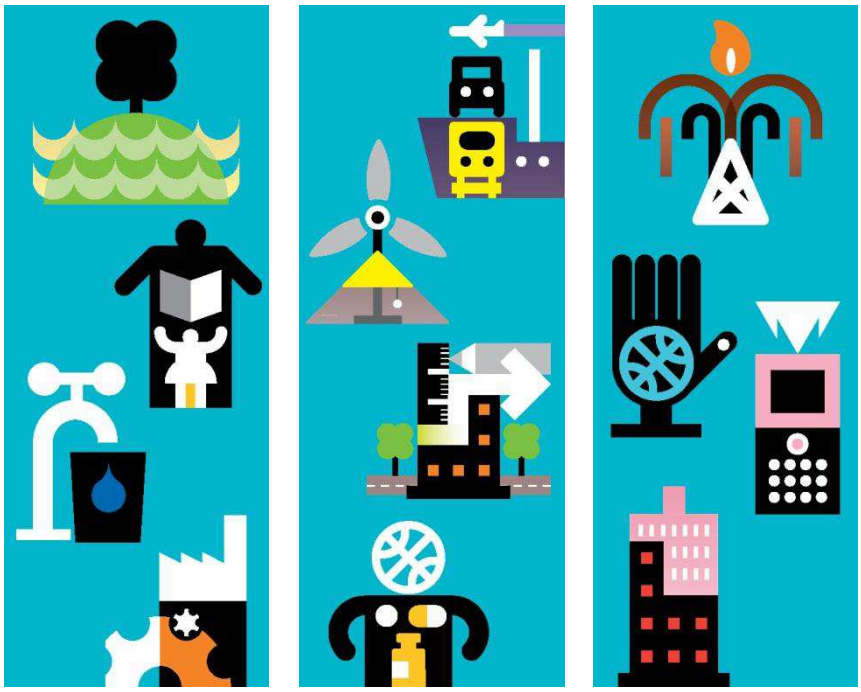

A5300/A562 Junction Major Scheme Business Case

Economic Appraisal Report

August 2014

Knowsley Borough Council

Mott MacDonald

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Economic Appraisal Report

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
A	17/08/14	Manila Wisten	Iain Conway / Sarah Pierce	Manila Wisten	Draft	
B	26/08/14	Manila Wisten	Ian Conway / Sarah Pierce	Manila Wisten	Draft (with cost updates)	

Contents

Executive Summary

Mott MacDonald has undertaken analysis of transport economic benefits for transport improvements at the A5300/A562 strategic junction as part of a Major Scheme Business Case. The economic appraisal has mainly used the Department for Transport TUBA (Transport Users Benefit Appraisal) software which carries out economic appraisal in accordance with published DfT guidance. The appraisal is based on data from the Liverpool City Region Transport Model (LCRTM) and travel cost changes implied by the proposed improvements.

The economic analysis shows that the proposed transport intervention reduces delays at the A5300/A562 junction and reduces journey times for traffic passing through this junction which consists mainly of long distance traffic movements. This delivers Present Value of Benefits of £36m over a 60 year appraisal period. Considered together with the scheme cost of £5.3m, the transport improvements yield a Benefit-to-Cost ratio (BCR) of 6.9.

Monetised Costs and Benefits (in 2010 prices and discounted to 2010)	
Present Value of Benefits (PVB)	£36m
Present Value of Costs (PVC)	£5.3m
OVERALL IMPACTS	
Net Present Value (NPV)	£31m
Benefit to Cost Ratio (BCR)	6.9

A BCR of 6.9 is considered *very high value for money* according to DfT criteria. This BCR includes quantitative benefits that cover main economic appraisal benefits from TUBA, wider economic benefits (agglomeration and welfare) from WITA/OWeL and reliability benefits.

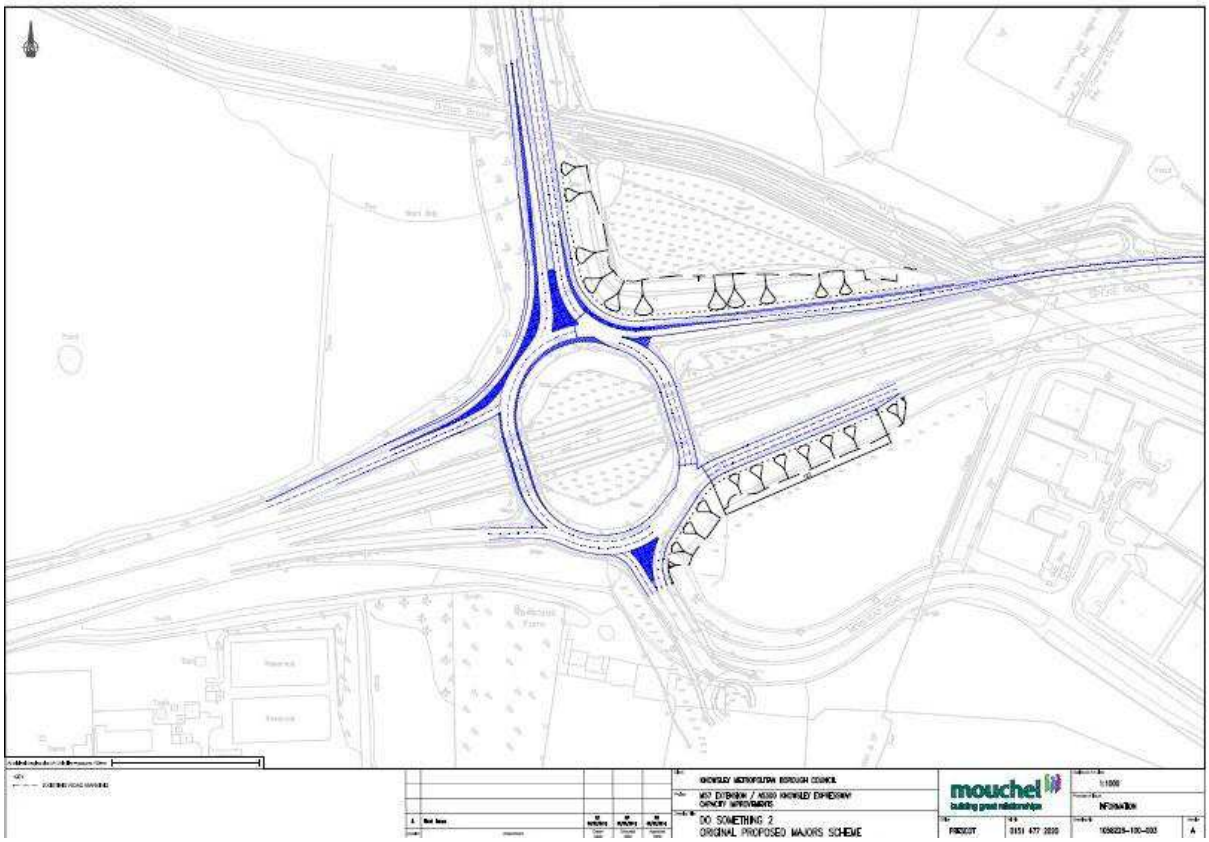
1 Modelling Methodology and Assumptions

1.1 Introduction

An economic appraisal and assessment of Value for Money (VfM) have been carried out for transport improvements for the A5300/A562 junction that are part of a Major Scheme Business Case for Knowsley Borough Council. A detailed description of the scheme is given in the Strategic Case. The existing junction and three capacity improvement options were assessed using LINSIG and the preferred option only forms the basis for this economic appraisal and the VfM assessment. This scheme is shown below.

The preferred alignment is Option 2 as set out in the Options Appraisal Report and is consistent with the scheme originally proposed for major scheme funding at this junction. The scheme proposes to extend the length of the left-hand free flowing slip lane from the A5300 to the A562 Eastbound, compared with the proposal contained in the Local Pinch Point (LPP) scheme, requiring the widening of the bridge over Ditton Brook, together with the addition of a continuous flow left slip lane from the A562 Eastbound to the A5300 Northbound and the extension of the A562 Westbound off slip nearside flare.

Figure 1.1: A5300/A562 Junction Capacity Improvement Scheme



This report gives the economic appraisal and Value for Money (VfM) assessment carried out for the scheme and takes account of wider impacts of the proposed scheme because of its strategic nature and location.

