



**CHICHESTER AREA TRAFFIC MODEL,  
MODEL VERIFICATION - TECHNICAL  
NOTE**

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## Chichester Area Traffic Model, Model Verification - Technical Note

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## Chichester Area Traffic Model, Model Verification - Technical Note

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# 1 Introduction

## 1.1 Background

The transport evidence base for the Chichester Local Plan has relied on traffic analysis and outputs from a SATURN traffic model known as the Chichester Area Transport Model (CATM). The model was originally validated in 2014 and was then used to test the impact of the Local Plan development, alongside background growth up to the end of the plan period. Stantec (then Peter Brett Associates) undertook an update of the model in 2018, however this still utilised 2014 data as part of the validation process. The 2014 and subsequently the 2018 models were developed following DfT Transport Appraisal Guidance (TAG).

In line with TAG, a proportionate modelling approach was undertaken based on using a Highway Assignment Modelling (HAM) approach with no recourse to a more costly multi-modal approach. Where necessary trip reductions as a result of sustainable transport measures, have been affected through a manual adjustment of the trip matrices. This was considered appropriate and proportionate for the purposes of the transport modelling. It is also noted that this approach is consistent with that used by Jacobs to inform the transport evidence for the adopted local plan.

The 2014 base year model utilises and is validated against traffic data and journey making patterns from that time. It is recognised that the model is now old and that travel behaviour following the COVID-19 Pandemic has changed, with more home working, but increases in other types of journeys on the road such as deliveries resulting from the increased uptake of home shopping.

There is a commitment to update the model at a very early stage following the forthcoming plan submission and examination. This commitment will be included as part of the Monitor and Manage process being developed going forward, however, to support the upcoming plan submission and examination, further work has been undertaken to review current traffic flows and to compare them with modelled flows and also with observed flows from the model base year to strengthen the evidence base as far as is possible at this time.

## 1.2 Purpose of Note

The purpose of this note is to provide outputs from a comparative exercise undertaken to demonstrate whether the outputs from the model can be deemed to be robust to support the Local Plan evidence base, given the commitments stated above. The note sets out the findings and evidence and seeks to get buy-in to the findings and conclusions reached from National Highways and West Sussex County Council (The Highways Authorities).

The four key questions that the note aims to answer are:

- **Is the survey data collected in November 2023 typical of current traffic conditions on the A27 and wider network and what does this tell us about current conditions? (Section 2)**
- **How does the data compare to traffic conditions in 2014 when the model was developed and what have been the trends in traffic growth since then, with**

**particular reference to impacts of changes in travel behaviour following the COVID-19 Pandemic? (Section 3)**

- **Can the modelling outputs produced to date still be used to provide suitable evidence to the Local Plan process, in light of the commitment to update modelling in due course? (Section 4)**
- **What do the relevant modelling outputs indicate in terms of conditions on the A27 and wider higher network? (Section 5)**

The exercise utilises newly collected data, alongside other existing and historic data sources and provides a comparative analysis to understand current network conditions in 2023 and how this compares to the CATM 2014 base year model. In addition, where data is available, comparisons have been made with pre-COVID-19 observed traffic conditions.

The analysis then focuses on how the comparisons impact on the suitability of the model, the model forecasting and outputs produced to date and what inference can be made from the comparative analysis. Given the main issues highlighted on the highway network as reported in the Transport Assessment are on the A27 and the highway mitigation proposals focused mainly on the A27 junctions, the main focus is on that road, however the WSCC network and data is considered.

At this stage of the Local Plan Review (LPR), the update, calibration and revalidation of the CATM is not feasible to complete within the timescale and therefore the comparative analysis between the newly collected data, historic data and the CATM model in its current state is to demonstrate the model is behaving as expected, both in terms of current conditions and expected impacts in future years with background traffic from neighbouring authorities growth and further afield and the Local Plan growth. The model is being used as an analytical tool to inform the transport evidence for the Chichester LPR.

Traffic data from the following sources have been used:

- Newly collected Manual Classified Turning and Counts
- Journey Time Surveys
- Queue Surveys
- Data from National Highways Traffic Count (WebTRIS) and journey time database
- Data from West Sussex County Council traffic count data base

The following reports previously produced and included within the Local Plan Transport Evidence Base Library have been referred to, to support the work undertaken and reported in this Technical Note:

- Chichester Transport Study Local Plan Review Transport Assessment version 3, Stantec, January 2023
- Chichester Area Transport Model Local Model Validation Report, Peter Brett Associates, July 2018 (Appendix B of the Transport Assessment).

- Chichester Local Plan Review Short Term Review Transport Modelling, Stantec, May 2022 (Annex C of the Transport Assessment)

## **2 Survey Data**

### **2.1 Manual Classified Traffic Counts and Queue Surveys**

Manual Classified Turning Counts (MCTC) and queue surveys were undertaken using video cameras at five junctions along the A27 Chichester Bypass and at two locations within Chichester listed below and as shown on Figure 1:

1. Portfield Roundabout
2. Bognor Road Roundabout
3. Whyke Roundabout
4. Stockbridge Roundabout
5. Fishbourne Roundabout
6. Stockbridge Road/Terminus Road
7. Stockbridge Road/Canal Wharf

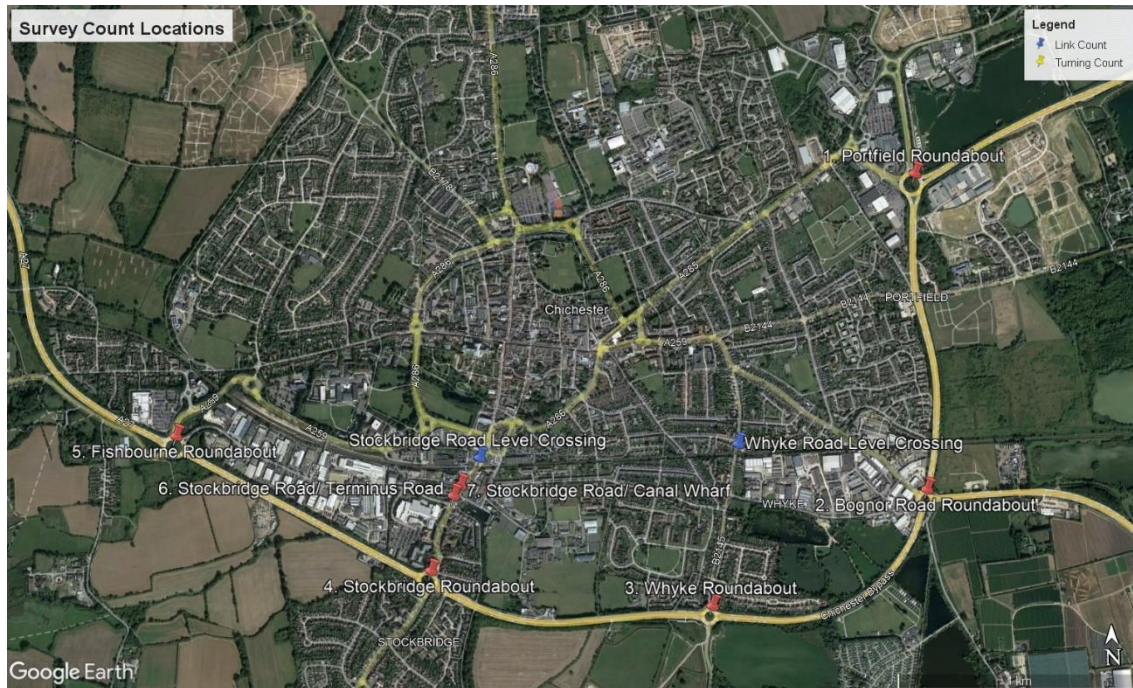
In addition, queue surveys were undertaken at the level crossings on Stockbridge Road and Whyke Road.

