

TECHNICAL NOTE

A338 Salisbury Local Plan VISSIM Assessment

SUBJECT

Local Plan Review

PROJECT NO.

5228726

DATE

17 July 2024

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DISTRIBUTION

Wiltshire Council

REPRESENTING

Wiltshire Council

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Draft	PR	RM	YP	AM	17/07/24

Client signoff

Client	Wiltshire Council		
Project	A338 Salisbury Local Plan VISSIM Assessment	Project No.	5228726
Client signature / date			

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1. Introduction

1.1 Background

In August 2022, Wiltshire Council commissioned AtkinsRéalís to undertake traffic modelling of the A338 Harnham Gyratory to assess a capacity improvement scheme along the A338 between the Exeter Street Roundabout and Harnham Gyratory to the south of Salisbury. The location of the area of assessment is shown in Figure 1.1. The model extents include St. Nicholas' Road, Exeter Street, Churchill Way South, Downton Road, Coombe Road, New Harnham Road and Britford Lane.

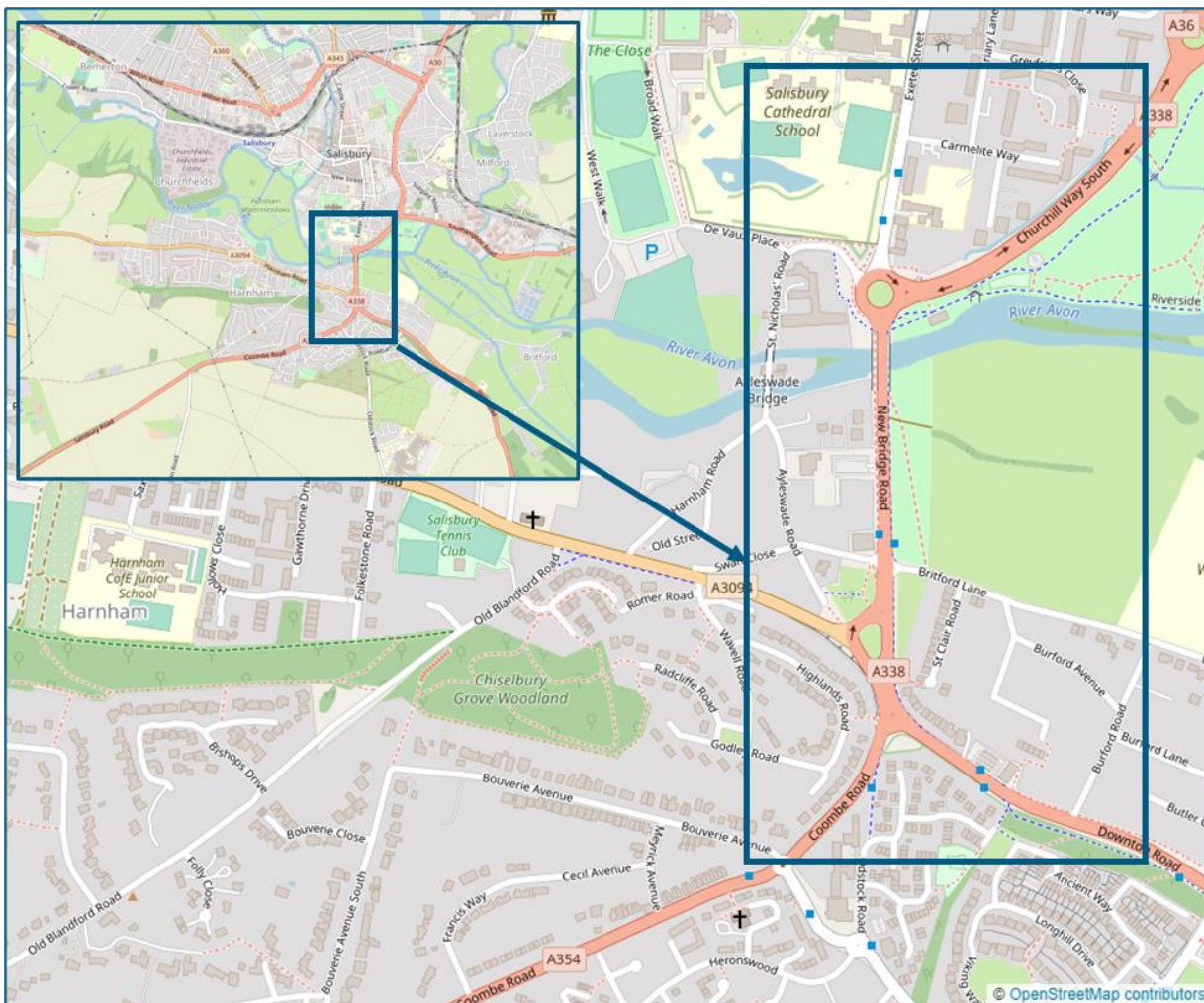


Figure 1.1 - Exeter Street Roundabout and Harnham Gyratory

AtkinsRéalís developed a VISSIM model for the area in 2016. The model represented a base year 2015 which is considered outdated to use for further assessments. For the purpose of Wiltshire Local Plan assessment, the model required updating with the 2022 traffic flows and revalidated to reflect the traffic conditions of 2022, especially since the COVID pandemic has altered travel patterns around the UK.