1.2 Scope of the Appraisal

The economic appraisal has been carried out in line with Department for Transport Guidance with a number of relevant simplifying assumptions adopted specifically to produce robust VfM assessment for the A5300/A562 scheme and that are consistent with local evidence. Much use is made of modelling evidence and outputs from the Liverpool City Region Transport Model (LCRTM) which has been used for several DfT-funded projects within Merseyside.

The appraisal has also employed OWeL (Operating WITA Extended Locally) - a toolkit that is compatible with the LCRTM and enables wider economic benefits and impacts of multi-modal transport interventions to be quantified. It produces Merseyside wider economic benefits that are largely calculated by the Department for Transport's WITA software (which is based on WebTAG A2.1).

The economic benefits calculated for the scheme include:

- **Transport economic benefits (WebTAG A1).** The transport economic appraisal has been undertaken using the TUBA (Transport Users Benefit Appraisal) program which carries out economic appraisal in accordance with published DfT guidance. This is based on trip and cost matrices from the Liverpool City Region Model and travel cost changes implied by the proposed schemes.

- **Wider economic benefits (using WITA/OWeL).** This follows WebTAG methodology (WebTAG Unit A2.1) and only captures impacts that are not already included in the conventional user benefit calculations from TUBA. These include agglomeration; increased/decreased output in imperfectly competitive markets; and labour market impacts. However, the wider economic benefits calculated here do not include new jobs or changes in GVA which may be part of separate analysis.

- **Journey reliability benefits (WebTAG A1).** The estimate of journey time reliability benefits is made to satisfy the 'Reliable journeys' sub-objectives within the 'Economy' section of scheme appraisal. The calculations assume that the model area is dominated by urban regions and therefore uses the urban journey time reliability calculations that are set out in the TAG unit.

Reliability benefits and wider economic benefits are included in the calculation of a modified BCR as suggested by DfT guidance[1]. Other components of the benefits of the schemes are described qualitatively in the Appraisal Summary Table.

1.3 Assumptions

In order to arrive at the economic benefits summarised in Table 2.1 below a number of modelling and appraisal assumptions have been adopted. The standard WebTAG appraisal forms the basis of the approach with specific assumptions and simplifications made to allow best use of available local modelling data and perceived nature of the schemes and longevity of their impacts.

[1] Value for Money Assessment: Advice Note for Local Transport Decision Makers, Department for Transport. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/267296/vfm-advice-local-decision-makers.pdf

1.3.1 Appraisal period

The A5300/A562 scheme has impact on both local and strategic traffic movements. On this basis, and the fact that the total scheme costs exceed £5m (if Pinch Point funds are included), the WebTAG recommended appraisal period of 60 years has been adopted.

1.3.2 Modelled years

The scheme is due for implementation during the period 2015-2017. In order to be proportionate in the modelling effort for the appraisal, the economic assessment has been based on traffic modelling of 2014 and 2024 where data is readily available for the Liverpool City Region Model. These results are then interpolated and extrapolated accordingly (in the modelling and appraisal tools) to obtain economic benefits for all other years, which are then discounted to 2010.

1.3.3 Annualisation

Annualisation factors convert benefits calculated for each day into totals for the full year. To achieve this, annualisation factors developed for the Liverpool City Region Model have been adopted. These factors have been used and accepted by the DfT on funding application projects such as LSTF, Local Pinch Point applications, and Better Bus Fund. The annualisation factors are robust and suitable for the current appraisals.

1.3.4 Scheme Costs for Appraisal

The appraisal of the improvements has excluded funding secured through pinch point bid. The cost calculations are given in Table1.1 below. In line with DfT cost guidance an Optimism Bias of 15% has been applied in the appraisal.

Table 1.1: Scheme Costs for Appraisal

	All Costs in (£000s)
A5300/A562 junction improvements (2014 prices)	5,354
Level of Optimism Bias	15%
Total A5300/A562 Scheme Costs including Optimism Bias (2014 prices)	6,157
Total Scheme Costs including optimism bias and discounted to 2010 (2010 prices)	5,313

2 Economic appraisal results

The economic appraisal has been carried out in line with Department for Transport Guidance with a number of relevant simplifying assumptions adopted in order to produce a robust VfM assessment and maximise use of available modelling evidence. As indicated above, the DfT's TUBA software has been used to calculate the main economic benefits. Wider Economic benefits have been calculated using the Department's WITA software and Merseyside's OWeL dataset. Both analyses use transport modelling results from the Liverpool City Region Model that reflect delay and traffic reassignment impacts of the A5300/A562 schemes.

The table below presents the initial BCR calculated from the main economic benefits of the A5300/A562 scheme. In line with the appraisal guidance, a modified BCR has been calculated by including quantifiable wider economic benefits and journey reliability benefits that arise from the transport intervention. Table 2.1 below summarises the BCR calculations.

Table 2.1: Appraisal summary (in £000s, 2010 prices if not stated)

	Initial BCR	Modified BCR
Scheme Costs in 2014 prices	5,354	5,354
Scheme Costs (including optimism bias of 15%) in 2014 prices	6,157	6,157
(All entries below are present values discounted to 2010, in 2010 prices)		
Scheme Costs including optimism bias of 15%)	5,313	5.313
Main Transport Economic Benefits	26,083	26,083
Wider Economic Benefits (Agglomeration and Welfare Benefits)		8,371
Reliability Benefits		2,132
Present Value of Costs (PVC)	**5,313**	**5,313**
Present Value of Benefits (PVB)	**26,083**	**36,586**
Benefit to Cost Ratio (BCR)	**4.9**	**6.9**

Table 2.1 shows that the A5300/A562 scheme is forecast to deliver a present value of main transport economic benefits (PVB) of **£26m** over standard appraisal period of 60 years. When the PVB is taken together with the present value of scheme costs (PVC) of **£5m** the initial BCR is calculated as **4.9**. According to Department for Transport Guidance, the BCR of **4.9** represents **Very High Value for Money**.

However, the A5300/A562 has large impacts on strategic movements. The changes in travel cost at this junction will produce wider economic benefits, of which agglomeration and welfare benefits have been calculated. Journey time reliability benefits have also been calculated and included in the calculation of the modified BCR:

- Journey time reliability benefits – this accounts for an additional £2.1m which is equivalent to 8% of the main TUBA-based economic benefits.
- Wider economic benefits (which are predominantly agglomeration benefits) account for £8.4m.This uses OWeL/WITA economic dataset in the calculations.

Therefore, the modified BCR is more indicative of the quantifiable economic benefits of A5300/A562 scheme. This is calculated as 6.9 and represents **Very High Value for Money**.

2.1 Economic Appraisal Results

The economic results are summarised in the following tables that are given in the pages that follow:

- *Transport Economic Efficiency Table impacts (TEE)*

  The transport modelling has shown that improvements to the A5300/A562 junction would produce significant overall delay and journey time reductions for traffic. The TEE table reflects this and shows that the transport intervention produce overall Present Value of Benefits (PVB) of £26m (2010 prices, discounted to 2010) almost all of which are time benefits.

  The strategic location of the A5300/A562 junction provides very few rerouting opportunities for most movements. Therefore there are small changes in distance travelled resulting in low benefits associated with vehicle operation costs. The TEE table in Table 2.2 confirms this.

- *Public Accounts impacts (PA)*

  The impact on public accounts for the A5300/A562 scheme costs as set out in Table 1.1 is a cost to public accounts of £5.313m. As a result of reductions in travel costs for drivers as a result of the schemes, there is also a small increase of £0.2m in Indirect Tax revenue to central government.

  This is given in Table 2.3.

- *Analysis of Monetised Costs and Benefits (AMCB)*

  The AMCB details are given in Table 2.4 and show an overall cost of the scheme as £5m against an overall present value of benefits of £26m having allowed for impacts of indirect taxation on the economy and greenhouse gases.

  This gives an initial BCR of 4.9 before wider impacts and journey time reliability are included.

- *Wider Impacts benefits table*

  The wider impacts of the scheme (i.e. agglomeration and welfare benefits) account for £8.4m of additional benefits. This does not, of course, include GVA impacts of the scheme which are subject of a separate analysis and report.

  Wider economic benefits are given in Table 2.5.

