Peter Davidson Consultancy Ltd

Transportation Planning, Railways, Research, Modelling & Software

HIGHWAYS CAPACITY ASSESSMENT REPORT (2028 DEVELOPMENT AND SITE ALLOCATIONS)

Rother Local Plan Project

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version 4.2 - edited map figures (19/11/18)

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Chapter 1: Introduction

This report describes the work undertaken by Peter Davidson Consultancy Ltd (PDC) for Rother District Council (RDC), using transport modelling to assess the capacity of the highway network to accommodate development being considered for inclusion in the Council's Development and Site Allocations Local Plan, for the year 2028.

Chapter 2 of this document describes the modelled scenarios and the methodology used for developing the forecast trip matrices.

Chapter 3 describes the transport modelling, presents an analysis of its outputs, and lists potential measures that could mitigate road capacity issues.

Chapter 4 summarises the findings and conclusions.

Disclaimer

In our projects that involve forecasting travel, all our forecasts will contain an element of uncertainty. This uncertainty depends upon the basis upon which the forecasts are made, the forecasting methodology and the events which happen between making the forecasts and the outturn travel volumes. For the first two, we use the most appropriate tools and techniques in accordance with generally accepted professional standards and practices which may lead to uncertain forecasts. The third involves a continuation of past trends which we have no way of knowing will turn out as forecast. The outturn may therefore be quite different to that forecast. This disclaimer should go on all reports, deliverables and material derived from them, that contain our forecasts.

Chapter 2: Model Development

Approach

Transport modelling was used to assess the capacity of the highway network to accommodate development being considered for inclusion in the Council's Development and Site Allocations Local Plan, for the year 2028.

A traffic model was used to identify locations where traffic demand exceeds capacity in the forecast scenarios. This was undertaken separately for the AM peak (0800-0900) and PM peak (average hour between 1600 and 1800).

The Bexhill Hastings Link Road (BHLR) model has been validated to a 2017 base year and has a 2028 forecast year. The scope of this commission relates to highway capacity analysis and we therefore only needed to use the highway assignment part of the model. Travellers' choices of trip redistribution and changing modes in response to congestion were not be represented. This allowed direct comparison between scenarios.

No edits to the existing 2028 model networks were required. The 2028 networks include the following changes over the 2017 networks:

- The North Bexhill Access Road (NBAR)
- Queensway Gateway Road
- Complementary measures associated with BHLR – junction improvements on The Ridge at Queensway and Harrow Lane and bus priority measures on the A259
- Junction improvements due to North East Bexhill development
- Signalised junctions of B2182 Holliers Hill / A2036 Wrestwood Road and B2182

The 2028 forecast year models need to reflect the amount and location of new housing and employment developments contained in the draft Development and Site Allocations Local Plan (DaSA) and hence referred to in this document as the "2028 with DaSA" scenario.

We also ran the 2028 forecast models without the DaSA development, the "2028 without DaSA" scenario in order to allow proper comparison and analysis of the impacts of traffic.

Model outputs were used to provide advice on the sensitivity of road network capacity impacts to the location and scale of specific development allocations.

Car Matrices

Each of the two scenarios, "2028 with DaSA" and "2028 without DaSA", required trip matrices to be developed, reflecting the land use in that scenario. The existing highway models have five user classes, which were retained for this project (car commuting; car employers business; car other; LGV; HGV). Our methodology for developing trip matrices followed the Guidance in the Department for Transport's Transport Analysis Guidance (WebTAG), unit M4 "Forecasting and Uncertainty".

2028 without DaSA

We used the validated 2017 base year trip matrices as the starting point.

Background growth from 2017 to 2028 was calculated using the latest TEMPro software and data set (version 7.2). TEMPro is software that allows data from the DfT's National Trip End Model to be viewed and output – this reflects the Department's forecasts of changes in travel demand for future years. Growth factors for origin trip ends and destination trip ends were calculated. These were

calculated separately for the AM period (Table 2-1) and PM period (Table 2-2), and for the three trip purposes commute, employers business, other. It excludes traffic growth due to increases in households or employment in the locations of development in the DaSA scenario.

Outside the core Bexhill study area, the overall East Sussex background growth figures were used.

TEMPro zone	Commute		Business		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
Rother 007	0.982	1.038	1.025	1.052	1.044	1.071
Rother 008	1.099	1.091	1.105	1.101	1.158	1.143
Rother 009	0.979	1.082	1.041	1.099	1.038	1.096
Rother 010	1.110	1.088	1.106	1.100	1.170	1.158
Rother 011	1.094	1.090	1.105	1.102	1.166	1.154
East Sussex	1.079	1.078	1.087	1.088	1.128	1.129

Table 2-1 Forecast background growth 2017 to 2028 (AM peak)

TEMPro zone	Commute		Business		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
Rother 007	1.021	0.976	1.039	1.007	1.047	1.036
Rother 008	1.085	1.092	1.097	1.099	1.137	1.140
Rother 009	1.061	0.978	1.078	1.019	1.066	1.044
Rother 010	1.082	1.105	1.093	1.110	1.146	1.159
Rother 011	1.085	1.085	1.096	1.098	1.135	1.136
East Sussex	1.071	1.072	1.082	1.082	1.115	1.114

Table 2-2 Forecast background growth 2017 to 2028 (PM peak)

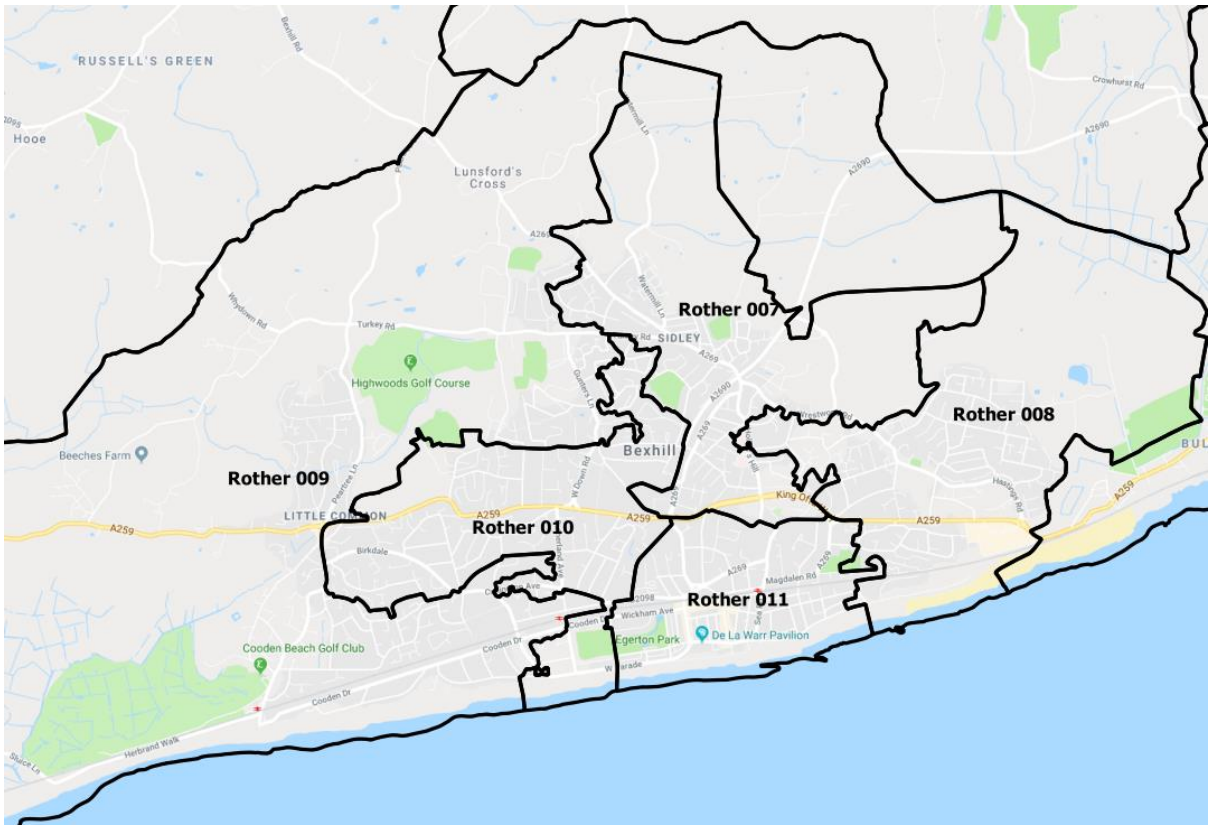

Figure 2-1 Bexhill TEMPro zones

The Furness procedure was then used to produce 2028 forecast year trip matrices consistent with the level of background growth.

2028 with DaSA

Trip rates for the planned housing and employment development in 2028 were extracted from TRICS and split into trip purposes in the same proportion as the 2017 matrices. For Spindlewood Drive, Barnhorn Green, and Grand Hotel developments, the trip rates were taken from the respective Transport Assessments. The trip rates for employment at the Levetts Wood and Oaktree Farm development were taken from the NBAR Transport Assessment.

The origin and destination trip ends generated by the development in the DaSA scenarios (shown in Table 2-3) were added to the background growth calculated using TEMPro.

Note that as well as DaSA, existing commitments at Barnhorn Green, Grand Hotel, and Worsham Farm are included in Table 2-3 and the trip generation calculations. Other commitments (listed in RDC's Housing Land Supply as at 1 April 2018 document) are smaller in scale and included in the background growth.

Site	TEMPro zone	Trips			
		AM in	AM out	PM in	PM out
Land at Levetts Wood and Oaktree Farm, Sidley	Rother 007	403	77	67	276
Land at Preston Hall Farm, Sidley, Bexhill	Rother 007	15	52	48	26
Land at North Bexhill	Rother 007	63	228	210	112
Land at Former High School Site and Drill Hall, Down Road, Bexhill	Rother 007	42	58	125	118
Land at Gullivers Bowls Club, Knole Road, Bexhill	Rother 011	5	15	14	8
Land adjacent to Cemetery Lodge /276 Turkey Road, Bexhill	Rother 009	4	12	11	6
Land at Moleynes Mead, Fryatts Way, Bexhill	Rother 009	3	10	9	5
Land south of Terminus Road	Rother 011	4	5	4	5
Land off Spindlewood Drive, Bexhill	Rother 009	27	61	61	40
Northeye, Bexhill	Rother 009	15	54	49	27
Land at Sidley Sports and Social Club, Bexhill	Rother 007	0	0	0	0
Land south-east of Beeching Road, Bexhill	Rother 011	59	46	102	106
Barnhorn Green	Rother 009	185	169	158	180
Grand Hotel	Rother 011	2	6	6	3
Worsham Farm	Rother 007	343	466	491	464
Total		1170	1259	1355	1376

Table 2-3 Forecast car trips to and from development sites

The Furness procedure was then used to produce 2028 forecast year trip matrices consistent with the level of development.

Forecast fuel price and income adjustment

As mentioned above, variable demand modelling was not used, so a further adjustment to the matrices is required, to reflect forecast growth in incomes and fuel costs between 2017 and 2028. These forecasts are published by DfT in WebTAG and we used their growth factors, shown in Table 2-4. These were applied to the matrices for both the with and without DaSA scenarios.

Growth	Income adjustment	Fuel cost adjustment	Overall factor
2017 to 2028	1.014	1.014	1.029

Table 2-4 Income and fuel cost adjustment factors

Goods Vehicle Matrices

For the LGV and HGV user classes, a single growth factor was applied to each user class, shown in Table 2-5. This used Road Traffic Forecasts (RTF15) for the South East region published by Department for Transport. The proportions of different goods vehicle categories were taken from local traffic count data on the A259, A269, and A2036.

Growth	LGV	HGV
2017 to 2028	1.285	1.111

Table 2-5 Goods vehicle traffic growth

Matrix Totals

The total number of trips in the matrices for each scenario is shown in Table 2-6.

Vehicle type	2017 base		2028 without DaSA		2028 with DaSA	
	AM	PM	AM	PM	AM	PM
Cars	25,244	25,443	28,344	28,627	29,622	30,035
LGVs	3,896	5,060	5,006	6,502	5,006	6,502
HGVs	3,457	2,462	3,841	2,735	3,841	2,735
Total	32,597	32,965	37,191	37,864	38,469	39,272

Table 2-6 Matrix totals (vehicles)

Chapter 3: Model Results

Introduction

SATURN model assignments were undertaken for the AM and PM peaks in 2028 for the two scenarios. The model outputs have been analysed to identify where congestion is likely to occur across the network. By comparing the outputs of the model runs with and without DaSA development, an assessment of the extent to which development traffic contributes to over-capacity parts of the road network is provided in the chapter.

Based on the knowledge and professional experience of PDC, qualitative advice is provided relating to:

- Traffic management measures that could be used to mitigate identified road capacity issues
- Measures designed to promote mode shift away from car use that could be used to mitigate identified road capacity issues
- Any specific road capacity issues that are directly caused by specific locations and/or scales of development
- Any locations where transport obligations should be attached to development allocations to mitigate identified road capacity issues

The quantitative effects of any recommended measures have not been tested in the model as this would be beyond the scope of this project.

Key Statistics

In both scenarios, with and without development, the total modelled road length operating under severely congested conditions is low, as shown in Table 3-1 and Table 3-2. V/C is a percentage figure calculated by dividing the modelled traffic using a road by the road's capacity. In general, a road with V/C value less than 80% is said to be operating within capacity. Roads and junctions with higher V/C values are investigated further in this chapter.

Figure 3-1 and Figure 3-2 show the links coded in the SATURN network (green lines), representing the 2028 road infrastructure[1]. These figures show which roads experience the biggest differences in traffic due to the proposed development. Links shown in darker green experience increased traffic in the 2028 with DaSA scenario, thus illustrating the roads most affected by the developments.

Scenario	Congested link distance	
	Over capacity (V/C > 100%)	Near capacity (V/C > 80% but < 100%)
2028 without DaSA	5.3km (0.8%)	14.5km (2.2%)
2028 with DaSA	5.3km (0.8%)	18.3km (3.0%)

Table 3-1 Key network statistics (AM)

Scenario	Congested links	
	Over capacity (V/C > 100%)	Near capacity (V/C > 80% but < 100%)
2028 without DaSA	5.3km (0.8%)	18.6km (2.8%)
2028 with DaSA	5.1km (0.8%)	14.6km (2.2%)

Table 3-2 Key network statistics (PM)

[1] Note that the SATURN model's links are plotted as straight lines, rather than following the curve of the road they represent.

