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## **LDF CORE STRATEGY - PREFERRED DEVELOPMENT OPTIONS**

### **TRAFFIC IMPACT ON STRATEGIC ROAD NETWORK**

**DRAFT**

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# LDF CORE STRATEGY - PREFERRED DEVELOPMENT OPTIONS

## TRAFFIC IMPACT ON STRATEGIC ROAD NETWORK

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#### REFERENCES

Solent Strategic Transport Study Model Development and Validation Report August 2006 (Atkins)  
Solent Transport Assessment Outputs from the Modelling Process August 2006 (Atkins)  
Solent Strategic Model Review Report August 2006 (Mott Gifford)

## **EXECUTIVE SUMMARY**

### ***Introduction***

Gifford has been appointed by Test Valley Borough Council to assess the traffic impact on the Strategic Road Network (SRN) of the development proposals contained within the Core Strategy Preferred Development Options document, January 2008.

The submitted South East Plan requires approximately 3,910 dwellings to be provided in Southern Test Valley by 2026. Of these, Test Valley Borough Council considers approximately 3,100 dwellings need to be on green field sites. Preferred residential (green field) development sites have been identified at Romsey, North Baddesley and Nursling. In addition, a preferred employment site has been identified at Nursling.

This report assesses the impact of the generated traffic by considering:

- the amount of traffic from the proposed developments likely to use the SRN;
- the resultant percentage change in traffic flows on key sections (or links) of the SRN; and
- the traffic flows with and without the development, compared with the estimated link capacities on the relevant sections of the SRN.

The assessment has made use of the Solent Strategic Traffic Model (SSTM), originally developed for Hampshire County Council as the basis for examining the impacts of future strategic development proposals and transport intervention options. Permission by Hampshire County Council to use the model and the assistance of Mott Gifford (as agents for the County Council) in accessing the model are gratefully acknowledged.

A range of possible measures are summarised in this report that could mitigate the predicted impacts on the SRN. These measures are predominantly related to demand management initiatives already being developed by Test Valley Borough Council.

The report is presented at this stage as a draft for the purposes of discussion and consultation with the Highways Agency.

The report sets out:

- The preferred development options
- The key SRN links where the impact of development will be assessed
- A brief description of the traffic model (SSTM) and how it will be used to assess the impact of the development options
- The findings of the traffic impact assessment.
- Identification of possible measures to mitigate the impact of the development
- Overall Conclusions and Recommendations

### ***Preferred Development Options and Key Strategic Road Network Links***

The preferred locations for residential development are Romsey, North Baddesley and Nursling. There is also a preferred location for employment uses at Nursling.

The impact of the development proposals are assessed for various key sections (links) on the M3, between Winchester and Southampton, the M27 between junction 1 and the M3 and the M271.

### ***Traffic Model and Impact Assessment Methodology***

The SSTM model used for the purposes of this study is designed primarily to enable the assessment of the Strategic Road Network. This part of the network is modelled in relative detail. It has not been used for the assessment of impacts on the local road network which is modelled in less detail. Impacts on the local road network in the Romsey area and in North Baddesley have been assessed in separate reports (14135/TR04A, Romsey Movement and Access Study Phase II and 14780/TR02A TVBC Development Impact, North Baddesley Cross Roads, respectively).

The SSTM is based on a trip matrix for the year 2026 that takes account of the development proposed in south Hampshire as put forward in the South East Plan. From this matrix a second matrix has been derived that excludes the development proposed in southern Test Valley (the 'preferred development options'). These two trip matrices can then be assigned to the road network. It is then possible, by comparing the traffic flows with and without the development proposals for Test Valley, to identify the scale of impact on sections of the SRN of those development proposals.

### ***Traffic Impact on the Strategic Road Network***

The impact of the development proposed for southern Test Valley on the SRN in the locality has been assessed for 2026, the end of the South East Plan period. The impact of the proposals on the links of the SRN is generally relatively low and has little effect on the flow to link capacity ratio.

The SRN is predicted to be close to or at capacity in 2026 with or without the southern Test Valley proposals.

The most significant impact occurs on the northern section of the M271 and its junction (3) with the M27. In addition, development traffic, mainly from Romsey, seeking to join the M3 appears to avoid the M27 and the southern part of the M3 by using the A3090 corridor and joining the motorway at junction 11. It is also noted that local traffic appears to divert from the M27 between junctions 1 and 2 to the parallel local road. These latter two effects may reflect the increasing congestion and strain on the SRN by 2026.

It should be noted that the effects of possible mitigation measures on the predicted traffic impacts have not been modelled.

### ***Possible Mitigation Measures***

The increased flows arising from the proposed development may have implications for the operation of the partially signal controlled M27 junction 3. The potential for possible improvements at this junction could be investigated further. However, the impact of the proposed southern Test Valley developments represents only part of the full impact of the South East Plan proposals on the SRN. The benefits of capacity improvements, over the longer term, to 2026 may be eroded or even nullified by traffic growth. Hence potential capacity improvements will need to be considered against the wider issue of demand management and the actual traffic flow and journey reliability benefits that might or might not be sustained over the longer term.

The predicted northbound flows arising from the development proposals joining the M3 at junction 11 may have implications for the merge of the northbound slip onto the main M3 carriageway. These flows may also have implications for the operation of the local road network in the south Winchester area in the vicinity of M3 junction 11. This impact may again require more detailed examination in the context of all South East Plan development likely to affect these sections of the local and strategic network and the wider aims of demand management.

It is clear that by 2026 the local and strategic road networks could be under significant strain due to both background traffic growth and traffic generated by the high level of development required in the South Hampshire area, arising from the proposals of the South East Plan. Working practices and travel behaviour will have to change to mitigate these impacts.

Test Valley Borough Council has been developing a range of measures, particularly relating to Travel Planning initiatives and smarter choices, aimed at reducing overall travel demands and promoting more sustainable travel choices. These measures include improved access to Romsey rail station and the promotion of associated rail services and enhanced bus services through partnership working. The development of these measures will provide a positive contribution towards reducing traffic demands and the impacts predicted by the traffic modelling.

### **Conclusions and Recommendations**

This assessment has shown that the impact of the proposed development in southern Test Valley on key links on the SRN, relative to the background flows and traffic growth by 2026, is generally low. However the SRN in south Hampshire by 2026 is predicted to be near or over capacity by 2026 with or without the proposed development in Test Valley.

It is apparent that the most significant percentage impacts, arising from the proposed development, occur on the M271 and at its junction with M27 junction 3. There are also impacts on the A3090 corridor towards Winchester that could have implications for M3 junction 11 and possibly the access routes on the local road network. There will be a need to consider these impacts further and the possible need for capacity improvements, but in the wider context of demand management and the overall South East Plan development proposals. Capacity improvements that seek to prevent future congestion would be unrealistic and probably not feasible; they would also be counter productive in terms of demand management.

Test Valley Borough Council is developing a range of demand management measures to reduce overall travel demands and promote sustainable travel behaviour that can make a positive contribution towards reducing the potential traffic impacts of future development. The traffic flows for 2026 as predicted by the traffic modelling work therefore represent a 'worst case' situation. In practice, over the period to 2026 the proposed demand management measures and changes in travel behaviour generally are likely to contribute significantly to a reduction in predicted traffic flows.

It is recommended that Test Valley Borough Council should work with the local highway authority, other neighbouring local planning authorities and the Highways Agency to explore opportunities to:

- optimise the performance of the junctions identified in this report, as part of the wider examination of the impacts of the South East Plan proposals and the resultant need for improvements to the local and strategic road networks; and
- develop joint demand management and travel planning initiatives.