All surveys were conducted by ATR on a single day on Wednesday 15<sup>th</sup> November 2023. The survey data was collected for 12 hours (0700-1900), and data provided at 15-minute intervals and summarised by hour.

Queue lengths by lane on each approach arm were measured in vehicles at 5-minute intervals. Where queue lengths are reported in metres in this technical note, a vehicle length of 6 metres has been assumed for the conversion.



Figure 1 Count and Queue Survey Locations



The full traffic count surveys are provided within Appendix A.

### Queue Survey Summary

Tables 1 to 8 show the queue data on each arm at each junction. Where a plus sign is shown in the table, this indicates that the queue was beyond the extent on the camera visibility. Queue lengths on the A27 approaches were also measured from the journey time surveys and this data is also provided.

Table 1 Queue Lengths at Fishbourne Roundabout from Video Survey

Road	AM Max Queue (Vehicles)	Length (M)	PM Max Queue (Vehicles)	Length (M)
Cathedral Way	12	72	14+	84
Terminus Road	6	36	9	54
A27 Bypass WB	17	102	58	348
Fishbourne Rd	10+	60	10+	60
A27 Bypass EB	48+	288	17	102

Table 2 Queue Lengths at Fishbourne Roundabout from Journey Time Survey

Direction	AM Max Queue (M)	PM Max Queue (M)
A27 Eastbound	3300	170
A27 Westbound	170	650

- The highest queues at Fishbourne Roundabout are on the A27 eastbound approach arm and on the A27 westbound approach arm.

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- The queues on the side roads are less prominent although this is partly due to the limited camera vision extent.
- Cathedral Road and Fishbourne Road show maximum queues in excess of 10 vehicles in both the AM and PM peaks.

The data shows that there were some extensive queues to Fishbourne Roundabout from the west in the AM peak. A further comparison of this data against other data is provided in Section 3.

**Table 3 Queue Lengths at Stockbridge Roundabout from Video Survey**

Road	AM Max Queue (Vehicles)	Length (M)	PM Max Queue (Vehicles)	Length (M)
Stockbridge Rd	14	84	14+	84
Bypass WB	25	150	28	168
Stockbridge Rd NB	21+	126	15	90
Bypass EB	34	204	115	690

**Table 4 Queue Lengths at Stockbridge Roundabout from Journey Time Survey**

Direction	AM Max Queue (M)	PM Max Queue (M)
A27 Eastbound	350m	400m
A27 Westbound	900m	100m

- The highest queues at Stockbridge Roundabout are on the A27 eastbound approach arm and on the A27 westbound approach arm.
- The queues on the side roads are less prominent - although the outputs are limited by the extent of the camera vision.
- Both Stockbridge Road, side arms show maximum queues 14 or more vehicles in both the AM and PM peaks.

**Table 5 Queue Lengths at Whyke Roundabout from Video Survey**

Road	AM Max Queue (Vehicles)	Length (M)	PM Max Queue (Vehicles)	Length (M)
Whyke Road	13+	78	13+	78
Bypass WB	28	168	29+	174
St Josephs	21+	126	13	78
Bypass EB	10	60	18	108

**Table 6 Queue Lengths at Whyke Roundabout from Video Survey**

Direction	AM Max Queue (M)	PM Max Queue (M)
A27 Eastbound	None	None
A27 Westbound	450m	None

- The highest queues at Whyke Roundabout are on the A27 westbound approach arm and on the A27 westbound approach arm.

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- The queues on the St Joseph's side road are of similar level of magnitude as the A27 westbound and maybe longer in reality as their true extent is limited by the camera vision extent.
- The queues on Whyke Road at 13+ vehicles are comparable if not longer than those on A27 eastbound.

**Table 7 Queue Lengths at Bognor Road Roundabout from Video Survey**

Road	AM Max Queue (Vehicles)	Length (M)	PM Max Queue (Vehicles)	Length (M)
A27 SB	123	738	131	786
A286 WB	63	378	74+	444
Vinnetrow Road	14+	84	9	54
A27 NB	23+	138	24+	144
A286 EB	13	78	23+	138

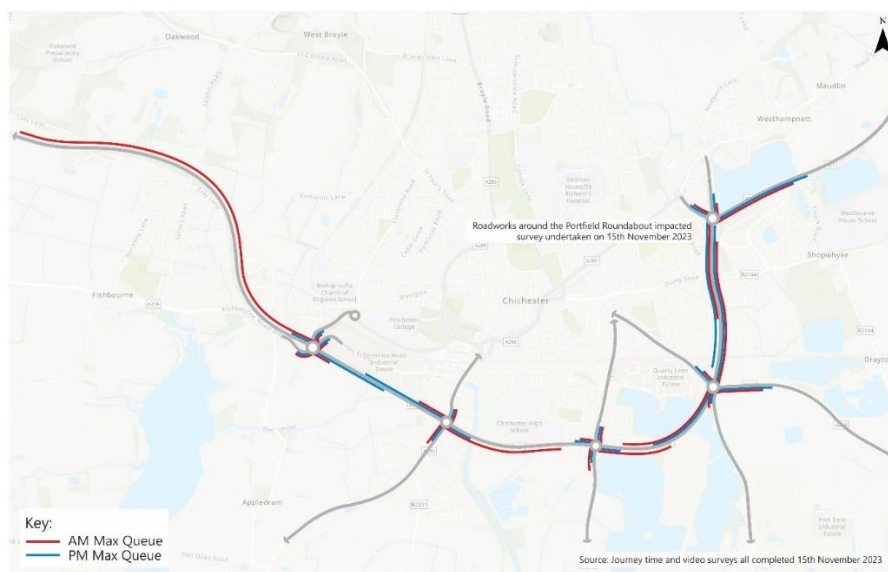
**Table 8 Queue Lengths at Bognor Road Roundabout from Video Survey**

Direction	AM Max Queue	PM Max Queue
A27 Northbound	900m	800m
A27 Southbound	1100m	1300m

- The highest queues at Bognor Road Roundabout are on the A27 westbound approach arm in both the AM and PM peaks with queues on the A27 eastbound shorter, but still considerable.
- The most prominent side road queues are on Bognor Road westbound side road in both the AM and PM peak although their full extent is not fully captured due to the limited camera vision extent.

The extent of the maximum queues is shown in Figure 2.

**Figure 2 Count and Queue Survey Locations**



## 2.2 Journey Time Surveys

Journey times surveys were also conducted on the A27 from the Warblington Interchange (A27/A259 junction) in Havant through to the Temple Bar Interchange to the east of Chichester (A27/A285 junction). The surveys were conducted using Moving Car Observer method. The routes were split into two routes as follows:

- Route 1 between Fishbourne Roundabout to the west and the Temple Bar Interchange to the east as shown in Figure 3.
- Route 2 between Warblington Interchange to the west to A27/Stockbridge Roundabout to the east as shown in Figure 4.

The journey time surveys were undertaken to cover the AM peak period 0700 – 1000 and PM peak period 1600 – 1900.