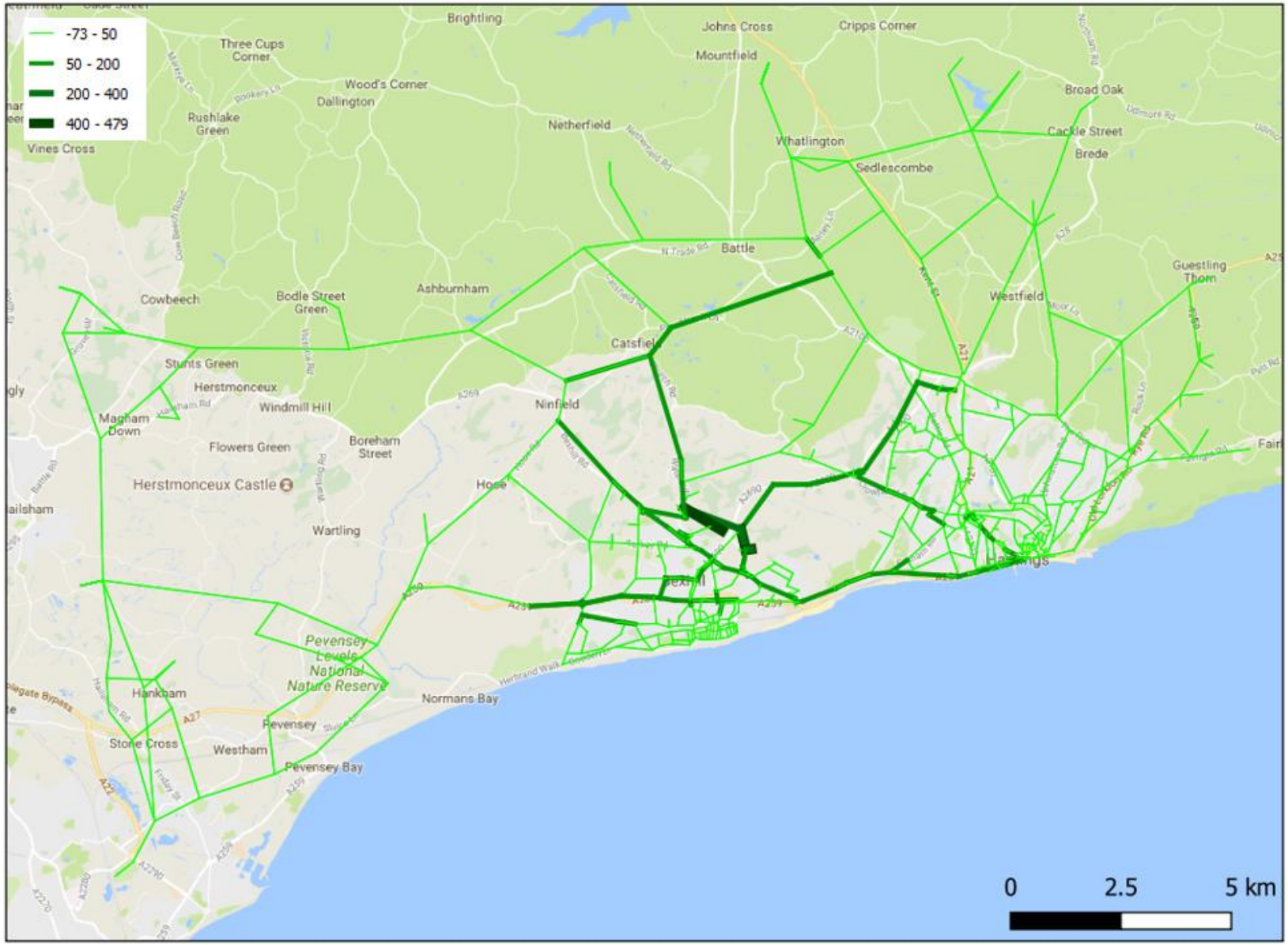

Figure 3-1 Modelled traffic increases > 50 vehicles per hour, 2028 with DaSA compared to 2028 without DaSA (AM peak)

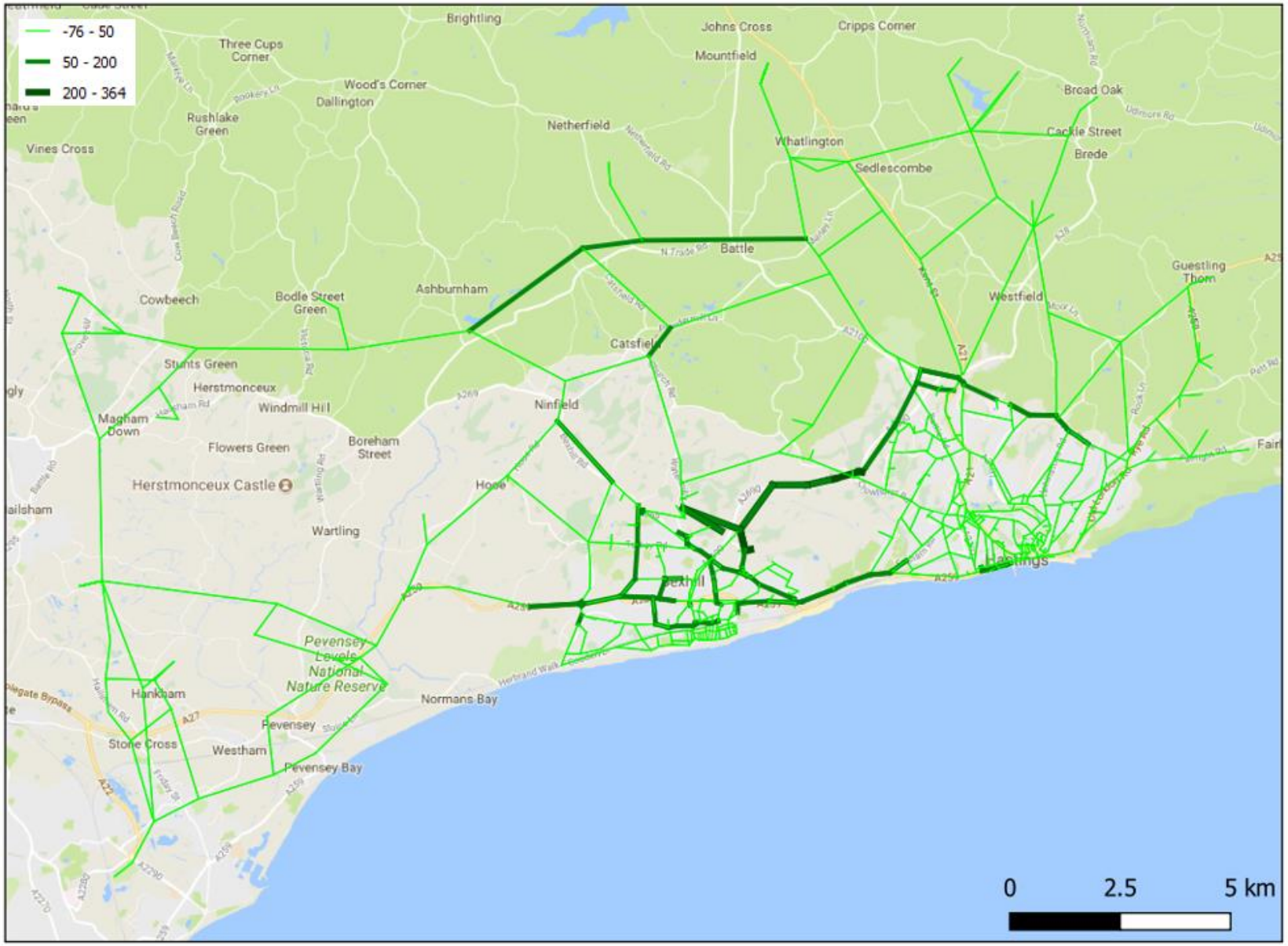

Figure 3-2 Modelled traffic increases > 50 vehicles per hour, 2028 with DaSA compared to 2028 without DaSA (PM peak)

The following sections of this chapter present analysis of the most congested areas of the road network.

AM Peak Analysis

Focusing on Bexhill, Figure 3-3 shows which roads experience the biggest differences in traffic due to the proposed development.

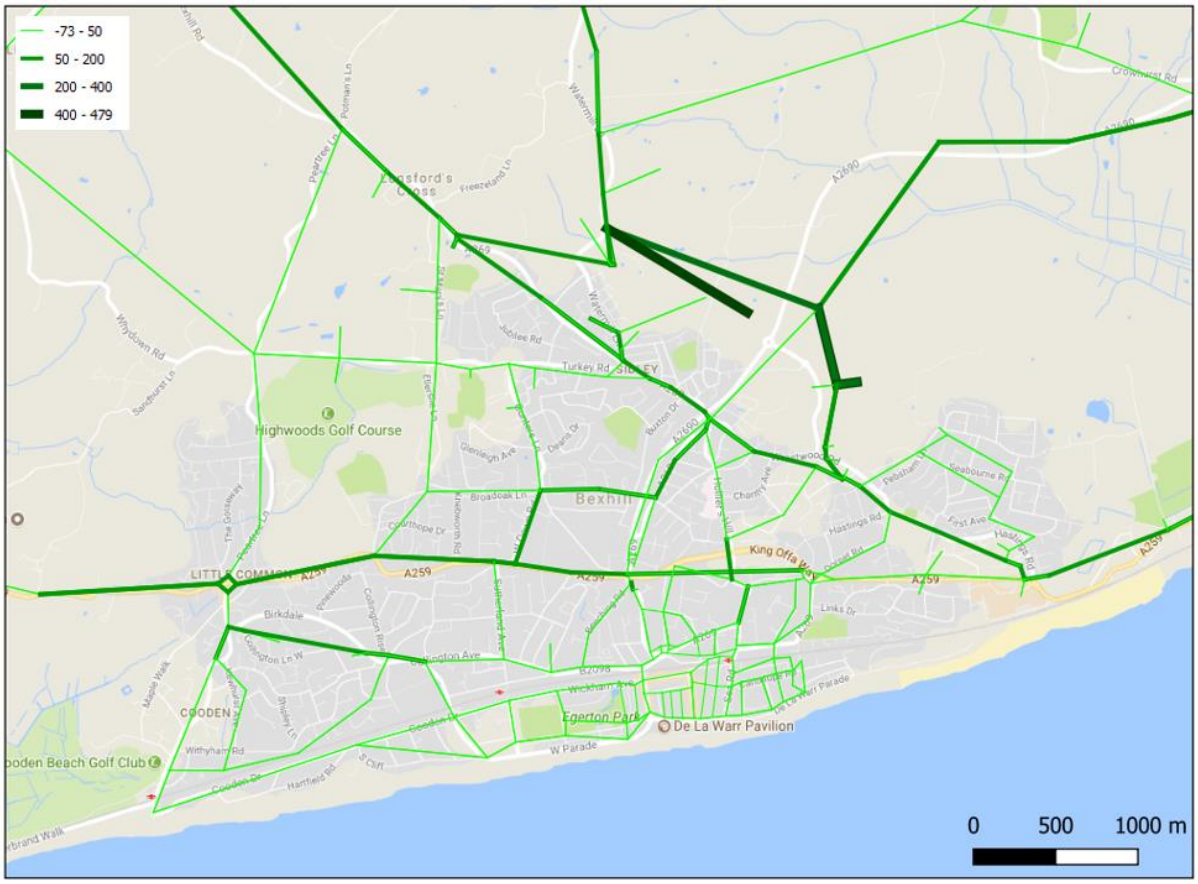

Figure 3-3 Modelled traffic increases in Bexhill, 2028 with DaSA compared to 2028 without DaSA (AM peak)

Figure 3-4 shows the DaSA locations on a map background. As above, the green lines are the links coded in the SATURN network, representing the 2028 road infrastructure. Orange lines represent congested links, where the V/C is greater than 80% but less than 100%. Red lines represent over-capacity links, with V/C over 100%. Figure 3-5 is the equivalent for the 2028 with DaSA scenario. Comparison of Figure 3-4 and Figure 3-5 gives an indication of where development traffic might cause road capacity issues.

Figure 3-4 Modelled V/C (AM without DaSA)

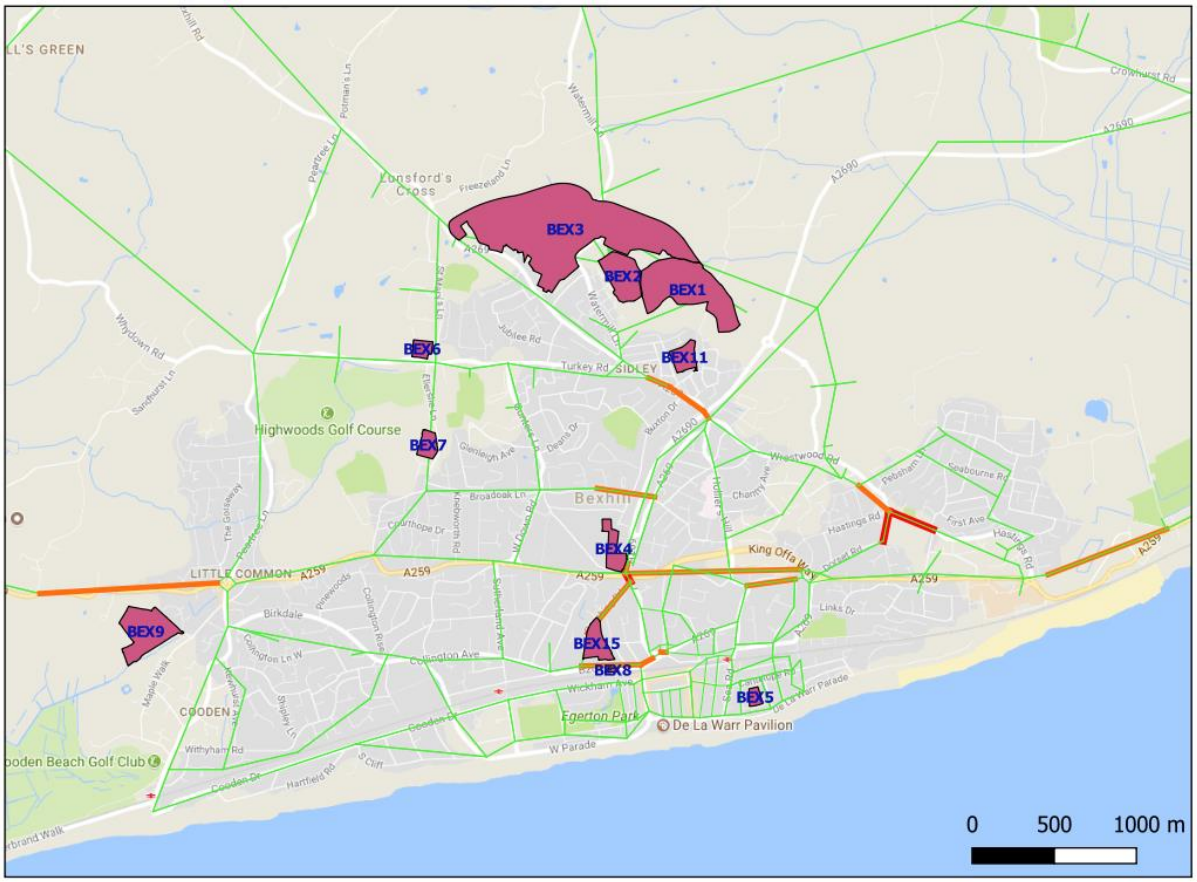

Figure 3-5 Modelled V/C (AM with DaSA)

