

## Technical note

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<b>Project</b>	Wycombe Local Development Framework	<b>Date</b>	19 April 2010
<b>Note</b>	TN5 – Transport Modelling Individual Site Tests M40 Gateway- Mitigation Tests - SLINK	<b>Ref</b>	TN5
<b>Author</b>			

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### **1**

#### ***Introduction***

#### 1.1

The Wycombe Local Development Framework (LDF) is now proceeding from the analysis of the Core Strategy to the investigation of individual site allocations. The Wycombe Transport Model provides a tool to assess the impact of growth arising from the major developments proposed in the town. A second phase of testing involved assessing the impact of each individual site by dropping each site/ or groups of sites from the Core Strategy. These were reported in 'TN1 - Individual Site Tests Summary' and 'TN2 – Individual Site Tests M40 Gateway Alternatives', 26 June 2009. Some of the options tested in TN2 included a Southern Link Road (Slink). The model has been used to assess the impact of the Wycombe Coachway and development at the Sports Centre.

#### 1.2

The Wycombe District Council Delivery and Site Allocations (DSA) Update Consultation Development Plan Document (June 2009) updated the proposals regarding individual sites, the mix of development in the town including town centre Master Plan, and elements of the transport strategy, including Smarter Choices.

#### 1.3

This round of tests updates the 2026 scenario to reflect the proposed DSA and focuses on Daws Hill and Abbey Barn South developments. Technical note 'TN3 – Individual Site Tests, Daws Hill, Abbey Barn South Sensitivity Tests' assessed the impact of the Daws Hill and Abbey Barn South sites by dropping each site from the full DSA proposals. Technical note 'TN4 – Individual Site Tests, Daws Hill, Abbey Barn South Mitigation Tests' outlined the impact of potential mitigation measures that might accompany the developments. This note outlines the impact of SLink, similar to the option in TN2.

### **2**

#### ***Options for Testing***

#### 2.1

The modelling work undertaken in these M40 Gateway tests involves an assessment of the full set of potential development sites that could come forward compatible with the DSA and also included the Smarter Choices elements of the transport strategy.

#### 2.2

In this note we examine the impact of potential mitigation measures offered by a southern link road (SLink) with predominantly business use on Abbey Barn South site.

2.3 As reported in TN3 and TN4, the land use allocations assumed for the main sites within the DSA consultation document.

Site Name	Quantum of Development
Cressex Island	Car showroom 2,800m <sup>2</sup> + parking Large format Commercial Use 12,000 m <sup>2</sup>
Sports Centre Site/Highways Dept	Sport Centre 11,000m <sup>2</sup> 150 bed hotel, Business 33,105m <sup>2</sup> Coachway/Park and Ride incl 550 parking spaces
Terriers Farm	400 dwellings Small Community building Care home, Park and Ride
Gomm Valley	400 Dwellings 4,000 m <sup>2</sup> . B1 offices 1,000 m <sup>2</sup> . Community/retail use
Ashwells	100 dwellings
Former Compair Broomwade	672 student bedrooms 495sqm Business start up units 15,800 sqm retirement community 10,000m <sup>2</sup> offices, 3,100 m <sup>2</sup> distribution 10 flats
Former De la Rue	120 dwellings 2,437m <sup>2</sup> B1(c) light industrial
RAF Daws Hill	550 dwellings (483 net) 3,000 m <sup>2</sup> . B1 offices, 800 m <sup>2</sup> retail 700 m <sup>2</sup> A1-A5 uses Primary school
Abbey Barn South	550 dwellings, 7,000 m <sup>2</sup> B1 Community Centre
Abbey Barn North	100 dwellings

**Table 1: Assumptions for Individual Site Allocations**

2.4 Other assumptions in the town centre are reported in Table 2.

Site	New land use assumptions
Wellesbourne campus (Kingshill Road)	238 dwellings (instead of the 156 currently in the model – traffic zone 46)
John North Hall, Marlow Hill	106 dwellings (Instead of 25 currently in the model – traffic zone 60)
Johnson and Johnson	13,620 sq m of additional B1 office (traffic zone 66)
<b>ADDITIONAL TOWN CENTRE SITES:</b>	
All sites except the hotel element of the Octagon Parade development rely on implementation of Master Plan, including removal of Abbey Way and downgrading of Archway.	

Swan Frontage (Scenario A)	13,062 sq m office 1750 sq m A1 shops 9 x 2-bed flats 4 x 1-bed flats Total Parking Provision = 141 spaces
Suffield Road	11 dwellings
Archway/Dovecot	3,640 sq m B1 office 1,799 sq m A1 shops 22 flats, 2,460 sq m hotel
Octagon Parade	3,416 sq m hotel, 8980 sq m A1 shops 5928 sq m B1 office No additional parking provided.

**Table 2: Land Use Assumptions – Changes from previous Core Strategy Tests**

2.5 The specific land use assumptions that replace those in Table 1 for the Abbey Barn South development site in the SLink Test are:

- 370 dwellings
- Community centre (assume approx 500 sq m)
- 25,000 sq m B1 office

**3 Assumptions**

3.1 Based on the information provided by Wycombe District Council table 3 shows the land use data for the Wycombe model area used by the transport model for the various forecasts. The table shows that in the DSA proposals the number of households is increased to 43,671 with 54,423 jobs. In the SLink test the number of jobs is increased by 1,100 to 55,523 while the number of households is reduced by 210.