**Figure 3 Journey Time Survey Route 1**

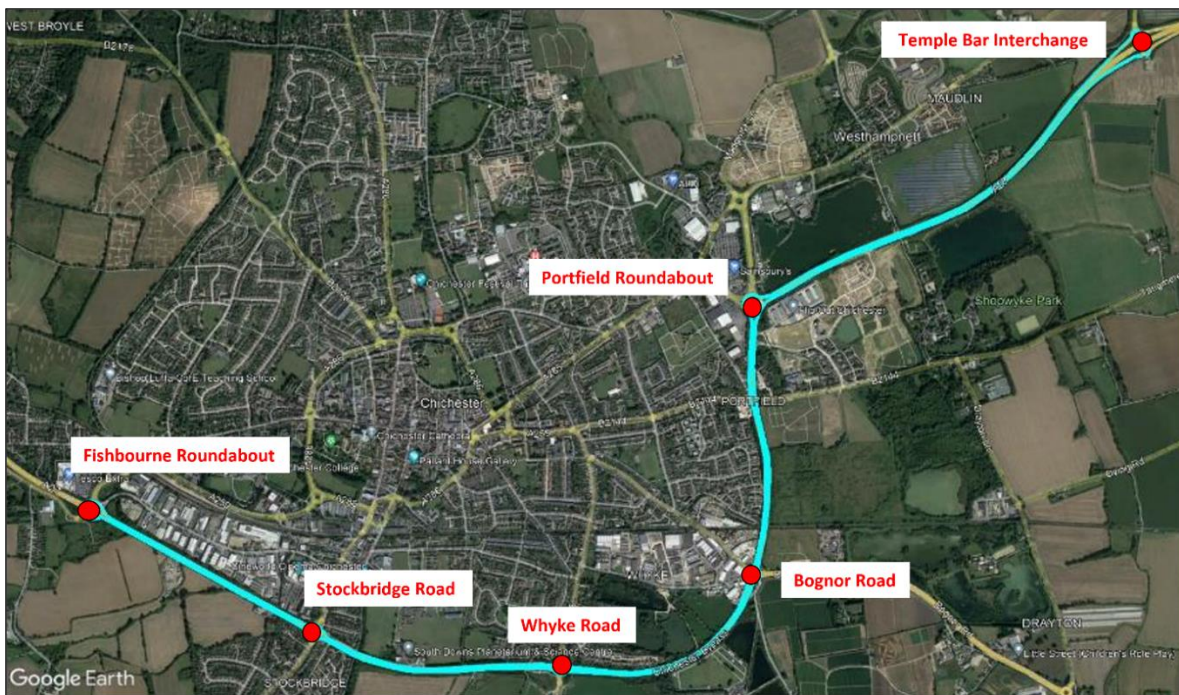
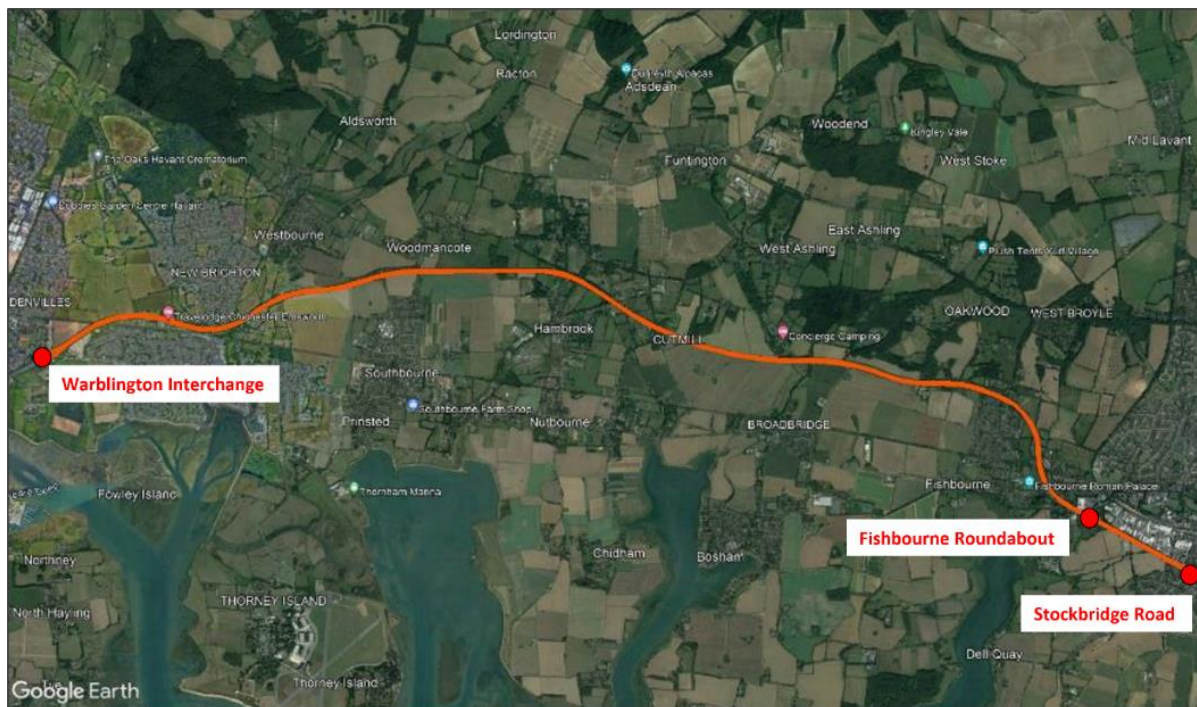




Figure 4 Journey Time Survey Route 2



The number of runs for each route, by time period and direction is shown in Tables 9 and 10.

Table 9 Journey Time Route Sample – Route 1

From/To	Direction	Number of Runs							
		AM				PM			
		0700 - 0800	0800 - 0900	0900 - 1000	Total	1600 - 1700	1700 - 1800	1800 - 1900	Total
Fishbourne Rbt to Temple Bar Interchange	Eastbound	5	4	5	14	4	2	7	13
Temple Bar Interchange to Fishbourne Rbt	Westbound	4	4	4	12	2	4	7	13

Table 10 Journey Time Route Sample – Route 2

From/To	Direction	Number of Runs							
		AM				PM			
		0700 - 0800	0800 - 0900	0900 - 1000	Total	1600 - 1700	1700 - 1800	1800 - 1900	Total
Warblington Interchange to Stockbridge Rbt	Eastbound	4	5	6	15	5	5	6	16
Stockbridge Rbt to Warblington Interchange	Westbound	5	5	5	15	5	6	5	16

A summary of the ATR journey time outputs is provided in Tables 11 to 14, with the full data provided as Appendix B. For each run intermediate timing points at each junction stop line were recorded, along with the time where the vehicle hit the back of a queue.

