

**Transport Scotland
A77(T) Route Study – Maybole to Stranraer
High Level Traffic & Economic Assessment of Scheme Improvements**

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1 INTRODUCTION

1.1 Background

As part of its LATIS Lot 4 Traffic and Transportation Advisor and Auditor (TTAA) commission, SIAS Limited (SIAS) was requested by Transport Scotland's (TS) Major Transport Infrastructure Projects (MTRIPS) Planning & Design directorate in November 2011 to develop an S-Paramics model of the A77(T) between Maybole and Stranraer.

Separate microsimulation models of the A77(T) had been developed previously to assess the various route improvements. The road network descriptions from each model were joined together into a single network, and took cognisance of the various route improvements constructed in the intervening years.

The development of the conjoined model was reported in SIAS's report *A77(T) Route Strategy Model Development Report (SIAS Ref. 74524, July 2012)*.

Following a traffic survey exercise in 2012, SIAS was requested by TS to update the existing Base model with additional traffic data collected to infill potential movements in and around Girvan along with up-to-date movements at the ferry ports at Cairnryan and Old House Point.

The data collected was reported on in the *A77(T) Girvan Survey Report Summer 2012 (SIAS Ref. 74918, November 2012)*. The Base model update was reported on in the *A77(T) Route Strategy Model Update Note (SIAS Ref. 75075, March 2012)*

1.2 Purpose of Note

SIAS was commissioned by TS in March 2013 to carry out a high level refresh of the traffic and economic assessments supporting three of the road improvements currently in the MTRIPS Trunk and Motorway Road programme:

- Burnside (800m Southbound, 600m Northbound alternating WS2+1)
- Ardwell to Slockenray (1100m Northbound WS2+1)
- Drummuckloch to Innermessan (1500m Southbound WS2+1)

This Note outlines each scheme and presents the results of the updated high level traffic and economic assessment.

2 PROPOSED SCHEMES

2.1 Burnside

The proposed scheme for Burnside comprises an alternating wide single 2+1 improvement, north of Girvan on the A77(T); an 800m Southbound section and a 600m Northbound section. The location of the proposed scheme is highlighted in Figure 2.1.