Test	Test Description	Population	Households	Employed Residents	Jobs
	2006	87,510	36,744	44,970	46,790
1	2026 full DSA proposals	103,889	43,671	53,674	54,423
SLink	2026 Land Use with Slink	103,387	43,461	53,414	55,523

**Table 3: Land Use Information – Forecast Scenarios**

Planning Data Assumptions- External area Reference Case

3.2 The current tests make use of Tempro version 6.2 programmes for deriving trip growth outside of the Wycombe District with the Tempro 5.4 dataset. The Tempro inputs have been adjusted to take account of the SE Plan as adopted in May 2009. The external trip growth is fed from Tempro through the regional model to the local model.

Network Assumptions for 2026 base test

3.3 These are as reported in TN4 (Test 1A)–2026 full DSA proposals with no mitigation assumed.

### Network Assumptions for SLink test

3.4

The assumptions for the SLink Test are as follows:

- Standard of Slink = single carriageway local distributor (speed assumed 40mph)
- Slink Includes south facing slips onto A404
- Slink to join Heath End Road at the junction with Abbey Barn Lane (nb no separate junction of Winchbottom Lane with Heath End Rd as per current arrangement)
- No right turn from Slink northbound onto Heath End Rd eastbound. Assume light controlled junction of SLINK with Heath End Rd/Abbey Barn Lane
- Slink to join Marlow Old Road at a roundabout
- No right turn from Abbey Barn Lane northbound onto Kingsmead Rd eastbound.

Additional mitigation assumptions are:

- Improve alignment of Abbey Barn Lane (over railway bridge + improve gradient)
- Improve Abbey Barn Road junction with London Rd – use Buchanan’s Ford Street arrangement.
- Daws Hill Lane/Marlow Hill junction (only widen the south bound flares off Daws Hill Lane as per Mitigation Run 1 in TN4).
- Relocate school drop off traffic for Catholic Schools to Sports Centre access
- Dedicated bus route from Daws Hill/Abbey Barn development to Coachway (i.e. not using existing Daws Hill Lane)

**4**

### ***Trip Rates***

4.1

These are as reported in TN3.

**5**

### ***Smarter Choices***

5.1

These are as reported in TN3.

**6**

### ***Overall Results***

6.1

The results are presented for the network as a whole before assessing each local area in more detail later in this report.

### Network Summary Statistics

6.2

The traffic growth forecast within the various DSA scenarios between 2006 and 2026 is 16%. In the local area there is transfer to park and ride and a modest transfer to bus. The traffic growth equates to an annual average growth rate of just less than 1%. We have not assumed any additional demand management or smarter choices measures to accompany these option tests to that outlined previously.

6.3 Tables 4, 5, and 6 show the summary statistics obtained from the model for each of the modelled periods for these tests. Table 7 provides a summary for the 12-hour period (0700-1900) which combines the periods. These include the total travel time and distance spent within the modelled periods as well as the free moving time. The difference between the total time and the freemove time provides the amount of congestion. This is reflected in a congestion index which is taken as the ratio of the total time and the free move time. The tables also provide the network speed for the whole modelled area (which includes the rural area outside Wycombe) and a generalised cost index (taken as total time + distance/100). The latter is taken as a proxy indicator for use in benefit calculations. It should be noted that the information includes the buffer area and the M40 motorway hence the base year speeds appear to be higher than an urban speed limit.

6.4 Table 4 shows that there is an increase in morning peak travel in 2026, resulting in increased queues and delays. The table shows that the network congestion index is 1.21 in the DSA Test 1A. The addition of the Slink the there is a small reduction in travel time and queuing with a congestion index of 1.21 but a lower generalised cost index.

	Free moving Time	Total time	Distance	Speed	Queues	Congestion Index	GC Index
2006	19,796	22,503	1,562,269	69.4	12,089	1.14	24,066
Test 1A - 2026 DSA	23,130	28,078	1,798,299	64.0	25,727	1.21	46,061
Slink	23,052	27,971	1,803,810	64.5	25,716	1.21	46,009

**Table 4: Local Model Summary statistics- Morning Peak**

6.5 Table 5 shows that there is an increase in inter peak travel in 2026, resulting in increased queues and delays. In each test the congestion index is 1.13 although the generalised cost index is lower with Slink.

	Free moving Time	Total time	Distance	Speed	Queues	Congestion Index	GC Index
2006	30,387	33,326	2,424,698	72.8	2,802	1.10	35,750
Test 1A - 2026 DSA	35,895	40,577	2,825,165	69.6	5,059	1.13	68,829
Slink	35,741	40,235	2,827,421	70.2	4,533	1.13	68,509

**Table 5: Local Model Summary statistics- Inter Peak**

6.6 Table 6 shows that there is an increase in evening peak travel in 2026, resulting in increased queues and delays. The table shows that the network congestion index is 1.25 in the Test 1A run. The SLink test there is a reduction in travel time and larger reduction in queuing time than the AM peak with a congestion index of 1.23 and a lower generalised cost index.

6.7 Slink is having a greater impact in the PM peak than the AM peak.

	Free moving Time	Total time	Distance	Speed	Queues	Congestion Index	GC Index
2006	21,492	24,266	1,726,557	71.2	11,554	1.13	25,993
Test 1A - 2026 DSA	25,719	32,261	2,017,119	62.5	35,728	1.25	52,432
Slink	25,478	31,244	2,015,376	64.5	30,777	1.23	51,398

**Table 6: Local Model Summary statistics- Evening Peak**

6.8 Table 7 shows that there is an overall change in 12-hour travel conditions in 2026, resulting in increased queues and delays. The table shows that the network congestion index is 1.19 in the Test 1A. The Slink run the Congestion Index is reduced to 1.18. There is less queuing time as the southern link road is designed to be fairly free-flowing. The increase in the distance travelled suggests that there is a diversion onto the southern link road.