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**Table 11 Journey Time Summary – Route 1 Eastbound AM Peak**

Start Time	Fishbourne	Stockbridge Road	Whyke Road	Bognor Road	Portfield	Temple Bar
07:01:53	00:00:00	00:01:31	00:02:43	00:08:30	00:11:02	00:12:55
07:09:43	00:00:00	00:01:15	00:02:14	00:07:13	00:10:06	00:11:43
07:24:11	00:00:00	00:01:15	00:02:27	00:08:39	00:12:27	00:14:03
07:32:13	00:00:00	00:01:07	00:02:27	00:09:17	00:14:55	00:16:31
07:48:59	00:00:00	00:01:16	00:02:28	00:08:05	00:15:14	00:16:52
Average 0700-0800	00:00:00	00:01:17	00:02:28	00:08:21	00:12:45	00:14:25
08:01:55	00:00:00	00:01:46	00:03:18	00:07:12	00:15:53	00:17:24
08:23:57	00:00:00	00:01:11	00:02:19	00:09:06	00:15:21	00:16:57
08:42:38	00:00:00	00:01:08	00:02:29	00:06:24	00:14:52	00:16:24
08:58:01	00:00:00	00:01:09	00:02:20	00:07:39	00:13:58	00:15:38
Average 0800-0900	00:00:00	00:01:18	00:02:36	00:07:35	00:15:01	00:16:36
09:12:35	00:00:00	00:01:31	00:02:44	00:07:38	00:12:33	00:14:10
09:29:11	00:00:00	00:01:38	00:03:00	00:08:26	00:10:54	00:12:52
09:37:16	00:00:00	00:01:03	00:01:58	00:07:53	00:10:16	00:11:46
09:50:06	00:00:00	00:01:16	00:02:31	00:06:18	00:07:56	00:09:47
09:56:31	00:00:00	00:01:16	00:02:11	00:06:40	00:08:04	00:09:33
Average 0900-1000	00:00:00	00:01:21	00:02:29	00:07:23	00:09:57	00:11:38

**Table 12 Journey Time Summary – Route 1 Eastbound PM Peak**

Start Time	Fishbourne	Stockbridge Road	Whyke Road	Bognor Road	Portfield	Temple Bar
16:00:14	00:00:00	00:01:05	00:02:08	00:04:42	00:19:15	00:21:03
16:13:38	00:00:00	00:01:18	00:02:18	00:03:42	00:13:27	00:14:49
16:49:39	00:00:00	00:02:39	00:03:58	00:05:54	00:14:27	00:16:17
16:51:49	00:00:00	00:02:44	00:03:47	00:05:21	00:14:30	00:15:59
Average 1600-1700	00:00:00	00:01:56	00:03:03	00:04:55	00:15:25	00:17:02
17:34:20	00:00:00	00:01:31	00:02:35	00:03:46	00:12:17	00:13:42
17:40:26	00:00:00	00:01:13	00:02:22	00:03:32	00:10:58	00:12:53
Average 1700-1800	00:00:00	00:01:22	00:02:28	00:03:39	00:11:37	00:13:17
18:06:27	00:00:00	00:01:08	00:02:08	00:03:21	00:05:17	00:06:56
18:12:18	00:00:00	00:01:33	00:02:46	00:04:20	00:05:55	00:07:32
18:25:04	00:00:00	00:01:00	00:01:59	00:03:01	00:04:34	00:06:01
18:30:26	00:00:00	00:01:16	00:02:27	00:03:36	00:05:04	00:06:53
18:37:34	00:00:00	00:01:09	00:02:02	00:03:09	00:04:34	00:06:06
18:45:14	00:00:00	00:01:02	00:02:11	00:03:13	00:04:36	00:06:23
18:48:18	00:00:00	00:02:53	00:03:51	00:04:55	00:06:03	00:07:37
Average 1800-1900	00:00:00	00:01:26	00:02:29	00:03:39	00:05:09	00:06:47

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**Table 13 Journey Time Summary – Route 1 Westbound AM Peak**

Start Time	Temple Bar	Portfield	Bognor Road	Whyke Road	Stockbridge Road	Fishbourne
07:15:14	00:00:00	00:01:59	00:04:37	00:05:44	00:07:30	00:08:34
07:21:48	00:00:00	00:01:58	00:05:31	00:06:45	00:09:12	00:10:05
07:38:36	00:00:00	00:02:27	00:06:41	00:07:43	00:08:55	00:09:59
07:49:07	00:00:00	00:01:37	00:08:43	00:10:07	00:11:23	00:12:26
Average 0700-0800	00:00:00	00:02:00	00:06:23	00:07:35	00:09:15	00:10:16
08:06:16	00:00:00	00:01:55	00:10:01	00:13:39	00:16:22	00:17:20
08:19:40	00:00:00	00:02:19	00:11:22	00:12:28	00:15:19	00:16:08
08:41:17	00:00:00	00:02:19	00:09:36	00:10:40	00:15:20	00:16:23
08:59:23	00:00:00	00:01:32	00:07:57	00:08:59	00:11:59	00:12:51
Average 0800-0900	00:00:00	00:02:01	00:09:44	00:11:27	00:14:45	00:15:40
09:14:03	00:00:00	00:02:02	00:08:16	00:09:35	00:13:34	00:14:39
09:27:04	00:00:00	00:01:42	00:04:40	00:05:34	00:08:56	00:09:52
09:42:29	00:00:00	00:01:59	00:03:59	00:05:03	00:06:23	00:07:17
09:49:22	00:00:00	00:01:34	00:03:49	00:04:48	00:05:53	00:06:48
Average 0900-1000	00:00:00	00:01:49	00:05:11	00:06:15	00:08:41	00:09:39

**Table 14 Journey Time Summary – Route 1 Westbound PM Peak**

Start Time	Temple Bar	Portfield	Bognor Road	Whyke Road	Stockbridge Road	Fishbourne
16:21:40	00:00:00	00:03:34	00:21:33	00:22:38	00:24:34	00:27:36
16:28:49	00:00:00	00:01:38	00:17:45	00:18:46	00:19:49	00:22:39
Average 1600-1700	00:00:00	00:02:36	00:19:39	00:20:42	00:22:12	00:25:08
17:06:19	00:00:00	00:07:22	00:29:03	00:30:20	00:32:24	00:33:44
17:08:08	00:00:00	00:05:28	00:23:07	00:24:02	00:25:07	00:25:53
17:48:24	00:00:00	00:01:46	00:14:38	00:15:32	00:16:58	00:17:46
17:53:47	00:00:00	00:01:38	00:14:09	00:15:21	00:17:04	00:18:07
Average 1700-1800	00:00:00	00:04:04	00:20:14	00:21:19	00:22:53	00:23:53
18:13:43	00:00:00	00:01:41	00:07:49	00:08:47	00:10:09	00:11:01
18:20:13	00:00:00	00:01:52	00:06:34	00:07:37	00:08:50	00:09:49
18:31:25	00:00:00	00:01:37	00:03:01	00:04:02	00:04:58	00:05:48
18:37:40	00:00:00	00:02:07	00:04:04	00:05:13	00:06:19	00:07:13
18:44:01	00:00:00	00:01:42	00:02:45	00:03:42	00:04:42	00:05:35
18:51:59	00:00:00	00:01:43	00:03:40	00:04:41	00:05:48	00:06:43
18:56:15	00:00:00	00:01:30	00:02:52	00:03:42	00:04:44	00:05:26
Average 1800-1900	00:00:00	00:01:45	00:04:24	00:05:23	00:06:30	00:07:22