Areas of congestion in the AM peak

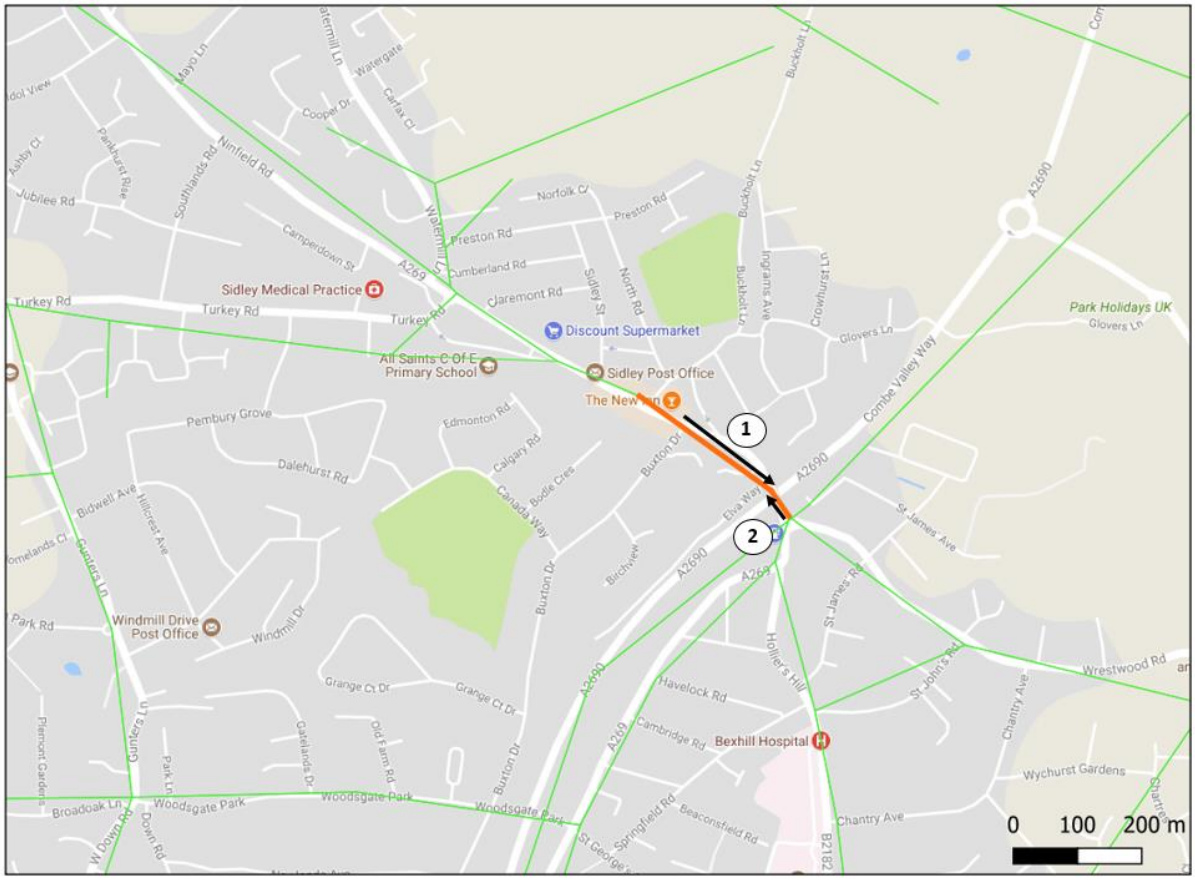

Figure 3-6 Modelled V/C (AM without DaSA)

Figure 3-6 shows links with V/C over 80% in the AM without DaSA scenario.

1: V/C is 84% southbound on the A269, approaching Hollier's Hill.

2: V/C is 82% northbound from Hollier's Hill to the A269.

Figure 3-7 shows the same area in the 2028 with DaSA scenario. Differences between Figure 3-6 and Figure 3-7 are explained below.

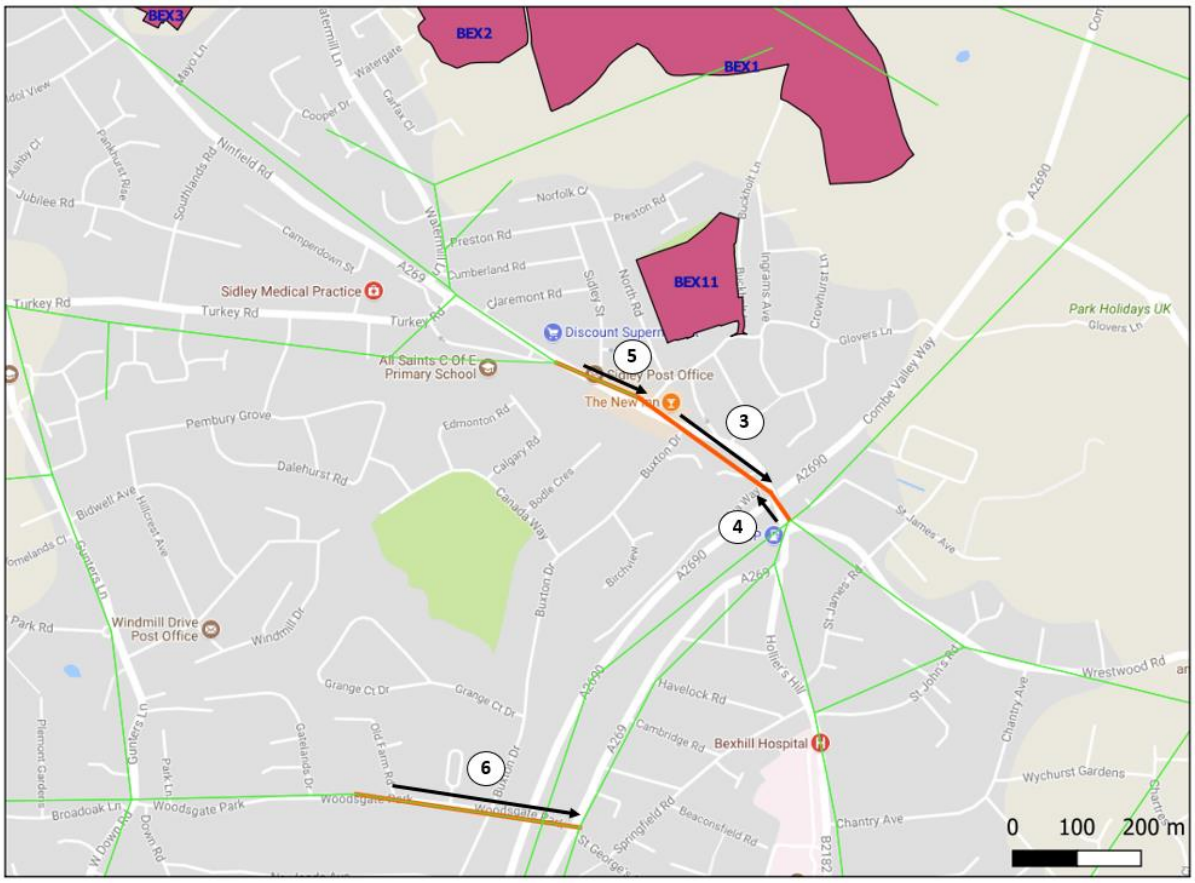

Figure 3-7 Modelled V/C (AM with DaSA)

3: V/C is 85% southbound on the A269, approaching Hollier's Hill, a slight increase compared to the scenario without DaSA.

4: V/C is over 80% northbound from Hollier's Hill to the A269. The V/C value here is 82% without DaSA, increasing to 90% with DaSA. This is a signal-controlled junction, and the increased congestion is simply due to the additional traffic. Delays and congestion here could potentially be ameliorated by changes to signal stage settings and/or timings.

5: V/C is over 80% southbound further along the A269. Figure 3-8 overleaf shows the increased traffic flow at the Hollier's Hill junction.

6: V/C is over 80% eastbound at the junction of Woodsgate Park and the A269. The increased congestion here is due to increased traffic turning from Woodsgate Park onto the A269.

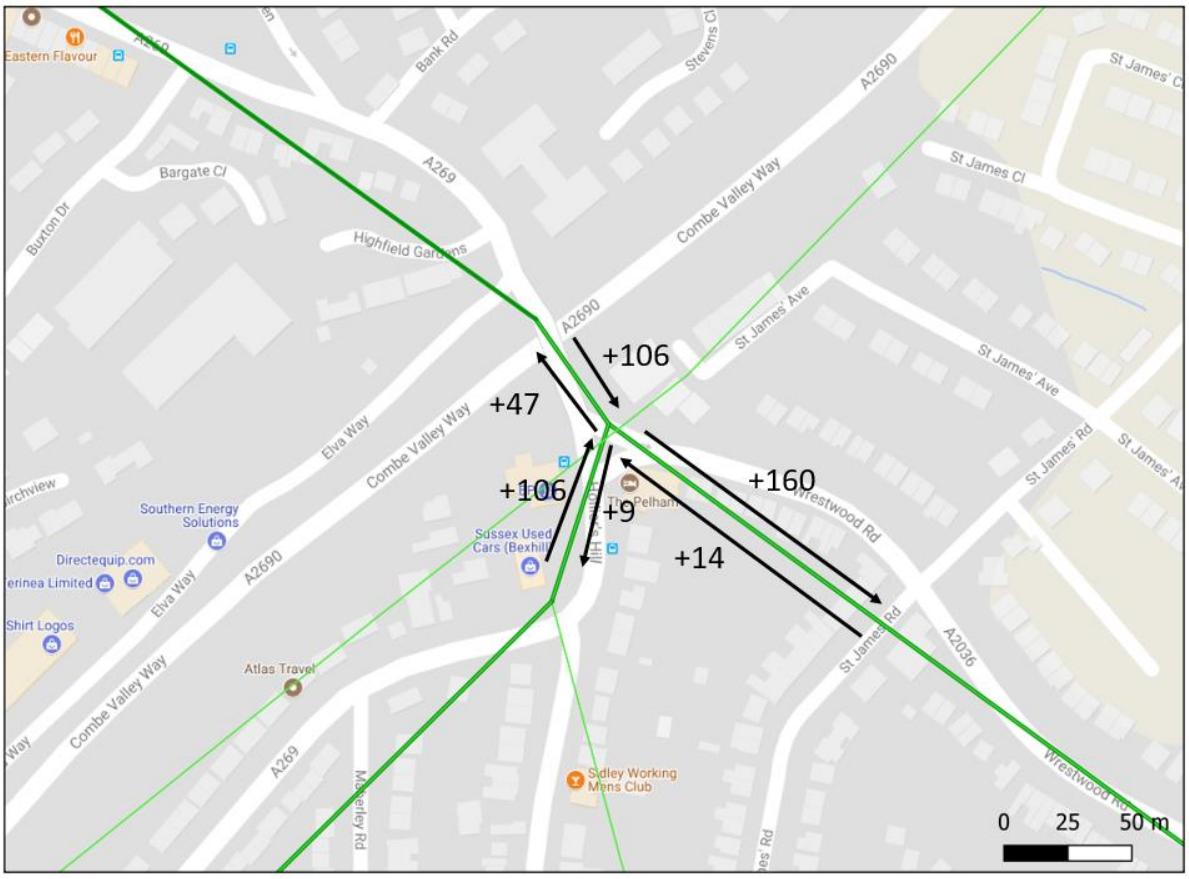

Figure 3-8 Modelled traffic differences (Hollier's Hill) (AM vehicles per hour)

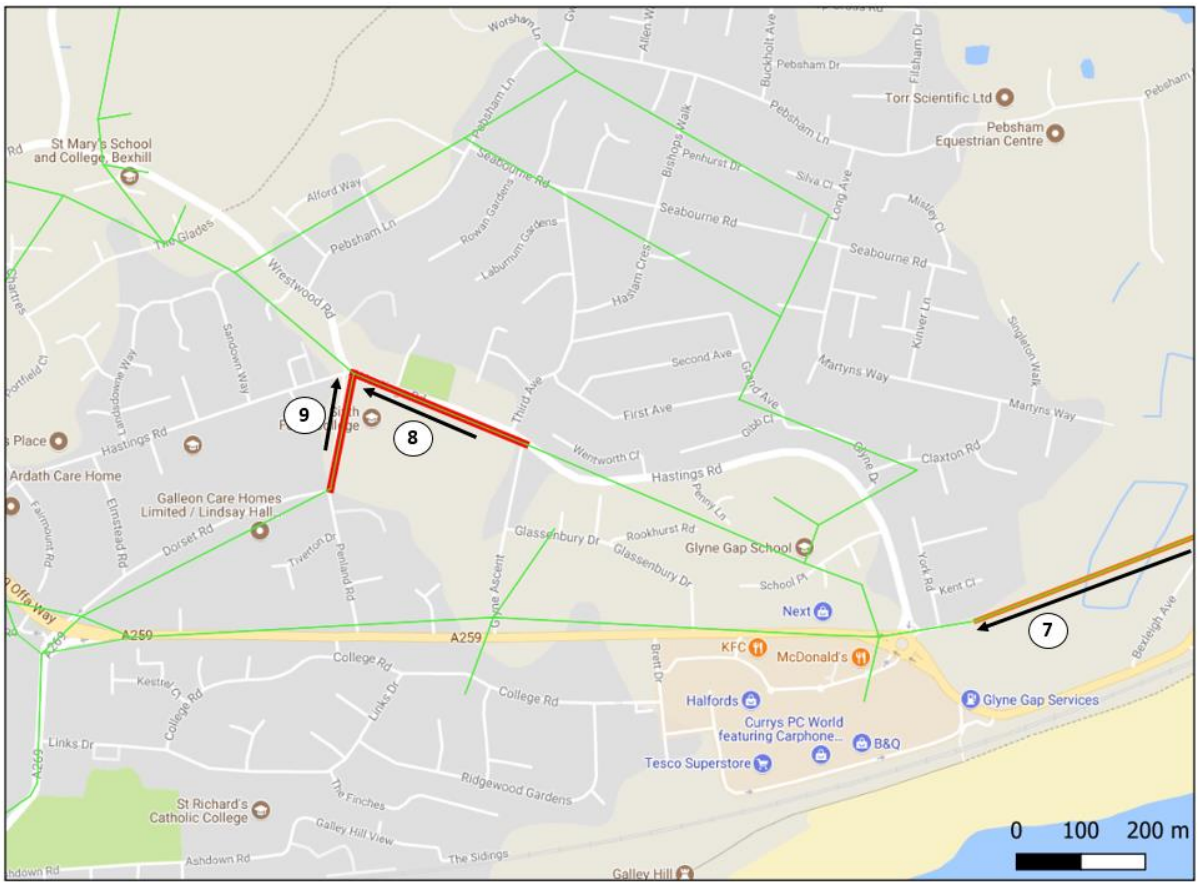

Figure 3-9 Modelled V/C (AM without DaSA)

Figure 3-9 shows links with V/C over 80% in the AM without DaSA scenario.