	Free moving Time	Total time	Distance	Speed	Queues	Congestion Index	GC Index
2006	71,675	80,095	5,713,524	71.3	26,444	1.12	85,809
Test 1A - 2026 DSA	84,741	100,916	6,640,582	65.8	66,514	1.19	167,321
Slink	84,271	99,450	6,646,607	66.8	61,028	1.18	165,916

**Table 7: Local Model Summary statistics- 12-hour**

6.9 It should be noted that further investigation of key hotspots of congestion may identify additional improvements to junctions which could improve the congestion indices as in this round of testing not all of the signals have been optimised.

6.10 The previous 2026 LDF land use and town centre Masterplan proposals (TN1) had a congestion index of 1.24 and Generalised Cost Index of 179,899. The biggest impact on this is the Smarter Choice factor, but also a function of revised land use employment allocations with increased employment in the town centre.

Flows across Cordons and Screenlines

6.11 Table 8 compares the traffic flows across a series of cordons and screenlines within the town. Flows are given for the peak hours, the average interpeak hour and the 12-hour daily flow. The locations include:

- Outer Cordon (equates to the BCC monitoring cordon)
- Railway screenline (equates to the BCC cordon)
- Handy Cross (excludes slip between A404 south and M40 west)
- Town Centre

6.12 The table shows that there is a forecast growth in 12 hour daily traffic of 10 to 12% across the Outer Cordon depending on the direction compared to 2006. There is an increased growth across the Railway Screenline in a northbound direction (18%) due in part to local re-routing. Inbound traffic into the town centre is forecast to grow by 10% across the day. With the SLink there is a forecast reduction in town centre traffic due to vehicles in the east/south direction are using Slink rather than London Road and Marlow Hill.

	2006 Base	Test 1A - 2026 DSA	Slink
<b>12 hr</b>			
Outer Screenline - Inbound Direction	94,694	105,208	102,266
Outer Screenline - Outbound Direction	91,603	104,401	102,286
Railway Screenline – Northbound	46,323	54,602	54,631
Railway Screenline – Southbound	48,674	55,211	55,036
Handy Cross- Inbound	75,788	81,514	83,400
Town Centre- Inbound	84,897	93,647	89,942
Town Centre- Outbound	80,921	94,173	90,495
<b>Am Hour (0800-0900)</b>			
Outer Screenline - Inbound Direction	10,038	11,829	11,498
Outer Screenline - Outbound Direction	8,763	9,749	9,554
Railway Screenline – Northbound	4,123	4,504	4,604
Railway Screenline – Southbound	6,330	7,019	7,113
Handy Cross- Inbound	7,668	8,562	8,538
Town Centre- Inbound	9,799	11,045	11,091
Town Centre- Outbound	7,221	8,513	8,534
<b>Average Interpeak Hr</b>			
Outer Screenline - Inbound Direction	7,276	7,844	7,597
Outer Screenline – Outbound Direction	6,852	7,859	7,642
Railway Screenline – Northbound	3,413	4,157	4,150
Railway Screenline – Southbound	3,455	3,910	3,915
Handy Cross- Inbound	5,495	5,587	5,783
Town Centre- Inbound	6,198	6,826	6,501
Town Centre- Outbound	6,086	7,053	6,711

	2006 Base	Test 1A - 2026 DSA	Slink
<b>PM Hour (1700-1800)</b>			
Outer Screenline - Inbound Direction	9,395	10,048	9,885
Outer Screenline – Outbound Direction	10,737	11,945	11,787
Railway Screenline – Northbound	5,686	6,623	6,570
Railway Screenline – Southbound	4,267	5,044	4,958
Handy Cross- Inbound	8,179	8,955	8,996
Town Centre- Inbound	7,861	8,624	8,399
Town Centre- Outbound	9,311	10,854	10,295

**Table 8: Flow difference – Cordons and Screenlines**

Delays at junctions

6.13 The model can provide forecast delays on each junction approach within the study area. Appendix A shows a series of diagrams showing the level of delays in the morning and evening peak periods for each test. These diagrams show junctions where an arm has delays in excess of a series of thresholds. The thresholds adopted are:

- 60 to 120 seconds
- 120 to 180 seconds
- 180 to 240 seconds
- Over 240 seconds

6.14 Typically a traffic signal junction has a cycle time between 60 and 120 seconds. Therefore, a delay of 60 seconds would equal half of a 120 second cycle so a vehicle arriving at the queue would wait for half the cycle before leaving the junction. With delays in excess of 120 seconds the vehicle would still be queued at the end of the green phase and would need to wait for the next green phase. A delay of 240 seconds would need at least two green phases before the vehicle clears the junction. Note: full signal optimisation has not been applied on the network.