## Chichester Area Traffic Model, Model Verification - Technical Note

**Table 15 Journey Time Summary – Route 2 Eastbound AM Peak**

Start Time	Warblington Int.	Fishbourne	Stockbridge
07:10:42	00:00:00	00:11:54	00:12:58
07:21:03	00:00:00	00:12:09	00:13:17
07:34:23	00:00:00	00:15:56	00:17:00
07:44:56	00:00:00	00:17:21	00:18:32
Average 0700-0800	00:00:00	00:14:20	00:15:27
08:02:04	00:00:00	00:14:10	00:15:18
08:13:39	00:00:00	00:14:07	00:15:13
08:27:38	00:00:00	00:13:25	00:14:23
08:38:54	00:00:00	00:13:06	00:14:24
08:52:41	00:00:00	00:11:25	00:12:24
Average 0800-0900	00:00:00	00:13:15	00:14:20
09:03:38	00:00:00	00:10:19	00:12:06
09:15:36	00:00:00	00:09:09	00:10:30
09:26:19	00:00:00	00:08:39	00:09:51
09:37:20	00:00:00	00:08:00	00:09:18
09:47:11	00:00:00	00:08:48	00:09:48
09:58:20	00:00:00	00:08:42	00:09:51
Average 0900-1000	00:00:00	00:08:56	00:10:14

**Table 16 Journey Time Summary – Route 2 Eastbound PM Peak**

Start Time	Warblington Int.	Fishbourne	Stockbridge
16:12:40	00:00:00	00:08:44	00:10:04
16:25:38	00:00:00	00:08:28	00:10:09
16:34:22	00:00:00	00:08:45	00:10:14
16:49:14	00:00:00	00:08:59	00:12:01
16:58:41	00:00:00	00:08:46	00:11:53
Average 1600-1700	00:00:00	00:08:44	00:10:52
17:14:12	00:00:00	00:09:04	00:11:50
17:21:57	00:00:00	00:08:50	00:10:26
17:37:19	00:00:00	00:08:54	00:10:33
17:43:31	00:00:00	00:08:46	00:10:01
17:59:39	00:00:00	00:08:55	00:09:55
Average 1700-1800	00:00:00	00:08:54	00:10:33
18:04:27	00:00:00	00:08:37	00:09:38
18:20:54	00:00:00	00:08:16	00:09:25
18:25:02	00:00:00	00:08:38	00:09:38
18:40:07	00:00:00	00:08:03	00:09:17
18:45:26	00:00:00	00:08:12	00:09:09
18:59:49	00:00:00	00:08:14	00:09:09
Average 1800-1900	00:00:00	00:08:20	00:09:23



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**Table 17 Journey Time Summary – Route 2 Westbound AM Peak**

Start Time	Stockbridge	Fishbourne	Warblington Int.
07:00:31	00:00:00	00:01:17	00:09:43
07:10:58	00:00:00	00:01:09	00:09:36
07:23:59	00:00:00	00:01:28	00:09:46
07:34:38	00:00:00	00:01:10	00:09:43
07:51:42	00:00:00	00:01:14	00:09:54
Average 0700-0800	00:00:00	00:01:16	00:09:44
08:03:48	00:00:00	00:01:09	00:09:21
08:17:46	00:00:00	00:01:01	00:09:12
08:29:09	00:00:00	00:01:21	00:09:22
08:42:24	00:00:00	00:01:07	00:09:46
08:53:43	00:00:00	00:01:10	00:09:30
Average 0800-0900	00:00:00	00:01:10	00:09:26
09:05:26	00:00:00	00:01:25	00:09:41
09:16:03	00:00:00	00:01:11	00:09:47
09:26:27	00:00:00	00:01:08	00:10:28
09:36:32	00:00:00	00:01:09	00:10:14
09:47:05	00:00:00	00:01:29	00:10:49
Average 0900-1000	00:00:00	00:01:16	00:10:12

**Table 18 Journey Time Summary – Route 2 Westbound PM Peak**

Start Time	Stockbridge	Fishbourne	Warblington Int.
16:02:41	00:00:00	00:01:20	00:09:35
16:13:07	00:00:00	00:03:15	00:12:05
16:23:05	00:00:00	00:02:13	00:10:51
16:36:09	00:00:00	00:02:56	00:12:36
16:44:56	00:00:00	00:03:34	00:13:20
Average 1600-1700	00:00:00	00:02:40	00:11:41
17:01:39	00:00:00	00:02:27	00:11:58
17:10:54	00:00:00	00:01:37	00:10:37
17:26:24	00:00:00	00:01:16	00:10:26
17:32:47	00:00:00	00:01:32	00:10:19
17:48:15	00:00:00	00:01:31	00:10:55
17:53:53	00:00:00	00:01:27	00:10:09
Average 1700-1800	00:00:00	00:01:38	00:10:44
18:09:56	00:00:00	00:01:08	00:10:28
18:14:25	00:00:00	00:01:16	00:10:10
18:30:38	00:00:00	00:01:06	00:09:03
18:35:01	00:00:00	00:01:20	00:10:01
18:49:46	00:00:00	00:01:12	00:09:29
Average 1800-1900	00:00:00	00:01:12	00:09:50

The data shows that there are extensive delays on the eastbound approach to Fishbourne Roundabout in the AM peak. The maximum journey time in the AM peak is just over 17 minutes around 0745. This is 8 minutes longer (or over double) the shortest journey times seen in either peak. There appears to be a minimum of 3 minutes delay during the two hours from 0700 to 0900 and the average delay is likely to be around 5 minutes over this period.

### 2.3 Existing Data Sources

Existing and historic data sources have been interrogated to understand what other useful data is available to inform the analysis. This data performs a dual role, first as a check of the newly collected count data, given the new data was collected for a single day only and then also to assist with the analysis.

Data from the following sources has been used.

- Data from National Highways Traffic Count (WebTRIS)<sup>1</sup> and journey time database<sup>2</sup>
- Data from West Sussex County Council traffic count database (see Figure 5)

**Figure 5 West Sussex County Council Count Sites**



Data from these sources has been used as a check against the survey data collected within November in Section 2.4, as well as to look at historic traffic data trends from the time the base model was developed to present day, including a check of trend up to 2019, to understand how traffic

<sup>1</sup> [National Highways - WebTRIS - Map View \(highwaysengland.co.uk\)](https://www.highwaysengland.co.uk/webtris)

<sup>2</sup> [National Highways - Open Data \(highwaysengland.co.uk\)](https://www.highwaysengland.co.uk/open-data)

volumes and journey times may have changed in the period up to the COVID-19 Pandemic and since, which is detailed in Section 3.3.

## 2.4 Data Checks – Validation of ATR Data

The newly count data was only collected for a single day, therefore it is usual to check this data against longer term data sources, to check that the day of the surveys was typical.

### Traffic Counts

As shown on Figure 4, National Highways have a number of permanent count sites on the A27 Chichester bypass and the approach roads. Unfortunately, only one site has any data collected in 2023 which is on the eastbound A27 between Warblington Interchange and Fishbourne Roundabout, therefore no comparisons can be made to check the validity of the count surveys using WebTRIS data. Some limited West Sussex data is available on the local highway network approaches to the junction, whilst this data is limited, this is all that is available. The outputs from the count checks are shown in Table 19 and 20.

**Table 19 Traffic Count Comparisons – A27 EB Warblington Interchange to Fishbourne Roundabout**

Month-Year	AM Peak (Vehicles)				PM Peak (Vehicles)			
	7	8	9	0700-1000	16	17	18	1600-1900
WebTRIS Data Mar-23	1665	2473	1774	5911	1577	1924	1860	5360
Survey	2187	1932	1692	5811	1824	1786	1460	5070

The flows in each hour do not match well, however in the AM peak the overall number is comparable. In the PM peak the survey flows are lower. This approach is impacted by long delays in the AM peak and therefore the ATC data is likely to be higher as the site is located some 3km before Fishbourne Roundabout. The PM peak flows seem to indicate that flows on the day of the survey were lower than possibly expected and therefore the queues and delays from the ATR surveys may underestimated.