- *Journey reliability benefits table*

  Journey time reliability benefits arise from more predictable journey times from decongestion impacts of the scheme. Reliability benefits have been calculated as £2.1m.

  Reliability benefits are shown in Table 2.6.

  Once wider economic impacts and reliability benefits are included to produce the full economic impacts of the A5300/A562 schemes the BCR is calculated as 6.9.

- *Appraisal Summary Table (AST)*

  Appendix H to the Outline Business Case presents the AST providing details of the impacts of the scheme. Both qualitative and quantitative benefits are recorded as required by DfT guidance.

Table 2.2: Economic Efficiency of the Transport System (TEE) Table

Economy: Economic Efficiency of the Transport System (TEE) (£000s)			
Consumer - Commuting user benefits	All Modes		Road
Travel Time	7,005		7,005
Vehicle operating costs	944		944
User charges	0		0
During Construction & Maintenance	0		0
NET CONSUMER - COMMUTING BENEFITS	7,950		7,950
Consumer - Other user benefits	All Modes		Road
Travel Time	3,574		3,574
Vehicle operating costs	-1,166		-1,166
User charges	0		0
During Construction & Maintenance	0		0
NET CONSUMER - OTHER BENEFITS	2,407		2,407
Business	All Modes	Road Personal	Road Freight
Travel Time	14,728	10,303	4,424
Vehicle operating costs	1,079	118	962
User charges	0	0	0
During Construction & Maintenance	0	0	0
Subtotal	15,807	10,421	5,386
Private Sector Provider Impacts			
Revenue	0		0
Operating costs	0		0
Investment costs	0		0
Grant/subsidy	0		0
Subtotal	0		0
Other business Impacts			
Developer contributions	0		0
NET BUSINESS IMPACT	15,807		
TOTAL			
Present Value of Transport Economic			
Efficiency Benefits (TEE)	26,164		

Note: Benefits appear as positive numbers, while costs appear as negative numbers. All entries are present values discounted to 2010, in 2010 prices

Table 2.3: Public Accounts (PA) Table

Public Accounts (£000s)		
Local Government Funding	ALL MODES	Road
Revenue	0	0
Operating Costs	0	0
Investment Costs	0	0
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
NET IMPACT	0	0
Central Government Funding: Transport	ALL MODES	Road
Revenue	0	0
Operating costs	0	0
Investment costs	5,313	5,313
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
NET IMPACT	5,313	5,313
Central Government Funding: Non-Transport		
Indirect Tax Revenues	188	188
TOTALS		
Broad Transport Budget	5,313	5,313
Wider Public Finances	188	188

Note: Costs appear as positive numbers, while revenues and developer contributions appear as negative numbers. All entries are present values discounted to 2010, in 2010 prices

Table 2.4: Analysis of Monetised Costs and Benefits (AMCB) Table

Analysis of Monetised Costs and Benefits (£000s)	
Greenhouse Gases	107
Economic Efficiency: Consumer Users (Commuting)	7,950
Economic Efficiency: Consumer Users (Other)	2,407
Economic Efficiency: Business Users and Providers	15,807
Wider Public Finances (Indirect Taxation Revenues)	-188
Present Value of Benefits (PVB)	26,083
Broad Transport Budget	5,313
Present Value of Costs (PVC)	5,313
OVERALL IMPACTS	
Net Present Value (NPV)	20,770
Benefit to Cost Ratio (BCR)	4.909

N*ote: This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. 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*.

Table 2.5: Wider Economic Benefits

SUMMARY OF WIDER IMPACTS			
All entries are in thousands of pounds discounted to 2010 in 2010 Prices			
	Impacts for Each Modelled Year		
Appraisal Period:2014 to 2074	Year 2014	Year 2024	Full Appraisal Period
Agglomeration			
Agglomeration – manufacturing	16	12	590
Agglomeration – construction	11	8	392
Agglomeration - consumer services	22	29	1,306
Agglomeration - producer services	20	90	3,870
Agglomeration – Total	69	139	6,158
Labour supply impact	19	18	633
Increased output in imperfectly competitive market			1,581
The move to more/less productive jobs	0	0	0
Total	88	156	8,371

Table 2.6: Reliability Benefits

Reliability Benefits	£000s
Journey Time Variability Benefits 2014	66
Journey Time Variability Benefits 2024	40
Journey Time Variability Benefits (60 year period)	2,132

All entries are present values discounted to 2010, in 2010 prices

3 Conclusions and Value for Money Statement

Economic benefits for the A5300/A562 improvement scheme have been calculated based on scheme preferred options as set out in the Strategic Case. The analysis provides an indication of likely economic benefits and BCRs using TUBA and other tools that support DfT methodologies. The A5300/A562 scheme reduces congestion at this junction and improves journey times for mostly strategic movements through the area. The journey time improvements forecast by the Liverpool City Region Model are significant and this is reflected in the economic benefits reported.

The calculation of the initial and modified BCR values is given in the table below. The monetised economic benefits (based on transport modelling outcomes) show that the scheme produces an overall BCR of **4.9** from Present Value of Benefits of **£26m** (2010 prices, discounted to 2010) and a cost to public accounts of **£5.35m** (2010 prices, discounted to 2010).

Table 3.1: Appraisal summary (in £000s, 2010 prices if not stated)

	Initial BCR	Modified BCR
Scheme Costs in 2014 prices	5,354	5,354
Scheme Costs (including optimism bias of 15%) in 2014 prices	6,157	6,157
(All entries below are present values discounted to 2010, in 2010 prices)		
Scheme Costs including optimism bias of 15%)	5,313	5.313
Main Transport Economic Benefits	26,083	26,083
Wider Economic Benefits (Agglomeration and Welfare Benefits)		8,371
Reliability Benefits		2,132
Present Value of Costs (PVC)	**5,313**	**5,313**
Present Value of Benefits (PVB)	**26,083**	**36,586**
Benefit to Cost Ratio (BCR)	**4.9**	**6.9**

According to DfT guidance and criteria[2], both the initial BCR of 4.9 and the modified BCR of **6.9** represent **very high Value for Money.** The initial BCR is based on TUBA outputs alone (i.e. considers the main transport economic benefits only).

This assessment has been based on

- Journey time benefits
- Wider economic benefits and
- Reliability Benefits

It can be concluded, therefore, that the quantifiable elements of the benefits for A5300/A562 scheme produce a strong Value for Money case. Qualitative benefits are set out in the Appraisal Summary Table.

[2] Value for Money Assessment: Advice Note for Local Transport Decision Makers, Department for Transport https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/267296/vfm-advice-local-decision-makers.pdf

4 Appendix: Economic Appraisal Listings

4.1 Wider Economic Impacts – WITA/OWeL Run Output

```
Wider Impact in Transport Appraisal WITA V1.1i-4 Be
Program run on Saturday, 16 August 2014 at 11:02:00

ERRORS AND WARNINGS
     503   Warnings found


INPUT SUMMARY
Run name                                    A5300
DM scheme                                   Do Minimum
DS scheme                                   Do Something

Economic parameter file
C:\329623\Economics\WITA_A5300\OWeL_WITA_Economics_File.txt
Scheme parameter file
C:\329623\Economics\09_BFS007_A5300_v2_ExclExt\A5300Scheme_1.7.txt
Employment file                             C:\329623\Economics\WITA_A5300\OWeL_Employment.csv
Transport-WITA zone correspondence file     C:\329623\Economics\WITA_A5300\LCRTMZone_to_WITA.csv
District-WITA zone correspondence file      C:\329623\Economics\WITA_A5300\OWeL_to_WITA_Zones.csv
Commuting PA file                           C:\329623\Economics\WITA_A5300\OWeL_PACommuteMatrix.csv
District Economics file                     C:\329623\Economics\WITA_A5300\OWeL_Economics_Data.csv
Global Data file                            C:\329623\Economics\WITA_A5300\OWeL_GlobalData.txt
PA Zone Level                               LAD Zone
Industry Segmentation                       Yes

First Appraisal Year           2014
Last Appraisal Year            2074
Modelled years                 2014 2024


TRIP MATRIX TOTALS
Annualised total trip numbers(thousands)
Submode        Year  Time period          DO MIN         DO SOM
Car            2014  AM peak              147867         147867
Car            2014  PM peak              158203         158203
Car            2014  Inter-peak                0              0
Car            2014  Off-peak                  0              0
Car            2014  Weekend                   0              0
Car            2014  All                  306070         306070
Car            2024  AM peak              147867         147867
Car            2024  PM peak              158203         158203
Car            2024  Inter-peak                0              0
Car            2024  Off-peak                  0              0
Car            2024  Weekend                   0              0
Car            2024  All                  306070         306070
LGV Freight    2014  AM peak               20314          20314
LGV Freight    2014  PM peak               18079          18079
LGV Freight    2014  Inter-peak                0              0
LGV Freight    2014  Off-peak                  0              0
LGV Freight    2014  Weekend                   0              0
LGV Freight    2014  All                   38393          38393
LGV Freight    2024  AM peak               20314          20314
LGV Freight    2024  PM peak               18079          18079
LGV Freight    2024  Inter-peak                0              0
LGV Freight    2024  Off-peak                  0              0
LGV Freight    2024  Weekend                   0              0
LGV Freight    2024  All                   38393          38393
OGV1           2014  AM peak                7849           7849
```

