Forecasting Report

Canterbury VISUM Model Update Run

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1 Introduction

1.1 Overview

1.1.1 Amey have been commissioned by Kent County Council (KCC) and Canterbury City Council (CCC) to provide transport modelling support to test the traffic impact of a revised Local Plan scenario for Canterbury City and other local district centres.

1.1.2 The commission requires the use of the existing Canterbury VISUM model, as previously developed by Jacobs on behalf of KCC and CCC, to assess forecast demand for car travel, commercial road vehicles, park & ride, bus and rail services in support of the Local Plan process.

1.2 Background

The existing model includes a 2008 Base Year and covers the Canterbury District with the detailed model area focussing on Canterbury City and immediate surrounding area as shown in Figure 1 below.

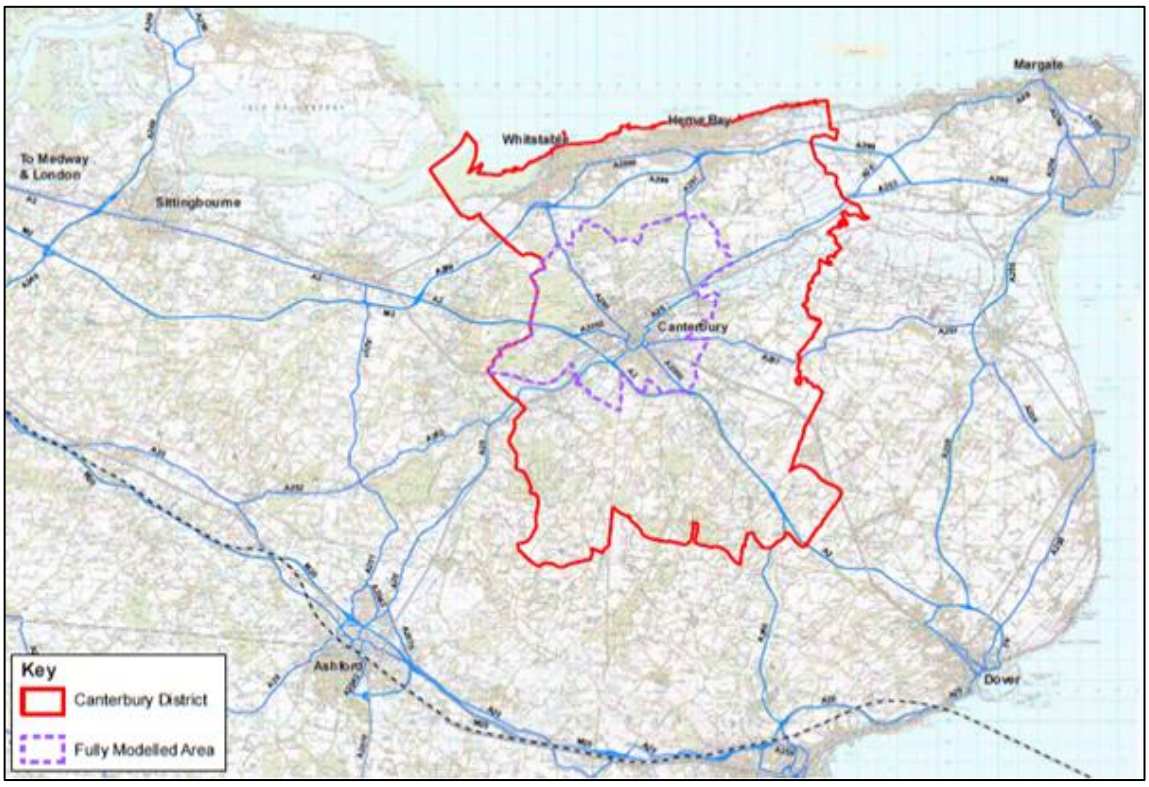

Figure 1: Model area

1.2.1 A Jacobs Local Model Validation Report (LMVR), dated June 2012, states that 'the model was measured against validation standards set by the DfT and was demonstrated to meet or exceed the minimum validation criteria as evidence that the model is validated' and further states that 'the model has been validated to a high standard and is now ready for forecast testing.'

1.2.2 Amey have conducted a review of the LMVR and Jacobs modelling methodology and are satisfied that the model was developed in an appropriate manner. It is recommended that the 2012 LMVR should be referred to for the full technical background of the model.

1.2.3 Jacobs previously used a 2026 horizon year to test different geographical distributions of development across the district. The model outputs and network performance have been summarised in a Jacobs Option Testing Report dated October 2012. It is also recommended that this report is referred to as context for this latest study.

1.2.4 In 2013-2014 Amey undertook a forecast scenario test using the same VISUM model to inform the development of the Local Plan by CCC. The previous assessments included a 2031 Do Minimum (DM) scenario and a 2031 Do Something (DS) scenario. The DM scenario incorporated the current site allocations and completions at that time (totalling some 4,800 dwellings and 263,000m^2 of employment); in addition to committed transport schemes only. The DS scenario was developed by CCC, based upon previous option tests by consultants Jacobs, to incorporate the full Local Plan development projections (totalling some 16,900 dwellings and 433,500m^2 of employment) and all Transport Strategy interventions.

1.3 Purpose of Report

1.3.1 Amey have been commissioned to undertake a revised Do Something scenario for the future year 2031.

1.3.2 The revised Do Something scenario, referred to herewith as DS2, replaces previous runs that had been undertaken during the evolution of the Local Plan and Transport Strategy. The DS2 scenario is intended to reflect, as far as is practicable, the current development projections and proposed transport strategy for the district in response to the ongoing Local Plan examination, which commenced in 2015.

1.3.3 This document provides background to the modelling methodology and a summary of the modelled outputs used to assess overall demand and network performance, including:

- Travel demand;
- Mode share;
- Network performance; and
- Journey times.