6.15 In Test 1A with the DSA proposals the areas with the largest delays are:

- Pedestal (Am)
- West Wycombe/ Chapel Lane/ Plumer Hill area (AM and PM)
- Handy Cross (AM and PM)
- West Wycombe Rd/ Pastures (PM)
- Hughenden Valley (AM)
- Marlow Hill/ Daws Hill Lane junction (AM and PM)
- Terriers (AM and PM)
- Cressex (AM and PM)
- Abbey Way ring junction (AM PM)



- London Road (Abbey Barn RD and Micklefield Rd area (AM)
- Rayners Avenue (AM)
- Winchbottom Lane (AM)
- Flackwell Heath (AM & PM)
- Treadaway Hill/ Station Road (AM PM)
- Desborough Road/ Desborough Avenue (PM)
- Amersham Hill/ Hamilton Rd (PM)

6.16 In the SLink test, the largest changes in delay are:

*Decreases*

- Daws Hill Lane (at Marlow Hill) (due to additional mitigation)
- Winchbottom Lane
- Sheepridge Lane

*Increases (due to additional traffic with Slink)*

- Gomm Road
- Hammersley Lane

**7 Local Junction Analysis**

7.1 A more localised analysis has been undertaken for the junctions in the vicinity of the M40 Gateway. The changes in flow at **Handy Cross** are shown below in Tables 9-12. These show that in the morning peak with the full core strategy run there is an increase in flow to 8,862 (this is lower than previous core strategy runs). The inclusion of Slink does not reduce the flow significantly. The outbound flows on table 10 show clearly that the main reduction in flow is traffic leaving the junction on the A404 Marlow Hill as some vehicles will be using Slink from the east and will not pass through Handy Cross.

Route	Observed	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	869	966	1069	1073
Marlow Road	714	714	701	716
A404 Marlow Hill	914	914	1172	1169
M40 Westbound off slip	1639	1639	2128	2029
A404 Marlow bypass	1254	1254	999	1087
Marlow old Road	753	753	889	884
M40 Eastbound off slip	1336	1336	1604	1580
<b>Total</b>	<b>7479</b>	<b>7576</b>	<b>8562</b>	<b>8538</b>

**Table 9: Flow Changes- Handy Cross- Am Peak Hour Inbound**

Route	Observed	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	1190	1315	1637	1648
Marlow Road	721	609	713	740
A404 Marlow Hill	1132	1143	1581	1302

M40 Westbound off slip	1418	1594	1591	1719
A404 Marlow bypass	2268	2260	2268	2239
Marlow old Road	498	434	560	611
M40 Eastbound off slip	252	297	212	278
	<b>7479</b>	<b>7652</b>	<b>8562</b>	<b>8538</b>

**Table 10: Flow Changes- Handy Cross- Am Peak Hour Outbound**

7.2 In the evening peak the flows at Handy Cross are reduced to 8,996 vehicles entering the junction in the Slink test compared with 8,955 in the DSA run. The largest reduction is on the Marlow Hill approach to the junction.

Route	Observed	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	1427	1486	1711	1714
Marlow Road	728	796	813	781
A404 Marlow Hill	1129	1191	1498	1378
M40 Westbound off slip	1514	1530	1678	1765
A404 Marlow bypass	1418	1455	1529	1522
Marlow old Road	635	638	607	674
M40 Eastbound off slip	972	1015	1119	1161
<b>Total</b>	<b>7823</b>	<b>8112</b>	<b>8955</b>	<b>8996</b>

**Table 11: Flow Changes- Handy Cross- Pm Peak Hour Inbound**

Route	Observed	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	1174	1126	1302	1433
Marlow Road	669	724	548	550
A404 Marlow Hill	1074	1199	1421	1231
M40 Westbound off slip	1606	1668	1885	1775
A404 Marlow bypass	2270	2302	2405	2446
Marlow old Road	492	461	801	868
M40 Eastbound off slip	538	632	592	695
	<b>7823</b>	<b>8112</b>	<b>8955</b>	<b>8996</b>

**Table 12: Flow Changes- Handy Cross- Pm Peak Hour Outbound**

7.3 Table 13 provides the morning peak hour delays at Handy Cross. In the Slink run these show increases in delay in the morning peak on Marlow Hill, Marlow Road and Marlow Old Road with a reduction on the Marlow bypass. The increase on Marlow Hill is despite a reduction in flow which suggests that the internal signals need to be optimised to avoid blocking on the junction.

Route	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	37	95	110
Marlow Road	48	79	90
A404 Marlow Hill	89	90	105
M40 Westbound off slip	40	22	21
A404 Marlow bypass	55	212	137
Marlow old Road	31	116	128
M40 Eastbound off slip	23	39	38

**Table 13: Average delays per vehicle (AM Peak Hour)**

7.4 Table 14 provides the peak hour delays for the evening peak. In the slink these show increases in delay on Marlow Old Road with a reduction on the Marlow bypass and on Marlow Hill, and Marlow Road.

Route	2008	Test 1A - 2026 DSA	Slink
A4094 John Hall Way	21	37	33
Marlow Road	51	59	54
A404 Marlow Hill	96	52	39
M40 Westbound off slip	53	21	21
A404 Marlow bypass	34	103	45
Marlow old Road	32	31	40
M40 Eastbound off slip	22	35	36

**Table 14: Average delays per vehicle (PM Peak Hour)**

7.5 Table 15 shows the change in traffic flows on **Daws Hill Lane** for each test. The table shows that with Slink there is an increase in westbound traffic on Daws Hill Lane compared to the DSA run. This is as a result of the mitigation measure which assumes a two lane discharge from Daws Hill Lane rather than SLINK.