OGV1	2014	PM peak	5320	5320
OGV1	2014	Inter-peak	0	0
OGV1	2014	Off-peak	0	0
OGV1	2014	Weekend	0	0
OGV1	2014	All	13169	13169
OGV1	2024	AM peak	7849	7849
OGV1	2024	PM peak	5320	5320
OGV1	2024	Inter-peak	0	0
OGV1	2024	Off-peak	0	0
OGV1	2024	Weekend	0	0
OGV1	2024	All	13169	13169
All	2014	AM peak	176030	176030
All	2014	PM peak	181602	181602
All	2014	Inter-peak	0	0
All	2014	Off-peak	0	0
All	2014	Weekend	0	0
All	2014	All	357632	357632
All	2024	AM peak	176030	176030
All	2024	PM peak	181602	181602
All	2024	Inter-peak	0	0
All	2024	Off-peak	0	0
All	2024	Weekend	0	0
All	2024	All	357632	357632

SUMMARY OF WIDER IMPACTS

All entries are in thousands of pounds discounted to 2010 in 2010 prices

Appraisal Period:2014 to 2074

	Impacts for Each Modelled Year		
	Year 2014	Year 2024	Full Appraisal Period
Agglomeration - manufacturing	16	12	590
Agglomeration - construction	11	8	392
Agglomeration - consumer services	22	29	1306
Agglomeration - producer services	20	90	3870
Agglomeration - Total	69	139	6158
Labour supply impact	19	18	633
Increased output in imperfectly competitive market			1581
The move to more/less productive jobs	0	0	0
Total	88	156	8371

4.2 Main Economic Appraisal – TUBA Output

```
Transport User Benefit Appraisal TUBA v1.9.1
Program run on Monday, 25 August 2014 at 03:16:19

INPUT_SUMMARY
Run name                        A5300
DM scheme                       Do Minimum
DS scheme                       Do Something

Economic parameter file         P:\Liverpool\ITD\Projects\329623 Knowsley MSBC - KIP 2013\LCRTM Modelling\Economics\09_BFS007_A5300_v2_ExclExt\economics_1.9.1.txt
Scheme parameter file           P:\Liverpool\ITD\Projects\329623 Knowsley MSBC - KIP 2013\LCRTM Modelling\Economics\09_BFS007_A5300_v2_ExclExt\A5300Scheme.txt

First year of scheme costs      2014
First Appraisal Year            2014
Last Appraisal Year             2074
Modelled years                  2014 2024

Time period                     Total hours
AM peak                            637
PM peak                            675
Inter-peak                           0
Off-peak                             0
Weekend                              0
Total                             1312


Note: All monetary values are in 2010 market prices. All monetary values discounted to 2010 unless otherwise stated.

DM_SCHEME_COSTS
Do minimum scheme costs. Undiscounted £000s
Mode            Year          Prep.       Superv.       Constr.          Land        Maint.         Oper.      Grant/Sub.    Dev._Cont
Road            2014             0             0             0             0            0             0             0            0
Road            2015             0             0             0             0            0             0             0            0
Road            2016             0             0             0             0            0             0             0            0
Road            2017             0             0             0             0            0             0             0            0

DS_SCHEME_COSTS
Do something scheme costs. Undiscounted £000s
Mode            Year          Prep.       Superv.       Constr.          Land        Maint.         Oper.      Grant/Sub.    Dev._Cont
Road            2014             0             0           371             0            0             0             0            0
Road            2015             0             0          3398             0            0             0             0            0
Road            2016             0             0          2227             0            0             0             0            0
Road            2017             0             0           403             0            0             0             0            0

PRESENT_VALUE_COSTS
Scheme investment and operating costs (i.e. excluding grant/subsidy, developer contributions and delays) and differences. £000s.
Mode            Year DM_scheme_costs DS_scheme_costs    Difference
Road            2014               0             323           323
Road            2015               0            2861          2861
Road            2016               0            1812          1812
Road            2017               0             317           317
Road           Total               0            5313          5313

TRIP_MATRIX_TOTALS
Annualised total trip numbers(thousands)
Submode         Year  Time period          DO MIN         DO SOM
Car             2014  AM peak              147867         147867
Car             2014  PM peak              158203         158203
Car             2014  Inter-peak                0              0
Car             2014  Off-peak                  0              0
Car             2014  Weekend                   0              0
Car             2014  All                  306070         306070
Car             2024  AM peak              147867         147867
Car             2024  PM peak              158203         158203
Car             2024  Inter-peak                0              0
Car             2024  Off-peak                  0              0
Car             2024  Weekend                   0              0
Car             2024  All                  306070         306070
LGV Freight     2014  AM peak               20314          20314
LGV Freight     2014  PM peak               18079          18079
LGV Freight     2014  Inter-peak                0              0
LGV Freight     2014  Off-peak                  0              0
LGV Freight     2014  Weekend                   0              0
LGV Freight     2014  All                  38393          38393
LGV Freight     2024  AM peak               20314          20314
LGV Freight     2024  PM peak               18079          18079
LGV Freight     2024  Inter-peak                0              0
LGV Freight     2024  Off-peak                  0              0
LGV Freight     2024  Weekend                   0              0
LGV Freight     2024  All                  38393          38393
OGV1            2014  AM peak               7849           7849
OGV1            2014  PM peak               5320           5320
OGV1            2014  Inter-peak                0              0
OGV1            2014  Off-peak                  0              0
OGV1            2014  Weekend                   0              0
OGV1            2014  All                  13169          13169
OGV1            2024  AM peak               7849           7849
OGV1            2024  PM peak               5320           5320
OGV1            2024  Inter-peak                0              0
OGV1            2024  Off-peak                  0              0
OGV1            2024  Weekend                   0              0
OGV1            2024  All                  13169          13169
All             2014  AM peak              176030         176030
All             2014  PM peak              181602         181602
All             2014  Inter-peak                0              0
All             2014  Off-peak                  0              0
All             2014  Weekend                   0              0
All             2014  All                  357632         357632
All             2024  AM peak              176030         176030
All             2024  PM peak              181602         181602
All             2024  Inter-peak                0              0
All             2024  Off-peak                  0              0
All             2024  Weekend                   0              0
All             2024  All                  357632         357632

DM&DS_USER_COSTS
Total value of user costs, DM and DS. £000s.
Mode            Year     DMtot_time  DMtot_charge    DMtot_fuel DMtot_nonfuel    DStot_time  DStot_charge    DStot_fuel DStot_nonfuel
Road            2014        1580968             0        483471        339088       1580355             0        483440        339062
Road            2024        1308553             0        290389        240815       1308005             0        290380        240803
```

FUEL_CONSUMPTION
Total fuel consumption, DM and DS. kilounits.