1.3.4 The model outputs will be reported alongside the 2031 DM scenario for comparative purposes.

1.3.5 This document should be read within the context of previous modelling work, as undertaken by Jacobs and Amey, and also the emerging CCC Local Plan documents, in particular the Canterbury Transport Strategy.

1.4 Report Structure

1.4.1 This report will provide a summary of the methodology adopted to assess the forecast Local Plan scenario for the district and will set out the headline outputs from the model.

1.4.2 The report is structured as follows:

Chapter 1 Introduction;

Chapter 2 Modelling Methodology;

Chapter 3 Modelled Scenario;

Chapter 4 Model outputs;

Chapter 4 Summary.

2 Modelling Methodology

2.1 Overview

2.1.1 The previous forecast models for Canterbury were developed from the Base model using planning data, trips rates derived from TRICS and growth factors from TEMPRO.

2.1.2 With the aim of maintaining consistency with previous work, the previous 2031 forecast model scenarios were developed based on the data and files from earlier models that were made available to Amey. These files included base year matrices, highway and public transport networks, skimmed cost matrices and parameter values for mode choice. A number of assumptions were applied as required where there have been complications in the transfer of data, omissions or ambiguities.

2.1.3 The 2031 DS2 scenario has been developed from the previous 2031 Do Something scenario model and therefore incorporates many of the same input data and assumptions as used previously. As such the trip rates used are the same as used previously and the TEMPRO database, in conjunction with the National Trip End Model (NTEM), has been employed to provide for background growth and external traffic growth.

2.2 Approach Adopted

Model Process

2.2.2 The model process consists of generating reference matrices from an existing start-point. The starting point is the 2008 base which was growthed up to reflect general changes in trip-making (background growth) and to add trips for the specific land-use proposals identified (planning completions, permissions, strategic sites). A matrix furnessing approach was used, with relevant adjustments to account for empty zones or sparse distributions.

2.2.3 The reference matrices were assigned to a network which incorporated changes anticipated for the highway or for public transport. These assignments allow skims to be generated for travel costs. This information can be used to inform an incremental mode-choice of car, bus and train. Fundamentally this is a comparison of car journey time plus parking charges, versus bus (or train) ride time plus fare.

2.2.4 There is also a final sub-mode choice for car trips between 'car-all-the-way' and 'park & ride' (P&R) which was carried out at the absolute level to account for P&R mode-choice. This mechanism is to dampen down the highway flows rather than to explicitly provide P&R usage, either by site or at aggregate level. A broad check of total usage against capacity is undertaken, but P&R capacity is understood not to be a limiting factor in the transport strategy. In addition, for the OD pairs that are captured by the P&R, the interception rate was checked that it seems realistic.

Model Details

2.2.5 The zoning structure, for the basis of trip loading, is relatively fine for the city centre, becoming coarser for the rest of the district, and is done at the district level for the rest of the county.

2.2.6 Some elements that will be considered by the local authority are not included in the model, for example car park capacity and car park choice. Other elements are incorporated but only at the broad level, such as car park charging and public transport fares.

Mode Choice

2.2.7 The forecast year mode choice is based on the balance of the generalised cost of travel by car and public transport. Travel costs are determined from parking costs, vehicle operating costs, value of time, bus and rail fares.

2.2.8 The mode choice model allows for the change of mode between car, bus and rail for Home Based Work (HBW) and Home Based Other (HBO) trips, excluding external to external trips.

2.2.9 For the purposes of the 2031 DS2 scenario the vehicle operating costs, public transport cost and value of time remain unaltered. Parking costs applied are adjusted to reflect an increase of 3.5% per annum for the city centre and also to take into account the paying and non-paying parking, long and short stay parking, subsidised parking etc.

Model Outputs

2.2.10 The objective of this modelling exercise is to provide a means of assessing the traffic impact of a revised Local Plan development scenario (Preferred Option) for Canterbury. The model is a strategic level model providing an overview of how traffic responds to changes in demand and in network provision across the wider area.

2.2.11 Output from the VISUM model has been extracted to provide an overall view of the expected level of travel demand for the Do Minimum and DS2 scenarios and the subsequent impact on network performance and efficiency.

2.2.12 The model network performance has been assessed using key indicators:

- Total travel distance (vehicle kilometres);
- Total travel time (vehicle hours).

2.2.13 The total vehicle kilometres (vkm) travelled and total vehicle hours (veh hrs) recorded on the network, in relation to the number of trips made, provide an indication of the level of efficiency of the network (e.g. higher vehicle kilometres indicate that people have to travel further or take longer routes; and higher vehicle hours indicate people are taking longer to travel on a congested network).

Use of Model/Assumptions

2.2.14 As a strategic model, this scenario test can be used to give a broad overview of the implications of transport consequences of the Local Plan; and suggest areas where more specific transport or planning assessments may be needed. It does not replace the requirements of developers to undertake appropriate individual transport assessments.

2.2.15 This report should also be considered alongside any further detailed work, such as the VISSIM modelling for the Sturry Link Road.

2.2.16 Strategic modelling does not and cannot reflect all considerations, and this will be highlighted where appropriate.

2.2.17 As stated earlier in the report, a number of assumptions have been incorporated within the previous 2031 forecast scenarios which are therefore also contained within the 2031 DS2 scenario. These assumptions are summarised in Appendix A of this report.

2.2.18 Furthermore some inputs have been controlled to match transport aspirations. A common example is the assumption of higher walking and cycling trip making. This is not part of the modelling function, and therefore is adjusted outside of the model.

2.2.19 Where a new development site has been added and therefore a new distribution has been introduced outside of the pre-existing ones manipulated by furnessing, it has been generally assumed that these would be broadly Canterbury-facing so that a robust traffic pressure on the urban area, as the area of study, is generated.