A traffic collection exercise was undertaken on Thursday 19th May 2022 which included junction turning counts, ANPR OD surveys and queue lengths at Exeter Street Roundabout and Harnham Gyratory / Coombe Road junction. Using the latest traffic data, a VISSIM model was developed to represent a typical weekday AM (08:00-09:00) and PM (16:45-17:45) peak hour for a 2022 base year.

The VISSIM microsimulation model is used to provide an assessment of forecast traffic conditions at a detailed level of modelling and is utilised iteratively to inform the option design development. This includes

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analysis of queues, delays, blocking back and various other detailed on-street behaviours that conventional strategic models do not offer.

In April 2023, AtkinsRéalis completed the calibration and validation of the base (2022) VISSIM model. Further details are provided in the 'WCTHCC-ATK-HGN-TOB038-RP-CH-000003.docx' (Salisbury VISSIM model LMVR) submitted to Wiltshire Council in May 2023. The base model achieved calibration and validation criteria and is taken forward as a basis to assess the proposed scheme.

The details on the development process, assumptions and findings from the results associated with the forecast year traffic modelling assessment for the year 2026 are provided in the 'WCTHCC-ATK-HGN-TOB038-RP-CH-000004.docx' (Salisbury VISSIM model OAR) submitted to Wiltshire Council in October 2023. This report also includes the findings from the sensitivity test undertaken using the preferred option (DS2) for the 2036 forecast year based on the National Highways' A36 Southampton Road VISSIM model.

Since the 2026 VISSIM modelling assessment was completed in October 2023, the Wiltshire Transport Model (WTM) has been updated to incorporate the latest Local Plan allocations for the future year 2038. This technical note details the preferred scheme assessment with the updated Wiltshire Local Plan 2038 demand from the WTM.

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2. Forecast Model Development

This section will outline the development process associated with the Local Plan forecast year of 2038 traffic modelling assessment between a Do Minimum (DM) and Do Something (DS) scenario.

The validated 2022 base year VISSIM model has been carried forward to develop a forecast year model and to undertake an assessment of the proposed scheme.

In order to evaluate and quantify the impacts the scheme may have on the network in future years, a Do Minimum or 'without scheme' scenario is required as a reference case; to which the Do Something, or 'with scheme' scenario is compared.

The assumptions and further details on the forecast year model are provided in the 'WCTHCC-ATK-HGN-TOB038-RP-CH-000004.docx' (Salisbury VISSIM model OAR) submitted to Wiltshire Council in October 2023 and should be read in conjunction with this Technical Note.

For the purpose of the Local Plan assessment, the VISSIM modelling has been undertaken for a 2038 forecast year.

2.1 Do Minimum and Do Something Models

The Do Minimum (DM) model comprises of the 2022 Base network with no modifications, as no committed schemes are planned for the study area. The DM scenario is representative of a forecast baseline scenario in which the existing highway network is assessed with traffic growth from 2022 to 2038.

The Do Something Model i.e., preferred Option 2 is used for the assessment of the 2038 forecast year model. The preferred Option 2 (DS2) scenario comprises of the following changes:

- To maintain two long lanes for the A338 and A354 movements, New Bridge Road southbound has been converted to a similar layout as in base, but with an extended right turn lane to approximately 150m to increase the capacity at the Gyratory;
- The Churchill Way South road markings on the approach to the Exeter Street Roundabout have been retained so that vehicles travelling to the A354 can use both lanes at the Churchill Way approach;
- The double right turn from New Bridge Road to Churchill Way South is provided on Exeter Street Roundabout, along with the additional pedestrian crossings and cycle lanes; and,
- New pedestrian crossings are provided over New Bridge Road and Downton Road.

2.2 Forecast Year Flow Methodology

AtkinsRéalis obtained the forecast year traffic flows from the WTM. The model, although much larger than the VISSIM model area, covers the Salisbury area and has been cordoned to match the VISSIM modelled network to provide AtkinsRéalis with the associated traffic flow matrices for 2018 and 2038 from Scenario 1. The matrices were split into cars, LGVs, and HGVs for AM and PM peak. The growth from 2022 to 2038 was derived using the following process:

- The absolute flow differences (SATURN 2038 – SATURN 2018) for each O-D pair in the matrices were calculated;
- The absolute differences were then used to get the growth in flows for 16 years (as VISSIM observed flows were from 2022) excluding traffic growth between 2018 and 2022 by linear interpolation. Should the absolute growth return a negative value, the percentage difference was applied instead.
- The resulting growth was then split into 15-minute intervals with the observed count flow profile applied; and,
- The 15-minute grown flows were added to the base VISSIM 2022 observed flows for the same O-D movements to develop the 2038 flows for the AM and PM peaks.

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The same 2038 flows have been utilised in both the Do Minimum and Do Something forecast year models. The resulting 2038 total hourly traffic flows utilised within VISSIM for the AM and PM peaks have been provided in Appendix A.

In addition to the background growth from 2022 to 2038, the forecasted traffic flows also include 'Salisbury HEAT' development trips. The data for the heat trips were provided by SLR Consulting Limited. Each phase of the Salisbury HEAT development contains 100,000 sq. ft of life sciences development, of which each split has approximately 67% R&D and 33% manufacturing. These are assumed as an unmitigated forecasts, with no discounting for travel planning or other sustainable travel initiatives.

