMON


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Martin Curry, B.E., C.Eng.
Senior Engineer

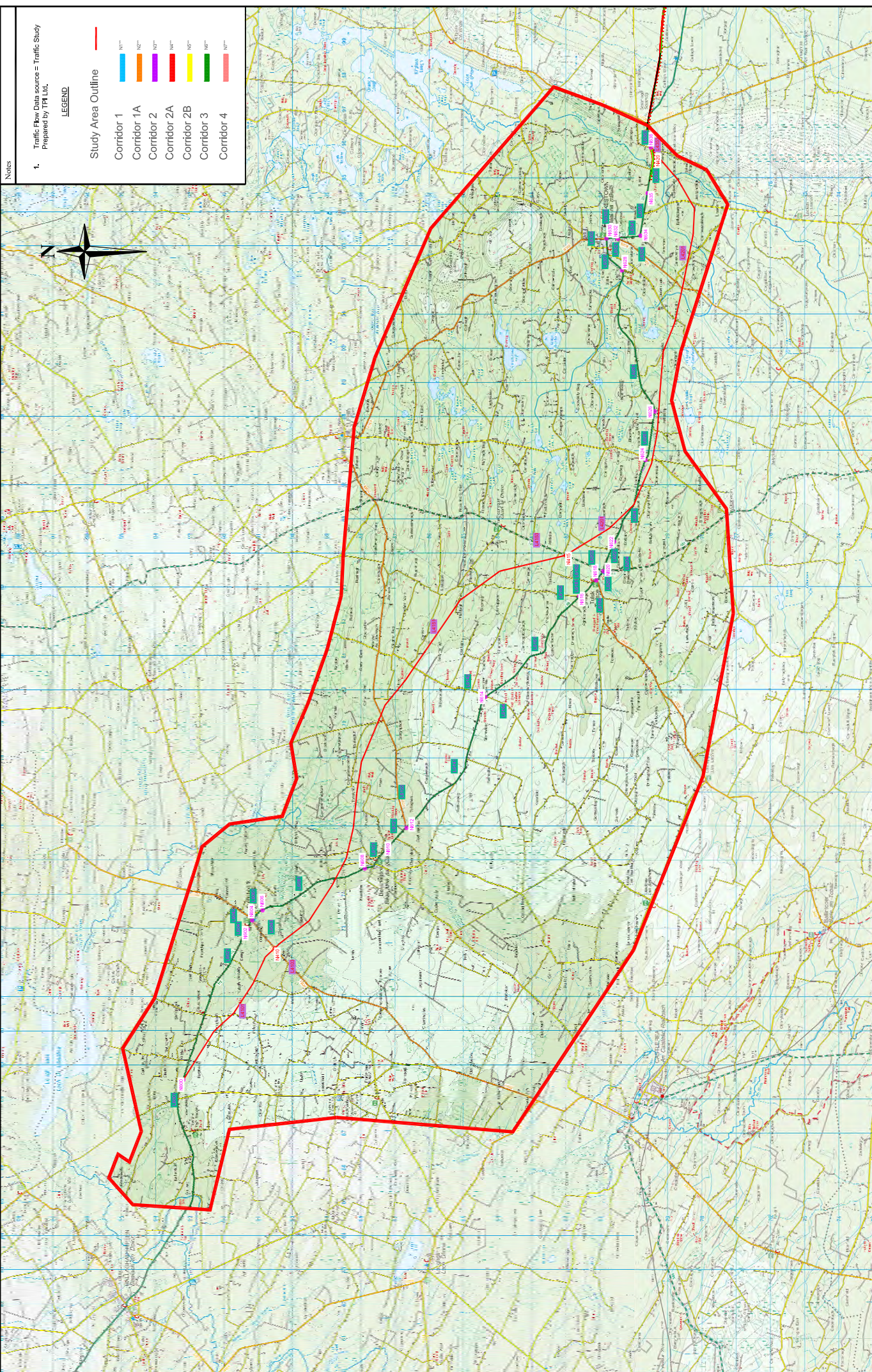




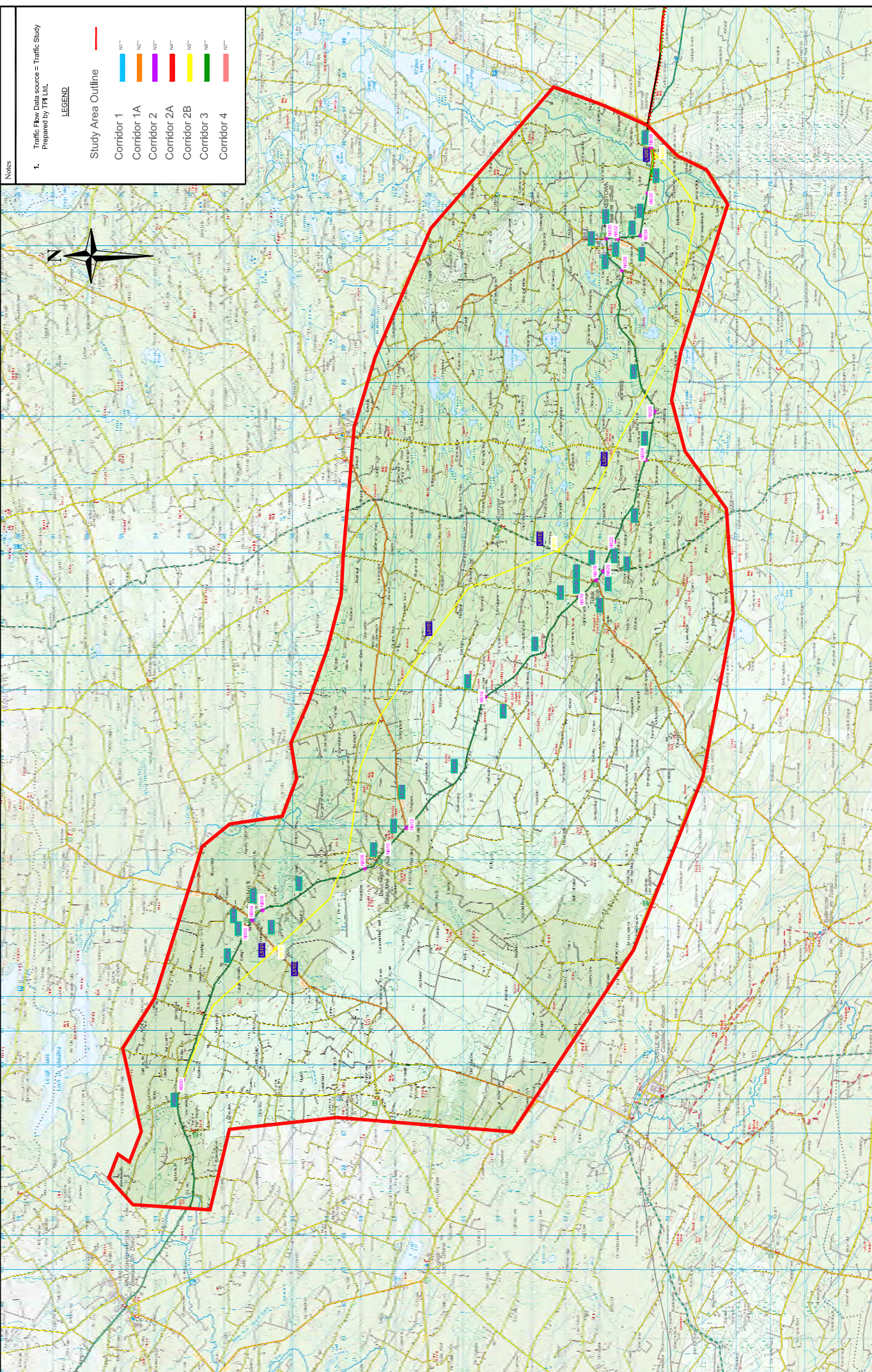
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