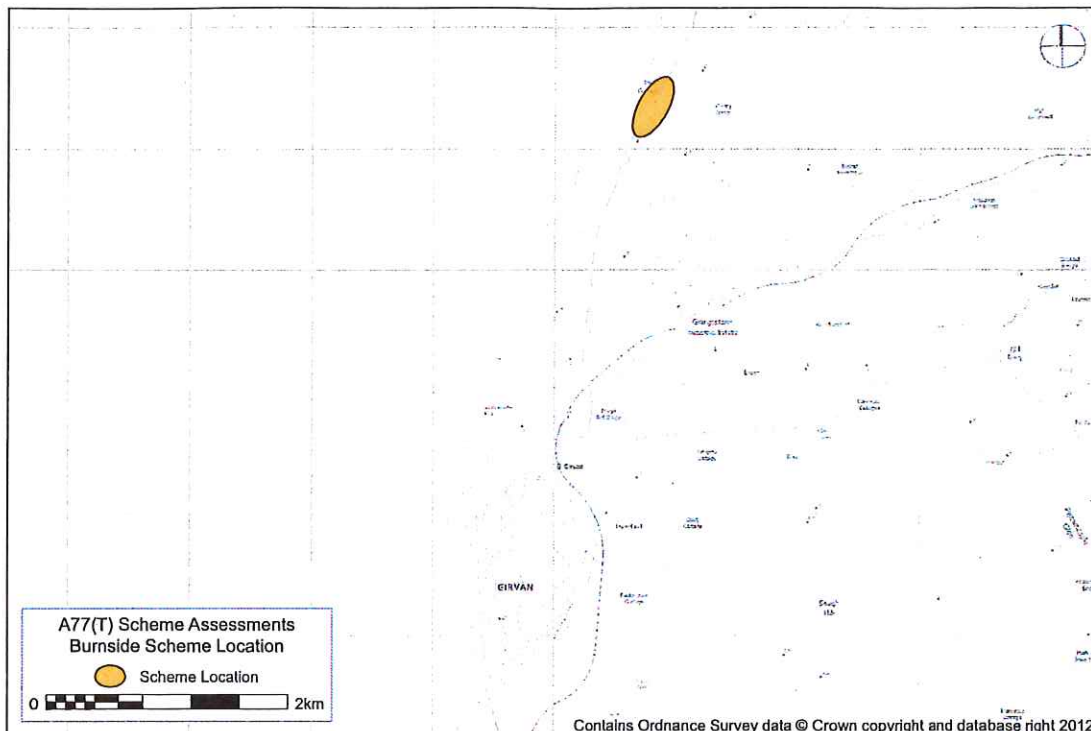


Figure 2.1 : A77(T) Burnside Scheme Location

The scheme was assessed by consultants AMEY in 2010. The assessment indicated that the scheme would return a Net Present Value (NPV) of £8.66M and Benefit Cost Ratio (BCR) of 3.10.

An audit carried out by SIAS identified a couple of potential issues with the assessment. Subsequent revision to the underlying parameter values, couple with minor trip matrix corrections, resulted in the scheme returning a NPV of £0.92M and BCR of -0.67, indicating that the scheme could not be justified in economic terms alone.



2.2 Ardwell

The proposed scheme comprises a 1,100m Northbound WS2+1 section between Ardwell and Slockenray on the A77(T). The location of the proposed scheme is highlighted in Figure 2.2.

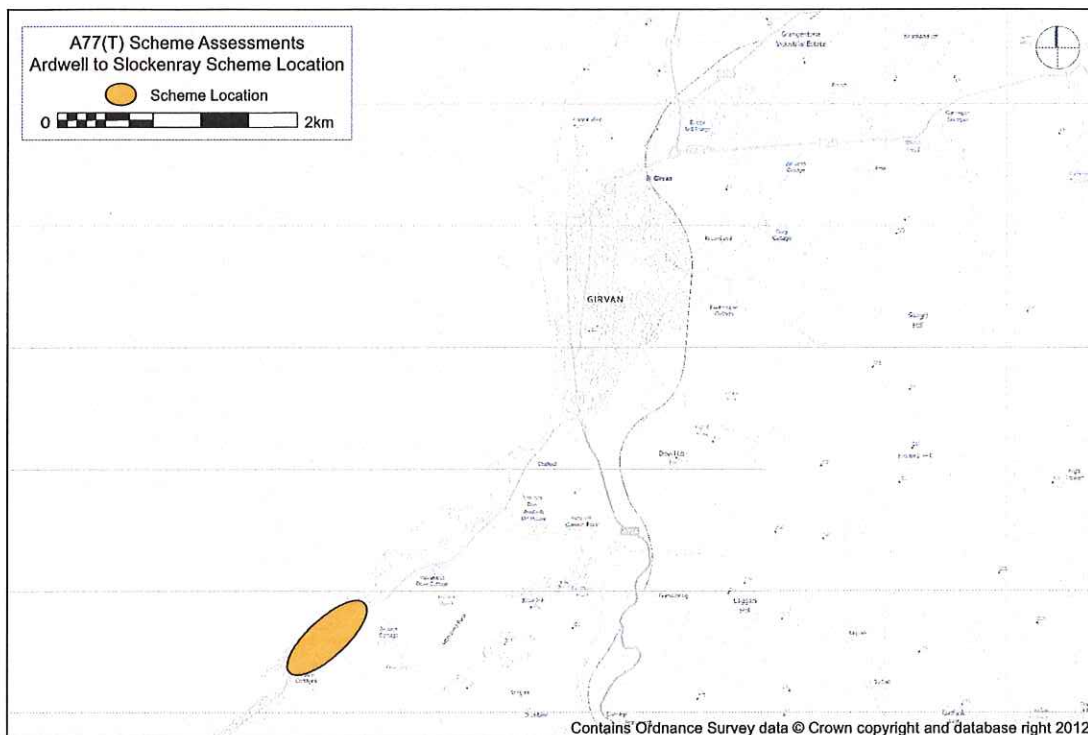


Figure 2.2 : A77(T) Ardwell to Slockenray Scheme Location

A Stage 2 traffic and economic assessment was carried out by SIAS in 2010. The assessment indicated that the scheme would return a Net Present Value (NPV) of £1.32M and Benefit Cost Ratio (BCR) of 1.41. The results of the assessment were reported in *A77(T) Girvan to Stranraer – Ardwell to Slockenray Improvement – Stage 2 Traffic and Economic Assessment (SIAS Ref. 72703, May 2010)*.