		Do minimum			Do something		
Submode	Year	Petrol	Diesel	Electric	Petrol	Diesel	Electric
Car	2014	160996	131095	350	160971	131077	350
Car	2024	99329	111852	13411	99332	111852	13413
LGV Freight	2014	2086	42877	0	2086	42896	0
LGV Freight	2024	499	35208	0	499	35194	0
OGV1	2014	0	61879	0	0	61876	0
OGV1	2024	0	61738	0	0	61742	0
All	2014	163082	235851	350	163057	235850	350
All	2024	99829	208798	13411	99831	208787	13413
Car	Total	5581496	5851006	1582448	5581498	5850871	1582676
LGV Freight	Total	26700	2016774	0	26696	2016156	0
OGV1	Total	0	3766782	0	0	3766977	0
All	Total	5608196	11634563	1582448	5608194	11634004	1582676

CO2_EMISSIONS_UNTRADED

		Emissions (tonnes)			cost (£000s, low)			cost (£000s, central)			cost (£000s, high)		
Submode	Year	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase
Car	2014	403745	403680	-65	9990	9989	-2	19981	19978	-3	29971	29966	-5
Car	2024	281632	281590	-42	5757	5756	-1	11514	11513	-2	17272	17269	-3
LGV Freight	2014	0	0	0	0	0	0	0	0	0	0	0	0
LGV Freight	2024	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	2014	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	2024	0	0	0	0	0	0	0	0	0	0	0	0
All	2014	403745	403680	-65	9990	9989	-2	19981	19978	-3	29971	29966	-5
All	2015	392082	392020	-62	9514	9513	-2	19029	19026	-3	28543	28538	-5
All	2016	377154	377094	-59	8974	8973	-1	17949	17946	-3	26923	26919	-4
All	2017	362813	362756	-57	8467	8466	-1	16934	16932	-3	25401	25397	-4
All	2018	348985	348931	-54	7987	7986	-1	15974	15972	-2	23961	23957	-4
All	2019	335598	335547	-52	7532	7531	-1	15064	15062	-2	22597	22593	-3
All	2020	322533	322484	-49	7100	7099	-1	14200	14197	-2	21299	21296	-3
All	2021	312063	312015	-47	6736	6735	-1	13472	13470	-2	20208	20205	-3
All	2022	301757	301712	-45	6398	6397	-1	12797	12795	-2	19195	19192	-3
All	2023	291623	291579	-44	6073	6072	-1	12146	12144	-2	18219	18216	-3
All	2024	281632	281590	-42	5757	5756	-1	11514	11513	-2	17272	17269	-3
All	2025	271709	271669	-40	5452	5451	-1	10904	10902	-2	16356	16353	-2
All	2026	264803	264764	-39	5214	5213	-1	10428	10427	-2	15643	15640	-2
All	2027	257903	257865	-38	4982	4981	-1	9963	9962	-1	14945	14943	-2
All	2028	250988	250950	-37	4755	4755	-1	9511	9509	-1	14266	14264	-2
All	2029	244039	244003	-36	4534	4534	-1	9069	9067	-1	13603	13601	-2
All	2030	237042	237007	-35	4318	4317	-1	8635	8634	-1	12953	12951	-2
All	2031	234997	234962	-35	4196	4195	-1	8391	8390	-1	12587	12585	-2
All	2032	232970	232935	-34	4392	4391	-1	8784	8783	-1	13176	13174	-2
All	2033	230960	230926	-34	4564	4563	-1	9128	9127	-1	13692	13690	-2
All	2034	228968	228935	-34	4714	4714	-1	9429	9427	-1	14143	14141	-2
All	2035	226994	226960	-34	4844	4843	-1	9688	9687	-1	14532	14530	-2
All	2036	226994	226960	-34	4997	4996	-1	9993	9992	-1	14990	14987	-2
All	2037	226994	226960	-34	5134	5133	-1	10267	10266	-2	15401	15399	-2
All	2038	226994	226960	-34	5256	5255	-1	10512	10511	-2	15769	15766	-2
All	2039	226994	226960	-34	5364	5363	-1	10728	10726	-2	16092	16089	-2
All	2040	226994	226960	-34	5459	5458	-1	10917	10916	-2	16376	16374	-2
All	2041	226994	226960	-34	5541	5540	-1	11082	11080	-2	16623	16620	-2
All	2042	226994	226960	-34	5611	5610	-1	11222	11221	-2	16833	16831	-2
All	2043	226994	226960	-34	5671	5670	-1	11341	11340	-2	17012	17010	-3
All	2044	226994	226960	-34	5747	5746	-1	11495	11493	-2	17242	17239	-3
All	2045	226994	226960	-34	5814	5813	-1	11628	11627	-2	17443	17440	-3
All	2046	226994	226960	-34	5873	5872	-1	11746	11744	-2	17619	17616	-3
All	2047	226994	226960	-34	5923	5922	-1	11846	11844	-2	17769	17767	-3
All	2048	226994	226960	-34	5965	5964	-1	11930	11928	-2	17895	17893	-3
All	2049	226994	226960	-34	6000	5999	-1	12000	11998	-2	17999	17997	-3
All	2050	226994	226960	-34	6028	6027	-1	12056	12054	-2	18083	18081	-3
All	2051	226994	226960	-34	6049	6048	-1	12098	12096	-2	18147	18144	-3
All	2052	226994	226960	-34	6081	6080	-1	12161	12159	-2	18242	18239	-3
All	2053	226994	226960	-34	6099	6098	-1	12198	12196	-2	18297	18294	-3
All	2054	226994	226960	-34	6112	6111	-1	12224	12222	-2	18336	18333	-3
All	2055	226994	226960	-34	6119	6118	-1	12238	12236	-2	18357	18354	-3
All	2056	226994	226960	-34	6115	6114	-1	12230	12228	-2	18345	18342	-3
All	2057	226994	226960	-34	6107	6106	-1	12213	12211	-2	18320	18317	-3
All	2058	226994	226960	-34	6088	6087	-1	12175	12173	-2	18263	18260	-3
All	2059	226994	226960	-34	6061	6060	-1	12122	12120	-2	18183	18180	-3
All	2060	226994	226960	-34	6028	6027	-1	12056	12054	-2	18084	18081	-3
All	2061	226994	226960	-34	5989	5988	-1	11978	11976	-2	17966	17964	-3
All	2062	226994	226960	-34	5919	5918	-1	11838	11836	-2	17757	17754	-3
All	2063	226994	226960	-34	5848	5847	-1	11696	11694	-2	17543	17541	-3
All	2064	226994	226960	-34	5765	5765	-1	11531	11529	-2	17296	17294	-3
All	2065	226994	226960	-34	5679	5678	-1	11357	11356	-2	17036	17034	-3
All	2066	226994	226960	-34	5582	5581	-1	11164	11163	-2	16747	16744	-2
All	2067	226994	226960	-34	5486	5485	-1	10971	10970	-2	16457	16455	-2
All	2068	226994	226960	-34	5380	5379	-1	10760	10758	-2	16139	16137	-2
All	2069	226994	226960	-34	5271	5270	-1	10541	10540	-2	15812	15809	-2
All	2070	226994	226960	-34	5156	5156	-1	10313	10311	-2	15469	15467	-2
All	2071	226994	226960	-34	5039	5039	-1	10079	10077	-1	15118	15116	-2
All	2072	226994	226960	-34	4924	4924	-1	9849	9847	-1	14773	14771	-2
All	2073	226994	226960	-34	4806	4806	-1	9613	9611	-1	14419	14417	-2
All	2074	226994	226960	-34	4687	4687	-1	9375	9373	-1	14062	14060	-2
Car	Total	15264127	15261843	-2283	357265	357212	-53	714531	714424	-107	1071796	1071635	-160
LGV Freight	Total	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	Total	0	0	0	0	0	0	0	0	0	0	0	0
All	Total	15264127	15261843	-2283	357265	357212	-53	714531	714424	-107	1071796	1071635	-160