7: V/C over 80% westbound on the A259 coming into Bexhill.

8: V/C over 100% westbound at the signal-controlled junction between Hastings Road and Wrestwood Road.

9: V/C over 100% northbound at the signal-controlled junction between Penland Road and Hastings Road.

Figure 3-10 shows the same area in the 2028 with DaSA scenario. Differences between Figure 3-9 and Figure 3-10 are explained below.

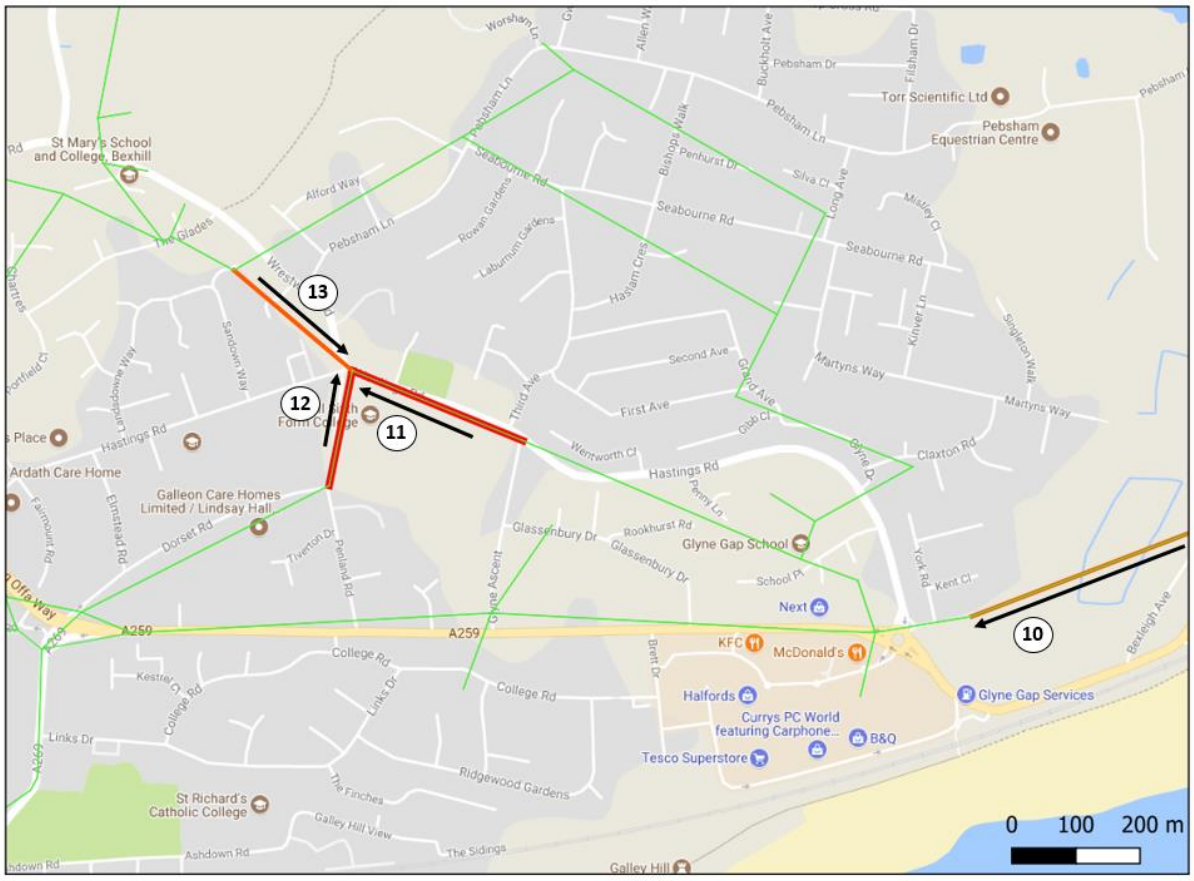

Figure 3-10 Modelled V/C (AM with DaSA)

10: V/C over 80% westbound on the A259 coming into Bexhill, similar to the 2028 without DaSA scenario (point 7 above). The V/C value is 84% without DaSA and 86% with DaSA.

11: V/C is 103% westbound at the signal-controlled junction between Hastings Road and Wrestwood Road, the same value as the 2028 without DaSA scenario (point 8 above).

12: V/C is 102% northbound at the signal-controlled junction between Penland Road and Hastings Road, the same value as the 2028 without DaSA scenario (point 9 above).

13: V/C has increased from 69% (in the without DaSA scenarios) to 81% southbound at the signal-controlled junction between Wrestwood Road and Hastings Road.

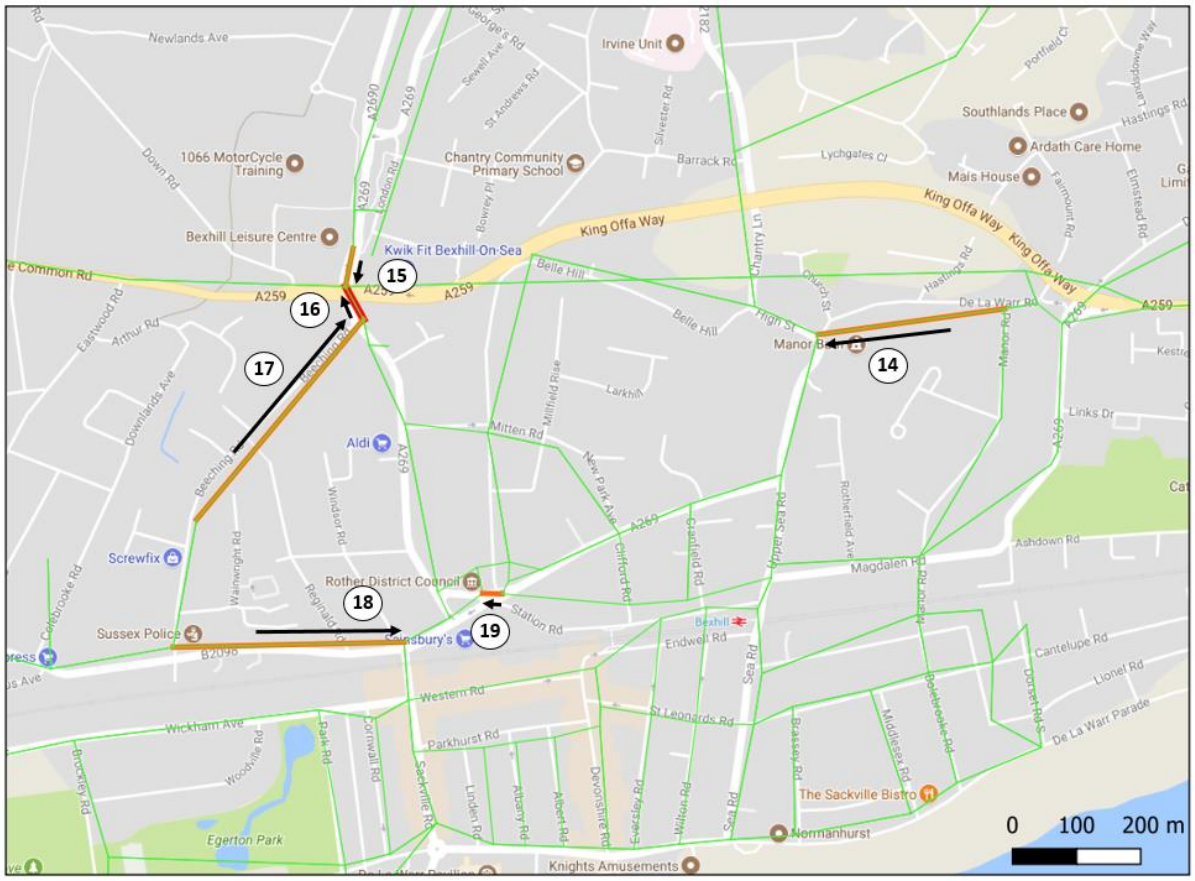

Figure 3-11 Modelled V/C (AM without DaSA)

Figure 3-11 shows links with V/C over 80% in the AM without DaSA scenario.

14: V/C is 83% westbound at junction between De La Warr Road and High Street.

15: V/C is 102% southbound at signal-controlled junction between A269 and A259.

16: V/C is 104% northbound at signal-controlled junction between A269 and A259.

17: V/C over 80% northbound at junction between Beeching Road and A269.

18: V/C is 84% eastbound at junction between Terminus Road and Buckhurst Place.

19: V/C is 82% westbound at junction between Station Road and Buckhurst Place.

Figure 3-12 shows the same area in the 2028 with DaSA scenario. Differences between Figure 3-11 and Figure 3-12 are explained below.

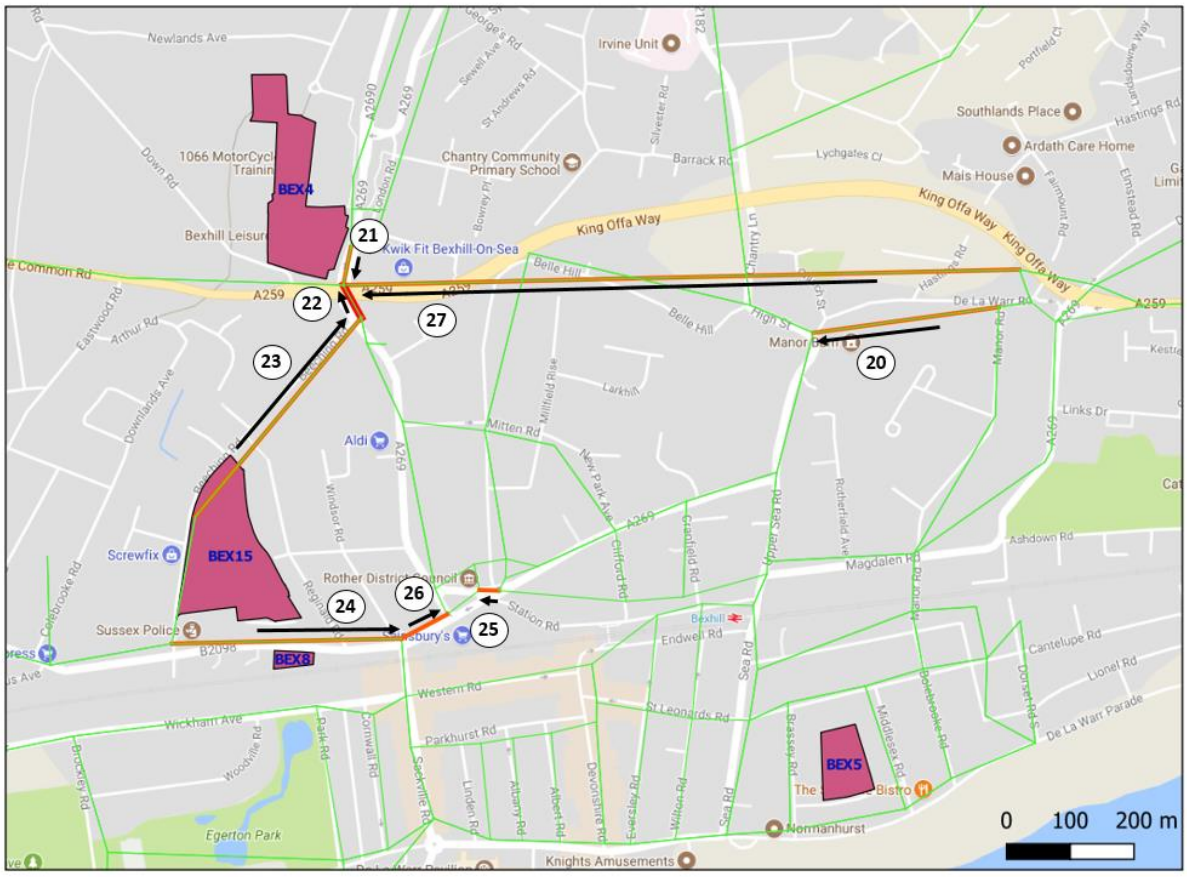

Figure 3-12 Modelled V/C (AM with DaSA)

20: V/C is 86% westbound at junction between De La Warr Road and High Street, the same value as the 2028 without DaSA scenario (point 14 above).

21: V/C is 87% southbound at signal-controlled junction between A269 and A259, similar to the 2028 without DaSA scenario (87%) (point 15 above).

22: V/C is 104% northbound at signal-controlled junction between A269 and A259, the same value as the 2028 without DaSA scenario (point 16 above).

23: V/C over 87% northbound at junction between Beeching Road and A269, similar to the 2028 without DaSA scenario (point 17 above).