Table 2.1 shows the arrival and departure trips for different time periods in each HEAT phase as received from SLR Consulting Limited. As the higher number of trips is observed in the final phase with 500,000 sq. ft, trips in this phase are added to the 2038 VISSIM forecast year flows. The resulting 2038 total hourly with Salisbury HEAT development traffic flows utilised within VISSIM for the AM and PM peaks have been provided in Appendix B.

SLR Consulting Limited also provided the development trip distribution across the highway network based on the 2011 Census journey to work data. A summary diagram of this is included in Figure 2.1.

Table 2.1 - Arrival and Departure Trips in each Heat Phase

Time Period	300k sqft		400k sqft		500k sqft	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
07:00-08:00	54	5	72	6	91	8
08:00-09:00	124	9	165	12	206	15
09:00-10:00	63	13	84	18	105	22
16:00-17:00	15	72	19	96	24	120
17:00-18:00	7	118	10	157	12	196
18:00-19:00	5	51	7	69	9	86

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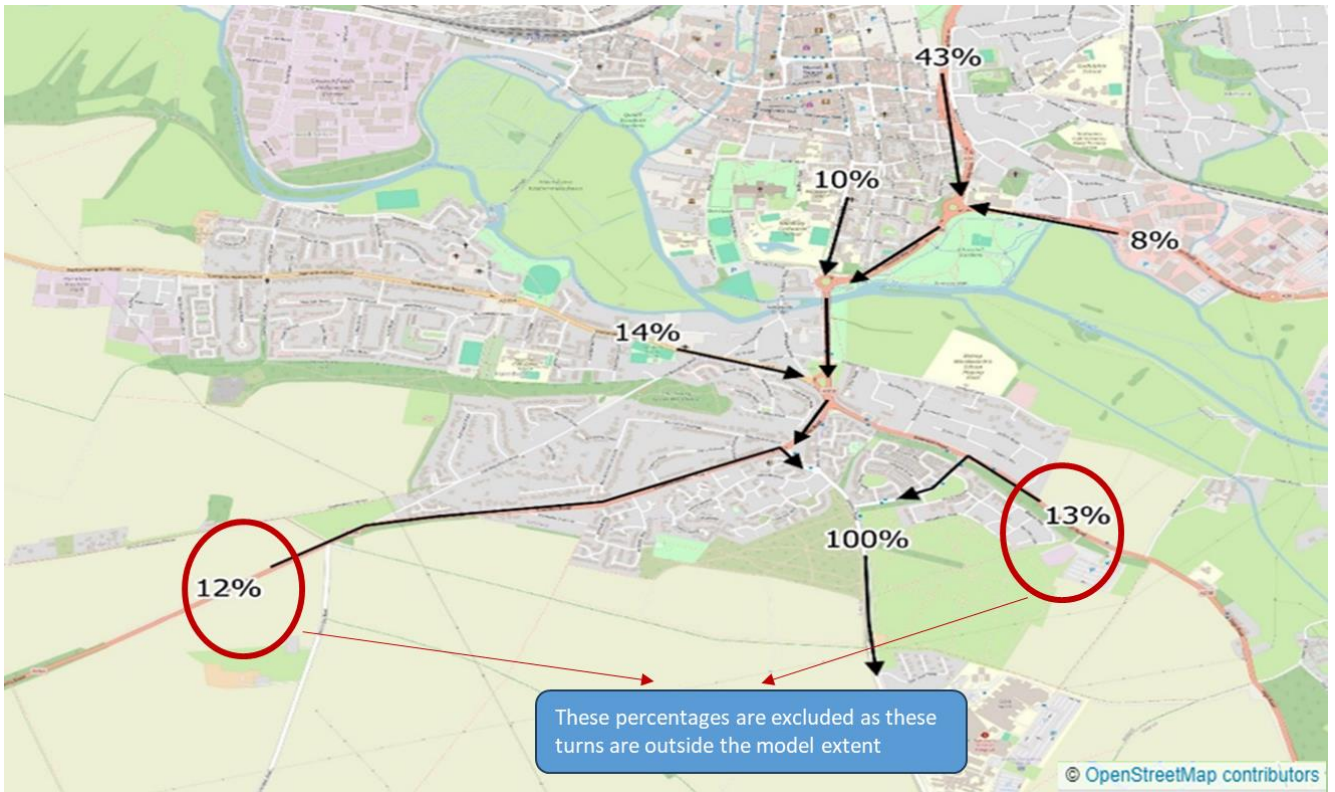


Figure 2.1 - Salisbury HEAT Development Trip Distribution

2.3 Signals

There are no new signalised junctions within the DM model and all existing signal timings remain consistent with the 2022 base modelling.

In DS2 scenario, minor signal timing tweaks from the October 2023 assessment were required in VISSIM to optimise the junction and minimise queues and delays in response to the additional traffic demand associated with growth under the forecast year 2038. The changes in stage start times in AM peak are undertaken for streams 1 and 3 to optimise the New Bridge Road southbound movement. The comparison of the change in stage start times between 2026 and 2038 DS2 AM scenarios are provided in Table 2.2.