3 Modelled Scenario

3.1 Overview

3.1.1 The 2031 DS2 scenario has been developed based upon information provided by CCC regarding the current development projections and transport strategy interventions incorporated within the Local Plan for the district.

3.2 Land Use Projections

3.2.1 The forecast models for 2031 have been developed from the 2008 Base model. The development assumptions built into the 2031 Do Minimum forecast models also allow for allocations and planning permissions from the base year 2008 recorded as completed, under construction or not started. The DS2 scenario is built onto the Do Minimum, with the inclusion of the additional strategic housing and employment land allocations identified in the Local Plan and including windfall development assumptions.

3.2.2 The total quantum of residential, employment and retail development assumptions included to create the previously modelled 2031 Do Minimum scenario and the current DS2 scenario are summarised in Table 1 below.

Land Use (2008 – 2031)	Do Minimum	Do Something 2
Housing (units)	4,817	18,963
Employment (all use classes) (sqm)	263,014	460,364
Retail (sqm)	8,191	46,291

Table 1: Modelled Development Projections

3.2.3 The above projections for the DS2 scenario reflect the aspiration of the Local Plan to deliver around 16,000 houses between 2011 and 2031. The additional houses (circa 3,000) shown in Table 1 above represent the housing completions between 2008 and 2010.

3.2.4 The individual development assumptions have been allocated to the most appropriate model zone that best reflect location and likely access arrangements to the highway network. Windfall developments have been distributed in the respective zones using the proportion of housing allocated per zone.

3.2.5 The main difference between the DS2 scenario and the previous Do Something scenario relate to the addition of a major development site at Thanington (1150 homes + employment, retail and primary school uses) in addition to more minor revisions.

3.2.6 The other strategic development sites include the large South Canterbury development of 4,000 houses on the A2050 to the south-east, and a group of developments in the north-east quadrant of the district at Sturry, Hersden and Herne Bay.

3.2.7 There is also notable employment and retail quanta in both the above sites and in business areas such as Wincheap on the A28(S).

3.3 Transport Interventions

3.3.1 The current DS2 scenario requires the delivery of a package of highway, public transport and parking management improvements to mitigate the traffic impact associated with development growth. These interventions have been incorporated where practicable, and to a level of detail relevant to the VISUM model. A key aspect not included is car park capacity. In addition parking cost is a simplified input trying to account for car park location, free parking, and non-residential private parking.

3.3.2 KCC and CCC have identified a range of measures, which aim to address specific transport issues, while remaining deliverable through specific development clusters and within the known constraints. Table 2 below summarises the principal schemes included in the Do Minimum and DS2 scenarios.

3.3.3 A range of schemes, particularly in the Wincheap area, are likely to be delivered to relieve local congestion in the Do Minimum scenario. Building on this, the DS2 scenario seeks to also address wider strategic issues with the delivery of an all movement A2 junction to replace the existing constraints at the Bridge Interchange and a southbound off-slip at Wincheap.

3.3.4 New link roads are proposed at Herne, Chaucer Road, Sturry and Broad Oak to relieve excessive traffic demand on constrained routes and improve capacity. The layouts of such schemes are largely assumption based at this stage and are subject to design feasibility and more detailed modelling.

Ref.	Highway Measures	Do Minimum	DS2
1	New All movement A2 Junction at Bridge	×	✓
2	A2 southbound off-slip at Wincheap (includes gyratory layout)	×	✓
3	Wincheap Relief Road	✓	✓
4	Sturry Link Road	×	✓
5	Broad Oak Relief Road	×	✓
6	Herne Relief Road	×	✓
7	Chaucer Road/Barracks Link Road	×	✓
Ref.	**Public Transport Measures**	**Do Minimum**	**DS2**
8	Extend Sturry Road Bus Lane to Kingsmead Roundabout	×	✓
9	Old Dover Road Bus Gate and Priority Measures	×	✓
10	Fast Bus Link from South Canterbury Development	×	✓
11	Wincheap Bus Priority	✓	✓
	Bus Fare Subsidy South Canterbury Development	×	✓
Ref.	**Traffic Management Measures**	**Do Minimum**	**DS2**
12	St Dunstans/Westgate Towers Environmental Improvements	✓	✓
Ref.	**Parking Measures**	**Do Minimum**	**DS2**
13	New Dover Road P&R Increase Capacity to 1,000 (+400 spaces)	×	✓
14	Wincheap P&R Increase Capacity to 900 (+300 spaces)	×	✓
15	Sturry Road P&R Increase Capacity to 700 (+100 spaces)	×	✓
	3.5% Annual Increase in Parking Tariffs	×	✓

Table 2: Proposed Do Minimum and DS2 Transport Interventions

3.3.5 Overall access to Park & Ride will be improved through improvements to the A2 junctions at Wincheap and New Dover Road; and through a link to the proposed Sturry Link Road. Local bus priority measures, including extended bus lanes and bus gates, are proposed to improve park & ride bus journey times. Capacity will be increased at each site to accommodate any additional demand either resulting from improved access or displaced from city centre parking.

3.3.6 A bus gate is being introduced on Old Dover Road, to prevent through traffic hindering the Park & Ride Service. The new alignment through Wincheap will also include bus lanes.

3.3.7 Improved bus services, and possibly subsidised fares, are being considered for the larger sites at South Canterbury and Thanington.

3.3.8 An increase to car parking charges has been applied as far as is practicable to reflect an increase of 7% every two years.

3.3.9 Walking and cycling modes of travel are not modelled specifically. Trip generation for the model is based on vehicle trips and an estimate of bus/rail trips is extrapolated from this. It is presumed that a further 20% of walk and cycle trips are not accounted for. The transport strategy aims to increase the walk and cycle trips, especially within the urban area. On this basis new development trips within the Canterbury urban area have been assumed to have the potential for a higher proportion of walking and cycling trips (30%) which would otherwise have been made by car. Car trips estimated for development are adjusted accordingly to reflect the higher proportion of walking and cycling trips.