24: V/C is 95% eastbound at junction between Terminus Road and Buckhurst Place, similar to the 2028 without DaSA scenario (90%) (point 18 above).

25: V/C is 82% westbound at junction between Station Road and Buckhurst Place, similar to the 2028 without DaSA scenario (81%) (point 19 above).

26: V/C over 80% eastbound on Buckhurst Place at the junction with the A269. Demand for the left turn onto the A269 increases slightly in the 2028 with DaSA scenario (from 525 vehicles to 565). This traffic has to give way. The V/C value increases from 77% in the 2028 without DaSA scenario to 81% in the 2028 with DaSA scenario.

27: V/C over 80% westbound at the signal-controlled junction between A259 and A269. The V/C on this road increases from 75% in the 2028 without DaSA scenario to 82% in the 2028 with DaSA scenario. The main increase in traffic on this approach is straight on movements on the A259 (from

King Offa Way to Little Common Road). Delays and congestion here could potentially be ameliorated by changes to signal stage settings and/or timings. For example, the green time for this movement could be increased. In the SATURN model, it is currently coded as 14 seconds in each cycle time of 2 minutes.

Clearly, additional traffic to and from the developments at BEX4 and BEX15 (site locations shown in Figure 3-12) has some impact on the junctions described above. The levels of congestion predicted in this area show that a traffic management scheme is required, in particular focused on the A259 / A269 junction and ancillary roads.

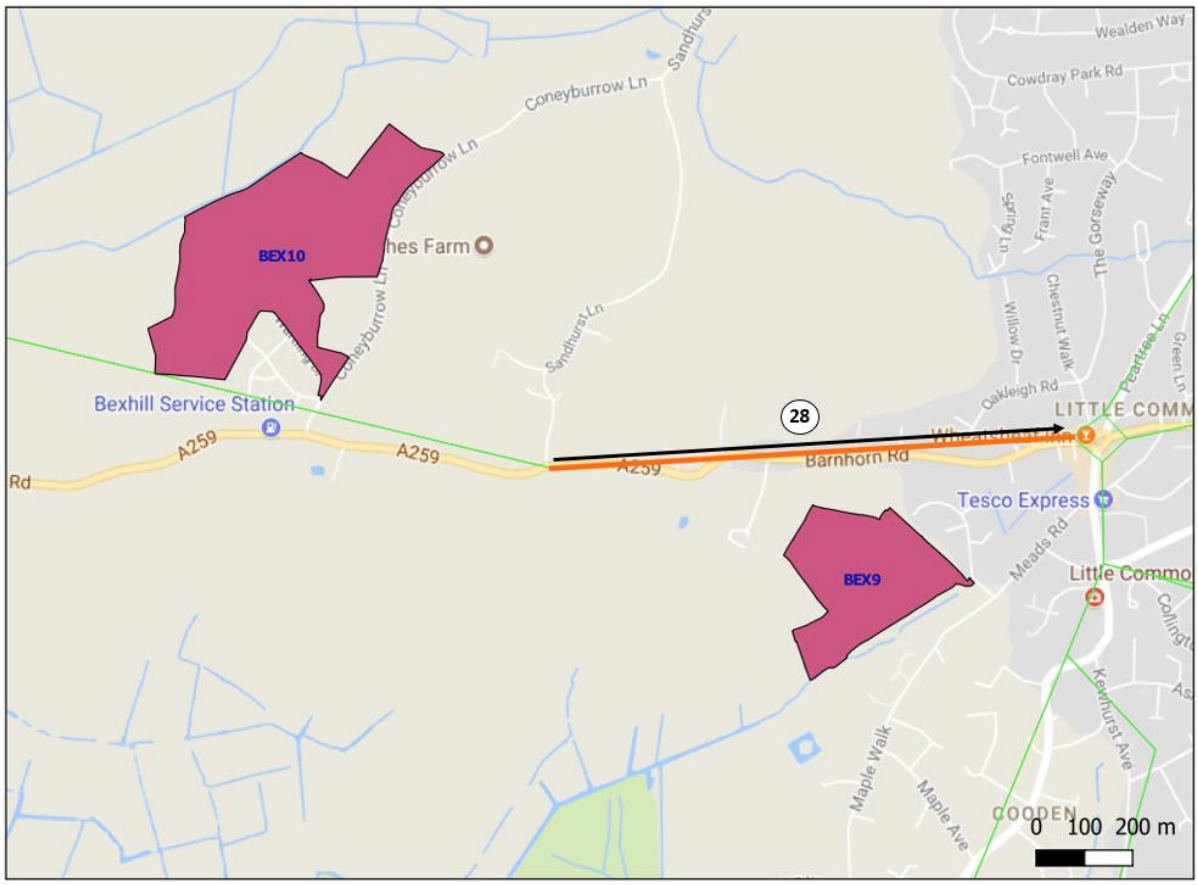

Figure 3-13 Modelled V/C (AM with DaSA)

Figure 3-13 shows one further congested link in the 2028 with DaSA scenario.

28: V/C over 80% eastbound along the A259 towards Bexhill. The V/C value increases from 74% in the 2028 without DaSA scenario to 85% in the 2028 with DaSA scenario. This is due to increased traffic demand from SATURN zone number 118, which includes the Northeye and Barnhorn Green developments. In the opposite direction at this point on the network, the increased traffic demand into these development zones increases the V/C value from 52% in the 2028 without DaSA scenario to 57% in the 2028 with DaSA scenario.

Consideration should be given to measures to mitigate the impact of these developments, possibly including Section 106 contributions. An important consideration is the exact locations where the traffic from this development will join the existing road network, and the type and layout of the new junctions in those locations.

PM Peak Analysis

Figure 3-14 shows which roads in Bexhill experience the biggest differences in traffic due to the proposed development.

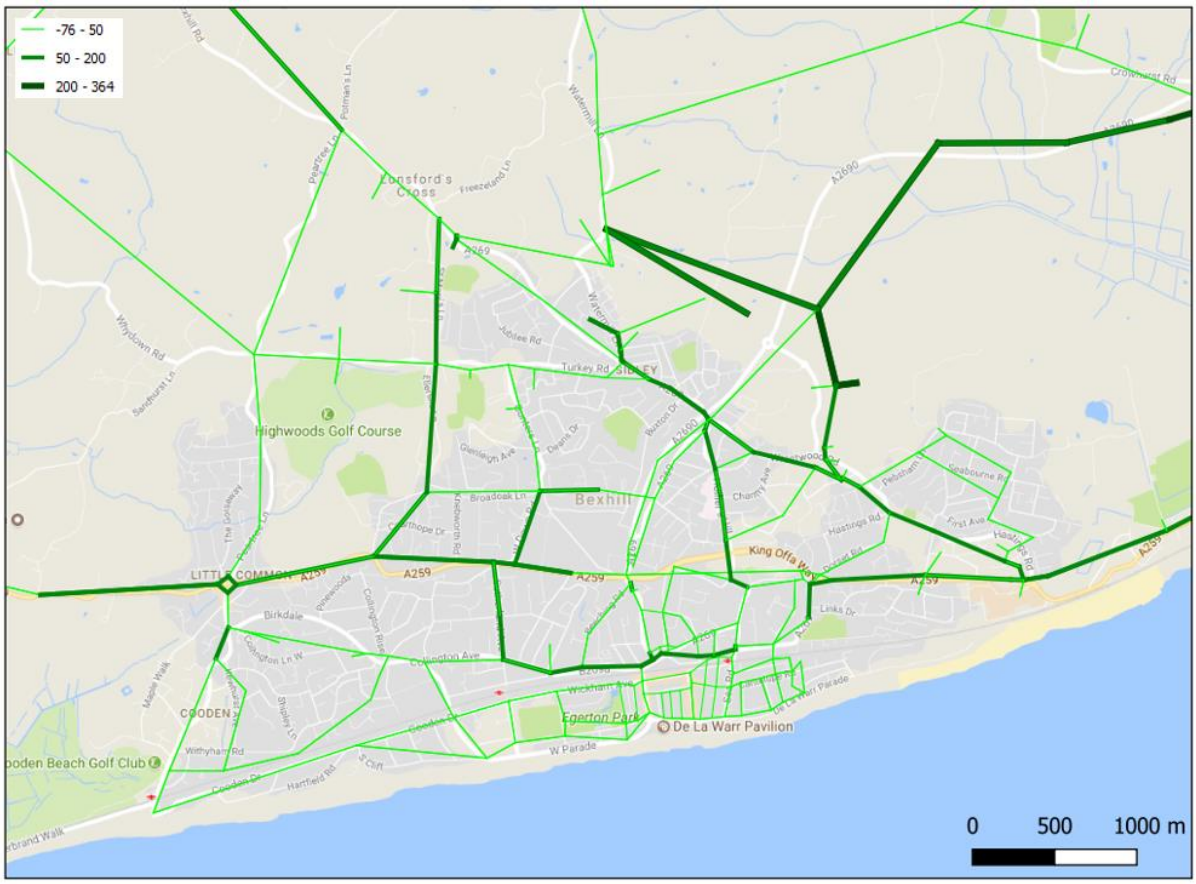

Figure 3-14 Modelled traffic increases in Bexhill, 2028 with DaSA compared to 2028 without DaSA (PM peak)

Figure 3-15 shows the modelled congestion for the without DaSA scenario in the PM time period. The green lines are the links coded in the SATURN network, representing the 2028 road infrastructure. Orange lines represent congested links, where the V/C is greater than 80% but less than 100%. Red lines represent over-capacity links, with V/C over 100%. Figure 3-16 is the equivalent for the 2028 with DaSA scenario. Comparison of Figure 3-15 and Figure 3-16 gives an indication of where development traffic might cause road capacity issues.

Figure 3-15 Modelled V/C (PM without DaSA)

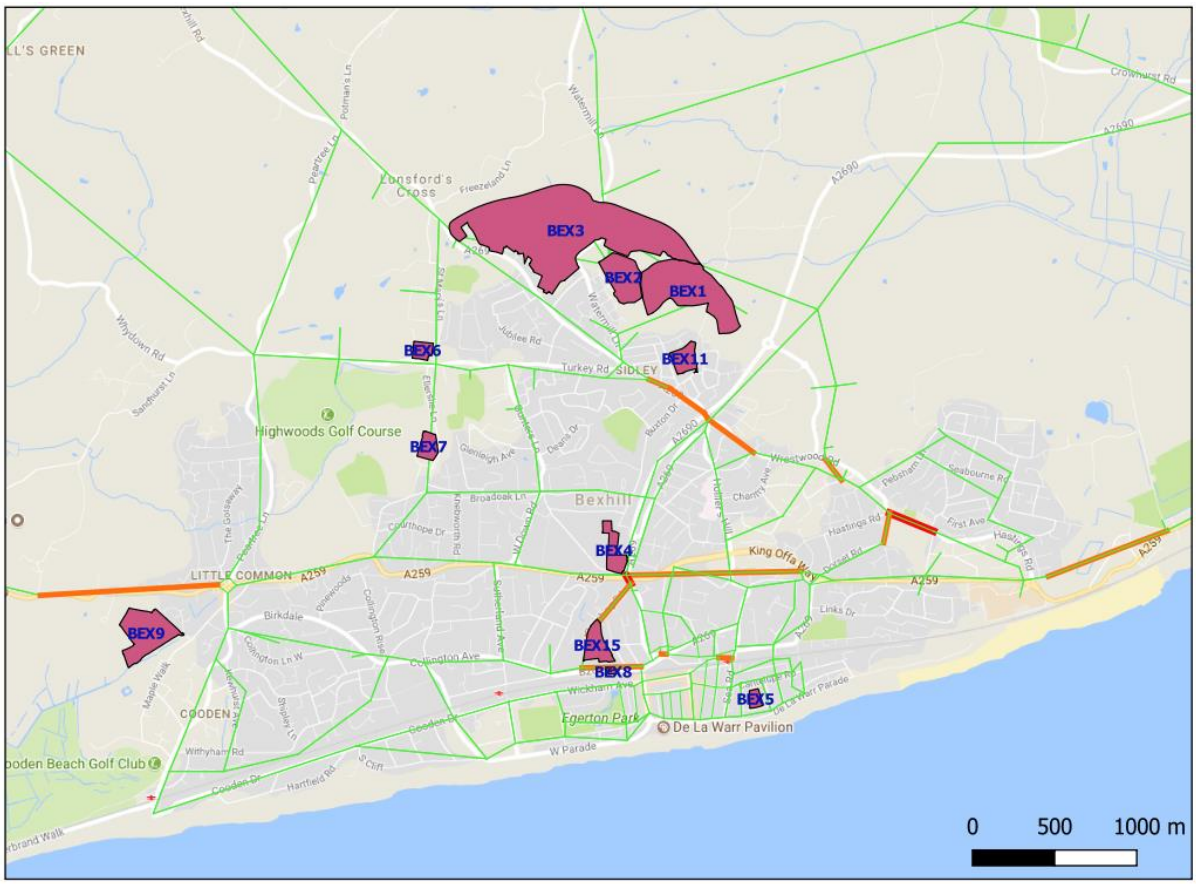

Figure 3-16 Modelled V/C (PM with DaSA)