Table 2.2 - Changes in Stage Start Times (2026 vs 2038)

Streams	Stage	AM Peak (08:00 – 09:00)	
		2026	2038
Stream 1	1	39	38
	2	6	6
Stream 3	1	37	36
	2	23	23

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2.4 Forecast Model Summary

The validated 2022 base year VISSIM model has been carried forward as the basis for a 2038 forecast year assessment of the proposed scheme as a result of updates to the Local Plan assumptions. In order to evaluate and quantify the impacts the scheme may have on the network in future years, a Do Minimum or 'without scheme' scenario is required as a reference case; to which the Do Something, or 'with scheme' scenario is compared.

The 2038 VISSIM flows have been derived from the WTM SATURN flows and have been utilised in both the Do Minimum and Do Something forecast year models. In addition to the background growth, the forecasted traffic flows also include 'Salisbury HEAT' development trips. All existing signal timings remain consistent in the DM model with the 2022 base model. In the DS2 AM peak scenario, minor signal timing changes were undertaken to optimise the New Bridge Road southbound movement due to the increase in traffic demand under the 2038 forecast year.

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3. 2038 Forecast Year Analysis

AtkinsRéalis has undertaken a comparative modelling assessment for each approach to the junctions along with network-wide performance statistics between the 2038 DM and DS2 scenarios. The comparative assessment considers the differences between queue, delays, and journey times for the AM and PM peak VISSIM models.

As with the base model validation, each forecast year model was run for results using an average of 10 random seed runs (seeds 5 to 50).

3.1 Journey Time Analysis

The 2038 DM AM peak modelled journey times have been compared to the 2038 DS2 journey times for each approach to Exeter Street Roundabout and Harnham Gyratory, in line with the routes used for base model validation and are provided in Table 3.1. The differences in journey times between Base 2022 and DM 2038, DM 2038, and DS2 2038 have been provided with reductions shown in green and increases in red. The 2022 base model results have been provided for reference.

Table 3.1 - 2038 AM Peak Journey Time Comparison (seconds)

Route	2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street to Downton Road	143	208	155	+65	-53
Exeter Street to Coombe Road	154	219	166	+65	-53
Exeter Street to New Harnham Road	182	253	191	+71	-62
Churchill Way S to Downton Road	151	221	165	+71	-56
Churchill Way S to Coombe Road	162	232	176	+71	-56
Churchill Way S to New Harnham Road	190	266	201	+77	-65
Downton Road to Exeter Street Roundabout	142	235	204	+94	-31
Coombe Road to Exeter Street Roundabout	137	206	200	+69	-6
New Harnham Road to Exeter Street Roundabout	179	320	190	+141	-130

The 2038 AM peak journey time results demonstrate that:

- The growth in traffic under the 2038 DM scenario have increased journey times across all routes when compared against the base scenario, with the largest increase of over 2 minutes occurring from the New Harnham Road to Exeter Street Roundabout;
- Journey times under the 2038 DS2 scenario are forecast to decrease with the proposed design across all routes when compared against the DM scenario;

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- The largest decrease of 2 minutes 10 seconds is forecast under the DS2 scenario for vehicles travelling from New Harnham Road to Exeter Street Roundabout as a result of optimising the signal times and allowing a double right to Churchill Way South;
- A notable decrease in journey times is observed for vehicles travelling from Exeter Street and Churchill Way under the DS2 scenario over the DM scenario due to the proposed scheme increasing capacity along New Bridge Road southbound; and,
- It is noticed that the improved lane utilisation of nearside and offside lane at Exeter Street as a result of maintaining the current full lanes southbound and extending the right turn lane under DS2 scenario has helped in achieving the journey time savings.

The 2038 DM modelled results for the PM peak journey times have been compared to the 2038 DS2 journey time results for each approach to Exeter Street Roundabout and Harnham Gyratory and are provided in Table 3.2.

Table 3.2 - 2038 PM Peak Journey Time Comparison (seconds)

Route	2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street to Downton Road	128	278	129	+150	-149
Exeter Street to Coombe Road	132	283	137	+151	-146
Exeter Street to New Harnham Road	161	314	164	+153	-150
Churchill Way S to Downton Road	93	218	118	+125	-99
Churchill Way S to Coombe Road	97	223	126	+126	-97
Churchill Way S to New Harnham Road	126	254	153	+128	-101
Downton Road to Exeter Street Roundabout	116	207	138	+92	-69
Coombe Road to Exeter Street Roundabout	109	154	140	+44	-13
New Harnham Road to Exeter Street Roundabout	95	222	129	+127	-93

The 2038 PM peak journey time results demonstrate that:

- The traffic growth under the 2038 DM scenario has increased the modelled journey times across all routes over the base scenario, with the largest increase of over 2 minutes 30 seconds occurring from the Exeter Street approach;
- Journey times under the 2038 DS2 scenario is forecast to decrease compared to the 2038 DM across all routes;
- The largest decreases in journey times are occurring for vehicles travelling from Exeter Street which are forecast to decrease by over 2 minutes under the DS2 scenario over the DM scenario. This is due to the proposed scheme increasing capacity along New Bridge Road southbound; and,
- Churchill Way is forecasting a decrease by over 1 minute 30 seconds under the DS2 scenario over the DM, whilst the journey times of vehicles from Downton Road decreased by over a minute and for the New Harnham Road by over a minute and half.