3.3.10 Furthermore, an objective of the Canterbury Transport Strategy is to raise the mode share of walking and cycling in the Canterbury urban area for existing travel to 40%. This change has been reflected by the adjustment of trips which fall within all of the following categories:

- home based only;
- within the urban area; and
- less than 5 km in distance.

4 Model Outputs

4.1 Travel Demand

Total Travel Demand

4.1.1 A range of indicators have been used to demonstrate and compare the transport situation between the 2008 Base, 2031 Do Minimum and 2031 DS2 scenarios. The model demonstrates the estimated travel demand for highway and public transport trips for each scenario. While total travel demand is referred to throughout this document as person trips, walking and cycling trips are not modelled.

4.1.2 The total travel demand in terms of person trips for each scenario are summarised in Table 3 below. The model estimates the total number of person trips will increase by up to 17% between the 2008 Base year and 2031 Do Minimum scenario. The delivery of the DS2 scenario is estimated to increase total travel demand by up to 30% from the base situation and by 11-12% from the Do Minimum.

4.1.3 The model demonstrates that the AM and PM peak hour demand levels are relatively consistent in each of the scenarios. The stated values do not include through trips travelling between areas external to the model which do not travel through the Canterbury urban area i.e. movements along the A2.

Person Trips	AM Peak			PM Peak		
	Base	DM	DS2	Base	DM	DS2
Total Demand (per hour)	35,100	40,900	45,800	36,000	41,200	46,000
% Increase from Base		17%	30%		15%	28%
% Increase from Do Min			12%			11%

Table 3: Total Travel Demand - Person Trips (excl. Walking and Cycling)

4.1.4 The total travel demand in terms of vehicle trips for each scenario are summarised in Table 4 below. The model estimates the total number of vehicle trips will increase by up to 18% between the 2008 Base year and 2031 Do Minimum scenario. The delivery of the DS2 scenario is estimated to increase total travel demand by up to 30% from the base situation and by 9-10% from the Do Minimum.

Vehicle Trips	AM Peak			PM Peak		
	Base	DM	DS2	Base	DM	DS2
Total Demand (per hour)	30500	36100	39600	29800	35000	38200
% Increase from Base		18%	30%		17%	28%
% Increase from Do Min			10%			9%

Table 4: Total Travel Demand - Vehicle Trips

Canterbury Cordon Flows

4.1.5 Inner and outer cordons, illustrated in Figure 2 below, have been used to identify traffic demand moving within the city and between the city and the immediate surrounding areas.

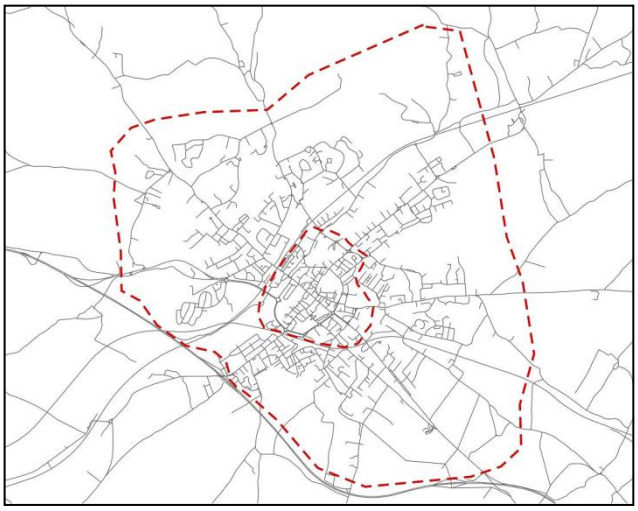

Figure 2: Canterbury Inner and Outer Cordons

4.1.6 Figure 3 and Figure 4 below show the net volumes of traffic crossing the inner and outer cordons for the different scenarios.

4.1.7 The cordon flows indicate that the DS2 scenario will have a greater impact on Canterbury's outlying highway network. The higher increases in the outer cordon, when compared to the inner cordon, are potentially due to: the higher distribution of development in these areas; saturation levels of city centre network; and also the impact of city centre transport interventions e.g. bus priority, bus frequency, fare incentives, displacement from city centre parking stock, and impact of Park & Ride sites intercepting traffic on the city outskirts.