2.3 Innermessan

The proposed scheme comprises a 1500m Southbound 2+1 section between Drummuckloch and Innermessan on the A77(T). The location of the proposed scheme is highlighted in Figure 2.3.

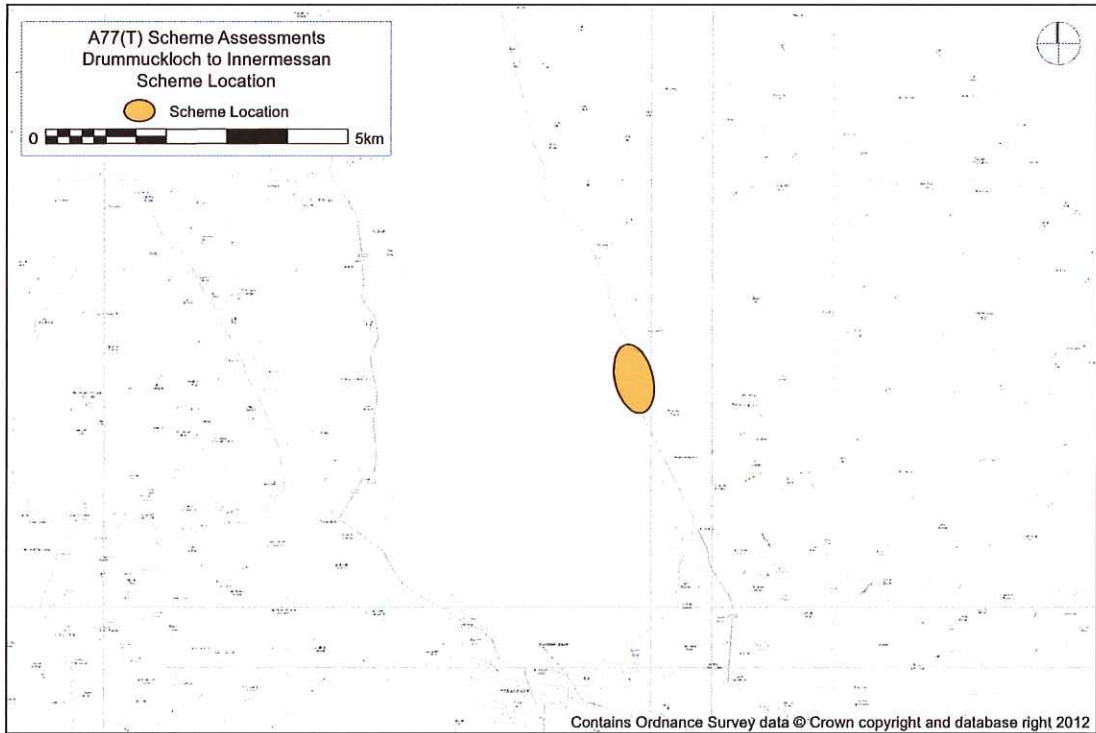


Figure 2.3 : A77(T) Drummuckloch to Innermessan Scheme Location

A Stage 2 traffic and economic assessment was carried out by SIAS in 2010. The assessment indicated that the scheme would return a Net Present Value (NPV) of £1.12M and Benefit Cost Ratio (BCR) of 0.77. The results of the assessment were reported in *A77(T) Girvan to Stranraer – Drummuckloch to Innermessan Improvement – Stage 3 Traffic and Economic Assessment (SIAS Ref. 72622, March 2010)*.



3 TRAFFIC MODEL UPDATES

3.1 Road Network Description

The road network description was retained throughout all future year Do-Something networks.