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3.2 Queue and Delay Analysis

The comparison between Base and DM 2038, DM 2038 and DS2 2038 in terms of mean maximum queues (m) and average delays (s) for each approach to the Exeter Street Roundabout and Harnham Gyratory are shown in Table 3.3 and Table 3.4, respectively for the AM peak.

The maximum queue parameter is defined as the end of the recorded queue during any given moment during any of the modelled random seeds. The average of the maximum queues recorded is the mean maximum queue.

The full junction performance for all turning movements, which include the number of vehicles and average queues, along with mean maximum queues and average delays have been provided in Appendix C.

The difference in queues and delays have been provided with reductions shown in green and increases in red. The 2022 base year modelled results have also been provided for reference purposes.

Table 3.3 - 2038 AM Peak Queue Comparison

Junction	Approach	Mean Maximum Queue (m)				
		2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street Roundabout	Exeter Street	81	224	83	+143	-141
	Churchill Way South	176	452	361	+276	-91
	New Bridge Road (NB)	216	350	241	+134	-109
Harnham Gyratory	New Bridge Road (SB)	257	374	323	+117	-50
	Downton Road	142	347	349	+205	+2
	Coombe Road	95	210	252	+114	+42
	New Harnham Road	184	481	265	+297	-217

Table 3.4 - 2038 AM Peak Delay Comparison

Junction	Approach	Average Delay (seconds)				
		2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street Roundabout	Exeter Street	32	70	28	+38	-42
	Churchill Way South	32	61	34	+30	-28
	New Bridge Road (NB)	19	30	28	+10	-2
Harnham Gyratory	New Bridge Road (SB)	37	47	45	+9	-2
	Downton Road	40	86	75	+47	-12
	Coombe Road	36	59	61	+23	+2
	New Harnham Road	97	173	90	+76	-83

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The 2038 AM peak queue and delay results can be summarised as follows:

- In the 2038 DM scenario, all approaches experience increases in queues and delays compared with the base year, as a result of the growth in traffic;
- The largest increases under the DM are forecast to occur at the Churchill Way, Downton Road and New Harnham Road approaches;
- Under the DS2 scenario, the mean maximum queue for the Exeter Street approach is reduced to 83m and the delay to 28 seconds due to the improved lane utilisation;
- Due to the optimisation of signals, delays along New Harnham Road are forecasted to decrease under DS2 by 83 seconds;
- The DS2 scenario is forecasting a slight reduction in queues and delays along Churchill Way and New Bridge Road (SB) due to increasing capacity for the southbound movement;
- Delays have decreased for the New Bridge Road (NB) approach as a result of introducing the double right turn to Churchill Way South, with queues reducing by 109m under the DS2 scenario, and;
- The increase in queue and delay along Coombe Road is due to the phase delay of 12 seconds required at the Coombe Road junction to avoid the southbound queue blocking back to Harnham Gyratory;

The 2038 DM scenario has been compared to the 2038 DS2 results in terms of mean maximum queues (m) and average delays (s) for each approach to the Exeter Street Roundabout and Harnham Gyratory and are shown in

Table 3.5 and Table 3.6, respectively for the PM peak.

Table 3.5 - 2038 PM Peak Queue Comparison

Junction	Approach	Mean Maximum Queue (m)				
		2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street Roundabout	Exeter Street	99	416	102	+317	-315
	Churchill Way South	41	326	133	+284	-193
	New Bridge Road (NB)	122	349	72	+227	-277
Harnham Gyratory	New Bridge Road (SB)	166	373	161	+207	-213
	Downton Road	98	347	227	+249	-120
	Coombe Road	84	169	251	+85	+82
	New Harnham Road	61	480	229	+419	-251

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Table 3.6 - 2038 PM Peak Delay Comparison

Junction	Approach	Average Delay (seconds)				
		2022 Base	2038 DM	2038 DS2	DM vs Base	DS2 vs DM
Exeter Street Roundabout	Exeter Street	35	131	31	+96	-100
	Churchill Way South	5	58	16	+53	-42
	New Bridge Road (NB)	10	19	8	+9	-11
Harnham Gyratory	New Bridge Road (SB)	29	44	38	+16	-7
	Downton Road	37	89	61	+53	-28
	Coombe Road	31	42	51	+11	+9
	New Harnham Road	38	114	77	+76	-36

The 2038 PM peak queue and delay results can be summarised as follows:

- As a result of the growth in traffic, all the approaches see an increase in queues and delays in the 2038 DM scenario compared with the base year;
- Under the DS2 scenario, delays and queues have decreased for all approaches, with the exception of Coombe Road, which is a result of introducing phase delays at the Downton Road / Coombe Road junction to prevent queue blocking. Queue and delays along Coombe Road have increased by 82m and 9 seconds, respectively under the DS2 scenario over DM;
- Due to the optimisation of signals, queues, and delays along New Harnham Road and New Bridge Road (SB) are forecasted to decrease under the DS2 scenario over DM. Queue and delays along New Harnham Road have decreased by 251m and 36 seconds respectively, under the DS2 scenario. Queue and delays along New Bridge Road (SB) have decreased by 213m and 7 seconds, respectively under the DS2 scenario; and,
- The mean maximum queue for the Exeter Street approach is forecast to reduce by 315m and the delay by 100 seconds under the DS2 scenario compared to the DM scenario, due to the improved lane utilisation.