Test	AM Peak hr		PM Peak hr		12-hr	
	East	West	East	West	East	West
Test 1A - 2026 DSA	803	641	809	633	9,493	7,585
Slink	807	953	847	776	9,281	8,914

**Table 15: Flows on Daws Hill Lane**

7.6 Table 16 shows the **Marlow Hill** flows in each test. The table shows that north of the junction there is a small reduction in flow with Slink, mainly in the south bound direction as traffic is diverted to Abbey Barn Lane and Slink. South of Daws Hill there is a small increase in traffic on Marlow Hill compared to Test 1A.

Test	AM Peak hr		PM Peak hr		12-hr	
	North	South	North	South	North	South
<b>Marlow Hill (north of Daws Hill)</b>						
Test 1A - 2026 DSA	1803	1888	1934	1791	19,131	19,068
Slink	1823	1734	1925	1415	19,400	17,992
<b>Marlow Hill (south of Daws Hill)</b>						
Test 1A - 2026 DSA	2251	2224	2426	2122	24,539	22,712
Slink	2184	2453	2417	2145	24,735	22,921

**Table 16: Flows on Marlow Hill at Daws Hill Lane junction**

7.7 The delays at the **Daws Hill Lane / Marlow Hill junction** are shown in table 17. This shows that on Daws Hill Lane there is a reduction in delay as a result of changes on the Daws Hill Lane approach and Slink. This is as a result of the two lane discharge which is assumed from Daws Hill Lane in this test. In the morning peak there is an increase in delay for right turning traffic from the A404. This corresponding delay is reduced in the evening peak.

Test	AM Peak hr	PM Peak hr	AM Peak hr	PM Peak hr	AM Peak hr	PM Peak hr
	Daws Hill westbound	Daws Hill westbound	A404 northbound	A404 northbound	A404 southbound	A404 southbound
Test 1A - 2026 DSA	428	248	0 ahead 121 right	0 ahead 145 right	11	11
Slink	42	31	0 ahead 188 right	0 ahead 128 right	11	11

**Table 17: Delays (sec/vet) Daws Hill Lane at Marlow Hill**

7.8 Table 18 shows the change in traffic flows on **Abbey Barn Road (south of Wycombe Marsh link)** for each test. The table shows that the northbound increase is due to Wycombe Marsh link, whereas Slink has an increase in southbound traffic.

Test	AM Peak hr		PM Peak hr		12-hr	
	North	South	North	South	North	South
Test 1A - 2026 DSA	866	902	889	637	7,116	6,101
Slink	995	853	1118	807	7,909	8,023

**Table 18: Flows on Abbey Barn Road**

7.9 The following table shows the flows, delays and queues on **London Road at the junction with Abbey Barn Road**. The table shows that eastbound traffic on the A40 has a small increase during the day. Westbound traffic on the A40 at Abbey Barn Rd is reduced as some traffic diverts to use Abbey Barn Lane. There is increased delay to traffic on the A40 as a result of the additional signals. Further optimisation of the performance of these junctions could be undertaken to improve the 'green wave' on the A40.

	AM Peak hr			PM Peak hr			12 hr		
	Flow (veh)	Delay (sec/veh)	Queue (veh)	Flow	Delay	Queue	Flow	Delay	Queue (Av)
<b>Test 1A - 2026 DSA</b>									
London Rd eastbound	765	37	3	864	16	1	9378	15	4
London Rd turning right into Abbey Barn Rd	327	54	8	128	29	4	902	20	4
London Rd westbound	1004	15	13	1114	40	13	12092	36	11
Abbey Barn Rd northbound	417	42	6	441	51	7	2914	36	3
<b>Slink</b>									
London Rd eastbound	900	68*	15	893	146*	10*	10534	40*	5*
London Rd turning right into Abbey Barn Rd	293	82*	21	135	51*	21*	676	45*	10*
London Rd westbound	900	75*	31	969	83*	34*	10,111	49*	15
Abbey Barn Rd northbound	607	36 left 42 right	6 left 4 right	656	48 left 29 right	8 left 3 right	4275	23 left 29 right	2 left 2 right

**Table 19: Flows, delays and queues on Abbey Barn Ln and London Rd**

\* combined delays or queues at the two junctions with Abbey Barn Rd and Ford Rd

7.10

Table 20 shows the delays in the **town centre at the Marlow Hill/ London Road junction**. The table shows that with the Slink there is a reduction in peak hour northbound traffic flows on Marlow Hill leading to increased delays and queues. There is a reduction in daily flows on Abbey Way. This is as a result of rerouting of east/south area traffic onto Slink.

	AM Peak hr			PM Peak hr			12 hr
	Flow (veh)	Delay (sec/veh)	Queue	Flow	Delay	Queue	Flow (veh)
<b>Test 1A - 2026 DSA</b>							
Marlow Hill northbound	1868	70	109	1872	118	135	20118
New Abbey Way eastbound	1147	31	12	1081	87	45	12213
Abbey Way westbound	1529	177	112	1542	75	54	18435
<b>Slink</b>							
Marlow Hill northbound	1833	110	146	1901	124	148	20448
New Abbey Way eastbound	1176	35	14	1066	46	35	12433
Abbey Way westbound	1582	126	88	1463	65	52	17287

**Table 19: Flows, delays and queues on Abbey Way and Marlow Hill**

7.11

Table 20 - 21 shows the flows over a selection of roads around the M40 Gateway area.