Areas of congestion in the PM peak

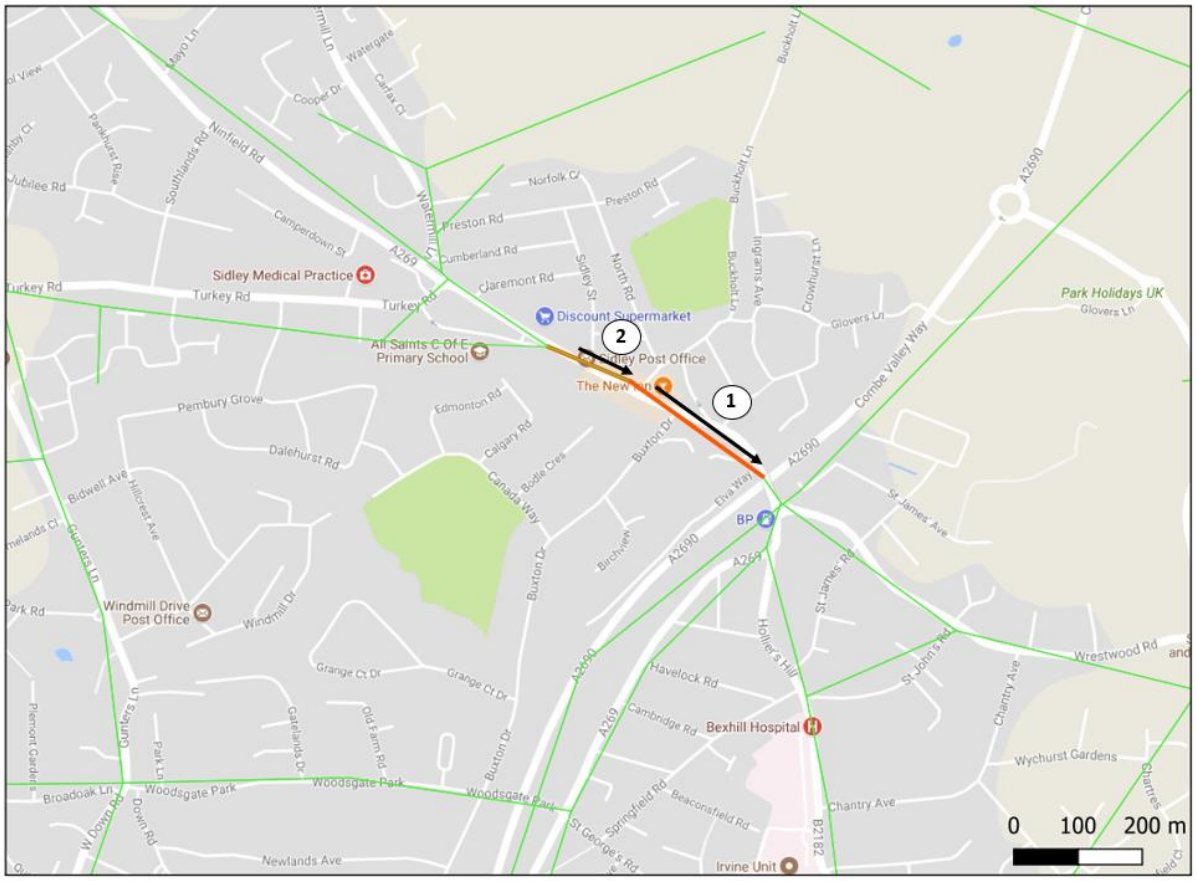

Figure 3-17 Modelled V/C (PM without DaSA)

Figure 3-17 shows links with V/C over 80% in the PM without DaSA scenario.

1: Similar to point 1 in the AM without DaSA scenario.

2: The V/C value is over 80% southbound further along the A269.

Figure 3-18 shows the same area but in the 2028 with DaSA scenario. Differences between Figure 3-17 and Figure 3-18 are explained below.

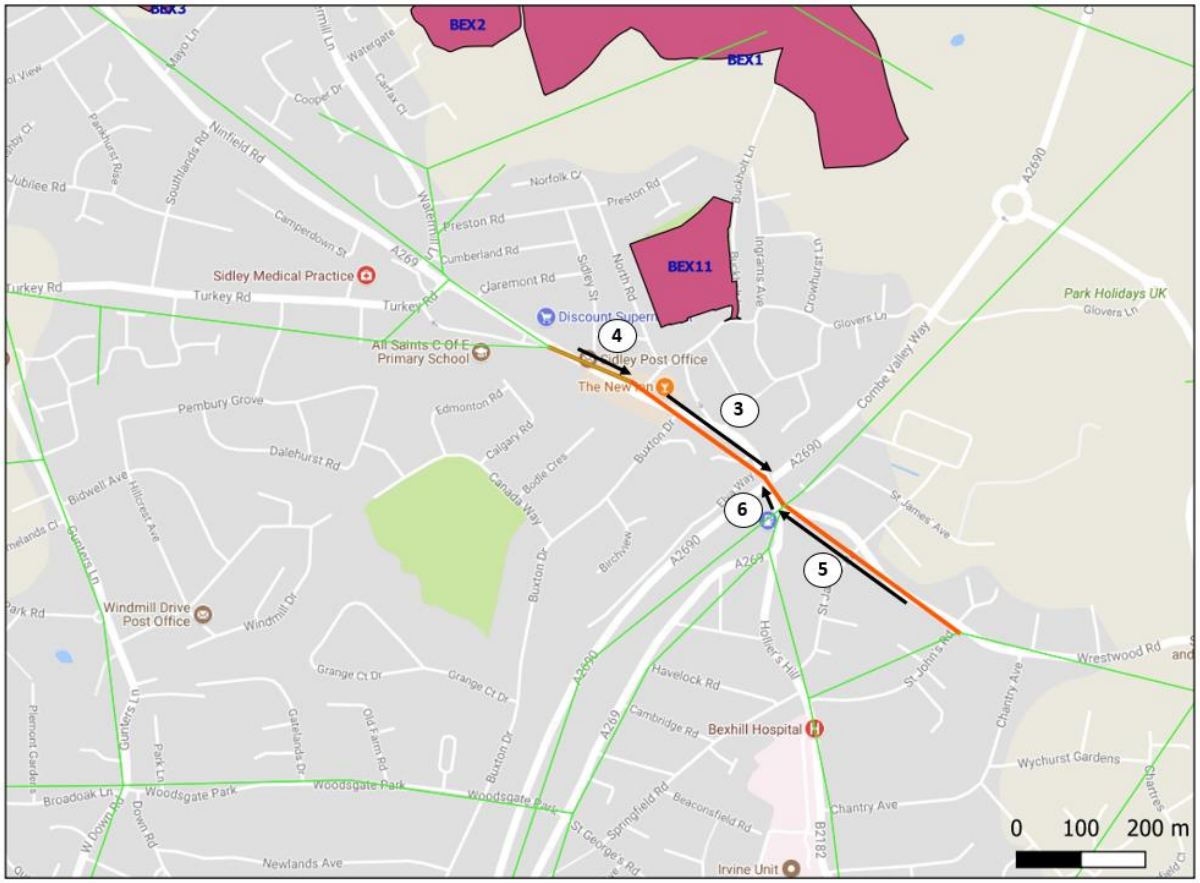

Figure 3-18 Modelled V/C (PM with DaSA)

3: V/C is over 80% southbound along the A269 approaching Hollier's Hill. The V/C value here is 84% in the without DaSA scenario and increases to 92% in the with DaSA scenario.

4: V/C is still over 80% southbound further along the A269 (as in point 2), however there is an increase in V/C from 88% in the without DaSA scenario to 94% in the with DaSA scenario.

5: V/C is 83% northbound on Wrestwood Road approaching the junction with Hollier's Hill (A269). The increased congestion on Wrestwood Road at the junction with the A269 is due to increased traffic levels northbound on the A269 (Figure 3-19). This causes increased delays to the Wrestwood Road traffic, which has to give way. There is also increased traffic on Wrestwood Road itself. Delays and congestion here could potentially be ameliorated by installing traffic signals.

6: Congestion northbound from Hollier's Hill to the A269 is similar to point 4 in the AM peak section.

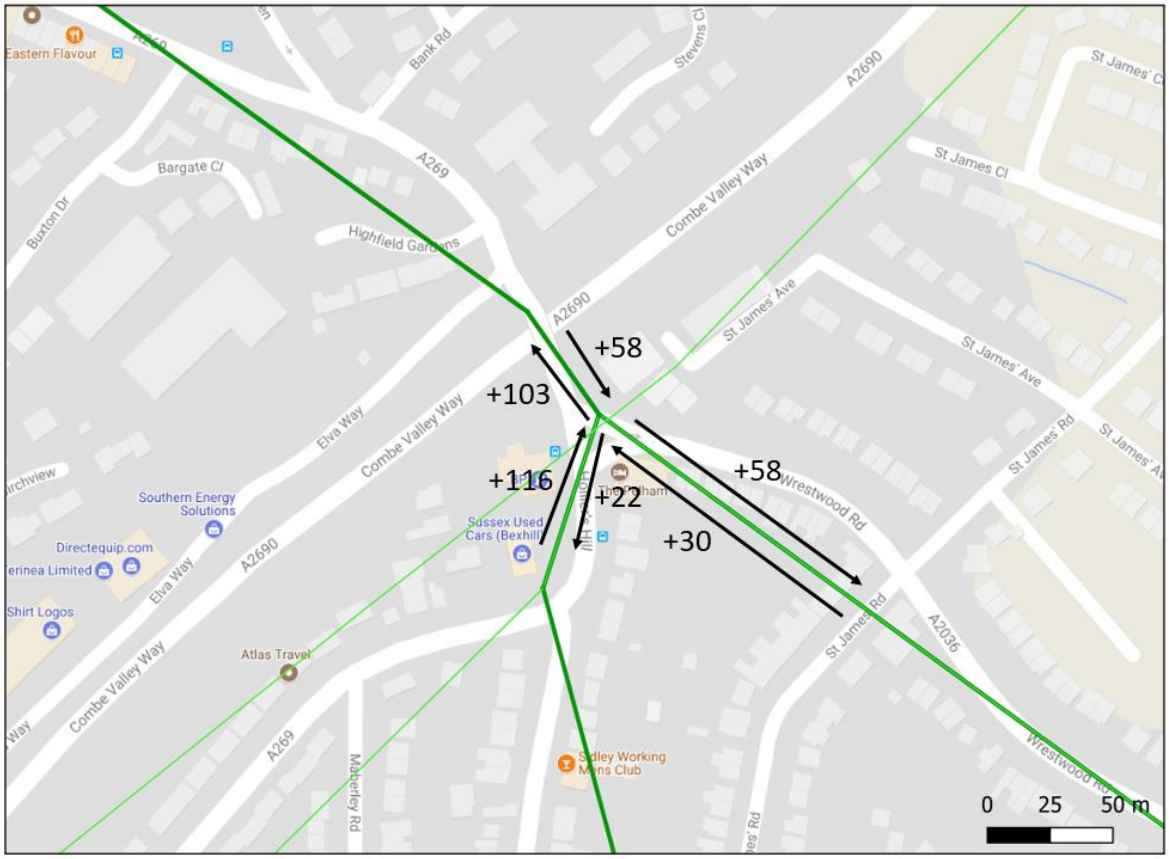

Figure 3-19 Modelled traffic differences (A269 / Wrestwood Road) (PM vehicles per hour)

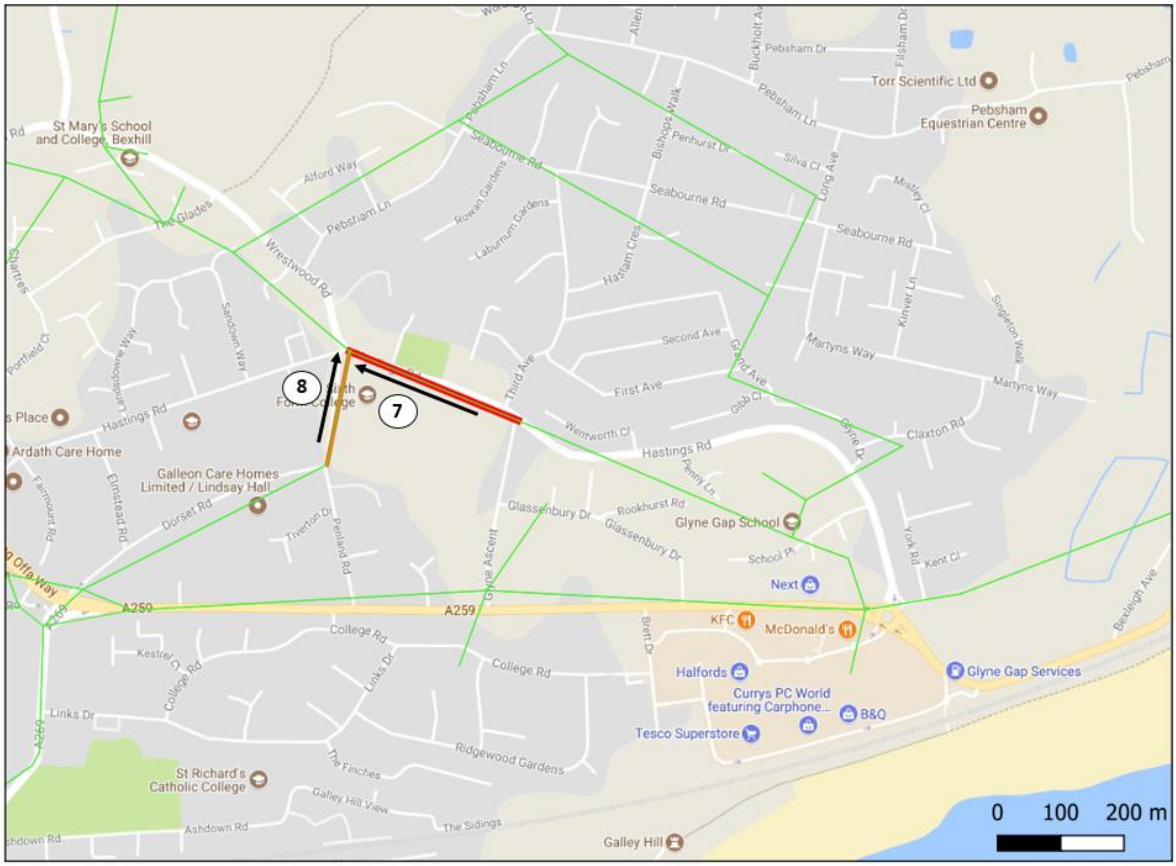

Figure 3-20 Modelled V/C (PM without DaSA)

Figure 3-20 shows links with V/C over 80% in the PM without DaSA scenario.

7: The V/C is over 100% here as in point 8 in the AM scenario.

8: V/C is over 80% at this junction as in point 9 in the AM scenario.

Figure 3-21 shows the same area in the 2028 with DaSA scenario. Differences between Figure 3-20 and Figure 3-21 are explained below.