3.3 Network Performance Analysis

A comparison of the performance of the DM and DS2 scenarios for the network as a whole has been undertaken using the network performance results parameters for all vehicles.

The network performance results provided include average delay per vehicle, average journey time per vehicle, average speed per vehicle, and processed vehicles through the network.

The 2038 DM scenario has been compared to the 2038 DS2 in terms of network performance results and are shown in Table 3.7 for the AM peak.

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Table 3.7 - 2038 AM Network Performance Comparison Results

Parameter	2022 Base	2038 DM	2038 DS2
Average Journey Time (mm:ss)	02:51	04:49	03:42
Average Delay Time (mm:ss)	01:35	03:35	02:26
Average Network Speed (mph)	12.1	6.97	9.33
Processed Vehicles	4,803	5073	5377

The results in Table 3.7 show that:

- Average journey time, average delay time and average network speed under the 2038 DM scenario have worsened compared to 2022, due to the growth in traffic;
- The average journey time per vehicle increases by 1 minute 57 seconds in the 2038 DM scenario compared against the 2022 model;
- Reduction in average journey time by 1 minute 6 seconds per vehicle is observed under the DS2 scenario compared to the DM scenario;
- Average delay time is forecast to decrease under DS2 by 1 minute 9 seconds per vehicle when compared against the DM scenario, and;
- The average network speed under the DM scenario is 6.97 mph, which shows that congestion is evident in the AM peak for the 2038 forecast year. However, there is an increase in the average speed by 2.4 mph under the DS2 scenario. This is due to the increased capacity the proposed scheme provides, along with optimisation of the signal operation at Harnham Gyrotory.

The 2038 DM scenario has been compared to the 2038 DS2 in terms of network performance results and are shown in Table 3.8 for the PM peak.

Table 3.8 - 2038 PM Network Performance Comparison Results

Parameter	2022 Base	2038 DM	2038 DS2
Average Journey Time (mm:ss)	02:10	04:34	02:42
Average Delay Time (mm:ss)	00:49	03:17	01:21
Average Network Speed (mph)	17.0	7.75	13.70
Processed Vehicles	4,420	4929	5060

The results show that:

- Average journey time, average delay time and average network speed under the 2038 DM scenario have worsened compared against the 2022, which is due to the growth in traffic;
- The average journey time per vehicle decreases by 1 minute 52 seconds in the 2038 DS2 scenario compared against the DM scenario;
- Average delay time is forecast to decrease under DS2 by 1 minute 56 seconds per vehicle when compared against the DM scenario, and;
- The proposed scheme has improved the average network speed of vehicles under the DS2 scenario by 6 mph over the DM scenario.

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3.4 2038 Assessment Summary

The 2038 results have shown that the DS2 scenario provides better performance with lower journey times and delays in both the AM and PM peaks, especially for vehicles travelling southbound to Harnham Gyratory. Marginal increases in queues and delays are forecast for the Downton Road and Coombe Road approaches in both peaks.

As per the conclusion of the 2026 and 2036 future year assessment, the DS2 design is still forecasting an improvement in performance along Exeter Street with lower queues, delays, and quicker journey times whilst maintaining the benefits to the remainder of the network in 2038.

4. Summary and Conclusions

4.1 Summary

AtkinsRéalis has been commissioned by Wiltshire Council to undertake traffic modelling of A338 Salisbury Junctions to understand whether the detailed designs will improve capacity at the Exeter Street Roundabout and Harnham Gyratory to the south of Salisbury.

In order to evaluate the proposed schemes, both the existing conditions and the proposals were assessed in traffic modelling software to quantify their benefits.

In April 2023, AtkinsRéalis completed the validation and calibration of the 2022 Base year VISSIM model which provided a robust representation of the traffic conditions and driving behaviours within the study area and was taken forward as the basis for a 2026 assessment and 2036 sensitivity test.

Since this work was completed in October 2023, the Wiltshire Transport Model (WTM) has been updated with the Local Plan changes. In order to understand if the preferred scheme (Option 2) would still provide benefits, it was necessary to update the VISSIM models in line with the WTM demand for 2038. In addition, Salisbury HEAT development trips have been added to the 2038 VISSIM model as these trips were not included in the WTM.

A comparative modelling assessment between DM and DS2 scenarios have been undertaken using VISSIM model for a 2038 forecast year.

The modelling results have demonstrated that:

- The existing junctions under the DM scenario do not have sufficient capacity to accommodate the forecasted full level of traffic growth under a 2038 forecast year. Queues, delays, and journey times have increased significantly for all the approach roads in both AM and PM peaks;
- The largest decreases in travel times are observed for vehicles travelling from Exeter Street and Churchill Way southbound to Harnham Gyratory and along New Harnham Road under the DS2 scenario. This is due to the increase in capacity for the southbound movement, the improved lane utilisation of nearside and the offside lane at Exeter Street as a result of maintaining the current full lanes southbound and introducing the double right turn to Churchill Way South; and,
- DS2 scenario provides better performance with lower journey times and delays by maintaining the long lanes for the A338 and A354 movements, though there is a marginal increase in queues and delays for the Downton and Coombe approach due to signal optimisation.