Route	Test 1A - 2026 DSA	Slink
Winchbottom Lane junction with Marlow Old Rd – eastbound	125	
Winchbottom Lane junction with Marlow Old Rd – westbound	414	
Slink – eastbound		518
Slink – westbound		806
Heath End Rd – eastbound	819	627
Heath End Rd – westbound	653	707
Abbey Barn Ln – northbound	710	847
Abbey Barn Ln – southbound	611	814
Kingsmead Rd – eastbound	469	331
Kingsmead Rd – westbound	320	362
Treadaway Hill – northbound	816	801
Treadaway Hill-southbound	530	626
Sheepridge Lane- Northbound	152	173
Sheepridge Lane- Southbound	259	222
Boundary Rd – eastbound	497	346
Boundary Rd – westbound	499	479
Station Rd junction with A40 - northbound	886	825
Station Rd junction with A40 - southbound	610	583

**Table 20: Flows for AM Peak hr (8-9am)**

Route	Test 1A - 2026 DSA	Slink
Winchbottom Lane junction with Marlow Old Rd – eastbound	276	
Winchbottom Lane junction with Marlow Old Rd – westbound	330	
Slink – eastbound		854
Slink – westbound		733
Heath End Rd – eastbound	608	642
Heath End Rd – westbound	729	702
Abbey Barn Ln – northbound	632	1023
Abbey Barn Ln – southbound	629	941
Kingsmead Rd – eastbound	271	224
Kingsmead Rd – westbound	549	447
Treadaway Hill – northbound	638	569
Treadaway Hill-southbound	701	680
Sheepridge Lane- Northbound	482	347

Sheepridge Lane- Southbound	106	159
Boundary Rd – eastbound	404	335
Boundary Rd – westbound	608	527
Station Rd junction with A40 - northbound	820	756
Station Rd junction with A40 - southbound	597	553

**Table 21: Flows for PM Peak hr (5-6pm)**

Route	Test 1A - 2026 DSA	Slink
Winchbottom Lane – eastbound	1,473	
Winchbottom Lane – westbound	2,776	
Slink – eastbound		4619
Slink – westbound		7519
Heath End Rd – eastbound	7,958	7254
Heath End Rd – westbound	6,708	8097
Abbey Barn Ln - north	4,206	6296
Abbey Barn Ln – south	4,834	7842
Kingsmead Rd – eastbound	2,561	2009
Kingsmead Rd – westbound	4,223	3475
Treadaway Hill – northbound	7,923	7129
Treadaway Hill-southbound	6,843	6774
Sheepridge Lane- Northbound	3,201	2956
Sheepridge Lane- Southbound	2,107	1516
Boundary Rd – eastbound	3,697	3451
Boundary Rd – westbound	4,815	4601
Station Rd junction with A40 - northbound	6,743	6095
Station Rd junction with A40 - southbound	4,902	4492

**Table 22: Flows for 12hr period**

7.12

The percentage composition of traffic of traffic using Slink is shown in table 23. This shows that 9% of the forecast Slink traffic has an origin or destination in the Abbey Barn South or Daws Hill development sites.

Corridor	Percentage of Slink Traffic
M40 Gateway (Daws Hill/Abbey Barn Sth)	9%
Other Daws Hill area	5%
Heath End Rd	26%
Kingsmead Rd	9%
London Rd West/ Micklefield	26%

Hammersley Lane	2%
Wycombe Marsh	3%
Gomm Valley	6%
London Rd east	13%

**Table 23: Percentage of Slink Traffic by corridor**

7.13 The percentage of Daws Hill and Abbey Barn South development traffic using Slink and other immediate routes is shown in Table 24

<b>Corridor</b>	<b>Percentage of Development traffic</b>
Daws Hill Lane	43%
Abbey Barn Lane	42%
Heath End Rd	7%
Slink	9%

**Table 24: Percentage of M40 Gateway Traffic by corridor**

**8**

**Summary**

8.1

The impacts of the measures in Slink are as follows:

- Network travel time and queuing is reduced thus resulting in a lower congestion index.
- Travel distance is also increased but there is a lower generalised cost index due to the overall improved network performance.
- The traffic restriction measures applied within the mitigation package on Kingsmead Road have not led to an increase in traffic levels on this corridor
- Westbound flows on Heath End Road are increased but the mitigation measures have not increased eastbound flows.
- There are increased flows on Abbey Barn Lane.