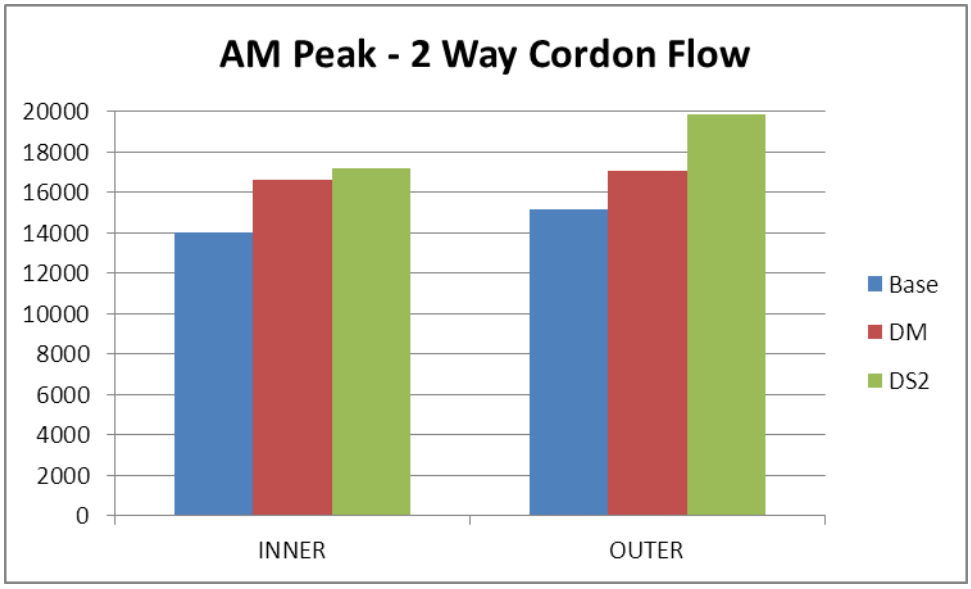

Figure 3: AM Peak Cordon Flows

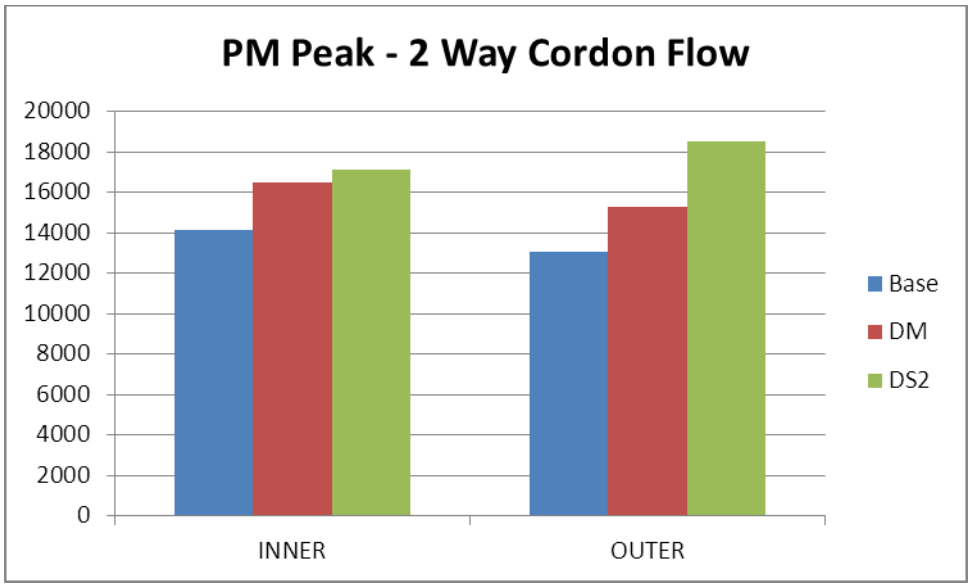

Figure 4: PM Peak Cordon Flows

4.2 Mode Choice

4.2.1 The model calculates mode choice and modal shift for car, bus, rail and park & ride trips only and does not specifically account for walking and cycling. This section addresses mode share for car, bus, and rail trips and compares the Do Minimum and DS2 scenarios.

4.2.2 Home-based work (HBW) and home-based other (HBO) have been assessed, given these trips are most likely to have the opportunity for modal shift. It is assumed that employer's business and non-home-based other trips are unlikely to have much opportunity to change mode.

4.2.3 The mode share for car, bus and rail trips is based upon the generalised cost of travel for each mode. Travel costs are derived from parking costs, vehicle operating costs, value of time and bus and rail fares. The modelling methodology retains the base year value for an element of these costs e.g. vehicle operating costs and fares. However, city centre parking costs have been increased by 3.5% per annum to encourage mode shift away from the car.

4.2.4 The attraction of bus and rail is also dependent on the origin and destination of trips, the accessibility of public transport at each end of the journey, service provision and the level of delay tolerable to drivers.

4.2.5 While the Do Minimum scenario does include some bus priority improvements at Wincheap and increased parking charges, the DS2 scenario also includes a subsidised fast bus service from the South of Canterbury development as well as bus priority on Old Dover Road and Sturry Road.

4.2.6 The forecast average peak mode share for HBW and HBO trips demonstrate relatively little change between the Do Minimum and DS2 scenarios.

4.2.7 In the wider strategic sense, there are only small incentives being applied to encourage mode shift from car to bus, therefore, it is not considered surprising that the mode choice model has minimal effect. The bus priority measures are helping to enable the current bus timetables to be effective into the future; however do not introduce significant priority, for example at key junctions, to give bus users a tangible time saving.

4.2.8 The mode choice includes car, bus and rail; however, the rail demand is staying broadly unchanged. Wider aspects of HS1 domestic are not included in the model.

4.2.9 More specific promotion to new residents aiming to start occupation of sites with a higher bus mode share is not explicitly modelled. However, this is likely to be promoted as part of the development process.

4.3 Network Performance

4.3.1 The overall performance of the model network is assessed for the different scenarios using the following indicators:

- Total travel distance (vehicle kilometres (vkm));
- Total travel time (veh hrs); and
- Journey times (mins).

Network Overview

4.3.2 The total travel distance and total travel time have been extracted for the core modelled area which covers the City of Canterbury in the Do Minimum and DS2 scenarios as shown in Table 5 below.

Core Network Performance	AM Peak		PM Peak	
	DM	DS2	DM	DS2
Total Travel Distance (vkm)	90,236	101,744	85,703	97,783
% Increase from Do Min		13%		14%
Total Travel Time (veh hrs)	3,885	4,749	3,659	4,939
% Increase from Do Min		22%		35%

Table 5: Core Network Performance Indicators

4.3.3 The results provide a high level overview of network performance as the model responds to the increased travel demand associated with the additional development in the DS2 scenario.

4.3.4 The extent of distance travelled (vkm) in the DS2 is largely due to the increased travel demand generated by the higher development offer. The impact of potential transport interventions, including a new A2 Bridge junction, Wincheap off-slip and city wide bus priority measures, will also potentially divert trips away from shorter more congested city centre routes to either make longer journeys on the A2 or alternatively use a P&R site.