## 1. INTRODUCTION

- 1.1.1 Gifford has been appointed by Test Valley Borough Council to assess the traffic impact on the Strategic Road Network (SRN) of the development proposals contained within the Council's Local Development Framework, 'Core Strategy Preferred Development Options' document, January 2008.
- 1.1.2 The submitted South East Plan requires approximately 3,910 dwellings to be provided in Southern Test Valley by 2026. Of these, the Council considers approximately 3,100 dwellings need to be on green field sites. Preferred residential (green field) development sites have been identified, within the Core Strategy Development Options document, at Romsey, North Baddesley and Nursling. In addition, a preferred employment site has been identified at Nursling. The remaining 800 dwellings are predominantly on brownfield or previously developed sites. The majority of these, about 700, are committed developments or have planning permission. It is therefore considered reasonable that these dwellings should not be included within this assessment of future development options. The location of the residual 100 dwellings within southern Test Valley is non specific for the purposes of this report.
- 1.1.3 The Highways Agency is responsible for managing maintaining and improving the country's motorway and trunk road network. A major element of this responsibility is the control of development which affects this road network. The Department for Transport (DfT) Circular 02/2007 'Planning and the Strategic Road Network' explains how the Agency, on behalf of the Secretary of State for Transport will participate in all stages of the planning process with local planning authorities, other authorities and stakeholders. The Circular places emphasis on early consultation with the Agency about development proposals. The preparation of the Core Strategy is identified as a key stage in the planning process for such consultation.
- 1.1.4 Test Valley Borough Council therefore wishes to establish the likely traffic impacts of its development proposals on the SRN, as a basis for discussions with the Highways Agency, in order to seek agreement on the predicted impacts and, as appropriate, suitable mitigation measures that should be considered for inclusion within the Local Development Framework Core Strategy.
- 1.1.5 Hampshire County Council has developed a 'Solent Strategic Traffic Model', to represent travel demand in the South Hampshire area. It has provided a basis for analysis of the impact of the level of development proposed across South Hampshire in the South East Plan (some 80,000 dwellings by 2026) and a range of possible transport interventions aimed at addressing that impact and also accommodating the area's future strategic access needs. The future trip matrices used in this model incorporate the predicted traffic growth associated with the total number of dwellings required by the South East Plan. It therefore provides a good basis from which to assess the impact that the proposals for southern Test Valley are likely to have within the context of the overall proposals for South Hampshire.
- 1.1.6 This report is set out as follows:
- Section 2 sets out the preferred development options examined and identifies the key links on the SRN where the traffic impacts will be assessed
  - Section 3 outlines the background to the Traffic Model (SSTM) and describes the methodology used to assess the traffic impacts of the development options on the SRN
  - Section 4 contains the detailed assessment of the traffic impacts of the preferred development options
  - Section 5 discusses in principle, possible measures to mitigate these impacts

- Section 6 provides conclusions and recommendations arising from the assessment of the development options

1.1.7 The report is presented in draft initially as a basis for discussion of the outcomes with the Highways Agency and the local Highway Authority.

## 2. PREFERRED DEVELOPMENT OPTIONS AND KEY STRATEGIC ROAD NETWORK LINKS

### 2.1 Preferred Development Options

- 2.1.1 Test Valley Borough Council has identified Romsey, North Baddesley and Nursling as the preferred locations for green field development. For the purposes of this assessment, the scale of development shown in Table 1 is assumed.

**Table 1 Preferred Development Options**

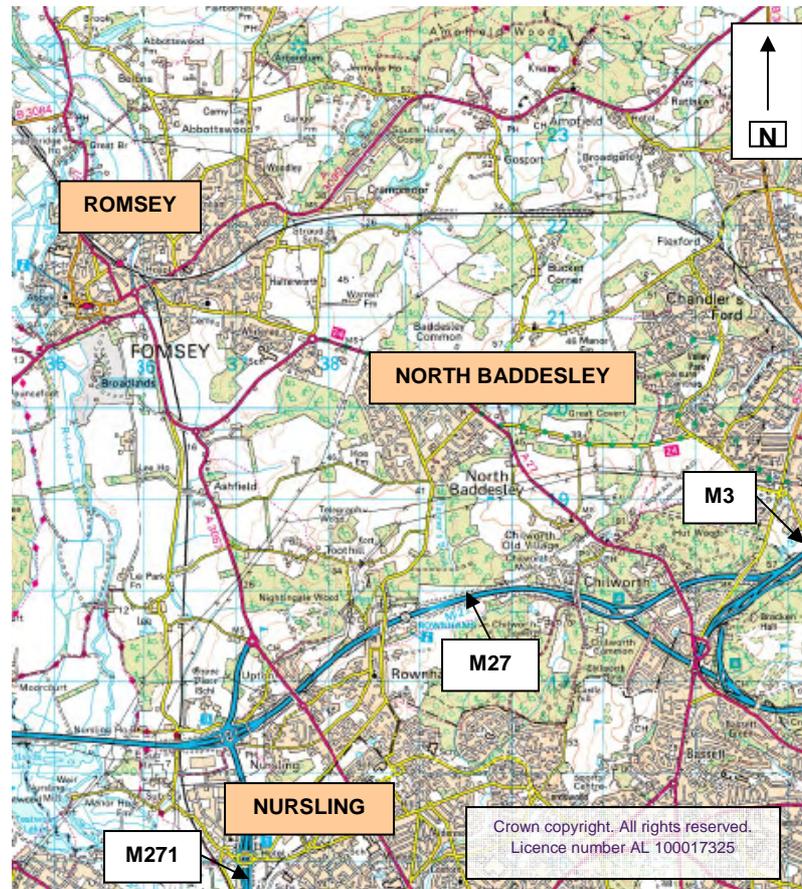
Settlement	General Location <sup>[1]</sup>	Housing (dwellings)	Employment		
			(hectares)	Land Use <sup>[3]</sup>	Floor space (m <sup>2</sup> )
Romsey	North	800 <sup>[2]</sup>			
	South	1500			
North Baddesley	West	500			
Nursling	East of M271 junction	300			
	West of M271 junction		6	B1	8,800
				B2	3,500
				B8	14,200

Notes: [1] – location of proposed development in relation to settlement (or M271 for employment)

[2] - proposed allocation at Abbotswood

[3] - assumed split between land uses based on TVBC Sustainability Appraisal Report (paragraph 5.59)

- 2.1.2 The settlement locations are illustrated in Figure 1.



**Figure 1 Preferred Development Options - Settlement Locations**

## 2.2 Key Strategic Road Network Links

2.2.1 Test Valley Borough Council specified within the project brief that the impacts on the M3, M27 and M271 corridors should be assessed. The key links on the SRN to be considered are:

- M27 junctions:
  - 1 to 2 (Cadnam – Ower),
  - 2 to 3 (Ower – Rownhams),
  - 3 to 4 (Rownhams – M3)
  
- M3 junctions:
  - 10 to 11 (Bar End – Twyford)
  - 11 to 12 (Twyford – Eastleigh North),
  - 12 to 13 (Eastleigh North – Eastleigh),
  - 13 to 14 (Eastleigh – M27)
  
- M271 junctions:
  - 1 to M27
  - 1 to Redbridge

2.2.2 The locations of these links in relation to the settlements where the preferred development allocations are proposed, are shown in Figure 2 overleaf.