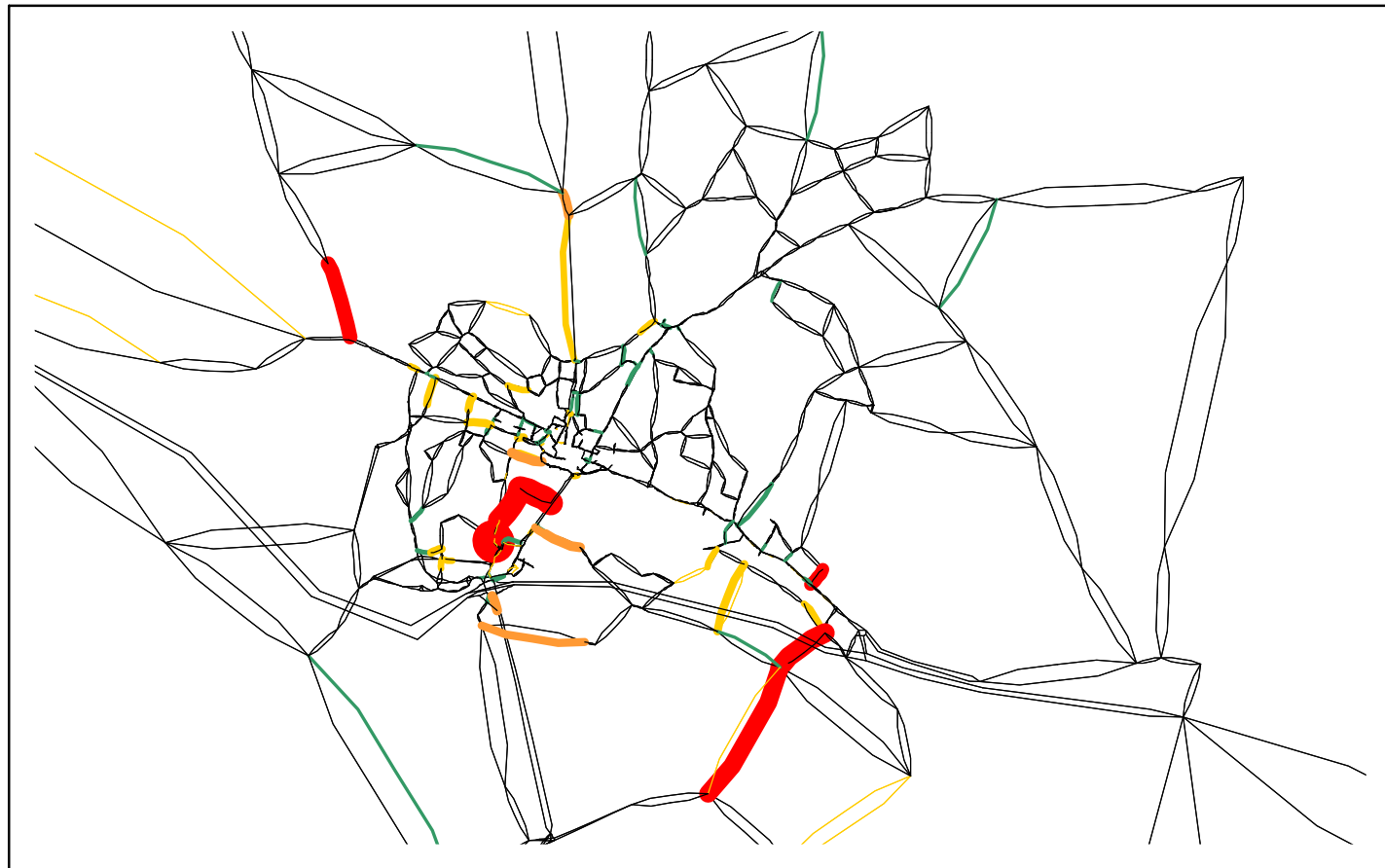
The impacts of other measures, such as increasing capacity at Daws Hill Lane include:

- There is more congestion on the Marlow Hill approach to the town centre as traffic is not gated on the approaches (such as on Daws Hill) (i.e. the increase in capacity at Daws Hill Lane allows more traffic through the junction.
- Increasing the capacity at Daws Hill Lane at the junction with Marlow Hill, increases the flows, particularly westbound
- Delays are reduced on Daws Hill lane but the reduction pulls in traffic from other routes, particularly Abbey Barn Lane