3.2 Trip Matrices

Following the Base model update, as reported in *A77(T) Route Strategy Model Update Note (SIAS Ref. 75075, March 2012,)*, two changes were applied to the microsimulation model for the purposes of the economic assessments. These were:

- The removal of incidents from the model
- The removal of tractors from the demand matrices

Incidents, which were coded within the Maybole area of the network, were removed from the model to prevent 'background noise' in the simulation, particularly in the future year assessments.

Tractors were included as a specific vehicle type in the Base model and constituted approximately 90 trips over a 24hr period. Although appropriate for the Base model, these trips were removed from the runs used in the economic assessments to prevent the unrealistic 'vehicle platoons' developing in the future year scenarios. In reality, these vehicle types pull aside to let other traffic pass.

No other changes were made to the Base traffic model.

3.3 Future Year Trip Matrices

For the purposes of the assessment, an Opening Year of 2017 was assumed. Traffic was then further growthed forward to 2027 and 2031 using NRTF medium forecasts for Car, LGV and HGV vehicle types.

A global uplift of trips within the network was not deemed appropriate for the purposes of this study and only trips to and from the A77, the A75 and both ferry ports (Cairnryan and Old House Point) were included. It would have been, for instance, unrealistic to growth internal-internal trips in Maybole and create 'noise' in the network that is unlikely to occur in reality.

The level of growth applied using medium NRTF forecasts was as follows.

- 2012 – 2017 (6.9% Cars & LGV; 9.1% HGV)
- 2012 – 2027 (16.9% Cars & LGV; 29.6% HGV)
- 2012 – 2031 (20.6% Cars & LGV; 38.5% HGV)



4 ECONOMIC ASSESSMENT

4.1 Introduction

The economic assessments, which take the form of a cost benefit analysis, have been carried out in accordance with the guidance laid down in *STAG (Scottish Transport Appraisal Guidance)* and DfT's *Transport Appraisal Guidance (TAG Unit 3.5.6)*.

All benefits and costs were estimated over a 60 year period and rebased to 2002 prices and values using specified discount rates.

The economic assessment for each scheme was undertaken using the Program for Economic Assessment of Road Schemes (PEARS).

The economic returns are presented in the form of a Net Present Value (NPV) and Benefit Cost ratio (BCR), and are based on the overall costs (scheme costs and maintenance costs) and benefits (travel time, vehicle operating cost and accident savings) of the scheme.

The economic assessments have been undertaken from an average of ten runs for each model to account for variation between individual simulations and provide confidence in the results.

4.2 Accident Only NESAs Assessment

DMRB Vol.15 (Part 6) states that “the preferred method of evaluating accidents is to separate link and junction accidents, using local data (minimum of five years) to define Do-Minimum rates and default rates for new links and junctions in the Do-Something” (*DMRB 15.1.6.5*). It also recommends that default accident costs should be used in both the Do-Minimum and Do-Something.

Local area accident-only NESAs models were developed as part of the individual scheme assessments in 2009/10.

In each case, the Future Year Do-Minimum and Do-Something network descriptions were derived using measurements taken from a combination of the S-Paramics models and scheme drawings provided by Transport Scotland. These were used to establish geometric variables such as link lengths, road widths and junction configurations.

In each case, default accident rates and costs were adopted with the NESAs model configured to separate link and junction accidents.

The respective NESAs assessments for each scheme were updated to reflect a 2017 opening year and the results fed back into the scheme TEE tables in 2002 prices and values.

4.3 Maintenance Savings

Delays during construction and both Group 1 and Group 2 maintenance cost savings have been considered for each scheme as part of the assessment.

Delays during construction, calculated using the DfT's computer programme QUADRO (Queues and Delays at Road Works), arise from the impact to traffic as a result of any temporary traffic management or restrictions during the construction programme.



Group 1 costs consider the following items: drainage, street lighting footway/cycle tracks, safety fence/barrier, boundary fences, bridges/culverts/subways, remedial earthworks, verge maintenance, sweeping, gully emptying, signals/signs/crossings, road markings, salt/snow-plough/fencing and motorway compounds. Group 1 costs are calculated in NESAs.

Group 2 maintenance cost savings arise through potential savings in life cycle maintenance, such as savings in capital cost of maintenance and delays to users. Groups 2 cost savings are calculated using QUADRO.