CO2_EMISSIONS_TRADED

		Emissions (tonnes)			cost (£000s, low)			cost (£000s, central)			cost (£000s, high)		
Submode	Year	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase
Car	2014	78	78	0	1	1	0	1	1	0	1	1	0
Car	2024	3007	3007	0	79	79	0	79	79	0	79	79	0
LGV Freight	2014	0	0	0	0	0	0	0	0	0	0	0	0
LGV Freight	2024	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	2014	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	2024	0	0	0	0	0	0	0	0	0	0	0	0
All	2014	78	78	0	1	1	0	1	1	0	1	1	0
All	2015	239	239	0	3	3	0	3	3	0	3	3	0
All	2016	342	342	0	5	5	0	5	5	0	5	5	0
All	2017	488	488	0	8	8	0	8	8	0	8	8	0
All	2018	697	697	0	12	12	0	12	12	0	12	12	0
All	2019	994	994	0	17	17	0	17	17	0	17	17	0
All	2020	1416	1416	0	26	26	0	26	26	0	26	26	0
All	2021	1711	1711	0	33	33	0	33	33	0	33	33	0
All	2022	2066	2066	0	45	45	0	45	45	0	45	45	0
All	2023	2493	2493	0	60	60	0	60	60	0	60	60	0
All	2024	3007	3007	0	79	79	0	79	79	0	79	79	0
All	2025	3622	3622	0	101	101	0	101	101	0	101	101	0
All	2026	3904	3904	0	116	116	0	116	116	0	116	116	0
All	2027	4189	4189	0	131	131	0	131	131	0	131	131	0
All	2028	4469	4469	0	146	146	0	146	146	0	146	146	0
All	2029	4738	4737	0	161	160	0	161	160	0	161	160	0
All	2030	4988	4987	0	175	175	0	175	175	0	175	175	0
All	2031	4546	4546	0	164	164	0	164	164	0	164	164	0
All	2032	4107	4107	0	156	156	0	156	156	0	156	156	0
All	2033	3672	3671	0	147	147	0	147	147	0	147	147	0
All	2034	3237	3237	0	135	135	0	135	135	0	135	135	0
All	2035	2805	2804	0	121	121	0	121	121	0	121	121	0
All	2036	2382	2382	0	106	106	0	106	106	0	106	106	0
All	2037	1958	1958	0	89	89	0	89	89	0	89	89	0
All	2038	1534	1534	0	72	72	0	72	72	0	72	72	0
All	2039	1112	1112	0	53	53	0	53	53	0	53	53	0
All	2040	688	688	0	33	33	0	33	33	0	33	33	0
All	2041	662	661	0	33	33	0	33	33	0	33	33	0
All	2042	635	635	0	32	32	0	32	32	0	32	32	0
All	2043	609	609	0	31	31	0	31	31	0	31	31	0
All	2044	582	582	0	30	30	0	30	30	0	30	30	0
All	2045	558	558	0	29	29	0	29	29	0	29	29	0
All	2046	531	531	0	28	28	0	28	28	0	28	28	0
All	2047	505	505	0	27	27	0	27	27	0	27	27	0
All	2048	479	479	0	25	25	0	25	25	0	25	25	0
All	2049	452	452	0	24	24	0	24	24	0	24	24	0
All	2050	426	426	0	23	23	0	23	23	0	23	23	0
All	2051	426	426	0	23	23	0	23	23	0	23	23	0
All	2052	426	426	0	23	23	0	23	23	0	23	23	0
All	2053	426	426	0	23	23	0	23	23	0	23	23	0
All	2054	426	426	0	23	23	0	23	23	0	23	23	0
All	2055	426	426	0	23	23	0	23	23	0	23	23	0
All	2056	426	426	0	23	23	0	23	23	0	23	23	0
All	2057	426	426	0	23	23	0	23	23	0	23	23	0
All	2058	426	426	0	23	23	0	23	23	0	23	23	0
All	2059	426	426	0	23	23	0	23	23	0	23	23	0
All	2060	426	426	0	23	23	0	23	23	0	23	23	0
All	2061	426	426	0	23	23	0	23	23	0	23	23	0
All	2062	426	426	0	22	22	0	22	22	0	22	22	0
All	2063	426	426	0	22	22	0	22	22	0	22	22	0
All	2064	426	426	0	22	22	0	22	22	0	22	22	0
All	2065	426	426	0	22	22	0	22	22	0	22	22	0
All	2066	426	426	0	21	21	0	21	21	0	21	21	0
All	2067	426	426	0	21	21	0	21	21	0	21	21	0
All	2068	426	426	0	20	20	0	20	20	0	20	20	0
All	2069	426	426	0	20	20	0	20	20	0	20	20	0
All	2070	426	426	0	20	20	0	20	20	0	20	20	0
All	2071	426	426	0	19	19	0	19	19	0	19	19	0
All	2072	426	426	0	19	19	0	19	19	0	19	19	0
All	2073	426	426	0	18	18	0	18	18	0	18	18	0
All	2074	426	426	0	18	18	0	18	18	0	18	18	0
Car	Total	81143	81136	-6	2992	2992	0	2992	2992	0	2992	2992	0
LGV Freight	Total	0	0	0	0	0	0	0	0	0	0	0	0
OGV1	Total	0	0	0	0	0	0	0	0	0	0	0	0
All	Total	81143	81136	-6	2992	2992	0	2992	2992	0	2992	2992	0

CO2_EMISSIONS_BY_TIME_PERIOD_UNTRADED

		Emissions (tonnes)			cost (£000s, low)			cost (£000s, central)			cost (£000s, high)		
Submode	Year	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase
AM peak	2014	201639	201663	24	4989	4990	1	9979	9980	1	14968	14970	2
AM peak	2024	140597	140578	-19	2874	2874	0	5748	5747	-1	8622	8621	-1
PM peak	2014	202106	202017	-89	5001	4999	-2	10002	9998	-4	15003	14996	-7
PM peak	2024	141035	141012	-23	2883	2883	0	5766	5765	-1	8649	8648	-1
Inter-peak	2014	0	0	0	0	0	0	0	0	0	0	0	0
Inter-peak	2024	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	2014	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	2024	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	2014	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	2024	0	0	0	0	0	0	0	0	0	0	0	0
AM peak	Total	7620592	7619821	-771	178364	178346	-18	356728	356692	-36	535092	535038	-54
PM peak	Total	7643534	7642022	-1513	178901	178866	-35	357802	357731	-71	536703	536597	-106
Inter-peak	Total	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	Total	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	Total	0	0	0	0	0	0	0	0	0	0	0	0

CO2_EMISSIONS_BY_TIME_PERIOD_TRADED

		Emissions (tonnes)			cost (£000s, low)			cost (£000s, central)			cost (£000s, high)		
Submode	Year	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase	DM	DS	Increase
AM peak	2014	39	39	0	1	1	0	1	1	0	1	1	0
AM peak	2024	1496	1496	0	39	39	0	39	39	0	39	39	0
PM peak	2014	39	39	0	1	1	0	1	1	0	1	1	0
PM peak	2024	1511	1511	0	39	39	0	39	39	0	39	39	0
Inter-peak	2014	0	0	0	0	0	0	0	0	0	0	0	0
Inter-peak	2024	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	2014	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	2024	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	2014	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	2024	0	0	0	0	0	0	0	0	0	0	0	0
AM peak	Total	40360	40362	2	1488	1488	0	1488	1488	0	1488	1488	0
PM peak	Total	40783	40774	-8	1504	1503	0	1504	1503	0	1504	1503	0
Inter-peak	Total	0	0	0	0	0	0	0	0	0	0	0	0
Off-peak	Total	0	0	0	0	0	0	0	0	0	0	0	0
Weekend	Total	0	0	0	0	0	0	0	0	0	0	0	0

MODE
User benefits and changes in revenues by mode, all years. £000s.