**Table 20 Traffic Count Comparisons – West Sussex Count Sites**

Road	AM			PM		
	Survey Throughput Flow	WSCC on Day of Survey	Avg. WSCC Tue-Wed in Nov	Survey Throughput Flow	WSCC on Day of Survey	Avg. WSCC Tue-Wed in Nov
Terminus Road	474	475	506	423	415	456
Stockbridge Road (N)	883	892	889	820	801	797
Whyke Road (N)	813	800	827	604	605	614
Bognor Road (W)	1490	1380	1413	1239	1183	1157

The WSCC data shows a good match between the MCTC and ATC data where available.

The initial checks found that the count at Portfield Roundabout showed some large differences when compared to other data from 2014 in terms of some of the throughput from the south and also the turning movements to the northern arm (particularly from the east). Whilst the 2014 data is obviously

older, there were no clear reasons for such differences that were seen, other than impacts on roadworks within the area around Portfield. Further comments on this are made in the comparisons of journey time data below and the summary at the end of Section 2.

### **Journey Times**

Journey time data on the A27, has been used as a check against the data collected in November using National Highways data from March and October. The National Highways data was extracted for all Tuesday, Wednesday and Thursdays in the relevant month, avoiding any school holidays where applicable. March has been used in addition to October as it was clear that there were issues on the day of the survey around Portfield, potentially caused by roadworks that were in place from the start of October. The outputs of the comparison are shown in Tables 21 and 22.

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Table 21 Journey Time Comparisons – Survey vs National Highways Data - Eastbound

Time	Warblington to Fishbourne			Fishbourne to Stockbridge			Stockbridge to Whyke			Whyke to Bognor			Bognor to Portfield		
	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey
0700-0800	10:39	10:50	14:20	01:08	01:12	01:17	01:05	01:09	01:11	03:11	04:12	05:53	02:09	02:30	04:24
0800-0900	12:02	15:18	13:15	01:30	01:32	01:18	01:08	01:06	01:18	03:14	03:00	04:59	02:38	05:40	07:26
0900-1000	08:38	12:33	08:56	01:12	01:51	01:21	01:05	01:05	01:08	04:33	03:37	04:54	01:48	03:38	02:34
1600-1700	07:12	08:00	08:44	01:53	02:48	01:56	01:02	01:03	01:06	02:07	02:34	01:52	02:00	02:29	10:30
1700-1800	07:28	08:49	08:54	01:58	03:03	01:22	00:59	01:00	01:06	01:19	01:41	01:11	01:42	02:26	07:58
1800-1900	07:24	09:14	08:20	01:03	01:22	01:26	00:57	00:58	01:03	01:05	01:12	01:10	01:18	01:24	01:30

Table 22 Journey Time Comparisons – Survey vs National Highways Data - Westbound

Time	Portfield to Bognor			Bognor to Whyke			Whyke to Stockbridge			Stockbridge to Fishbourne		
	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey	Mar-23	Oct-23	Survey
0700-0800	02:14	02:52	04:23	00:59	01:07	01:12	02:36	02:41	01:40	01:06	00:45	01:01
0800-0900	04:46	06:10	07:43	01:31	01:40	01:42	02:53	02:40	03:18	00:56	01:01	00:55
0900-1000	02:11	03:29	03:22	01:00	01:04	01:04	02:48	02:22	02:26	00:57	01:00	00:58
1600-1700	05:45	08:14	17:03	01:17	01:53	01:03	02:56	02:56	01:30	02:04	02:26	02:56
1700-1800	02:23	06:57	16:11	01:10	01:33	01:04	02:29	01:58	01:35	01:25	02:25	00:59
1800-1900	01:16	02:41	02:39	00:53	00:59	01:00	01:02	01:19	01:07	00:55	01:07	00:52

The data indicates that there were excessive delays between Portfield and Bognor Road Roundabouts on the day of the survey. These also seem to be present in the October data, but not so great. This seems to indicate that the March data is more reliable.

Data on the other sections of the A27 are more comparable between all sets of data.

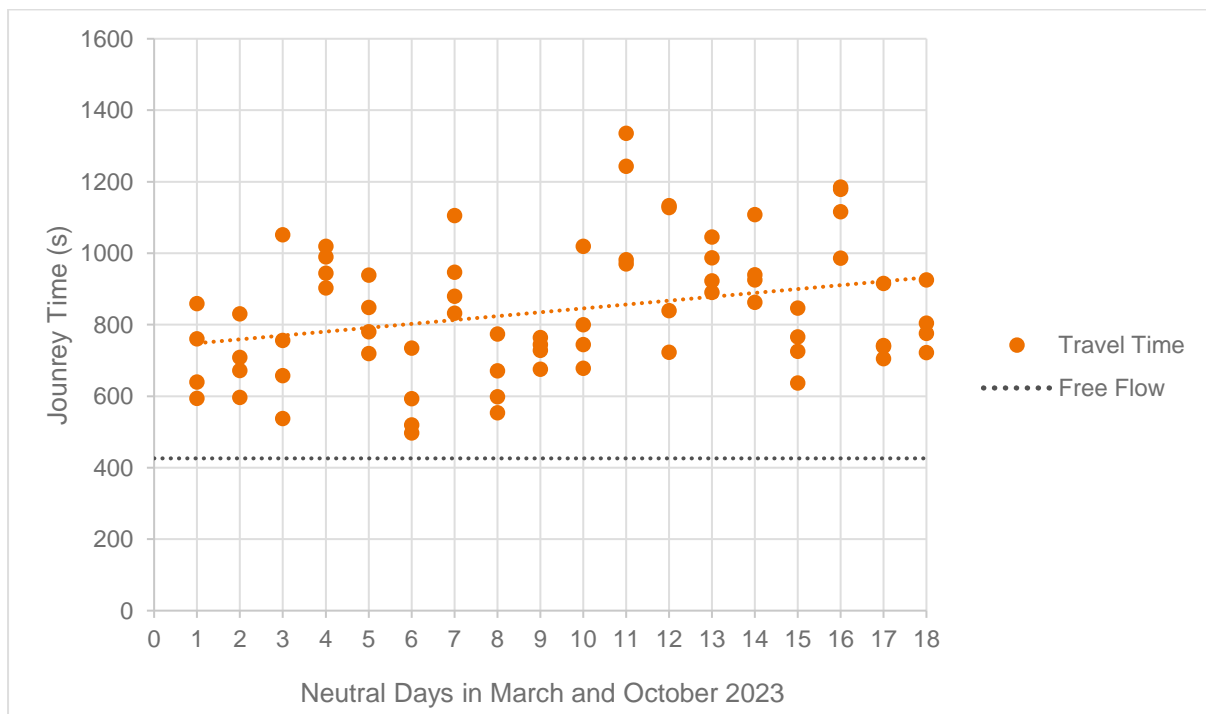
**Eastbound Approach to Fishbourne Roundabout – Further Journey Time Checks**

The 2023 survey data showed long journey times and variability on Route 2 eastbound on the approach to Roundabout and further analysis has been provided to demonstrate the variability.

This is consistent with findings reported in the 2014 Base Model LMVR where the high journey times on the eastbound approach to Fishbourne Roundabout in the AM peak were noted in the LMVR (paragraph 8.65) from analysis of 2014 WebTRIS data and this continues to be a persistent issue even in 2023 WebTRIS data and is also evidenced by long queues from the 2023 survey data.