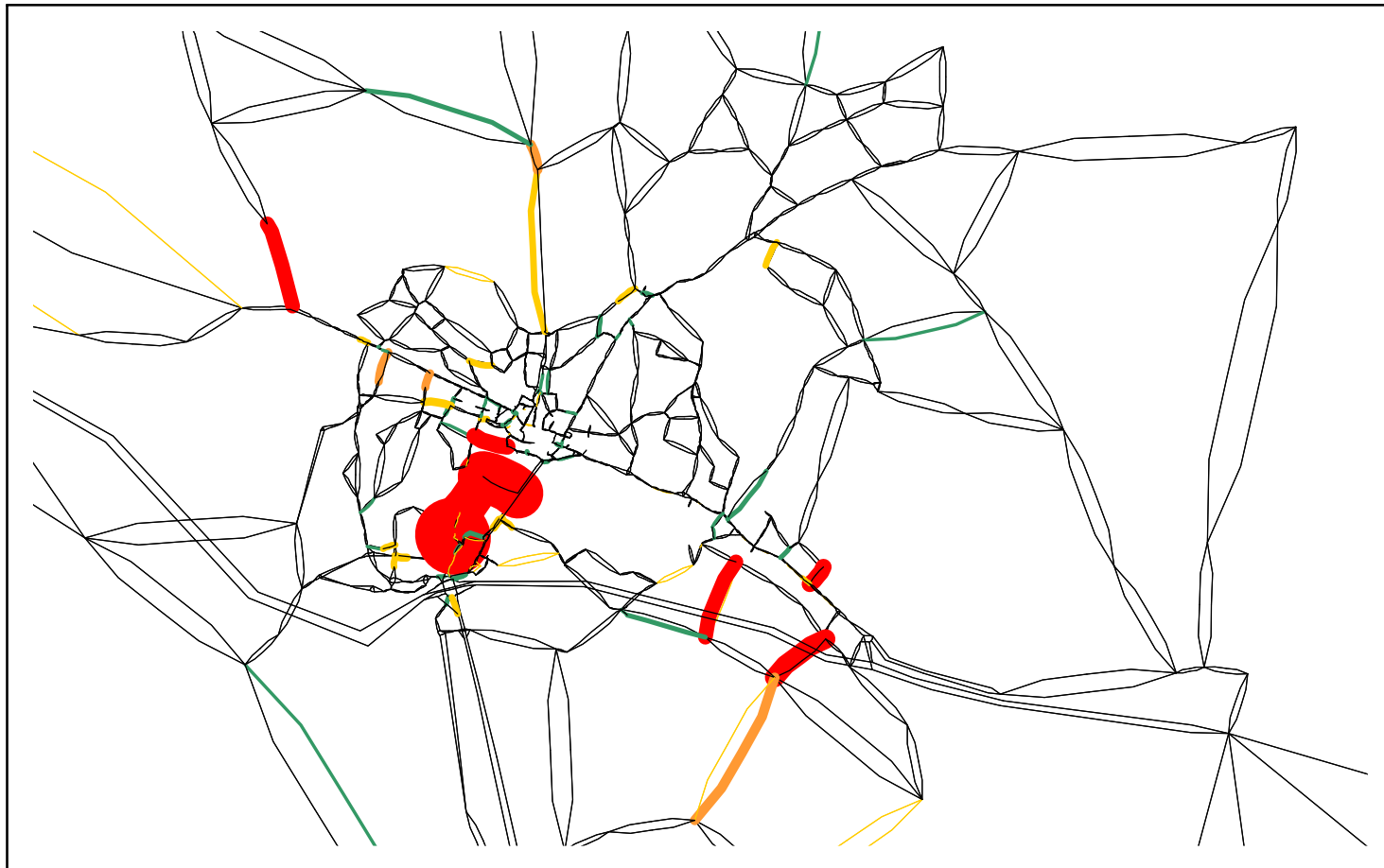


**Appendix A - Average Vehicle Delays**

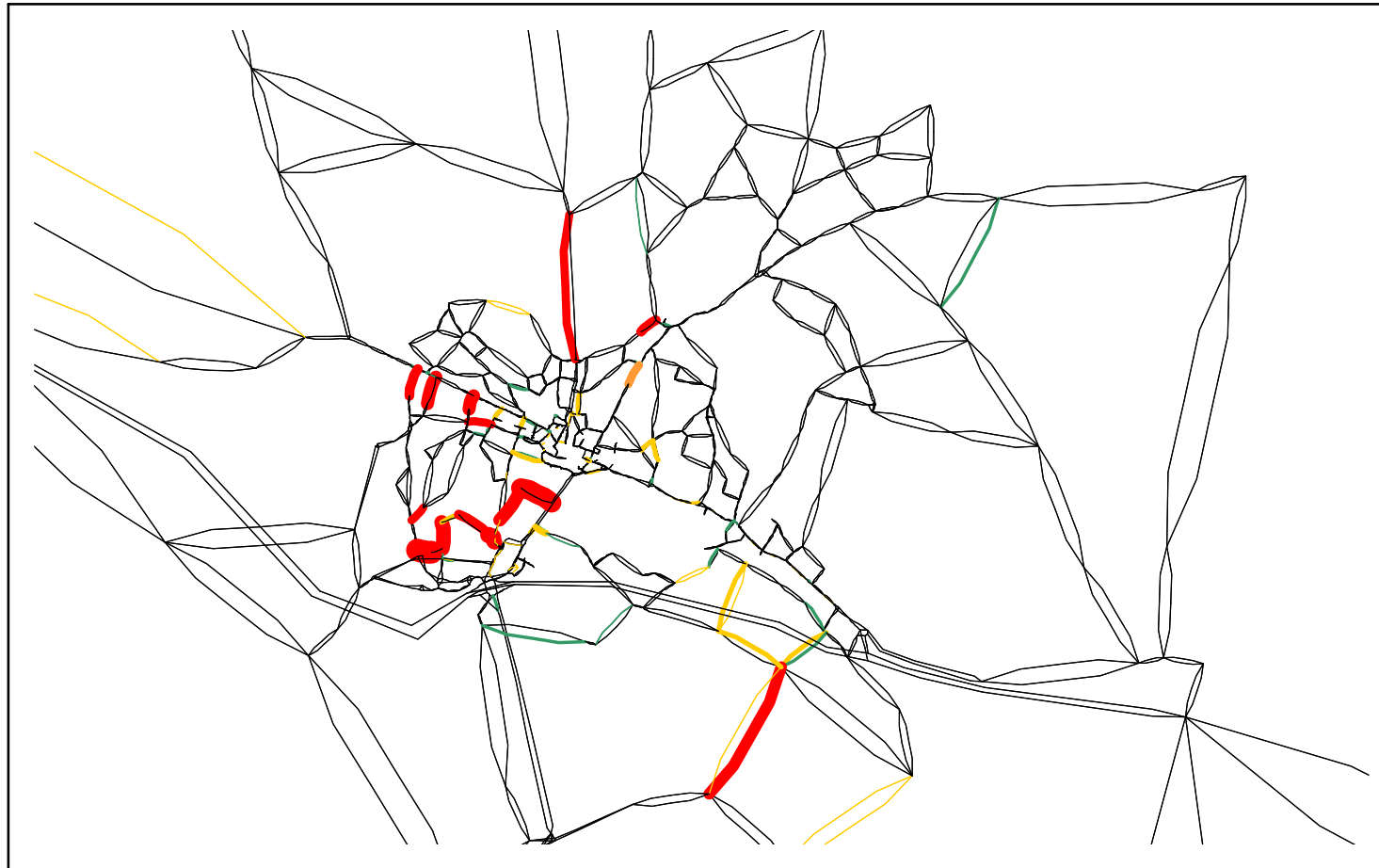
**2026 Test 1A –AM Peak hour**



**2026 Slink test -Am Peak Hour**



**Test 1A – PM Peak hour**



**Slink Test - PM Peak hour**