The respective QUADRO assessments for each scheme were updated to reflect a 2017 opening year and the results fed back into the scheme TEE tables in 2002 prices and values.

4.4 Optimism Bias

An important consideration in the assessment process is that of Optimism Bias; the term used to reflect a tendency for the true capital cost, operational cost or works duration of schemes in the public sector to be underestimated, thereby overestimating the benefits of a scheme.

There is a need, particularly at the initial stages of the assessment, to estimate costs prudently. To this end, the appraisal process includes the requirement to apply an uplift in capital costs of the works and extensions to the project programme.

At the request of TS, an Optimism Bias of 25% was adopted for the purposes of this study.

4.5 Economic Assessment

The costs benefit analysis for each proposed scheme was carried out using the results of the traffic assignments for the anticipated opening year of 2017 and future years 2027 and 2031. This assumes that benefits due to additional growth beyond 2031 are not taken into account in order to provide a more conservative assessment.

The scheme costs for each option evaluated were provided by TS in an email in January 2013 and are:

- Ardwell £ 7.0m (£8.75m including Optimism Bias)
- Burnside £15.0m (£18.75m including Optimism Bias)
- Innermessan £ 9.5m (£11.87m including Optimism Bias)

The results of the following standard economic measures are summarised in Table 4.1.

- Present value of Costs (PVC)
The overall value of costs to the provider (including indirect tax revenues and the optimism bias applied to the scheme cost estimate)
- Present Value of Benefits (PVB)
The overall value of costs to users (in terms of travel time and vehicle operating cost benefits)
- Net Present Value (NPV)
The arithmetic difference between the Present Value of Benefits and the Present Value of Costs (PVB-PVC)
- Benefit Cost Ratio
The ratio of the benefits to the costs (PVB/PVC)



Table 4.1 : Economic Assessments Summary

(£M)	Burnside	Ardwell	Innermessan
Present Value of Costs (PVC)	7.01	3.86	5.18
Present Value of Benefits (PVB)	4.94	3.10	0.97
Net Present Value (NPV)	-2.07	-0.76	-4.21
Benefits/Cost Ratioe (BCR)	0.70	0.80	0.19

Note:

Evaluation period: 60 years

First Scheme Year: 2017

Current Year: 2012

Costs are in year 2002 prices in million pounds and are discounted to 2002

Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%



5 SUMMARY & CONCLUSIONS

5.1 Summary

As part of its TTAA role with Transport Scotland, SIAS was retained to carry out a high level refresh of earlier traffic and economic assessments in support of three (separate) road improvements in the A77 between Stranraer and Maybole. The refresh was undertaken on behalf of MTRIPS Planning and Design directorate of Transport Scotland.

The assessment was carried out using a strategic route model of the A77 developed in S-Paramics microsimulation, updated to include data derived from traffic count information collected during the course of 2012.

Scheme drawings were used to code separate future year scenario models for each scheme, with the scheme cost estimates provided by Transport Scotland, again based on earlier (separate) assessments.

5.2 Conclusions

The results of the Burnside assessment indicate that over a 60 year appraisal period the scheme is predicted to return a negative NPV of -£2.07M and a BCR of 0.70.

The results of the Ardwell to Slockenray assessment for the same appraisal period indicate that the scheme is predicted to return a negative NPV of -£0.76M and a BCR of 0.80.

The Drummuckloch to Innermessan assessment indicated that over a 60 year appraisal period the scheme is predicted to return a negative NPV of -£4.21M and a BCR of 0.19.

In all three cases, the schemes cannot be justified on economic grounds alone.