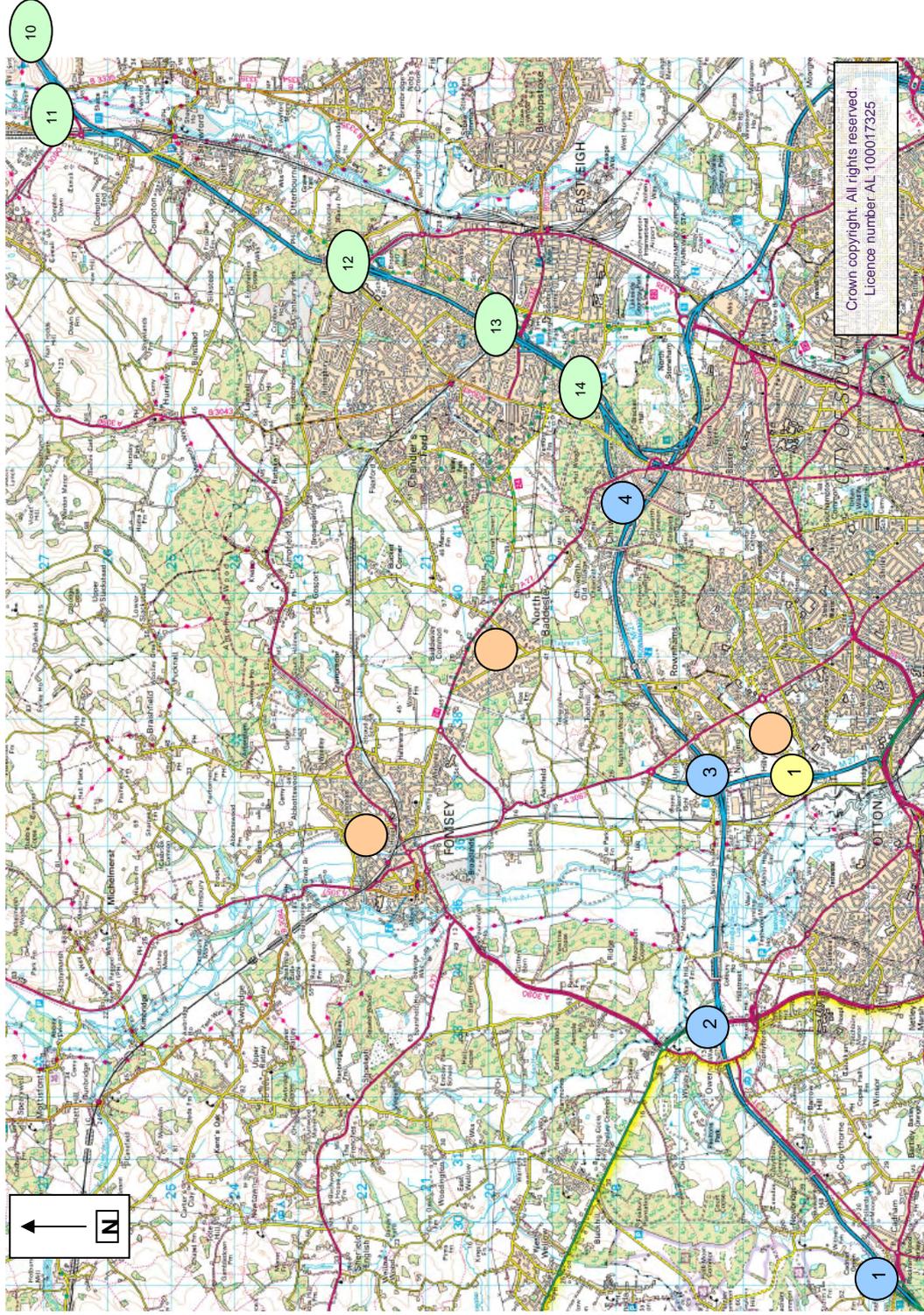
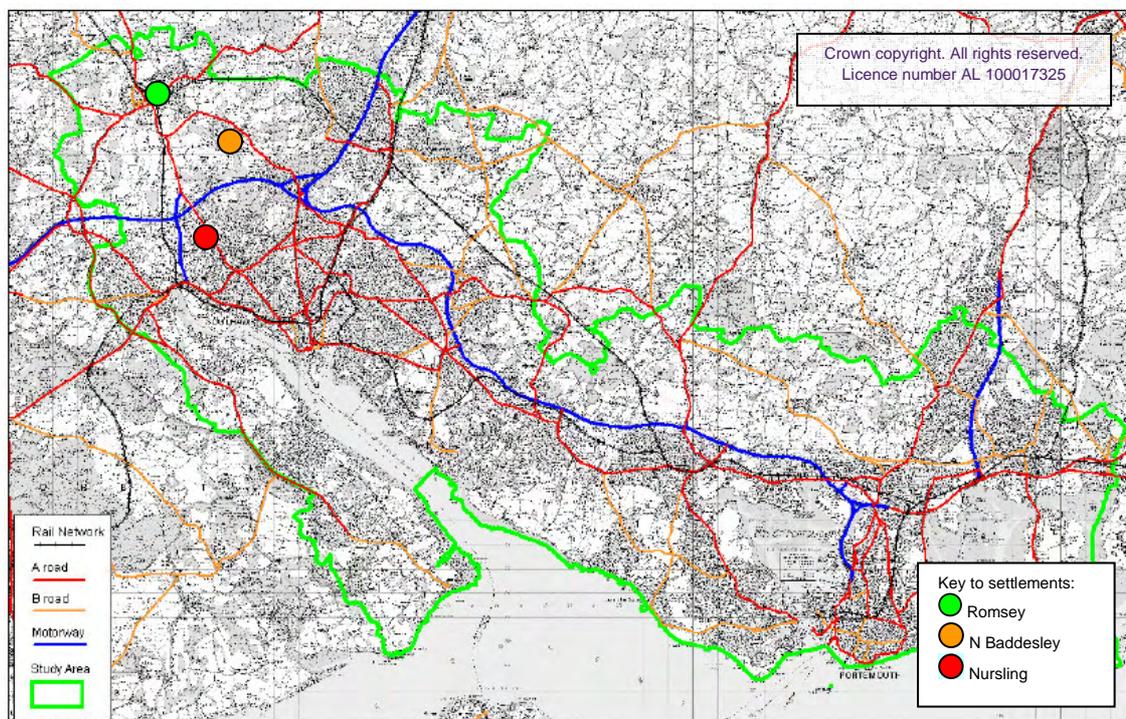


Figure 2 Key Strategic Road Network Links and Preferred Development Locations

### 3. TRAFFIC MODEL AND IMPACT ASSESSMENT METHODOLOGY

#### 3.1 Solent Strategic Traffic Model

- 3.1.1 The Solent Strategic Traffic Model (SSTM) was developed by Atkins for Hampshire County Council to represent travel demand in the Solent (South Hampshire) area, at a 'strategic' level. It presents an average hour in the morning peak (0700-1000) and in the inter peak (1000-1600). For the purposes of this assessment a morning peak period hour (0800-0900) is modelled and analysed. The predicted model flows are compared against the existing morning peak hourly flow in paragraph 4.1.4 and Table 2 below.
- 3.1.2 The SSTM has three sub models (highways, public transport and travel demand). The highway model has been used in this study. The highway network has been modelled using the SATURN suite of programs. The model includes all the Motorways and Trunk Roads, A roads, B roads and other roads that are considered to carry high volumes of traffic in and around South Hampshire. The area covered is illustrated in Figure 3.



**Figure 3 SSTM – Modelled Network Area**

Notes: Not all modelled lower category routes are shown  
Settlement locations are indicative only

- 3.1.3 The network comprises a mixture of 'simulation' and 'buffer' coding. Simulation coding essentially means this part of the network is modelled in relative detail; buffer coding represents a more coarse level of modelling. The motorway network and associated junctions have been coded in simulation, the rest of the network in the vicinity of southern Test Valley has been coded as a buffer area. The model set up is therefore appropriate to the requirement to assess the impact of the Test Valley development proposals on the SRN. The model outputs however should not be used for assessing impacts on the local roads, within the buffer area. The SSTM was reviewed in August 2006 by Mott Gifford (Solent Strategic Model - Review Report). The Review concluded that the highway model has been validated to meet DMRB standards.

3.1.4 The base year of the SSTM is 2004. The predicted flows from the model for the key SRN links are compared in Table 2 against the observed flows obtained from the Highways Agency TRADS database. It can be seen that the majority of the model average hourly flows are within 15% of the observed hourly (0800-0900) flows. Hence it is considered that the modelled flows are reasonably consistent with the observed peak hour flows for the purposes of this assessment. (The validation of the overall model was more fully considered and confirmed in the Solent Strategic Model Review Report, Mott Gifford, August 2006).