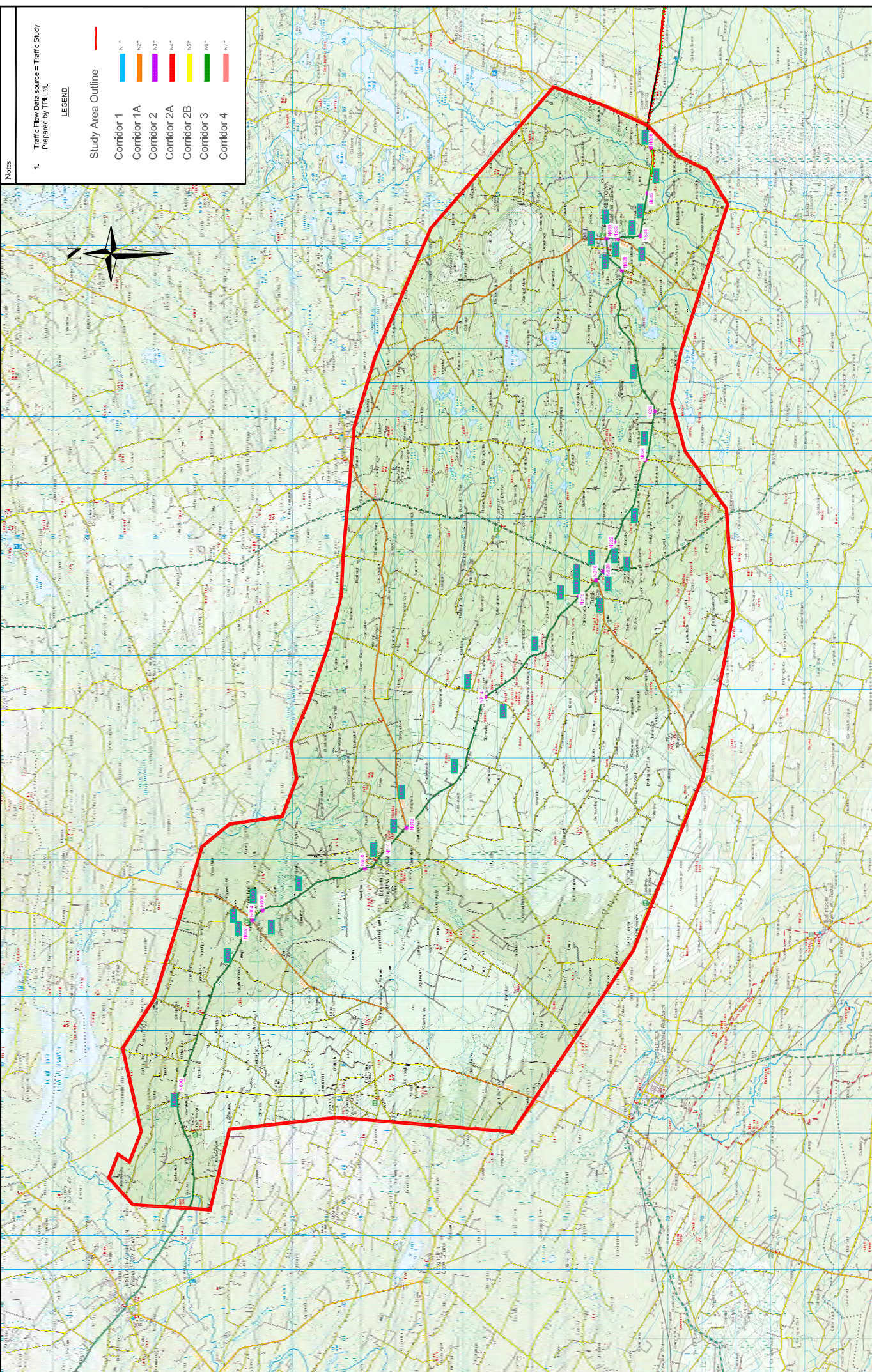
1. Traffic Flow Data source = Traffic Study Prepared by TPI Ltd.