4.3.5 The forecast increase in total travel distance corresponds with a significant increase in total network travel time between the Do Minimum and DS2 scenarios. Travel time increases are more notable in the PM within the Canterbury area and reflect the more congested network associated with the higher development quantum and travel demand.

Journey Times

4.3.6 Journey times have been monitored around all of the radial routes, with the increased demand leading to expected increases in journey times. The journey time routes are shown in Figure 5 below:

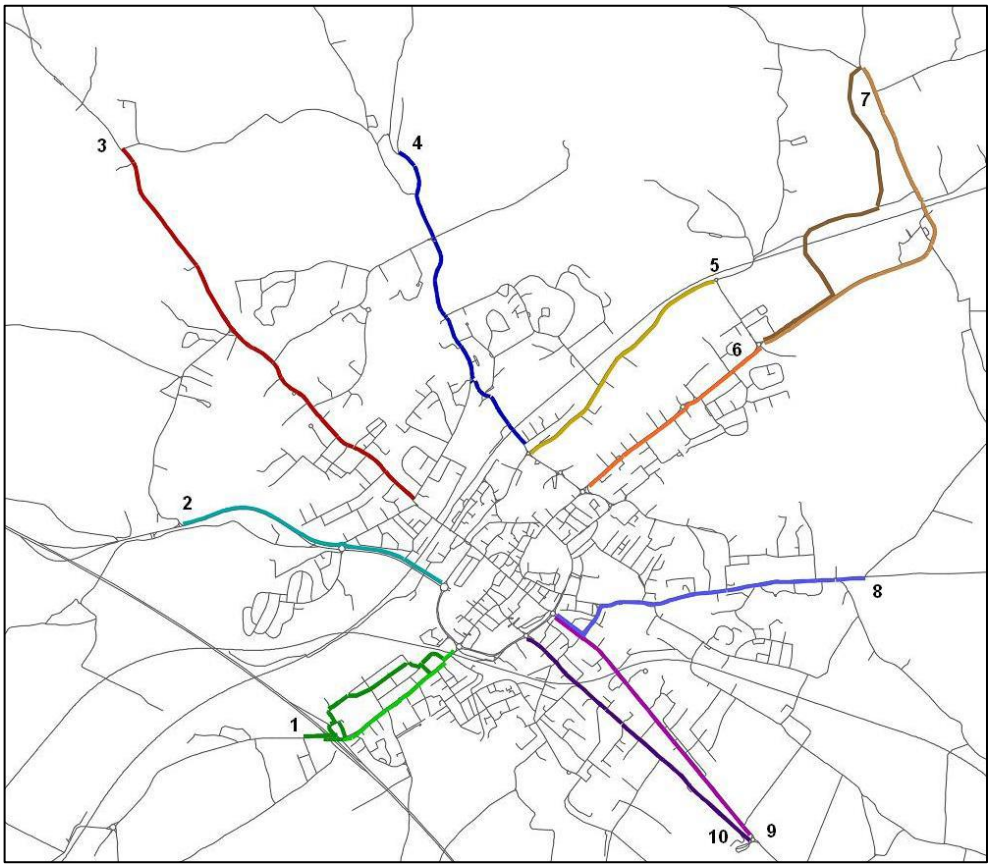

Figure 5: Journey Time Routes

4.3.7 The journey times reflect the link and junction delays held in the model run. The link times are based on the response of free flow speeds to speed-flow curves, which decrease as volume increases in relation to capacity. The junction delays are based on a simple calculation of junction type, signal timings (if appropriate), and traffic volumes.

4.3.8 Figure 6 and Figure 7 below show the comparison in vehicle journey time in minutes between the Do Minimum and DS2 scenarios for the AM and PM peaks respectively. A summary is also shown in Table 6 further below.