**Table 2 Comparison of Modelled Average Hour and Observed Hourly Flows (2004)**

Road link	TRADS 08:00-09:00 (2004) (One Way Flow)	2004 Base AM peak Model (One Way Flow)	Difference	Percentage Difference
<b>M27</b>				
J 1-2	3466	3959	493	14%
J 2-1	2311	2286	-25	-1%
J 2-3	4705	5267	561	12%
J 3-2	3183	3088	-95	-3%
J 3-4	5340 [3]	5454	114	2%
J 4-3	4766 [3]	4620	146	-3%
<b>M 3</b>				
J 10-11	4445	4755	310	7%
J 11-10	5556	5562	6	-
J 11-12	4494	4712	218	5%
J 12-11	5107	5644	474	9%
J 12-13	4832	5071	239	5%
J 13-12	4696	5700	1004	21%
J 13-14 Main	5144[3]	5592	448	9%
J 14-13 Main	5454[3]	5933	374	7%
<b>M 271</b>				
North of M27 Northbound	715	747	32	4%
North of M27 Southbound	645	682	37	6%
South of M27 Northbound	1964	1578	-386	-20%
South of M27 Southbound	3018	2857	-161	-5%

Notes: [1] TRADS hourly flows calculated from Tuesdays, Wednesdays, Thursdays averaged over 2004.

[2] The model flow represents an average hour within the morning peak period (07:00-10:00) in 2004.

[3] 2004 data not available for M3 J 14 -13 and M27 J 4 - 3; 2005 data quoted for both directions instead

3.1.5 The end year of the current South East Plan period, 2026, has been used as the future assessment year. The 2004 base year trip matrix for the SSTM was factored by TEMPRO (v4.23, policy based v1.6 dataset for the South East) to produce a 2026 year trip matrix that reflects the projections of new dwellings and employment proposed in the South East Plan (Solent Transport Assessment, Outputs from the Modelling Process, Atkins, August 2006). The data from this matrix has been extracted for the purposes of this study. Table 3 summarises the development assumptions used in the modelling. It can be seen that the number of new dwellings on Greenfield sites in Test Valley represents about 5% of the total across south Hampshire and the number of jobs represents about 3% of the total.

**Table 3 South East Plan - Projections for New Dwellings and Employment**

District	Increases between 2006 and 2026	
	Dwellings	Employment (jobs)
Southern Test Valley (total, including commitments) <sup>[1]</sup>	3,910	1,950
Southern Test Valley (Greenfield sites) <sup>[2]</sup>	3,100	<sup>[2]</sup>
Total (South Hampshire)	80,000	58,600

Notes: [1] - Greenfield and committed redevelopment sites  
 [2] – see paragraph 2.1.1 and Table 1

3.1.7 The model base network for 2026 includes the following new highway schemes or improvements, which have committed funding or are now under construction:

- M27 Junctions 3 to 4, widening
- M3 junctions 10 to 11, climbing lanes

### 3.2 Impact Assessment Methodology

#### ***Trip Generation and Trip Matrices***

3.2.1 The future assessment year (2026) trip matrix, as described in Section 3.1, includes all the trips associated with the development (dwellings and employment) proposals contained in the South East Plan, including the allocations within southern Test Valley. The number of dwellings and scale of employment development proposed in southern Test Valley is broken down by settlement in Table 1 above. It is possible therefore to derive a second future assessment year matrix that excludes the trips associated with the development proposed in southern Test Valley - by subtracting the Test Valley related trips from the original trip matrix. This produces two trip matrices:

- 2026 Trip Matrix including South Hampshire development proposals, but excluding southern Test Valley development proposals ('2026 excluding Test Valley')
- 2026 Trip Matrix including all South Hampshire development proposals ('2026 including Test Valley')

3.2.2 Trip rates for the proposed development in southern Test Valley have been derived from the TRICS database. The trip rates will be used to produce trip generation predictions for the proposed development that can be deducted from the '2026 including Test Valley' trip matrix to produce the '2026 excluding Test Valley' trip matrix.

3.2.3 The residential trip rates to be used in this assessment are the same as those utilised in the 'Romsey Movement and Access Study (RMAS) Review, Phase II', December 2007. The

employment trip rates are derived from TRICS version 2008(a). The trip rates used in this report can be seen in Table 4. Table 5 illustrates the trip generation for each of the preferred development option locations.

**Table 4 Trip Rates 08:00-09:00 AM**

	Out	In	Total
<b>Residential (per unit)</b>			
Dwellings	0.465	0.15	0.615
<b>Employment (per 100m<sup>2</sup>)</b>	Out	In	Total
B1	0.135	0.985	1.120
B2	0.08	0.39	0.47
B8	0.08	0.137	0.224

Notes: [1] TRICS version 2008(a) was used for the employment trip rates. The trips generation for the dwellings is as used for the RMAS Review report derived from TRICS version 2007(a).

**Table 5 Trip Generation (TRICS)**

Residential	No of units	Generated Flows		
		Out	In	Total (two way)
Romsey	2300	1070	345	1415
North Baddesley	500	233	75	308
Nursling	300	88	28	116
Employment	Floor space (m <sup>2</sup> )			
B1	8,787	12	87	99
B2	3,543	3	14	17
B8	14,173	11	19	30
Total employment (Nursling)		26	120	146

- 3.2.4 The number of trips derived for residential development will include both trips internal to each of the settlements and external trips, of which some will use the SRN. Hence if the total trips generated by the proposed developments are loaded onto the network there would be no allowance made for internal trips that do not leave each of the settlements. This would produce an overestimate of trips on the wider network. It is therefore necessary to factor the number of generated trips loaded onto the wider network by the expected proportion of trips that will be external to each of the settlements.
- 3.2.5 In the RMAS Review Phase II study a trip generation model was derived for the development options considered, which enables the number of trips internal and external to a settlement to be identified. The model considered all trip purposes. The derived trip matrices indicate that an estimated 63% of trips generated by the residential development options considered for Romsey would be external to the settlement. For the purposes of this assessment, this factor has been applied to the total number of trips generated by each of the residential developments in order to produce the number of trips to be loaded onto the highway network. The result is shown in Table 6. It is assumed that this proportion will be the same for each of the settlements. This may be an underestimate of external trips for Nursling and North Baddesley, given a lower level of self containment. However it is likely to be a reasonable assumption for the purposes of this assessment if 'internal trips' are taken to be those contained on the local road network and within the surrounding settlements, i.e. trips that will not reach the SRN. Trips to and from the employment preferred location at Nursling are all likely to be 'external' to that location and hence the trip rate was not adjusted.

**Table 6 External Trip Generation**

Development Location	Zone <sup>[1]</sup>	Total Trips		External Trips	
		Out	In	Out	In
<b>Residential</b>					
Romsey	794	1070	345	674	217
North Baddesley (40%) <sup>[2]</sup>	782	93	30	59	19
North Baddesley (60%) <sup>[2]</sup>	793	140	45	88	28
Nursling (44%) <sup>[2]</sup>	761	61	20	39	12
Nursling (56%) <sup>[2]</sup>	669	79	25	49	16
<b>Employment</b>					
Nursling	810	26	120	26	120

Notes: [1] These are the origin/destination zones used in the traffic model

[2] The trip generation from these settlements is divided between the zones available within these settlements, in the proportion of the existing trip generations from these zones

- 3.2.6 The predicted number of trips generated by the new developments derived from these trip rate and generation calculations can then be subtracted from the '2026 including Test Valley' matrix to produce the '2026 excluding Test Valley' matrix, as described above in 3.2.1.