LEGEND

Study Area Outline

- Corridor 1
- Corridor 1A
- Corridor 2
- Corridor 2A
- Corridor 2B
- Corridor 3
- Corridor 4

<p>NATIONAL ROADS DESIGN OFFICE ROSCOMMON Roscommon Rd. Roscommon. Phone: 090-6627004 Martin Curry, B.E. CEng. Senior Engineer.</p> 		<p>Checked</p>	<p>Approved</p>	<p>Date</p>
<p>ROSCOMMON COUNTY COUNCIL Courthouse, Roscommon, Phone: 090-6637100 Mícheál Hurst Director of Services</p> 				
<p>NRA National Roads Authority An tUdards um Bóithre Náisiúnta</p> 				
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<p>Project No. & Desc: RN04250 N5 Strategic Corridor-Route Selection Report</p>				
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<p>File Folder: RN04250-12-388 Legend</p>				
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1. Traffic Flow Data source = Traffic Study Prepared by TPI Ltd.

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Study Area Outline

- Corridor 1
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Drawn: Scale 1"		Date: December 2017																
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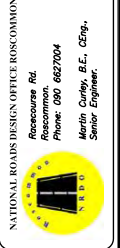
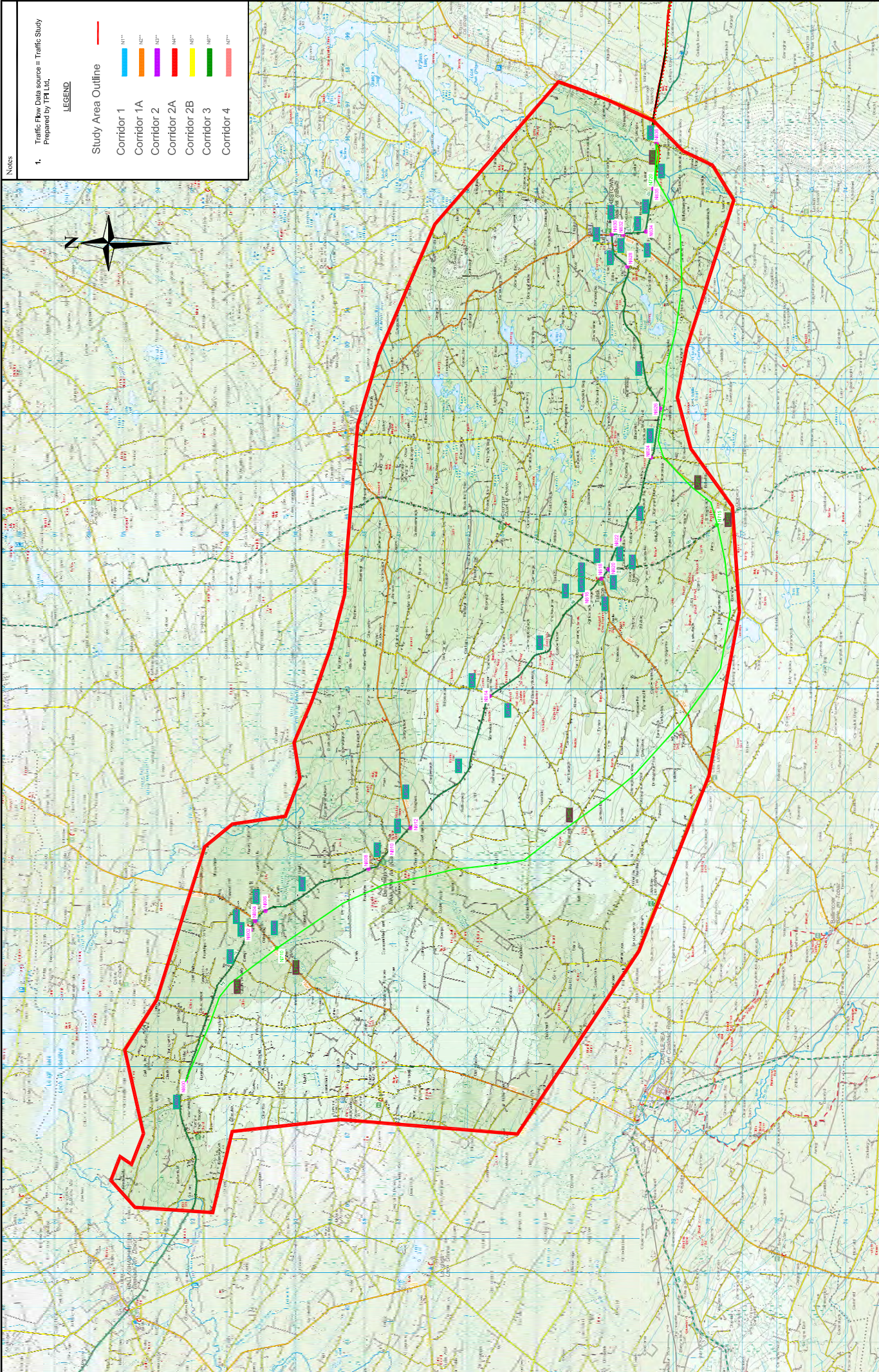
NOTES

- 1. Traffic Flow Data source = Traffic Study Prepared by TPI Ltd.

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Study Area Outline

- Corridor 1
- Corridor 1A
- Corridor 2
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- Corridor 2B
- Corridor 3
- Corridor 4



Item Description	Checked	Approved	Date

Project No. & Desc: **RN04250** N5 Strategic Corridor-Route Selection Report
 Drawing Title: **Economic Assessment - COBA Network - Option 4**
 File Author: **RN04250-12-389** Legend: **7 of 7**
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