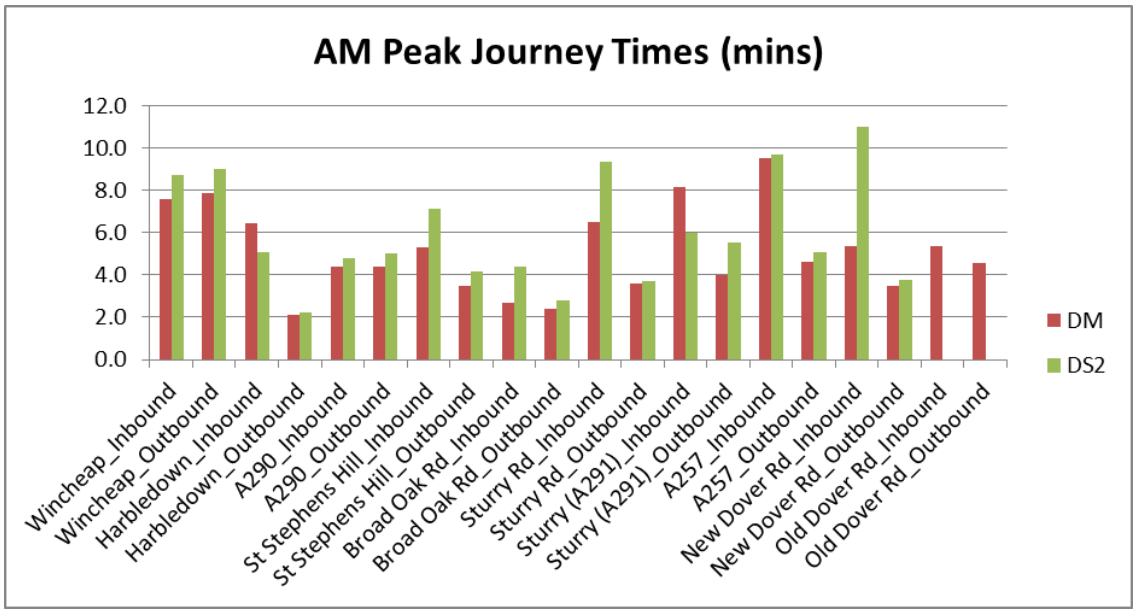

Figure 6: AM Peak Journey Times

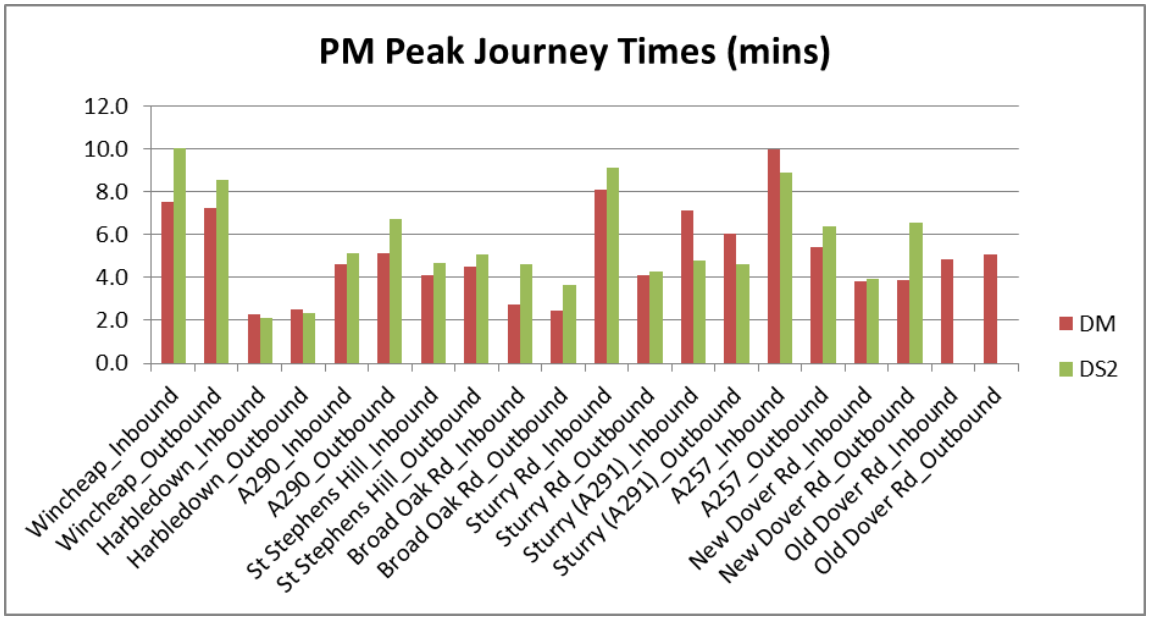

Figure 7: PM Peak Journey Times

4.3.9 While the increased travel demand of the DS2 scenario is reflected in a general increase in travel time across the network, analysis of the key radial routes indicate a number of key changes from the Do Minimum scenario.

Wincheap

4.3.10 The addition of the southbound A2 off slip and large scale retail development will significantly increase demand, which has a corresponding impact on both inbound and outbound journey times. However, until designs and development access arrangements have been finalised and tested in detail, these values should be treated with an element of caution.

Harbledown

4.3.11 The introduction of the southbound A2 off slip at Wincheap, in the DS2 scenario will reduce forecast demand on the A2050 at Harbledown and improve journey times. In particular, forecast inbound AM peak journey times will significantly reduce from the Do Minimum scenario.

St Stephen's Hill

4.3.12 While there is limited development proposed in the Stephen's Hill area of Canterbury, forecast journey times are expected to increase in the DS2 scenario. It is anticipated that this route will be constrained by increased demand on city centre routes rather than any specific intervention or development proposal.

Sturry

4.3.13 The model indicates that the introduction of the Sturry Relief Road in the DS2 will potentially improve journey times on the A291/A28 in the PM peak. However, additional travel demand in the AM peak, particularly inbound, will potentially increase journey times. Again it is advised that until designs and development access arrangements have been finalised and tested in detail, these values should be treated with an element of caution.

4.3.14 Furthermore, the model analysis does not necessarily reflect the localised benefits of a relief road to Sturry's centre e.g. access to local businesses, environmental, reduced pressure on level crossing and opportunity for bus priority.

4.3.15 In terms of the A28/A291 corridor and the north-east quadrant (Sturry/Hersden/Herne and Herne Bay), more detailed assessment work is being undertaken using micro-simulation modelling which will supersede the VISUM output.

A257 Littlebourne Road

4.3.16 The Barracks Link road will reduce forecast demand on the A257 in the DS2 scenario and will therefore benefit inbound journey times on this route.

New Dover Road

4.3.17 The addition of an Old Dover Road Bus Gate and an improved A2 junction at Bridge will significantly increase demand on A2050 New Dover Road in the DS2 scenario. As a result, journey times are expected to increase significantly, particularly AM peak inbound and PM peak outbound. This route does not have any specific highway mitigation proposed, however, sustainable modes are being encouraged with the new bus route from the South Canterbury development, and improved potential on Old Dover Road for the P&R bus.