#### ***Trip Distribution and Assignment***

- 3.2.7 The 2026 trip matrices are loaded onto the model base road network to produce two trip assignment outputs. The trips associated with the proposed developments in southern Test Valley join the network via 'zone connectors' from the zones that are already used for the existing traffic generated in Romsey, North Baddesley and Nursling. Network plots for the assignments with and without the southern Test Valley development are reproduced in Appendix A.
- 3.2.8 By comparing the trip assignment outputs, it is then possible to demonstrate the net impact of the proposals for southern Test Valley on the identified key links on the SRN, relative to the overall impact of development proposed in South Hampshire.
- 3.2.9 The predicted traffic flows, derived from the two 2026 trip matrices, can also be compared with the capacities of the key links on the SRN in order to provide a broad assessment of the implications of the southern Test Valley proposals for the 'degree of stress' on the SRN.

#### ***Modelling Adjustments for Local Trips***

- 3.2.10 As indicated earlier in section 3.1.3, the overall performance of the SSTM has been previously validated for the SRN. However in working through the model assignment outputs, the number of trips between Romsey and Totton/the Waterside appears higher than might be expected and the number of trips between Romsey and Southampton/Eastleigh appears lower. Whilst, as already acknowledged, the model is not being used to assess impacts on the local road network and this bias will not affect the predictions for the SRN generally, this bias could result in an underprediction of the Southampton bound flows on the M271.
- 3.2.11 To check this possible bias the distribution of trips to/from Romsey has been estimated using the journey to work origin/destination information from the 2001 Census. This distribution was

then compared against the distribution predicted by the model. This comparison is shown in Table 7. The bias towards Totton/the Waterside is confirmed. For the purposes of this assessment a manual adjustment will be made to the trip assignments extracted from the model, to derive more representative final predictions. A manual adjustment is made rather than amendments to the model. This is because such alterations to the model will lead to wider unrepresentative changes in the trip assignments across the network, as the model responds to different traffic flows, traffic flow/capacity ratios and the implications this will have for speed/flow relationships.

**Table 7 Comparison of Trips to/from Romsey**

	Total Trips <sup>(1)</sup>		Totton / Waterside		West Soton <sup>(2)</sup> via M271		West Soton <sup>(2)</sup> , Nursling via A3057		Other Destinations	
	Out <sup>(3)</sup>	In <sup>(3)</sup>	Out	In	Out	In	Out	In	Out	In
Model Flow	674	217	160	52	20	6	42	14		
Census Proportion (%)	100		12		7		9		72	
Adjusted flow	674	217	81	26	47	15	61	20		
Adjustment required	-	-	-79	-26	+27	+9	+19	+6		

Notes: (1) Total number of trips derived from housing numbers and TRICS generation rates

(2) 'Soton' - Southampton

(3) 'Out' are trips leaving Romsey, 'in' are trips arriving in Romsey

### ***Demand Management Modelling***

3.2.12 It should be noted that the traffic model has not been used to predict possible scenarios that take account of the effects of demand management measures. It has not been possible within the scope of this study to reliably quantify the effects of such measures. Hence the traffic predictions represent a 'worst case' situation. However the measures and initiatives that Test Valley Borough Council is developing (section 5.2 of this report) are likely to contribute significantly over the period to 2026 to a reduction in the predicted traffic flows.

## 4. TRAFFIC IMPACT ON THE STRATEGIC ROAD NETWORK

4.1.1 The traffic impact of the preferred development options on the identified key links on the SRN is summarised in Table 7. The net changes in the traffic assignments across the network in and around Test Valley are also illustrated in Appendix A. In terms of key changes or impacts, it is concluded that:

- The impacts on the SRN are generally less than 2%, with the impact less than 1% on many links. This may reflect in part the increasing congestion on the SRN by 2026 and the influence this will have on the balance of route choices between the local and strategic networks. It is recognised that there may be more significant impacts at junctions (as discussed in paragraphs 4.1.2 and 5.1.1 below)
- The M27/M3 corridors are generally at or over capacity by 2026 without the proposed development in southern Test Valley. The development proposals do not materially change the flow to capacity ratio.
- The most significant percentage impact on the SRN is on the M271 southbound, north of M27 junction 3. This reflects the likely high level of movements of traffic from southern Test Valley towards Southampton and the M27 corridor. However it should be noted that the actual traffic flows on the M271 (and the link flow to capacity ratios) are low, relative to other flows on the SRN.
- There is a significant northbound movement of traffic from southern Test Valley (mainly Romsey) that appears to avoid the M27 and the M3 south of Winchester by using the A3090, before joining the M3 at junction 11. This probably reflects the increasing congestion on the M27 and the M3 south of Winchester by 2026. The impact north of junction 11 is however less than 1.5%.
- There is an apparent reduction in flows on the M27 between junctions 1 and 2 when the development traffic is assigned. This appears to result from increasing congestion at M27 junction 2 by 2026 and the resultant delays. There is an alternative local route (Romsey Road) parallel to the M27, between junctions 1 and 2. The model diverts traffic to this local route to avoid the delays at the motorway junction.

4.1.2 It can be seen therefore that generally the impact on the SRN is low. The residential development traffic from southern Test Valley, as it travels towards Southampton, has a predicted impact on the M271 and M27 junction 3. The increasing congestion generally on the SRN by 2026 may lead to local traffic transferring away from the M271 and M27 junction 3 and using local routes, for example through Shirley in Southampton. The proposed employment development at Nursling may also have implications for M27 junction 3.

4.1.3 The increasing flows using the A3090 corridor towards Winchester may have implications for the local road network, including the approach routes to M3 junction 11. The use of Romsey Road, parallel to the M27 between junctions 1 and 2 will also have implications for the local road network.

4.1.4 This assessment has looked forward to the year 2026. The predicted increasing congestion on the SRN in the future is likely to influence route choices (as shown by the examples in paragraph 4.1.2), distances travelled and modal choices.

4.1.5 The potential for measures to mitigate the impact of the development proposals are considered in the next section.

**Table 7 Traffic impact of the preferred development options on SRN key links (2026)**

Key Route (by direction)	Number of Lanes (one way)	One Way Flows AM peak hour (0800-0900)			% Change with TVBC dev	Capacity (one way) [3]	Flow/Capacity ratio	
		Existing (2004)	2026 no TVBC Dev	2026 with TVBC Dev			2026 no TVBC dev	2026 with TVBC Dev
M27 Junctions 1-2	3	3959	4830	4790	-0.8% <sup>[4]</sup>	5400	0.9	0.9
M27 Junctions 2-1	3	2305	3047	3078	1.0%	5400	0.6	0.6
M27 Junctions 2-3	3	5267	7132	7168	0.5%	5400	1.3	1.3
M27 Junctions 3-2	3	3088	4905	4940	0.7%	5400	0.9	0.9
M27 Junctions 3-4	3 (4) <sup>[1]</sup>	5454	7372	7445	1.0%	7200	1.0	1.0
M27 Junctions 4-3	3 (4) <sup>[1]</sup>	4620	6551	6588	0.6%	7200	0.9	0.9
M3 Junctions 10-11	3	4755	5908	5930	0.4%	5400	1.1	1.1
M3 Junctions 11-10	3	5562	7073	7175	1.4%	5400	1.3	1.3
M3 Junctions 11-12	3	4712	5269	5273	0.1%	5400	1.0	1.0
M3 Junctions 12-11	3	5644	6508	6514	0.1%	5400	1.2	1.2
M3 Junctions 12-13	3	5071	5571	5588	0.3%	5400	1.0	1.0
M3 Junctions 13-12	3	5700	6859	6870	0.2%	5400	1.3	1.3
M3 Junctions 13-14	4	5593	6216	6243	0.4%	7200	0.9	0.9
M3 Junctions 14-13	4	5933	7439	7443	0.1%	7200	1.0	1.0
M271 North of M27 NB <sup>[2]</sup>	2	747	1256	1280 (1289) <sup>[5]</sup>	1.9% (2.6%) <sup>[5]</sup>	3600	0.3	0.4
M271 North of M27 SB <sup>[2]</sup>	2	682	708	800 (827) <sup>[5]</sup>	13.0% (16.7%) <sup>[5]</sup>	3600	0.2	0.2
M271 South of M27 NB <sup>[2]</sup>	2	1578	2014	2020 (2029) <sup>[5]</sup>	0.3% (0.7%) <sup>[5]</sup>	3600	0.6	0.6
M271 South of M27 SB <sup>[2]</sup>	2	2857	2871	2911 (2938) <sup>[5]</sup>	1.4% (2.3%) <sup>[5]</sup>	3600	0.8	0.8