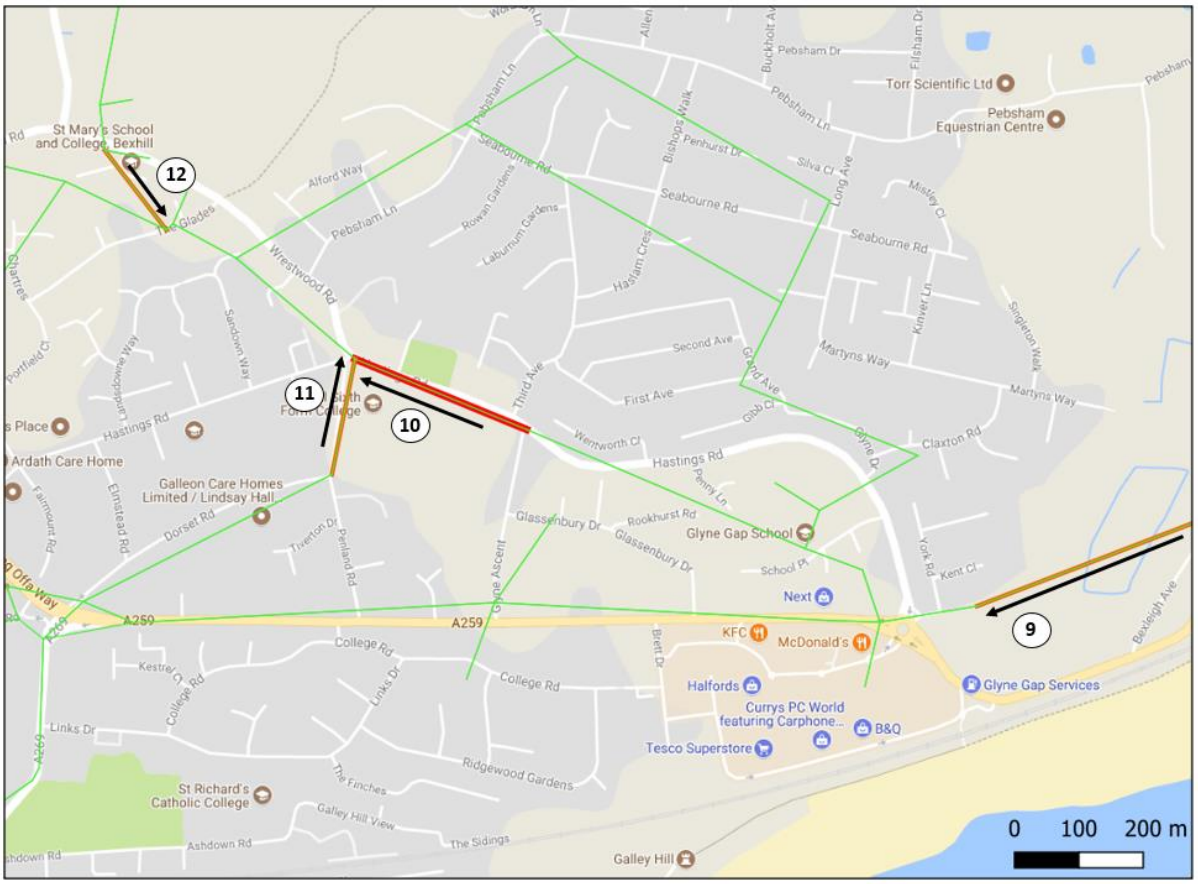

Figure 3-21 Modelled V/C (PM with DaSA)

9: V/C is 82% westbound on the A259 coming into Bexhill. This is an increase from 75% in the Without DaSA scenario.

10: V/C is 102%, similar to point 11 in the AM with development scenario.

11: V/C is 81%, similar to point 12 in the AM with development scenario.

12: V/C is over 80% southbound on signal-controlled junction from Mount View Street onto Wrestwood Road (74%% for the right turn and 90% for the left turn). The increased congestion is simply due to the additional traffic, much of which is to and from the Worsham Farm development. Delays and congestion here could potentially be ameliorated by changes to signal stage settings and/or timings.

The increased congestion illustrated in point 12 is primarily due to Worsham Farm development. Consideration should therefore be given to measures to mitigate the impact of this development, possibly including Section 106 contributions. The planning permission for the Worsham Farm development does include provision for an extended bus route, funding for a new route along

Combe Valley Way, various footpath and cycle links, all of which should encourage use of transport modes other than car and reduce actual congestion. Testing these effects is not within the scope of the current modelling.

Figure 3-22 shows links with V/C over 80% in the PM without DaSA scenario.

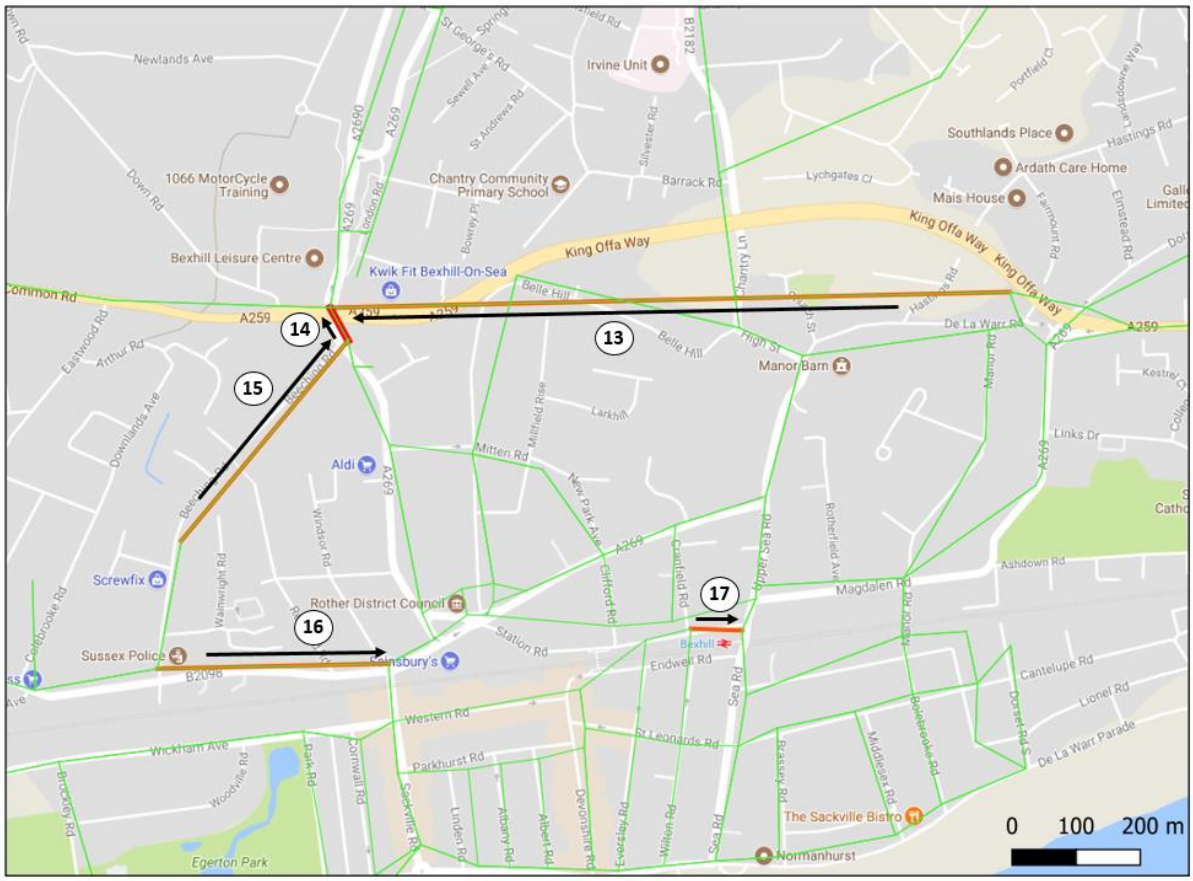

Figure 3-22 Modelled V/C (PM without DaSA)

13: V/C is over 80% west bound along the A259 approaching the signal-controlled junction between the A259 and A269.

14: V/C is over 100%, similar to point 16 in the AM without development scenario.

15: V/C is over 80%, similar to point 17 in the AM without development scenario.

16: V/C is over 80%, similar to point 18 in the AM without development scenario.

17: V/C is over 80% eastbound along Endwell Road, approaching the junction with Sea Road. This is due to Endwell Road traffic giving way to traffic on Sea Road.

Figure 3-23 shows the same area in the 2028 with DaSA scenario. Differences between Figure 3-22 and Figure 3-23 are explained below.

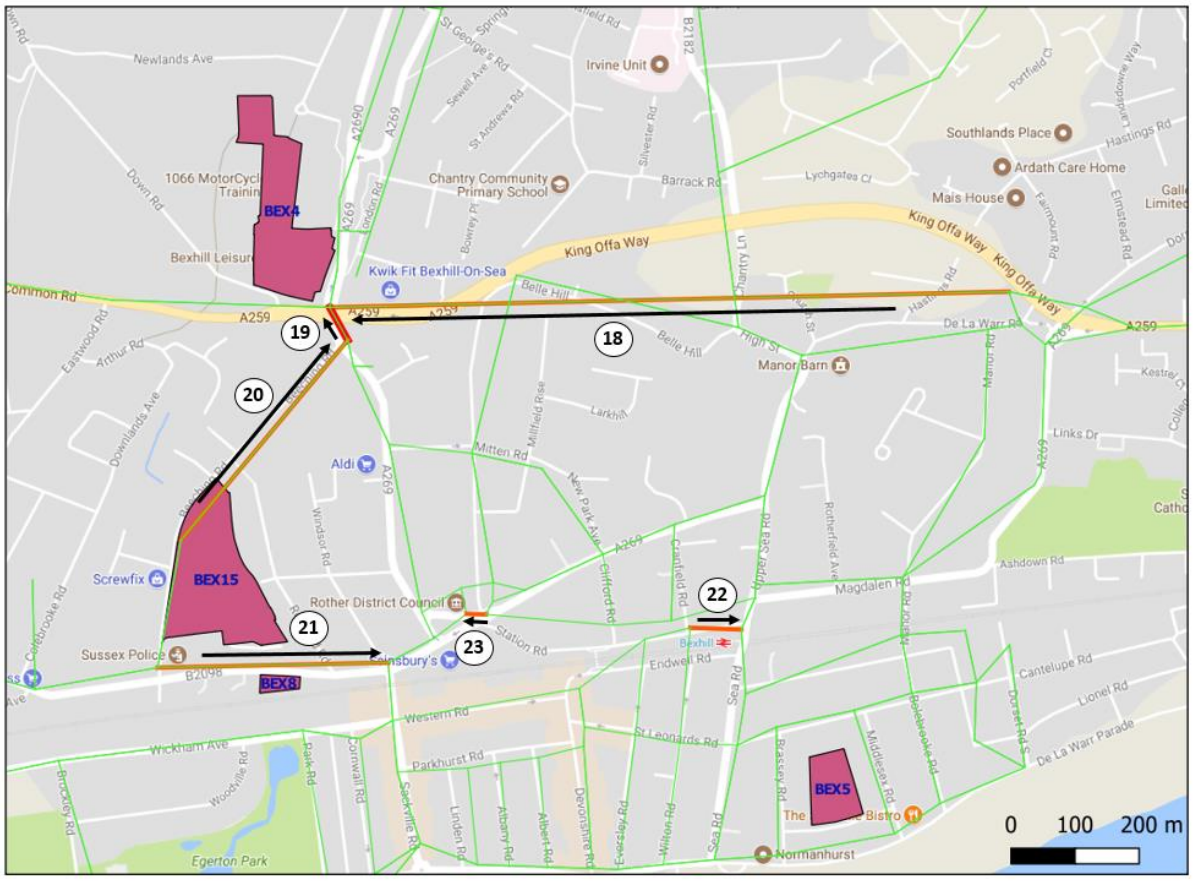

Figure 3-23 Modelled V/C (PM with DaSA)

18: V/C is over 80% in the without DaSA scenario (point 13 above) and the with DaSA scenario.

19: V/C is 102% in both the without DaSA scenario (point 14 above) and the with DaSA scenario.

20: V/C is over 80% northbound at the junction between Beeching Road and A269.

21: V/C is over 80% and has increased from 91% in the without DaSA scenario (point 16 above) to 99% in the with DaSA scenario.

22: V/C is over 80%, the same value in the without DaSA scenario (point 17 above) and the with DaSA scenario.

23: V/C is over 80% westbound at the junction between Station Road and Buckhurst Place. The V/C value in the PM peak is 80% without DaSA and 91% with DaSA. The increase in traffic around this one way system is caused by traffic accessing the BEX8 and BEX15 developments. Figure 3-24 shows the increase in traffic flow for the PM peak between the with DaSA and without DaSA scenarios.

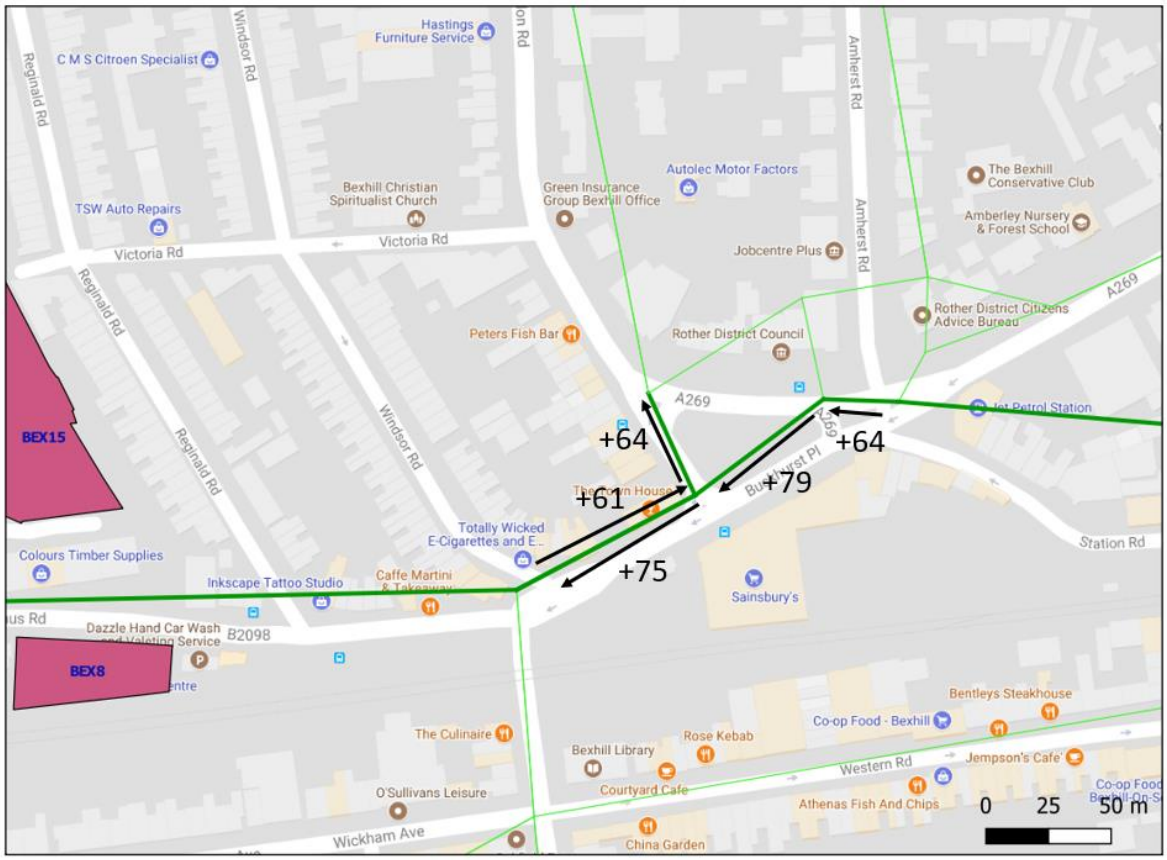

Figure 3-24 Modelled traffic differences (Station Road / Buckhurst Place) (PM vehicles per hour)