To further illustrate that the high journey times on this route are not unique to the survey day but are an observed long-term occurrence, journey time variability was analysed for neutral weekdays (Tuesday to Thursday only) in March and October 2023. The results are summarised in Figure 6. The data shows the average journey time for every 15 minutes within the AM peak hour, on each day, for a total of 18 days (the first 9 in March and final 9 in October). The free flow line shown is the average journey time pre-AM peak period (i.e. 5am to 6am).

**Figure 6 Journey Time Variability – Warblington to Fishbourne Roundabout (AM Peak Hour)**



The comparisons above show that the traffic data collected in November in the main shows that the data is comparable.

## **2.5 Summary**

The checks of the data undertaken indicate that in the main the survey data is adequate to be used for further analysis. The journey time data between Portfield and Bognor Road Roundabouts in both directions, both from the surveys and the National Highways data for October, seem to show excessive delays that are more than expected, therefore this data will not be used in any further comparisons. It was also noted that there were unexpected outputs from the traffic count at Portfield and along with the journey times, clearly indicates that there were localised issues here.

Data elsewhere on the network appears to be a reasonable match between the ATR surveys and other data where it has been possible to make comparison.

It is therefore concluded that the ATR surveys do provide a good representation of existing traffic conditions, apart from the Portfield Roundabout count and journey times between Portfield and Bognor Road Roundabouts. Therefore, the count and journey time surveys here will not be used in any further analysis, however all other data is suitable for use.

The data clearly shows that there are very long delays and journey time variations, in the AM peak on the eastbound approach to Fishbourne Roundabout and that this was also highlighted in the 2014 LMVR. There are delays seen elsewhere on the A27 as show by the queue and journey time data.

## **3 Model and Time Series Comparisons**

### **3.1 Overview**

The next stage of the analysis has been to undertake a comparison of the 2014 model against the new data, to gain an understanding of the differences within the model, compared to flows and traffic conditions in 2023. The aim is then to demonstrate that the model is behaving in a way that would be expected and that the outputs can be used to inform the Local Plan in its current position, again with the acceptance that an early model update will form part of the Monitor and Manage Process going forward.

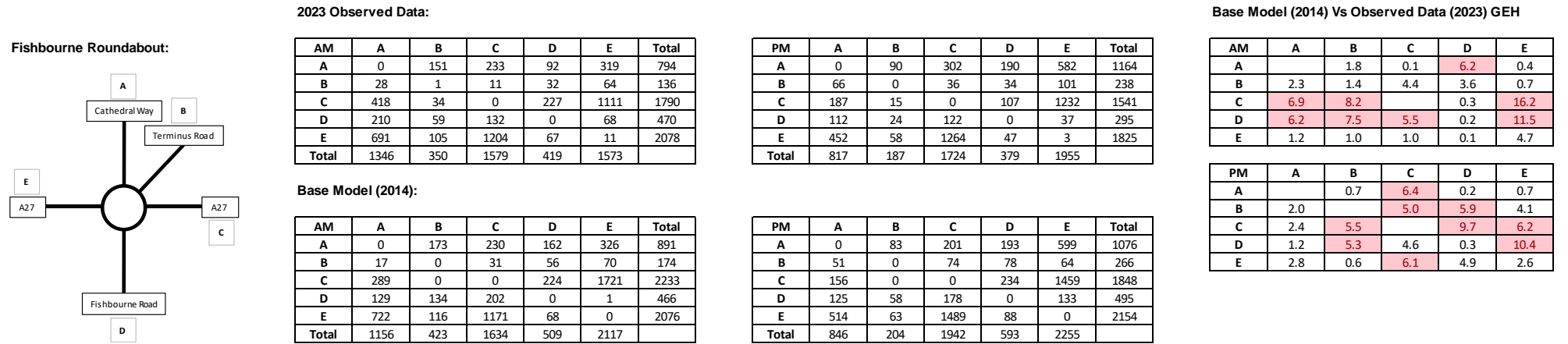
### **3.2 Comparison with 2014 Traffic Model Flows**

A comparison has been made between the ATR count data and the 2014 modelled flows at each junction along the A27. The outputs are presented in Figures 6 to 9. The purpose of this exercise is to determine the broad difference between the model and 2023 flows and to inform the way forward with the modelling. A flow diagram with the data, along with a GEH comparison is provided with Appendix C.

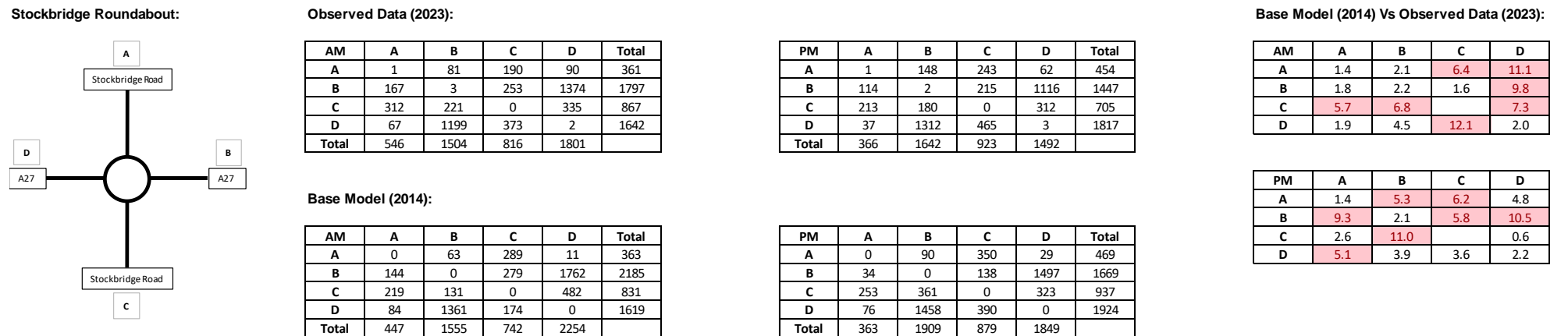
The GEH is a measure of fit between two sets of data used commonly in modelling to compare modelled and observed flows. DfT TAG criteria for model validation using a value of 5 as showing a good fit and has been used in that context here for a high-level comparison.

# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 7 Fishbourne Roundabout 2014 Base Model Vs 2023 Count Comparison



## Figure 8 Stockbridge Roundabout 2014 Base Model Vs 2023 Count Comparison

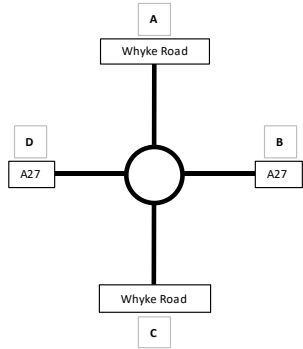




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## Figure 9 Whyke Roundabout 2014 Base Model Vs 2023 Count Comparison

Whyke Roundabout:



Observed Data (2023):

AM	A	B	C	D	Total
A	2	33	137	103	275
B	77	1	288	1427	1792
C	301	219	18	355	893
D	183	1065	254	1	1503
<b>Total</b>	<b>563</b>	<b>1318</b>	<b>696</b>	<b>1886</b>	

Base Model (2014):

AM	A	B	C	D	Total
A	0	71	143	132	345
B	39	0	206	1531	1776
C	278	231	0	522	1030
D	229	1224	101	0	1554
<b>Total</b>	<b>546</b>	<b>1525</b>	<b>450</b>	<b>2185</b>	