Notes: [1] - 4 lanes in each direction by 2026

[2] - NB – northbound; SB – southbound

[3] - Capacity taken from advice from Highways Agency. Based on maximum flows per lane of 1800 for motorways

[4] – The negative change arises from a transfer to the parallel local road

[5] - The figures in brackets include the manual adjustment to flows between Romsey and Totton

## **5. POSSIBLE MITIGATION MEASURES**

### **5.1 Highway Impacts**

- 5.1.1 The principal impacts of the development proposals on the SRN are predicted to occur on the southbound M271, north of the M27, and at the M271/M27 junction 3, and on the approaches to M3 junction 11 near Winchester.
- 5.1.2 The M271 southbound approach to M27 junction 3 is relatively lightly trafficked at present. Queuing occurs at morning peak times but this can be accommodated on the southbound approach link. The increased flows arising from the proposed development may have implications for the operation of the partially signal controlled junction 3. The potential for possible improvements at this junction could be investigated further. However, the impact of the proposed southern Test Valley developments represents only part of the full impact of the South East Plan proposals on the SRN. The benefits of capacity improvements, over the longer term, to 2026 may be eroded or even nullified by traffic growth. Hence potential capacity improvements will need to be considered against the wider issue of demand management and the actual traffic flow and journey reliability benefits that might or might not be sustained over the longer term.
- 5.1.3 The predicted northbound flows arising from the development proposals joining the M3 at junction 11 may have implications for the merge of the northbound slip onto the main M3 carriageway. These flows may also have implications for the operation of the local road network in the south Winchester area in the vicinity of M3 junction 11. This impact may again require more detailed examination in the context of all South East Plan development likely to affect these sections of the local and strategic network and the wider aims of demand management.

### **5.2 Demand Management and Smarter Travel Choices**

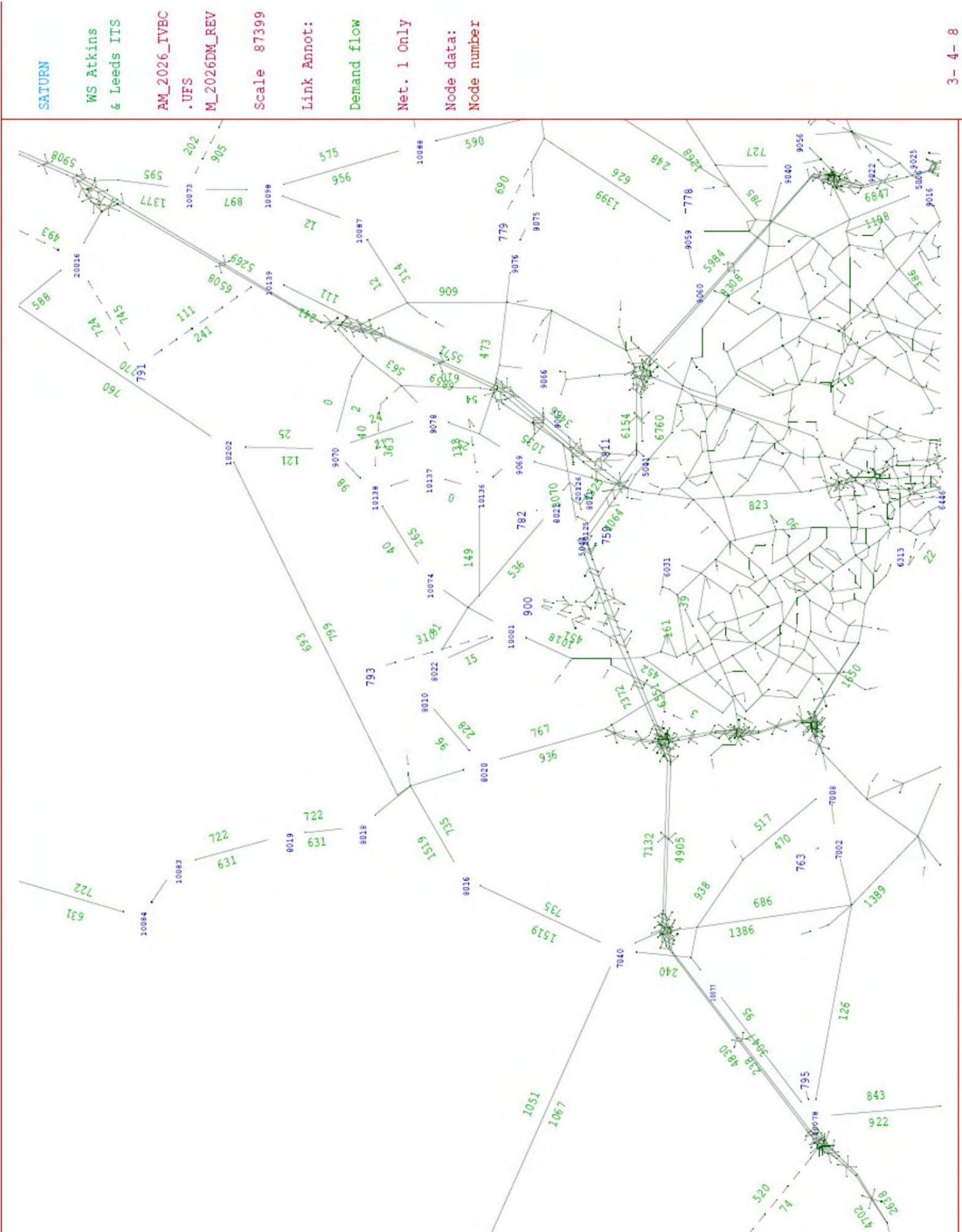
- 5.2.1 It is clear that by 2026 the local and strategic road networks could be under significant strain due to both background traffic growth and traffic generated by the high level of development required in the South Hampshire area, arising from the proposals of the South East Plan. Working practices and travel behaviour will have to change to mitigate these impacts.
- 5.2.2 Test Valley Borough Council has been developing a range of measures related to Travel Planning initiatives, aimed at reducing overall travel demands and promoting more sustainable travel choices. This range of measures is described more fully in Appendix B. These measures include:
- Allocation of development in sustainable locations, having good levels of accessibility. Use has been made of Accession modelling in assessing suitable locations, including access and proximity to employment areas;
  - The provision of facilities, services and employment opportunities within new development;
  - Extensive promotion of and requirement for Travel Plans;
  - Public transport improvements, including proposals to promote increased use of Romsey rail station and consideration of improvements to Romsey bus station and bus services in southern Test Valley;
  - A revised Cycle Strategy and Network, consultation draft, published in May 2008;
  - Enhancements to the walking network, including improved pedestrian routes and crossing facilities;

- A Town Access Plan for Romsey. The Plan will be a mechanism for coordinating funding from various sources for infrastructure improvements, particularly relating to accessibility and safety; and
- Long term proposals for a Park and Ride site serving Southampton city centre.