Mode	Year	User Time	User_Charges PT_fares_(pri	Vehicle_Operating_Cost Fuel	Non_fuel	Operator_Rev PT_fares_(pri	Indirect Taxes
Road	2014	613	0	31	27	0	-16
Road	2015	609	0	28	25	0	-14
Road	2016	605	0	24	23	0	-13
Road	2017	600	0	22	21	0	-11
Road	2018	592	0	19	20	0	-10
Road	2019	584	0	17	18	0	-9
Road	2020	576	0	15	17	0	-7
Road	2021	569	0	13	15	0	-6
Road	2022	562	0	11	14	0	-6
Road	2023	555	0	10	13	0	-5
Road	2024	548	0	8	12	0	-4
Road	2025	538	0	8	11	0	-4
Road	2026	527	0	7	11	0	-4
Road	2027	518	0	7	10	0	-3
Road	2028	508	0	7	10	0	-3
Road	2029	499	0	6	10	0	-3
Road	2030	490	0	6	9	0	-3
Road	2031	481	0	6	9	0	-3
Road	2032	473	0	5	9	0	-3
Road	2033	465	0	5	9	0	-3
Road	2034	457	0	5	8	0	-3
Road	2035	450	0	5	8	0	-2
Road	2036	443	0	5	8	0	-2
Road	2037	436	0	4	7	0	-2
Road	2038	429	0	4	7	0	-2
Road	2039	423	0	4	7	0	-2
Road	2040	417	0	4	7	0	-2
Road	2041	411	0	4	6	0	-2
Road	2042	405	0	4	6	0	-2
Road	2043	399	0	4	6	0	-2
Road	2044	395	0	4	6	0	-2
Road	2045	390	0	3	6	0	-2
Road	2046	385	0	3	6	0	-2
Road	2047	380	0	3	5	0	-2
Road	2048	375	0	3	5	0	-2
Road	2049	370	0	3	5	0	-2
Road	2050	365	0	3	5	0	-2
Road	2051	360	0	3	5	0	-1
Road	2052	356	0	3	5	0	-1
Road	2053	351	0	3	5	0	-1
Road	2054	346	0	3	4	0	-1
Road	2055	342	0	3	4	0	-1
Road	2056	337	0	3	4	0	-1
Road	2057	332	0	3	4	0	-1
Road	2058	328	0	2	4	0	-1
Road	2059	324	0	2	4	0	-1
Road	2060	319	0	2	4	0	-1
Road	2061	315	0	2	4	0	-1
Road	2062	311	0	2	3	0	-1
Road	2063	308	0	2	3	0	-1
Road	2064	304	0	2	3	0	-1
Road	2065	300	0	2	3	0	-1
Road	2066	296	0	2	3	0	-1
Road	2067	292	0	2	3	0	-1
Road	2068	289	0	2	3	0	-1
Road	2069	285	0	2	3	0	-1
Road	2070	281	0	2	3	0	-1
Road	2071	278	0	2	3	0	-1
Road	2072	274	0	2	3	0	-1
Road	2073	271	0	2	2	0	-1
Road	2074	268	0	2	2	0	-1
Road	Total	25307	0	372	485	0	-188

SUBMODE
User benefits and changes in revenues by submode/vehicle type, modelled years and total. £000s.

Submode	Year	User Time	User_Charges PT_fares_(pri	Vehicle_Operating_Cost Fuel	Non_fuel	Operator_Rev PT_fares_(pri	Indirect Taxes
Car	2014	388	0	51	39	0	-26
Car	2024	471	0	-2	-16	0	1
LGV Freight	2014	162	0	-24	-23	0	12
LGV Freight	2024	22	0	13	21	0	-6
OGV1	2014	63	0	3	10	0	-2
OGV1	2024	55	0	-4	7	0	2
All	2014	613	0	31	27	0	-16
All	2024	548	0	8	12	0	-4
Car	Total	20883	0	185	-289	0	-101
LGV Freight	Total	1786	0	283	516	0	-132
OGV1	Total	2638	0	-96	259	0	45
All	Total	25307	0	372	485	0	-188

PERSON_TYPES
User benefits and changes in revenues by person type, modelled years and total. £000s.

Person_type	Year	User Time	User_Charges PT_fares_(pri	Vehicle_Operating_Cost Fuel	Non_fuel	Operator_Rev PT_fares_(pri	Indirect Taxes
All	2014	613	0	31	27	0	-16
All	2024	548	0	8	12	0	-4
All	Total	25307	0	372	485	0	-188

PURPOSE
User benefits and changes in revenues by trip purpose, modelled years and total. £000s.

Purpose	Year	User Time	User_Charges PT_fares_(pri	Vehicle_Operating_Cost Fuel	Non_fuel	Operator_Rev PT_fares_(pri	Indirect Taxes
Business	2014	432	0	-12	3	0	6
Business	2024	298	0	8	29	0	-4
Commuting	2014	146	0	34	19	0	-17
Commuting	2024	161	0	17	7	0	-9
Other	2014	35	0	9	5	0	-4
Other	2024	89	0	-17	-24	0	9
Business	Total	14728	0	181	899	0	-86
Commuting	Total	7005	0	648	296	0	-318
Other	Total	3574	0	-457	-710	0	216

PERIOD
User benefits and changes in revenues by time period, modelled years and total. £000s.

Period	Year	User Time	User_Charges PT_fares_(pri	Vehicle_Operating_Cost Fuel	Non_fuel	Operator_Rev PT_fares_(pri	Indirect Taxes
AM peak	2014	405	0	-22	-14	0	11
AM peak	2024	437	0	1	5	0	-1
PM peak	2014	208	0	53	41	0	-27
PM peak	2024	111	0	7	7	0	-3
Inter-peak	2014	0	0	0	0	0	0
Inter-peak	2024	0	0	0	0	0	0
Off-peak	2014	0	0	0	0	0	0
Off-peak	2024	0	0	0	0	0	0
Weekend	2014	0	0	0	0	0	0
Weekend	2024	0	0	0	0	0	0
AM peak	Total	19793	0	-80	78	0	35
PM peak	Total	5514	0	452	407	0	-224
Inter-peak	Total	0	0	0	0	0	0
Off-peak	Total	0	0	0	0	0	0
Weekend	Total	0	0	0	0	0	0

NON MONETISED TIME BENEFITS BY TIME SAVING
Time benefits (thousands of person hrs) by size of time saving

Vehicle type	Purpose	Year	< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	> 5 mins
Car	Business	2014	0	0	-13	19	1	0
Car	Business	2024	0	0	-11	19	0	0
Car	Business	Total	0	-3	-670	1178	28	1
Car	Commuting	2014	-3	-7	-78	105	6	2
Car	Commuting	2024	0	-6	-61	94	6	2
Car	Commuting	Total	-35	-396	-3822	5770	363	137
Car	Other	2014	-5	-15	-33	54	3	3
Car	Other	2024	0	0	-35	51	5	1
Car	Other	Total	-49	-91	-2128	3140	293	43
LGV Freight	Business	2014	-1	-2	-13	21	6	1
LGV Freight	Business	2024	0	-4	-13	19	1	1
LGV Freight	Business	Total	-21	-248	-810	1175	66	38
LGV Freight	Commuting	2014	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0
OGV1	Business	2014	0	0	-5	10	0	0
OGV1	Business	2024	0	0	-6	10	1	0
OGV1	Business	Total	-4	-5	-338	597	65	20
OGV1	Commuting	2014	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0

MONETISED TIME BENEFITS BY TIME SAVING
Time benefits (£000s) by size of time saving

Vehicle type	Purpose	Year	< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	> 5 mins
Car	Business	2014	0	-3	-363	556	17	0
Car	Business	2024	0	-1	-269	480	11	0
Car	Business	Total	0	-65	-13145	22945	556	13
Car	Commuting	2014	-19	-38	-451	607	35	11
Car	Commuting	2024	-1	-31	-291	445	28	11
Car	Commuting	Total	-155	-1392	-13628	20424	1279	477
Car	Other	2014	-27	-76	-168	278	15	13
Car	Other	2024	-2	-1	-148	215	21	2
Car	Other	Total	-196	-421	-6518	9680	878	151
LGV Freight	Business	2014	-6	-18	-149	245	75	15
LGV Freight	Business	2024	-3	-43	-133	191	6	6
LGV Freight	Business	Total	-169	-1908	-6379	9306	628	309
LGV Freight	Commuting	2014	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0
OGV1	Business	2014	0	-2	-57	113	5	4
OGV1	Business	2024	-1	-1	-56	98	11	3
OGV1	Business	Total	-27	-43	-2655	4706	501	155
OGV1	Commuting	2014	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0

TOTAL BENEFITS BY TIME SAVING
Total benefits (£000s) by size of time saving

Vehicle type	Purpose	Year	< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	> 5 mins
Car	Business	2014	0	-1	-325	548	10	0
Car	Business	2024	0	-1	-255	469	7	0
Car	Business	Total	0	-40	-12542	22600	395	9
Car	Commuting	2014	4	14	-210	390	-6	6
Car	Commuting	2024	0	16	-110	290	-8	-3
Car	Commuting	Total	-8	226	-7126	14793	2	63
Car	Other	2014	-3	-16	-138	197	4	4
Car	Other	2024	0	0	-106	153	0	0
Car	Other	Total	-45	-107	-5148	7444	222	41
LGV Freight	Business	2014	-1	-7	-131	220	28	5
LGV Freight	Business	2024	-1	-11	-109	172	3	3
LGV Freight	Business	Total	-75	-885	-5551	8609	309	178
LGV Freight	Commuting	2014	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0
OGV1	Business	2014	0	-2	-77	150	3	2
OGV1	Business	2024	-1	-1	-65	119	4	1
OGV1	Business	Total	-29	-45	-3017	5543	261	88
OGV1	Commuting	2014	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0