A APPENDIX A – BURNSIDE IMPROVEMENT

Table A.1 : Economic Efficiency of the Transport System (in Market Prices)

IMPACT	Ref.	Total	Cars	LGVs	OGVs	Bus & Coach
Non-Business User Benefits						
Travel Time						
Commuting Travel Time	1	0.23	0.22	0.01		0.00
Other Travel Time	2	0.84	0.82	0.02		0.00
<i>Non-business Travel Time</i>	3	1.07				
Vehicle Operating Costs						
Commuter Fuel VOC	4	0.02	0.02	0.00		
Commuter Non-fuel VOC	5	0.01	0.01	0.00		
Other Fuel VOC	6	0.06	0.06	0.00		
Other Non-fuel VOC	7	0.03	0.03	0.00		
<i>Non-business Vehicle Operating Costs</i>	8	0.12				
During Construction and Maintenance						
Commuting: During Const. & Maint.	9	-0.21	-0.21	0.00	0.00	0.00
Other: During Const. & Maint.	10	0.11	0.11	0.00	0.00	0.00
Net Non-Business Benefits:						
<i>Commuting</i>	11	0.05				
<i>Other</i>	12	1.04				
<i>Total</i>	13	1.09				
Business User Benefits						
User Benefits						
Business Travel Time	14	1.15	0.70	0.41	0.04	0.00
Fuel VOC	15	0.04	0.01	-0.03	0.06	
Non Fuel VOC	16	0.07	0.03	0.00	0.04	
Business Vehicle Operating Costs	17	0.11				
During Construction & Maintenance						
During Construction	18	-0.17	-0.12	-0.05	0.00	0.00
During Maintenance	19	0.09	0.06	0.03	0.00	0.00
During Construction and Maintenance	20	-0.08				
<i>Net Business User Benefits</i>	21	1.18				
Private Sector Provider Impacts						
Revenue*	22	0.00				
Fuel VOC	23	0.00				0.00
Non Fuel VOC	24	0.00				0.00
Private Sector Vehicle Operating Costs	25	0.00				
Investment Costs*	26	0.00				
Grant / Subsidy*	27	0.00				
<i>Net Private Sector Provider Impacts</i>	28	0.00				
Other Business Impacts						
Developer & Other Contributions	29	0.00				
Net Business Impact						
<i>Total</i>	30	1.18				
Total Present Value of TEE Impacts						
	31	2.27				
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002. Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>						

Table A.2 : Public Accounts (in Market Prices)

IMPACT	Ref.	Total
Local Government Funding		
Revenue	32	
Investment Costs	33	
Operating Costs	34	
Maintenance Costs		
Non-Traffic (Group 1)	35	
Traffic Related (Group 2)	36	
Developer & Other Contributions	37	
Grant Subsidy Payment	38	
Net Impact	39	0.00
Central Government Funding; Transport		
Revenue	40	0
Investment Costs	41	9.78
Operating Costs	42	0
Maintenance Costs		
Non-Traffic (Group 1)	43	0.01
Traffic Related (Group 2)	44	-2.78
Developer & Other Contributions	45	0
Grant Subsidy Payment	46	0
Net Impact	47	7.01
Central Government Funding; Non-Transport		
Indirect Tax Revenues	48	0.07
Totals		
Broad Transport Budget	49	7.01
Wider Public Finances	50	0.07
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		



Table A.3 : Costs, Benefits & Economic Returns (in Market Prices)

IMPACT	Ref.	Total (inc June Acc)
TEE Impacts		
Noise	51	
Local Air Quality	52	
Greenhouse Gases (Emissions)	53	0.04
Journey Ambience	54	
Accident Benefits	55	2.70
Non-Business User Benefits: Commuting	56	0.05
Non-Business User Benefits: Other	57	1.04
Business User & Provider Impacts	58	1.18
Wider Public Finance (Indirect Tax Revenues)	59	-0.07
Option Values	60	
Present Value of Benefits (PVB)	61	4.94
Broad Transport Budget	62	7.01
Present Value of Costs (PVC)	63	7.01
Overall Impacts		
Net Present Value (NPV)	64	-2.07
Benefit Cost Ratio (BCR)	65	0.70
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		



B APPENDIX B – ARDWELL WS2+1 OVERTAKING LANE

Table B.1 : Economic Efficiency of the Transport System (in Market Prices)