## 6. CONCLUSIONS AND RECOMMENDATIONS

- 6.1.1 This assessment has shown that the impact of the proposed development in southern Test Valley on key links on the SRN, relative to the background flows and traffic growth by 2026, is generally low. However the SRN in south Hampshire by 2026 is predicted to be near or over capacity by 2026 with or without the proposed development in Test Valley.
- 6.1.2 It is apparent that the most significant impacts, arising from the proposed development, occur on the M271 and at its junction with M27 junction 3. There are also impacts on the A3090 corridor towards Winchester that could have implications for M3 junction 11 and the access routes on the local road network. There will be a need to consider these impacts further and the possible need for capacity improvements, but in the wider context of demand management and the overall South East Plan development proposals. Capacity improvements that sought to prevent future congestion in 2026 would be unrealistic and probably not feasible; they would also be counter productive in terms of demand management.
- 6.1.3 Test Valley Borough Council is developing a range of demand management measures to reduce overall travel demands and promote sustainable travel behaviour that can make a positive contribution towards reducing the potential traffic impacts of future development. These measures are likely to lead to a reduction in the 'worst case' predictions derived from the traffic model over the period to 2026.
- 6.1.4 It is recommended that Test Valley Borough Council should work with the local highway authority, other neighbouring local planning authorities and the Highways Agency to explore opportunities to:
- optimise the performance of the junctions identified in this report, as part of the wider examination of the impacts of the South East Plan proposals; and
  - develop joint smarter choices, demand management and travel planning initiatives.

**APPENDIX A  
MODEL PLOTS**



SATURN

WS Atkins  
& Leeds ITS  
AM\_2026\_IVBC  
.UFS  
M\_2026DM\_REV

Scale 87399

Link Annot:

Demand flow

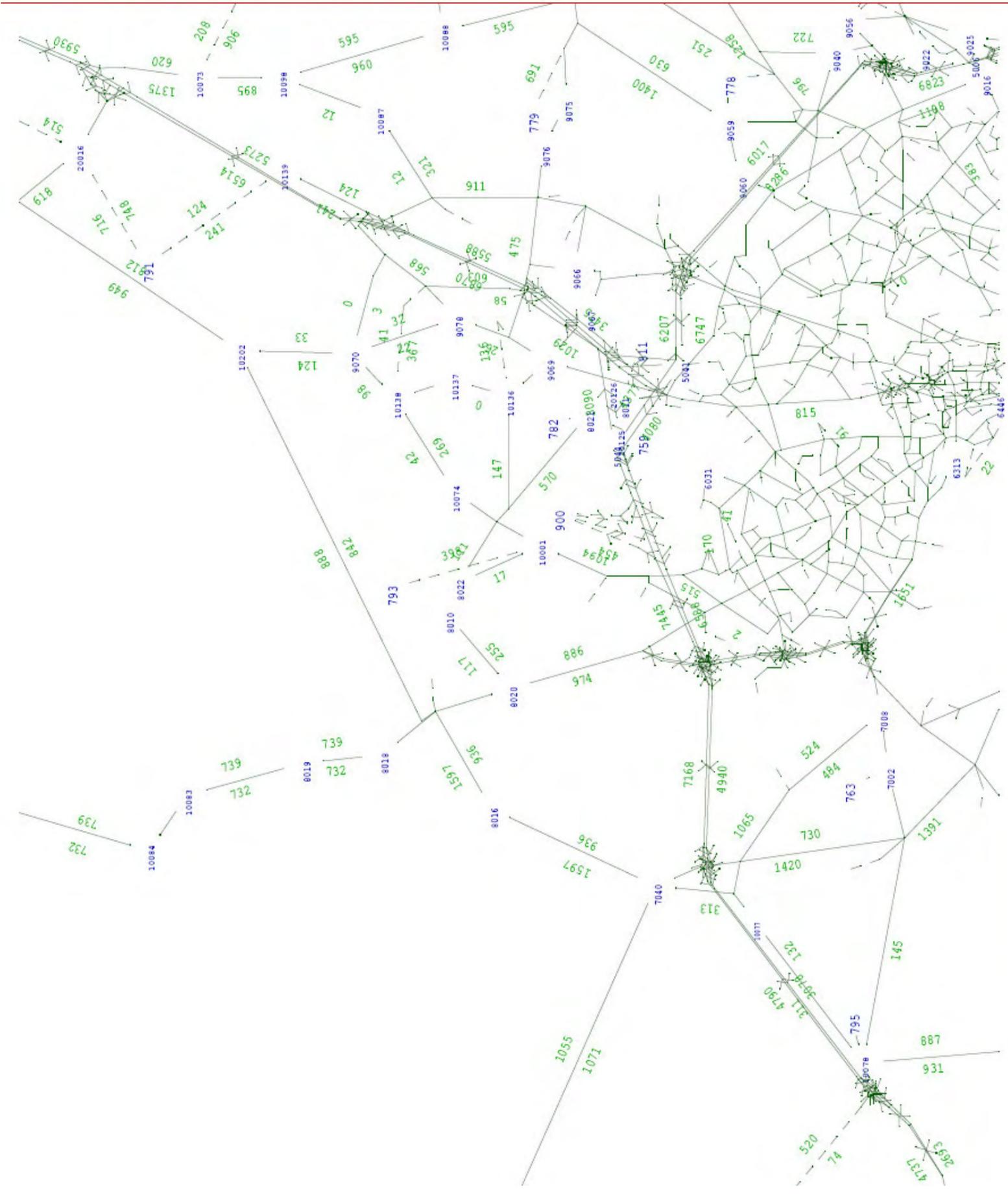
Net. 1 Only

Node data:

Node number

3-4-8

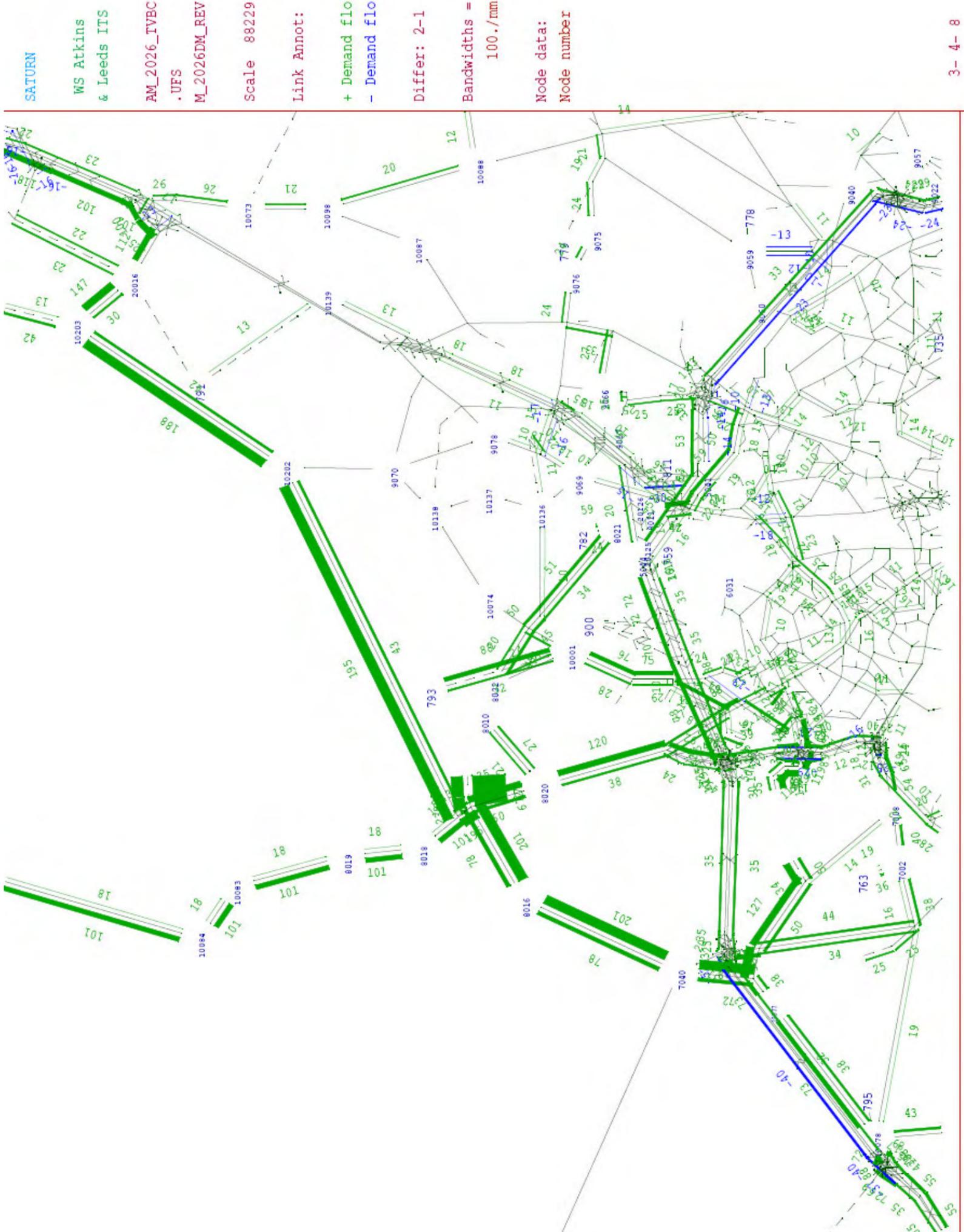
Plot B1 Sample Plot of Base (2026) excluding STV Development AM Peak Flows