NON MONETISED TIME BENEFITS BY DISTANCE
Time benefits (thousands of person hrs) by distance

Vehicle type	Purpose	Year	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 15 kms	15 to 20 kms	20 to 50 kms	50 to 100 kms	>100 kms
Car	Business	2014	0	0	1	0	0	4	1	0
Car	Business	2024	0	0	1	1	2	4	1	0
Car	Business	Total	0	17	85	72	89	240	53	-23
Car	Commuting	2014	0	2	4	9	5	18	-4	-9
Car	Commuting	2024	0	2	7	5	6	19	-2	-3
Car	Commuting	Total	0	123	406	333	373	1134	-158	-192
Car	Other	2014	0	3	10	3	0	6	-6	-10
Car	Other	2024	0	3	8	0	0	5	0	6
Car	Other	Total	0	165	476	-8	24	309	-10	253
LGV Freight	Business	2014	0	1	2	5	3	0	2	0
LGV Freight	Business	2024	0	0	-2	2	3	2	-2	-1
LGV Freight	Business	Total	0	-9	-78	141	171	101	-90	-37
LGV Freight	Commuting	2014	0	0	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0	0	0
OGV1	Business	2014	0	0	0	1	1	2	1	1
OGV1	Business	2024	0	0	0	0	0	3	2	1
OGV1	Business	Total	0	0	0	10	5	176	100	45
OGV1	Commuting	2014	0	0	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0	0	0

MONETISED TIME BENEFITS BY DISTANCE
Time benefits (£000s) by distance

Vehicle type	Purpose	Year	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 15 kms	15 to 20 kms	20 to 50 kms	50 to 100 kms	>100 kms
Car	Business	2014	0	13	21	-1	7	121	42	4
Car	Business	2024	0	6	36	32	39	97	20	-11
Car	Business	Total	0	336	1628	1343	1682	4677	1059	-421
Car	Commuting	2014	0	12	22	53	31	103	-22	-53
Car	Commuting	2024	0	10	33	24	29	89	-12	-12
Car	Commuting	Total	-1	433	1393	1215	1302	3980	-570	-748
Car	Other	2014	0	17	50	17	2	29	-31	-50
Car	Other	2024	0	11	32	-2	2	21	2	23
Car	Other	Total	-1	512	1483	13	75	954	-93	631
LGV Freight	Business	2014	0	12	24	64	34	0	29	-2
LGV Freight	Business	2024	0	-3	-16	20	28	18	-19	-6
LGV Freight	Business	Total	0	-46	-546	1178	1350	763	-632	-281
LGV Freight	Commuting	2014	0	0	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0	0	0
OGV1	Business	2014	0	-2	2	8	7	28	14	7
OGV1	Business	2024	0	0	0	1	0	29	17	8
OGV1	Business	Total	0	-6	6	86	48	1375	777	351
OGV1	Commuting	2014	0	0	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0	0	0

TOTAL BENEFITS BY DISTANCE
Total benefits (£000s) by distance

Vehicle type	Purpose	Year	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 15 kms	15 to 20 kms	20 to 50 kms	50 to 100 kms	>100 kms
Car	Business	2014	0	8	25	5	8	127	54	5
Car	Business	2024	0	7	32	28	43	98	24	-12
Car	Business	Total	0	320	1521	1250	1802	4741	1232	-445
Car	Commuting	2014	0	4	13	3	33	136	10	2
Car	Commuting	2024	0	9	23	17	34	94	13	-5
Car	Commuting	Total	-1	361	1064	762	1440	4291	303	-272
Car	Other	2014	0	10	21	9	3	20	-3	-12
Car	Other	2024	0	17	20	4	5	22	-4	-16
Car	Other	Total	-1	656	977	135	175	928	-121	-341
LGV Freight	Business	2014	0	5	20	36	24	7	26	-1
LGV Freight	Business	2024	0	-1	3	18	20	17	5	-5
LGV Freight	Business	Total	0	-26	1	976	1050	768	62	-246
LGV Freight	Commuting	2014	0	0	0	0	0	0	0	0
LGV Freight	Commuting	2024	0	0	0	0	0	0	0	0
LGV Freight	Commuting	Total	0	0	0	0	0	0	0	0
LGV Freight	Other	2014	0	0	0	0	0	0	0	0
LGV Freight	Other	2024	0	0	0	0	0	0	0	0
LGV Freight	Other	Total	0	0	0	0	0	0	0	0
OGV1	Business	2014	0	-1	3	7	4	33	20	9
OGV1	Business	2024	0	0	1	3	3	33	13	5
OGV1	Business	Total	1	-7	61	149	108	1521	692	277
OGV1	Commuting	2014	0	0	0	0	0	0	0	0
OGV1	Commuting	2024	0	0	0	0	0	0	0	0
OGV1	Commuting	Total	0	0	0	0	0	0	0	0
OGV1	Other	2014	0	0	0	0	0	0	0	0
OGV1	Other	2024	0	0	0	0	0	0	0	0
OGV1	Other	Total	0	0	0	0	0	0	0	0

SENSITIVITY
Total user benefits as a percentage of total DM user costs

	Modelled Years	
Mode	2014	2024
Road	0.03%	0.03%

Economy:Economic Efficiency of the Transport System(TEE)

Consumer - Commuting user benefits	All Modes	Road
Travel Time	7005	7005
Vehicle operating costs	944	944
User charges	0	0
During Construction & Maintenance	0	0
NET CONSUMER - COMMUTING BENEFITS	7950	7950

Consumer - Other user benefits	All Modes	Road
Travel Time	3574	3574
Vehicle operating costs	-1166	-1166
User charges	0	0
During Construction & Maintenance	0	0
NET CONSUMER - OTHER BENEFITS	2407	2407

Business	All Modes	Road Personal	Road Freight	Bus Personal	Bus Freight
Travel Time	14728	10303	4424		
Vehicle operating costs	1079	118	962		
User charges	0	0	0		
During Construction & Maintenance	0	0	0		
Subtotal	15807	10421	5386		

Private Sector Provider Impacts		
Revenue	0	0
Operating costs	0	0
Investment costs	0	0
Grant/subsidy	0	0
Subtotal	0	0

Other business Impacts		
Developer contributions	0	0
NET BUSINESS IMPACT	15807	

TOTAL
Present Value of Transport Economic
Efficiency Benefits (TEE) 26164

Note: Benefits appear as positive numbers, while costs appear as negative numbers.
Note: All entries are present values discounted to 2010, in 2010 prices

Public Accounts

Local Government Funding	ALL MODES	Road
Revenue	0	0
Operating Costs	0	0
Investment Costs	5313	5313
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
NET IMPACT	5313	5313

Central Government Funding: Transport	ALL MODES	Road
Revenue	0	0
Operating costs	0	0
Investment costs	0	0
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
NET IMPACT	0	0

Central Government Funding: Non-Transport

Indirect Tax Revenues	188	188

TOTALS		
Broad Transport Budget	5313	5313
Wider Public Finances	188	188

Note: Costs appear as positive numbers, while revenues and developer contributions appear as negative numbers.
Note: All entries are present values discounted to 2010, in 2010 prices

Analysis of Monetised Costs and Benefits

Greenhouse Gases	107
Economic Efficiency: Consumer Users (Commuting)	7950
Economic Efficiency: Consumer Users (Other)	2407
Economic Efficiency: Business Users and Providers	15807
Wider Public Finances (Indirect Taxation Revenues)	-188
Present Value of Benefits (PVB)	26083
Broad Transport Budget	5313
Present Value of Costs (PVC)	5313
OVERALL IMPACTS	
Net Present Value (NPV)	20770
Benefit to Cost Ratio (BCR)	4.909

Note: This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. 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.

4.3 Journey Time Reliability Output

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Running JTV Tools

Year 1 JTV Benefits (£ in 2010 prices):,       65853
Year 2 JTV Benefits (£ in 2010 prices):,       40195
Total JTV Benefits (£ in 2010 prices):,     2132437
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