4.2 Conclusions

The modelling assessment for the Exeter Street Roundabout and Harnham Gyratory has identified that the DS2 design is forecasting better performance with lower journey times and delays compared to the 2038 DM. Although additional queues and delays to Downton Road and Coombe Road are observed as a result of background growth and signal optimisation, the benefits in journey times along New Bridge Road and New Harnham Road outweigh these increases. Overall, the 2038 DS2 with Local Plan scenario provides better network performance compared with the 2038 DM.

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Appendices

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Appendix A. 2038 Vehicle Inputs

Table A.1 - Vehicle Inputs (veh/hr) – AM Peak

Vehicle Inputs	Volume (07:00 - 07:15)	Volume (07:15 - 07:30)	Volume (07:30 - 07:45)	Volume (07:45 - 08:00)	Volume (08:00 - 08:15)	Volume (08:15 - 08:30)	Volume (08:30 - 08:45)	Volume (08:45 - 09:00)	Volume (09:00 - 09:15)
St Nicolas' Road	16	24	132	240	260	236	296	244	156
Exeter Road	287	361	588	799	778	831	777	748	711
Churchill Way South	1000	1311	1488	1623	1411	1392	1300	1278	1195
Downton Road	619	733	947	968	900	953	948	999	626
Coombe Road	567	621	815	930	975	1111	978	766	776
New Harnham Road	551	626	663	577	656	568	620	723	652
Britford Lane	8	12	24	20	32	24	16	20	104

Table A.2 - Vehicle Inputs (veh/hr) – PM Peak

Vehicle Inputs	Volume (07:00 - 07:15)	Volume (07:15 - 07:30)	Volume (07:30 - 07:45)	Volume (07:45 - 08:00)	Volume (08:00 - 08:15)	Volume (08:15 - 08:30)	Volume (08:30 - 08:45)	Volume (08:45 - 09:00)	Volume (09:00 - 09:15)
St Nicolas' Road	88	176	148	64	140	112	120	80	76
Exeter Road	867	809	787	901	814	996	897	756	770
Churchill Way South	1393	1395	1208	1275	1297	1419	1421	1363	1307
Downton Road	829	866	858	887	779	880	875	800	653
Coombe Road	954	926	1033	936	979	935	980	934	759
New Harnham Road	668	639	760	707	679	685	721	629	571
Britford Lane	28	24	20	36	24	28	20	48	20

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Appendix B. Salisbury HEAT Development Trips

Table B.1 - Vehicle Inputs (veh/hr) – AM Peak

Vehicle Inputs	Volume (07:00 - 07:15)	Volume (07:15 - 07:30)	Volume (07:30 - 07:45)	Volume (07:45 - 08:00)	Volume (08:00 - 08:15)	Volume (08:15 - 08:30)	Volume (08:30 - 08:45)	Volume (08:45 - 09:00)	Volume (09:00 - 09:15)
St Nicolas' Road	0	0	0	0	0	0	0	0	0
Exeter Road	8	4	8	16	20	21	22	19	10
Churchill Way South	28	40	56	60	117	117	97	89	47
Downton Road	0	0	0	0	0	0	0	0	0
Coombe Road	3	4	5	6	12	13	11	9	12
New Harnham Road	7	10	16	20	28	25	31	31	12
Britford Lane	0	0	0	0	0	0	0	0	0

Table B.2 - Vehicle Inputs (veh/hr) – PM Peak

Vehicle Inputs	Volume (07:00 - 07:15)	Volume (07:15 - 07:30)	Volume (07:30 - 07:45)	Volume (07:45 - 08:00)	Volume (08:00 - 08:15)	Volume (08:15 - 08:30)	Volume (08:30 - 08:45)	Volume (08:45 - 09:00)	Volume (09:00 - 09:15)
St Nicolas' Road	0	0	0	0	0	0	0	0	0
Exeter Road	2	2	2	2	1	1	1	1	1
Churchill Way South	14	8	11	13	6	5	7	7	5
Downton Road	0	0	0	0	0	0	0	0	0
Coombe Road	83	95	93	89	151	144	145	148	51
New Harnham Road	4	2	3	4	1	2	2	1	1
Britford Lane	0	0	0	0	0	0	0	0	0