SATURN  
 WS Atkins  
 & Leeds ITS  
 AM\_2026\_TVBC  
 .UFS  
 M\_2026DM\_REV  
 Scale 87399  
 Link Annot:  
 Demand flow  
 Net. 2 Only  
 Node data:  
 Node number

3-4-8

Plot B2 Sample Plot of Base (2026) including STV Development AM Peak Flows



3-4-8

Plot B3 Sample Plot of Net Changes in flows due to STV Development AM Peak Flows

**APPENDIX B**  
**DEMAND MANAGEMENT AND TRAFFIC REDUCTION MEASURES**

## **Test Valley Borough Council**

### **Demand Management and Traffic Reduction Measures**

#### ***Introduction***

As part of its strategic transport policy for the Southern Test Valley area TVBC have adopted a series of measures to try and reduce the amount of car movements taking place within the area. Locating development in accessible locations and providing attractive alternative travel options to the car, whilst at the same time ensuring accessibility for all, will lead to less reliance on the car for transport. This should also reduce the impact of traffic on the Strategic Road Network as people chose to use alternative modes of transport for their journeys.

#### ***Location of development***

The accessibility of the site has been a key factor taken into account in determining the suitability of sites proposed for development within the core strategy.

The Dft software Accession has been used to assess how accessible the various potential development areas are to a range of key destinations including employment, schools, food shopping, doctor's surgeries and hospitals.

The preferred options have been identified as having reasonably good accessibility to such facilities by walking and/or bus. This will help to ensure that it will be possible for the future residents to access many of the destinations they require without the necessity of using a car. Those sites which were identified as being the least accessible have not been selected as a preferred option.

#### ***Provision of facilities and services within new development***

There is a requirement in the Core Strategy for local services and facilities such as recreational open space, local shops and community halls to be located within the proposed new development areas and in some sites employment opportunities will also be provided. This will enable new residents to walk or cycle to such facilities. Provision of cycle routes, attractive pedestrian routes and good links to public transport will also be required to ensure viable alternative options to the car are catered for within any new development.

#### ***Travel Plans***

Nearly every school in the Borough now has a Travel Plan and several schools have had new infrastructure provided such as improved crossing points and cycle sheds to encourage more children to walk or cycle.

There is a requirement for new businesses or expanded businesses over certain thresholds to prepare Travel Plans. Several smaller companies have also been required to prepare these where it is considered to be of particular benefit and other companies have volunteered Travel Plans as a part of their planning applications.

Residential developments of over 50 units are also required to prepare Travel Plans which will promote alternative uses to the car to the new residents ensuring they have information on travel options readily available.

The Travel Plans are monitored and businesses encouraged to promote the plans as an ongoing process. Test Valley Borough Council has been working with the Highways Agency and other organisations to seek examples of best practice for use in the Travel Plans being adopted.

### ***Public Transport Improvements***

Test Valley Borough Council has been working with Hampshire County Council, Network Rail and First Great Western to improve Romsey Railway Station. There is a feasibility study being carried out to improve access to the station and to consider enhancement of the station and its approaches. This study will look at the possibility of providing a ramped access to the far platform, bus access to the front of the station and better cycling and pedestrian links, as well as revising the layout for car parking.

Three Rivers Community Rail Partnership, which is supported by Test Valley Borough Council, other local authorities and the train operating companies, has been set up to promote use of the rail services along the route from Salisbury to Southampton which serves Southern Test Valley. They have arranged for adoption of Mottisfont and Dunbridge Station and Chandlers Ford Station and set up a volunteer group for Romsey Station. There has been local promotion of the service and projects to enhance the stations themselves are underway. The partnership has recently been awarded a grant towards providing a station travel plan for Romsey. The footfall of passengers through Romsey Station has been increasing and recently South West Trains have increased the number of carriages on the Cardiff to Portsmouth service.

There is a Quality Bus Partnership route from Romsey to Southampton. Salisbury and Winchester are also served by bus along with many of the smaller settlements close to Romsey. There is a limited town bus service as well, linking the outlying residential areas with the town centre. The Borough Council will be considering the possibility of enhancing the bus station and will work with Hampshire County Council and the bus companies to consider ways of improving the bus services in and around Romsey and Southern Test Valley. Any proposed future major development will be expected to be served by bus with appropriate improvements to services and infrastructure put in place to make this a viable travel option.

### ***Promotion of cycling facilities***

The revised Cycle Strategy and Network was published in May 2008. In recent years there have been several new cycle routes opened within Test Valley and monitoring figures available indicate that use of these routes is generally increasing. The strategy concentrates on providing safe cycle routes to the key destinations within the urban areas, and routes connecting the nearest settlements with larger urban areas nearby with the aim of providing safe and attractive alternatives to car use. For example North Baddesley is now linked to Romsey, Chandlers Ford and Rownhams by off road cycle routes, and Chilworth has an off road cycle route linking to cycle routes in Southampton in the south of the Borough. Some limited routes have been implemented in Romsey and more are proposed in the strategy. Major new developments will be expected to provide appropriate cycle facilities within and connecting to the development such as those previously provided at Valley Park.

### ***Improved pedestrian facilities***

In addition to joint use by pedestrians of some of the off road cycle routes in the cycle strategy Test Valley Borough Council, along with Hampshire County Council, has been improving pedestrian routes in the Borough. For example new pedestrian crossing facilities have been provided in Alma Road and along Botley Road in Romsey and the main arterial route along the Tadburn stream (leading from residential areas on the west to the centre of the town) has been enhanced. Some work has already been carried out by local groups identifying where improvements could be made to the network and more detailed Community street audits will be used to inform the Town Access Plan for Romsey (see section below)

### ***Town Access Plan for Romsey***

A Town Access Plan for Romsey is being prepared by Test Valley Borough Council in conjunction with Hampshire County Council.

Town Access Plans have their origins in the Local Transport Plan (LTP) 2006-2011. The Romsey TAP is one of the supplementary planning documents associated with the Local Development Framework (2007-2010) and has a role in directing investment within the town. The purpose is to highlight barriers or obstacles to access, and to identify specific schemes or solutions which will improve and facilitate access for all.

The Town Access Plan (TAP) for Romsey will inform and support financial contributions towards infrastructure and measures required to improve accessibility within the town for all modes of transport. The plan will play an integral part in ensuring that new development, or the redevelopment, of areas of the town will assist in improving accessibility either by implementing in part those measures previously identified or making financial provision for them. The plan is therefore a mechanism for prioritising and co-ordinating funding from various sources to bring about improvements in accessibility, improve safety, and to enhance the setting and appearance of the town. Links to the main public transport facilities will be an important consideration in the plan.

### ***Park and Ride***

A site has been identified within the Core Strategy Preferred options for a Park and Ride facility on the edge of Southampton at Nursling. This would cater for drivers wishing to access the centre of Southampton but at the moment the project is only at the stage of safeguarding the land for that purpose.