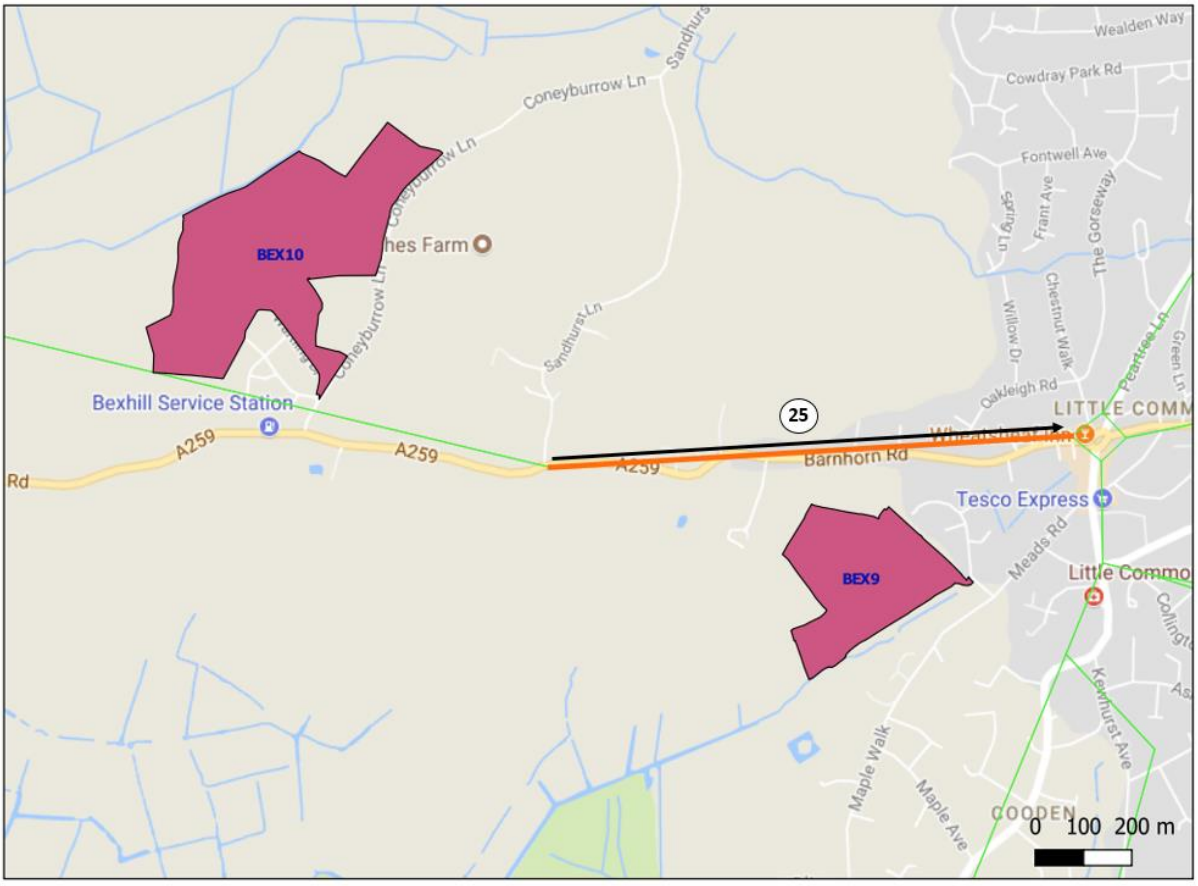

Figure 3-25 Modelled V/C (PM with DaSA)

Figure 3-25 shows a further congested link (point 25) on the 2028 network. The V/C is over 80% in both the without DaSA and with DaSA scenarios. There is an increase from 89% V/C in the without DaSA scenario to 98% in the with DaSA scenario.

Figure 3-26 shows the difference in traffic flow between the without DaSA and with DaSA senarios. The Northeye and Barnhorn Green developments are is located in SATURN zone 118, which connects to the network as shown in Figure 3-26. The increased number of trips generated by this development is the cause for the congestion in this area (see point 28 in the AM peak section above for further information).

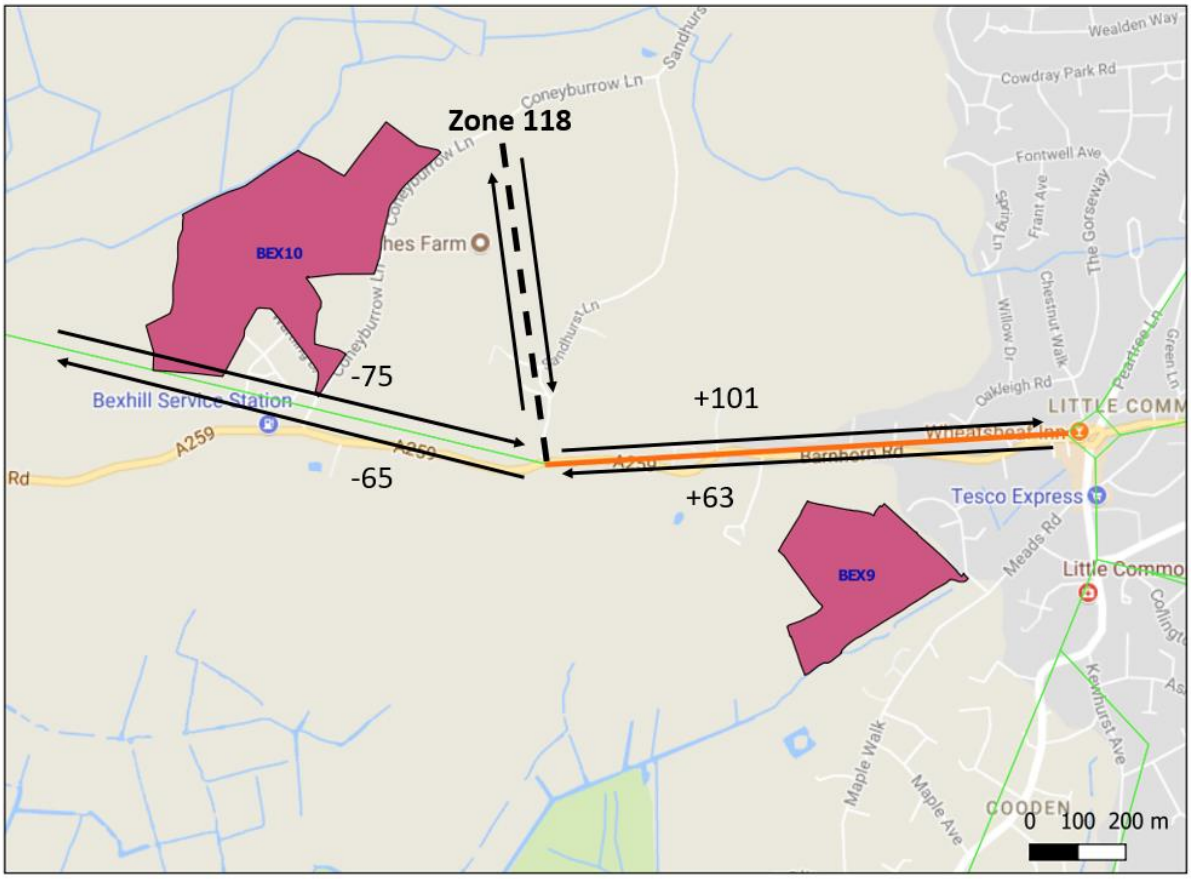

Figure 3-26 Modelled traffic differences (along the A259) (PM vehicles per hour)

Potential Mitigation Measures

The preceding analysis has identified locations where the traffic modelling predicts road capacity issues in 2028. Overall, the network is predicted to operate within capacity (Table 3-1 and Table 3-2), but there are certain areas where junctions are close to or over capacity, notably the A259 and A269. In some cases, these issues would arise without any of the development proposed in DaSA. In other cases, the road capacity issues are caused, or exacerbated, by this development.

Where junction are predicted to operate over capacity, the V/C value is between 100% and 105% in almost all cases. The traffic modelling analysis has been undertaken for the AM and PM peak traffic flows only, so presents a “worst-case scenario”, in that the same levels of congestion are less likely to be experienced at other times of day.

Junction Design

Scope to increase road capacity in Bexhill is limited.

At signal-controlled junctions, optimisation of the signal timings could reduce the level of congestion. Traffic signal optimisation systems such as MOVA or SCOOT could reduce congestion by taking account of traffic demand measured in real-time. Other junction modifications could include redefining which lanes can be used for which turning movements, or, at higher cost, redesigning junctions to increase capacity.

Modifications to junction designs would need to be tested in the appropriate traffic modelling software to determine the extent to which they might mitigate road capacity issues.

Smarter Choices

Smarter Choices refers to measures aimed at promoting shift away from car use. Measures such as workplace and school travel plans, personalised travel planning, public transport marketing, car sharing schemes are often uncontroversial and can offer good value for money

Research published by the Department for Transport[2] found that under the right conditions and supportive policy context, smarter choices could potentially reduce peak period urban traffic by about 21%, and peak period non-urban traffic by about 14%. More recent research into the outcomes of Local Sustainable Transport Fund (LSTF) schemes[3] [4] [5] found more modest changes would be likely.

Such changes in traffic levels would reduce congestion. This reduced congestion could lead to increased car use by other individuals taking advantage of improved network conditions. It would therefore be important to have measures to prevent this. In case studies, the success of smarter choices measures has been helped by associated policies such as reallocation of road space for public transport, pedestrianisation, cycle networks, or measures to make car use less attractive such as parking control, traffic calming, road user charging, or other restraints.

Provision of high quality, reliable, and affordable public transport services can also reduce car use.

Specific Developments

Some of the road capacity issues in the 2028 with DaSA scenario have been identified above as related to specific developments.

Worsham Farm, Northeye, and Barnhorn Green all cause potential problems where additional traffic joins the existing road network.

The mixed residential & commercial development at Down Road, and the retail development south-east of Beeching Road both add traffic to junctions which would already be near or over capacity in 2028.

[2] S Cairns et al (2004) Smarter Choices – Changing the Way We Travel
[3] J Preston et al (2016) Local Sustainable Transport Fund Evaluation: A Case Study Evaluation of Carbon Impacts and Congestion Relief
[4] L Sloman et al (2017) Meta-analysis of Outcomes of Investment in the 12 Local Sustainable Transport Fund Large Projects: Final Report to Department for Transport
[5] Department for Transport (2017) Local Sustainable Transport Fund Case Study Evaluation – Impacts of Sustainable Transport Measures on Town Centres

For these sites, travel plans can be used to reduce the level of car use. Consideration should be given to measures to mitigate the impact of developments where forecast traffic is added to the road network, possibly including Section 106 contributions. An important consideration is the location and design of new junctions.

Developments should be planned in a way that can encourage linked trips, public transport accessibility, and provide footpaths and cycleways. Extra capacity could be achieved on the approaches to the town centre with a comprehensive approach to traffic management measures.

Chapter 4: Summary & Conclusions

This report assesses the capacity of the highway network to accommodate various developments being considered for inclusion in the Council's Development and Site Allocations Local Plan, for the year 2028. The existing traffic model was provided, as was the 2028 network.

Two scenarios are modelled in this report. A 2028 without development scenario and a 2028 with development scenario. A traffic model was used to identify locations where traffic demand exceeds capacity in these forecast scenarios. This was undertaken separately for the AM peak (0800-0900) and PM peak (average hour between 1600 and 1800).

Chapter 2 of this report details the steps that were undertaken to develop the model. This involved determining the additional trips that are generated by the two scenarios. For the without development scenario growth factors obtained from TEMPro software were used to determine the additional trips.

For the with development scenario the additional trips generated by the developments were added separately, after the background growth factors were applied from TEMPro. These trips were added to the corresponding zone in the SATURN model for each development and by time period. In total the developments produce an additional 2705 trips/hour in the AM peak period and 3067 trips/hour in the PM peak period (where this is the sum of trips going into the development and out of the development for each time period).

In addition for each scenario and additional growth factor was applied that factors in forecasts in fuel price and income adjustment, as per WebTAG guidance.

The above growth factors and trip increases were applied to the car user classes. For the two goods vehicle user classes (Light Goods Vehicles and Heavy Goods Vehicles) published growth factors from the Department of Transport were used.

Chapter 3 of the report details the model results. Figure 3-1 and Figure 3-2 show the difference in the traffic flow on the networks between the without DaSA development and with DaSA development scenarios. It can be seen that the increased trips generated by the various developments have an impact on localised parts of the network.

Chapter 3 also details how congestion on the roads is affected by the developments. The congestion on the network can be shown as the volume of traffic along a particular network link divided by the capacity of that network link (referred to as V/C). In this report we have highlighted areas of the road network that have a V/C of greater than 80% (traffic approaching capacity of the road) and those that have a V/C of greater than 100% (traffic over the capacity of that road).

In some cases these areas of congestion occur in the 2028 without development scenario, where the increase in traffic caused by background growth factors is enough to cause additional congestion at certain points in the road network.

To mitigate these areas of potential congestion certain steps can be made to either improve junction layout or change the signal timings to prioritise certain arms of a junction dependent on time period and amount of traffic flow. These various mitigation issues are further detailed in chapter 3.

Development Beyond 2028

It is noted that scope to increase road capacity in Bexhill is limited. Any significant development beyond 2028 would require additional capacity. Additional capacity to the west of the town may also be required.