TECHNICAL NOTE

Appendix C. 2038 Junction Performance

Table C.1 - Junction Performance – AM Peak

AM Peak			Volume (veh)			Mean Max Queue (m)			Queue Length Avg (m)			Vehicle Delay (s)			LOS		
Junction	From	To	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038
New bridge Road/ Exeter street	Exeter Street (N)	Churchill Way	174	215	212	134	442	165	30	131	29	32	60	28	D	F	D
	Exeter Street (N)	New Bridge Road (S)	482	556	528	133	442	165	30	131	29	32	74	28	D	F	D
	Exeter Street (N)	ST. Nicholas Road (NW)	46	48	47	133	442	165	30	131	29	30	73	29	D	F	D
	Churchill Way	New Bridge Road (S)	951	1025	1177	401	455	454	119	429	304	31	57	32	D	F	D
	Churchill Way	ST. Nicholas Road (NW)	50	48	56	401	455	454	119	429	304	31	67	41	D	F	E
	Churchill Way	Exeter Street (N)	206	275	323	401	455	454	119	429	304	38	75	41	E	F	E
	New Bridge Road (S)	ST. Nicholas Road (NW)	7	3	6	444	506	448	110	290	174	9	29	26	B	D	D
	New Bridge Road (S)	Exeter Street (N)	518	565	562	444	506	448	110	290	174	21	33	35	C	D	E
	New Bridge Road (S)	Churchill Way	977	1020	1056	444	506	448	110	290	174	18	28	24	C	D	C
Harnham gyratory	New Bridge Road (N)	Downtown Road (SE)	623	635	677	387	397	386	181	318	226	20	25	24	B	C	C
	New Bridge Road (N)	Coombee Road (S)	639	708	786	387	397	386	181	318	226	47	57	65	D	E	E
	New Bridge Road (N)	New Harnham Road (NW)	192	220	256	387	397	386	181	318	226	63	80	42	E	E	D
	Downtown Road (SE)	Coombee Road (S)	28	24	24	270	352	352	55	305	305	33	65	64	C	E	E
	Downtown Road (SE)	New Harnham Road (NW)	184	186	194	270	352	351	55	304	305	42	80	68	D	F	E
	Downtown Road (SE)	New Bridge Road (N)	601	581	604	270	352	351	55	304	305	39	90	77	D	F	E
	Coombee Road (S)	New Harnham Road (NW)	95	143	127	193	256	256	20	124	203	26	40	56	C	D	E
	Coombee Road (S)	New Bridge Road (N)	661	815	747	193	256	256	20	124	203	37	63	62	D	E	E
	Coombee Road (S)	Downtown Road (SE)	12	10	9	193	256	256	20	124	203	73	82	89	E	F	F
	New Harnham Road (NW)	New Bridge Road (N)	221	198	283	325	486	440	119	459	175	78	176	79	E	F	E
	New Harnham Road (NW)	Downtown Road (SE)	128	121	165	325	486	440	119	459	175	101	158	95	F	F	F
	New Harnham Road (NW)	Coombee Road (S)	158	133	188	325	486	440	119	459	175	121	181	102	F	F	F

² LOS – Level Of Service (LOS) is a qualitative measure used to relate the quality of motor vehicle traffic service.

TECHNICAL NOTE

Table C.2 - Junction Performance – PM Peak

PM Peak			Volume			Mean Max Queue (m)			Queue Length Avg (m)			Vehicle Delay (s)			LOS		
Junction	From	To	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038	Modelled Base 2022	DM 2038	DS2 2038
New bridge Road/ Exeter street	Exeter Street (N)	Churchill Way	187	213	255	218	456	191	41	338	41	39	123	35	E	F	D
	Exeter Street (N)	New Bridge Road (S)	565	525	626	217	455	191	41	338	41	34	135	30	D	F	D
	Exeter Street (N)	ST. Nicholas Road (NW)	18	16	17	217	455	191	41	338	41	35	137	27	D	F	D
	Churchill Way	New Bridge Road (S)	912	1047	1091	72	404	217	4	271	50	4	56	15	A	F	B
	Churchill Way	ST. Nicholas Road (NW)	23	22	22	72	404	217	4	271	50	7	70	21	A	F	C
	Churchill Way	Exeter Street (N)	163	226	233	72	404	217	4	271	50	9	70	21	A	F	C
	New Bridge Road (S)	ST. Nicholas Road (NW)	6	6	7	304	479	131	25	225	11	6	14	8	A	B	A
	New Bridge Road (S)	Exeter Street (N)	450	520	502	304	479	131	25	225	11	9	18	11	A	C	B
	New Bridge Road (S)	Churchill Way	1093	1244	1204	304	479	131	25	225	11	10	19	7	A	C	A
Harnham gyratory	New Bridge Road (N)	Downtown Road (SE)	536	552	619	241	398	250	62	320	85	18	23	15	B	C	B
	New Bridge Road (N)	Coombee Road (S)	520	561	608	241	398	250	62	320	85	27	47	37	C	D	C
	New Bridge Road (N)	New Harnham Road (NW)	347	401	419	241	398	250	62	320	85	48	71	73	D	E	E
	Downtown Road (SE)	Coombee Road (S)	44	38	44	205	353	335	32	312	132	33	79	52	C	E	D
	Downtown Road (SE)	New Harnham Road (NW)	172	179	200	205	352	334	33	312	132	37	86	59	D	F	E
	Downtown Road (SE)	New Bridge Road (N)	525	552	611	205	352	334	33	312	132	37	91	62	D	F	E
	Coombee Road (S)	New Harnham Road (NW)	142	198	164	167	251	255	15	54	203	25	32	51	C	C	D
	Coombee Road (S)	New Bridge Road (N)	724	878	749	167	251	255	15	54	203	31	43	50	C	D	D
	Coombee Road (S)	Downtown Road (SE)	12	16	16	167	251	255	15	54	203	66	72	76	E	E	E
	New Harnham Road (NW)	New Bridge Road (N)	278	309	323	110	484	402	21	449	142	31	108	57	C	F	E
	New Harnham Road (NW)	Downtown Road (SE)	174	198	215	110	484	402	21	449	142	38	113	93	D	F	F
	New Harnham Road (NW)	Coombee Road (S)	104	128	143	110	484	402	21	449	142	55	130	100	D	F	F