IMPACT	Ref.	Total	Cars	LGVs	OGVs	Bus & Coach
Non-Business User Benefits						
Travel Time						
Commuting Travel Time	1	0.22	0.21	0.01		0.00
Other Travel Time	2	0.80	0.78	0.02		0.00
<i>Non-business Travel Time</i>	3	1.02				
Vehicle Operating Costs						
Commuter Fuel VOC	4	0.02	0.02	0.00		
Commuter Non-fuel VOC	5	0.01	0.01	0.00		
Other Fuel VOC	6	0.03	0.04	-0.01		
Other Non-fuel VOC	7	0.02	0.02	0.00		
<i>Non-business Vehicle Operating Costs</i>	8	0.08				
During Construction and Maintenance						
Commuting: During Const. & Maint.	9	-0.08	-0.07	0.00	0.00	-0.01
Other: During Const. & Maint.	10	0.02	0.02	0.00	0.00	0.00
Net Non-Business Benefits:						
<i>Commuting</i>	11	0.17				
<i>Other</i>	12	0.87				
<i>Total</i>	13	1.04				
Business User Benefits						
User Benefits						
Business Travel Time	14	1.01	0.66	0.41	-0.06	0.00
Fuel VOC	15	-0.05	0.01	-0.05	-0.01	
Non Fuel VOC	16	0.01	0.02	-0.01	0.00	
Business Vehicle Operating Costs	17	-0.04				
During Construction & Maintenance						
During Construction	18	-0.05	-0.02	-0.03	0.00	0.00
During Maintenance	19	0.02	0.01	0.01	0.00	0.00
During Construction and Maintenance	20	-0.03				
<i>Net Business User Benefits</i>	21	0.94				
Private Sector Provider Impacts						
Revenue*	22	0.00				
Fuel VOC	23	0.00				0.00
Non Fuel VOC	24	0.00				0.00
Private Sector Vehicle Operating Costs	25	0.00				
Investment Costs*	26	0.00				
Grant / Subsidy*	27	0.00				
<i>Net Private Sector Provider Impacts</i>	28	0.00				
Other Business Impacts						
Developer & Other Contributions	29	0.00				
Net Business Impact						
<i>Total</i>	30	0.94				
Total Present Value of TEE Impacts						
	31	1.98				
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>						

Table B.2 : Public Accounts (in Market Prices)

IMPACT	Ref.	Total
Local Government Funding		
Revenue	32	
Investment Costs	33	
Operating Costs	34	
Maintenance Costs		
Non-Traffic (Group 1)	35	
Traffic Related (Group 2)	36	
Developer & Other Contributions	37	
Grant Subsidy Payment	38	
Net Impact	39	0.00
Central Government Funding: Transport		
Revenue	40	0
Investment Costs	41	4.57
Operating Costs	42	0
Maintenance Costs		
Non-Traffic (Group 1)	43	0
Traffic Related (Group 2)	44	-0.71
Developer & Other Contributions	45	0
Grant Subsidy Payment	46	0
Net Impact	47	3.86
Central Government Funding: Non-Transport		
Indirect Tax Revenues	48	0.00
Totals		
Broad Transport Budget	49	3.86
Wider Public Finances	50	0.00
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		



Table B.3 : Costs, Benefits & Economic Returns (in Market Prices)

IMPACT	Ref.	Total (inc June Acc)
TEE Impacts		
Noise	51	
Local Air Quality	52	
Greenhouse Gases (Emissions)	53	0.00
Journey Ambience	54	
Accident Benefits	55	1.12
Non-Business User Benefits: Commuting	56	0.17
Non-Business User Benefits: Other	57	0.87
Business User & Provider Impacts	58	0.94
Wider Public Finance (Indirect Tax Revenues)	59	0.00
Option Values	60	
Present Value of Benefits (PVB)	61	3.10
Broad Transport Budget	62	3.86
Present Value of Costs (PVC)	63	3.86
Overall Impacts		
Net Present Value (NPV)	64	-0.76
Benefit Cost Ratio (BCR)	65	0.80
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		



C APPENDIX C – INNERMESSAN WS2+1 OVERTAKING LANE

Table C.1 : Economic Efficiency of the Transport System (in Market Prices)