Route	Link/Direction	AM Peak		PM Peak	
		Do Min	DS2	Do Min	DS2
1	Wincheap - Inbound	7.6	8.7	7.6	10.0
	Wincheap - Outbound	7.9	9.0	7.2	8.6
2	Harbledown - Inbound	6.5	5.1	2.3	2.1
	Harbledown - Outbound	2.1	2.2	2.5	2.4
3	A290 - Inbound	4.4	4.8	4.6	5.2
	A290 - Outbound	4.4	5.0	5.1	6.7
4	St Stephens Hill - Inbound	5.3	7.1	4.1	4.7
	St Stephens Hill - Outbound	3.5	4.2	4.5	5.1
5	Broad Oak Rd - Inbound	2.7	4.4	2.8	4.6
	Broad Oak Rd - Outbound	2.4	2.8	2.5	3.6
6	Sturry Rd - Inbound	6.5	9.4	8.1	9.1
	Sturry Rd - Outbound	3.6	3.7	4.1	4.3
7	Sturry (A291) - Inbound	8.2	6.0	7.1	4.8
	Sturry (A291) - Outbound	4.0	5.5	6.0	4.6

Route	Link/Direction	AM Peak		PM Peak	
8	A257 - Inbound	9.5	9.7	10.0	8.9
	A257 - Outbound	4.6	5.1	5.4	6.4
9	New Dover Rd - Inbound	5.4	11.0	3.8	3.9
	New Dover Rd - Outbound	3.5	3.8	3.9	6.6
10	Old Dover Rd - Inbound	5.4	0.0	4.9	
	Old Dover Rd - Outbound	4.6	0.0	5.1	

Table 6: Journey Time by Route (mins)

4.4 Alternative Land-use Profile

Ridlands Farm

4.4.2 The currently modelled land-use schedule within the DS2 scenario included a proposal for 310 houses at Ridlands Farm. There is an alternative proposal for 810 houses. This would be made possible with the hospital moving to the South Canterbury site. It has been considered appropriate, in terms of the strategic nature of the model, to provide a commentary on the potential impacts of this alternative rather than attempt to undertake an additional model run.

4.4.3 Clearly, there would be a higher overall trip generation, and the net balance of this increase would be on the South Canterbury site. The area around Ridlands Farm would be broadly unchanged, assuming the extra 500 houses would have a similar trip demand to the existing hospital trips.

4.4.4 New Dover Road and the local network in the Canterbury sites are the points of the highway network that would be affected and in particular the predicted journey times and conclusions for New Dover Road should be considered with this in mind.

5 Summary

5.1.1 The proposed Local Plan for the district of Canterbury is currently in the process of an Examination in Public (EiP). In response to initial comments from the planning inspector CCC have commissioned Amey to undertake a further forecast scenario test within the Canterbury VISUM model to assess the impacts of revisions to development projections and the Transport Strategy for the district.

5.1.2 The updated Do Something (DS2) model run incorporates updated development projections to reflect the latest Local Plan. The most significant change from the previous Do Something scenario is the inclusion of a further strategic development site at Thanington in addition to other more minor revisions.

5.1.3 The DS2 scenario incorporates a range of transport interventions in order to mitigate the impact of the proposed development, as set out in the Transport Strategy for the district. The package of measures is broadly similar to that modelled within the previous Do Something scenario. Some minor alterations are proposed, however, they are generally not significant in the context of the strategic nature of the transport model.

5.1.4 The headline model outputs, taken from the indicators used to assess and compare the network performance in the forecast Do Minimum and DS2 scenarios, include:

Travel Demand

- The Do Minimum scenario will increase overall travel demand (person trips) by up to 18% from current levels;
- The DS2 scenario increases overall travel demand (person trips) by a further 11-12% from Do Minimum levels;
- The DS2 scenario will increase vehicle trips by approximately 9-10% from Do Minimum levels, and represent an element of modal shift when considered against the increases in overall travel demand;

Mode Choice

- The DS2 scenario represents relatively modest modal shift to public transport and indicates additional measures are likely to be required to promote significant modal shift over the Do Minimum situation;

Overall Network Performance

- The impact of increased travel demand and proposed transport interventions in the DS2 scenario, e.g. new A2 junctions, bus priority and park & ride, will increase overall distance travelled on the network; and
- The DS2 scenario is predicted to observe significant increases in total travel time across the network. The increase is more notable in the PM peak, indicating the network is operating more efficiently in the AM peak;

5.1.1 In summary the DS2 scenario run has very similar outcomes to the previous Do Something run. This reflects the fact that, although some minor land use and transport intervention changes have been made, at a strategic level the Local Plan and transport strategy are broadly unchanged.

Appendix A Modelling Assumptions

Base Model
Chaucer Road link closed to traffic Correction to junction turns modelled at Lady Wootton's Green
Forecast Models
A number of small roundabouts comprised of links with inappropriate speed/flow values attributed to them, which potentially distorted delay for the heavily loaded forecast network. Link types were adjusted to remove the anomaly for forecast models. Signal arrangement adjusted to eliminate potential double counting of signal delay. Parking costs were previously assigned to zones with car parks. This does not reflect the reality of cars being parked in a zone which is not necessarily the final destination of the trip. Revised approach assigns estimated average car parking costs across city centre zones. The value attributed to the city centre zones takes into account the costs in the base model, proposed costs, journey purposes and availability of car parking. Car parks are not modelled specifically. In order to reflect the proposed reduction in car parking availability an adjustment was made to zone connector times. This reflects increased walking times for trips to the city centre zones as people would be expected to have to park further from their final destination. Proposed infrastructure changes are at an early conceptual stage and consequently a number of assumptions have had to be made regarding issues such as link capacity, junction arrangement, alignment, bus routes etc. Key bus services reviewed and additional services added to reflect current service pattern. Original timetables adjusted to reflect current travel times. Highway cost skims are based on congested travel time rather than on an impedance value used previously, The PM Park and Ride model operates independently of the AM peak Park and Ride model, rather than being simply a transposed matrix. Penalty (ASC) value of 5minutes applied to highway trips open to Park and Ride but driving all the way. Mode choice between car, bus and rail with no specific distinction for High Speed Rail. No allowance is made for car availability in the mode choice model. A Furnessing approach adopted based on development within existing zones. Adjustments were necessary to account for empty zones or those with sparse distribution.