IMPACT	Ref.	Total	Cars	LGVs	OGVs	Bus & Coach
Non-Business User Benefits						
Travel Time						
Commuting Travel Time	1	0.04	0.04	0.00		0.00
Other Travel Time	2	0.13	0.13	0.00		0.00
<i>Non-business Travel Time</i>	3	0.17				
Vehicle Operating Costs						
Commuter Fuel VOC	4	0.00	0.00	0.00		
Commuter Non-fuel VOC	5	0.00	0.00	0.00		
Other Fuel VOC	6	0.01	0.01	0.00		
Other Non-fuel VOC	7	0.01	0.01	0.00		
<i>Non-business Vehicle Operating Costs</i>	8	0.02				
During Construction and Maintenance						
Commuting: During Const. & Maint.	9	-0.08	-0.07	0.00	0.00	-0.01
Other: During Const. & Maint.	10	0.00	0.00	0.00	0.00	0.00
Net Non-Business Benefits:						
<i>Commuting</i>	11	-0.04				
<i>Other</i>	12	0.15				
<i>Total</i>	13	0.11				
Business User Benefits						
User Benefits						
Business Travel Time	14	0.10	0.10	0.01	-0.01	0.00
Fuel VOC	15	-0.02	0.00	-0.01	-0.01	
Non Fuel VOC	16	-0.02	0.00	-0.01	-0.01	
Business Vehicle Operating Costs	17	-0.04				
During Construction & Maintenance						
During Construction	18	-0.05	-0.02	-0.03	0.00	0.00
During Maintenance	19	0.00	0.00	0.00	0.00	0.00
During Construction and Maintenance	20	-0.05				
<i>Net Business User Benefits</i>	21	0.01				
Private Sector Provider Impacts						
Revenue*	22	0.00				
Fuel VOC	23	0.00				0.00
Non Fuel VOC	24	0.00				0.00
Private Sector Vehicle Operating Costs	25	0.00				
Investment Costs*	26	0.00				
Grant / Subsidy*	27	0.00				
<i>Net Private Sector Provider Impacts</i>	28	0.00				
Other Business Impacts						
Developer & Other Contributions	29	0.00				
Net Business Impact						
<i>Total</i>	30	0.01				
Total Present Value of TEE Impacts						
	31	0.12				
<small>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</small>						

Table C.2 : Public Accounts (in Market Prices)

IMPACT	Ref.	Total
Local Government Funding		
Revenue	32	
Investment Costs	33	
Operating Costs	34	
Maintenance Costs		
Non-Traffic (Group 1)	35	
Traffic Related (Group 2)	36	
Developer & Other Contributions	37	
Grant Subsidy Payment	38	
Net Impact	39	0.00
Central Government Funding; Transport		
Revenue	40	0
Investment Costs	41	6.19
Operating Costs	42	0
Maintenance Costs		
Non-Traffic (Group 1)	43	0
Traffic Related (Group 2)	44	-1.01
Developer & Other Contributions	45	0
Grant Subsidy Payment	46	0
Net Impact	47	5.18
Central Government Funding; Non-Transport		
Indirect Tax Revenues	48	-0.01
Totals		
Broad Transport Budget	49	5.18
Wider Public Finances	50	-0.01
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		



Table C.3 : Costs, Benefits & Economic Returns (in Market Prices)

IMPACT	Ref.	Total (inc June Acc)
TEE Impacts		
Noise	51	
Local Air Quality	52	
Greenhouse Gases (Emissions)	53	-0.01
Journey Ambience	54	
Accident Benefits	55	0.85
Non-Business User Benefits: Commuting	56	-0.04
Non-Business User Benefits: Other	57	0.15
Business User & Provider Impacts	58	0.01
Wider Public Finance (Indirect Tax Revenues)	59	0.01
Option Values	60	
Present Value of Benefits (PVB)	61	0.97
Broad Transport Budget	62	5.18
Present Value of Costs (PVC)	63	5.18
Overall Impacts		
Net Present Value (NPV)	64	-4.21
Benefit Cost Ratio (BCR)	65	0.19
<p>This analysis is based on CENTRAL traffic growth Costs are in 2002 prices in multiples of a million pounds and are discounted to 2002 Evaluation Period is 60 years First Scheme Year is 2017 Current Year is 2012 Discount Rate is 3.5% for first 30 years, thereafter 3.0% for 45 years, thereafter 2.5%</p>		