PM	A	B	C	D	Total
A	0	50	231	115	396
B	33	4	147	1083	1267
C	121	169	1	222	513
D	64	1260	353	1	1677
<b>Total</b>	<b>218</b>	<b>1483</b>	<b>731</b>	<b>1421</b>	

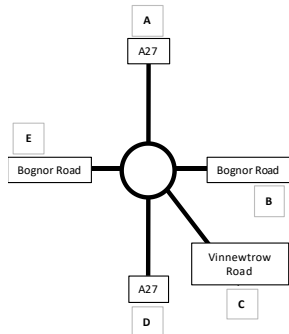
Base Model (2014) Vs Observed Data (2023):

AM	A	B	C	D
A	2.0	5.2	0.6	2.7
B	5.0	1.4	5.2	2.7
C	1.3	0.8	6.0	7.9
D	3.2	4.7	11.4	1.4

PM	A	B	C	D
A		0.9	5.1	1.5
B	4.4	3.0	11.3	5.6
C	2.1	4.0	1.4	2.6
D	7.1	2.5	2.3	1.4

## Figure 10 Bognor Road Roundabout 2014 Base Model Vs 2023 Count Comparison

Bognor Roundabout:



Observed Data (2023):

AM	A	B	C	D	E	Total
A	0	58	55	965	182	1260
B	110	4	16	623	476	1228
C	37	5	0	94	153	289
D	722	467	42	0	50	1282
E	80	384	60	131	0	655
<b>Total</b>	<b>949</b>	<b>918</b>	<b>173</b>	<b>1813</b>	<b>862</b>	

Base Model (2014):

AM	A	B	C	D	E	Total
A	0	63	36	1262	115	1476
B	0	0	0	462	471	933
C	43	0	0	3	195	241
D	1049	341	97	0	39	1525
E	94	404	94	99	0	691
<b>Total</b>	<b>1186</b>	<b>807</b>	<b>227</b>	<b>1826</b>	<b>820</b>	

PM	A	B	C	D	E	Total
A	0	59	99	652	56	866
B	77	6	46	468	324	921
C	51	20	0	69	92	232
D	744	380	313	0	57	1494
E	42	432	196	50	0	721
<b>Total</b>	<b>915</b>	<b>897</b>	<b>654</b>	<b>1239</b>	<b>529</b>	

Base Model (2014) Vs Observed Data (2023):

AM	A	B	C	D	E
A		0.6	2.8	8.9	5.5
B	14.8	2.6	5.6	6.9	0.2
C	1.0	2.9	0.1	13.0	3.1
D	11.0	6.3	6.5		1.7
E	1.5	1.0	3.9	3.0	0.3

PM	A	B	C	D	E
A		14.7	7.5	9.0	4.6
B	1.1	3.5	9.3	9.9	0.9
C	3.5	5.7		10.9	1.7
D	10.6	7.0	24.5		5.6
E	9.1	1.8	2.8	10.0	0.1

The data shows that the traffic 2014 model and the 2023 traffic data are a reasonable match, with the majority of the counts having a GEH less than 5, and almost all have a GEH of less than 10.

### 3.3 Time Series Data

The purpose of analysing time series data is to understand trends since the model was developed in 2014 to the present day when new data has been collected. It is also used to understand how the COVID-19 Pandemic has impacted traffic in the Chichester area.

#### National Highways Count Data

Traffic data for 2023 is very limited at the sites along the A27 in terms of any recent data, therefore only limited analysis has been possible. Where data is available the comparisons are shown in Tables 23 to 25.

**Table 23 A27 Eastbound Between Warblington Interchange and Fishbourne Roundabout**

Month-Year	AM Peak (Vehicles)				PM Peak (Vehicles)			
	7	8	9	0700-1000	16	17	18	1600-1900
Mar-14	1394	2270	1943	5608	1472	1912	1992	5375
Mar-19	1728	2465	1838	6030	1607	1996	1923	5526
Mar-22	1638	2472	1738	5848	1483	1837	1773	5093
Mar-23	1665	2473	1774	5911	1577	1924	1860	5360

The data here shows that there was growth between 2014 and 2019 in both peaks. In the AM peak traffic in March 2023 is similar to pre-COVID-19 levels and well above 2014 levels, however PM peak is similar to 2014 and below 2019.

**Table 24 A27 Eastbound Between Stockbridge Roundabout and Whyke Roundabout**

Month-Year	AM Peak				PM Peak			
	7	8	9	0700-1000	16	17	18	1600-1900
Mar-14	1217	1634	1457	4308	1811	2062	2037	5910
Mar-19	1429	1491	1386	4306	1697	1900	1871	5469
Mar-22	1304	1505	1416	4226	1633	1788	1724	5145

The data here shows that flows in the AM peak did not change between 2014 and 2019 and has fallen very slightly in 2022. Flows in the PM peak in March 2022 were well below pre-COVID-19 levels. No data is available for 2023.

**Table 25 A27 Westbound Whyke Roundabout and Stockbridge Roundabout**

Month-Year	AM Peak				PM Peak			
	7	8	9	0700-1000	16	17	18	1600-1900
Mar-14	1217	2176	2154	5546	1667	1721	1721	5109
Mar-19	1405	2120	1968	5493	1663	1634	1627	4924
Mar-21	1052	1880	1756	4688	1576	1617	1411	4604
Oct-22	1216	1944	1842	5001	1617	1568	1513	4698

## Chichester Area Traffic Model, Model Verification - Technical Note

The data here shows that there was no growth between 2014 and 2019 and flows were lower in October 2022 in both peaks.

### West Sussex Count Data

Data has been extracted from 12 sites in Chichester to understand the traffic trends in traffic from 2015 through to 2023. The data is shown on Figures 11 to 22.

Data has been compared for either March or October for any years where data is available. The data is based on average weekday (Tuesday to Thursday) data avoiding school holidays. Table 26 shows the growth factor for 2019 and 2023 from 2014.

**Table 26 Traffic Growth Factors 2014 to 2019 and 2023 at WSCC Count Locations**

Site Location	0700-0800		0800-0900		1700-1800	
	2014 to 2019	2014 to 2023	2014 to 2019	2014 to 2023	2014 to 2019	2014 to 2023
A259 Bognor Road SE of A27 roundabout	1.08	1.04	1.15	1.13	1.08	1.05
St Paul's Road	0.97	1.29	0.91	1.08	0.97	0.96
A259 Fishbourne	1.03	0.96*	1.00	1.00*	1.00	0.93*
A286 Lavant Road	1.10	1.02	0.97	0.97	0.94	0.83
B2145 Whyke Road	1.00	1.07	0.94	0.89	0.99	0.89
A286 Broyle Road	1.06	1.20	1.04	1.01	1.06	0.77
A259 Via Ravenna	1.07	1.12	1.09	1.16	1.03	1.00
A259 Bognor Road NW of A27 roundabout	1.24	1.30	1.21	1.17	1.21	1.25
A286 Orchard Street	1.04	1.07	0.97	0.97	0.96	1.05
B2201 Selsey Road	0.97	1.09	1.06	1.06	0.95	0.96
A286 Birdham Road	1.05	1.06	1.15	1.10	1.07	0.93
A286 St Pancras	1.33	1.20	1.22	1.14	1.12	0.91

\*2022 not 2023

The data shows that there was growth on the WSCC roads in most cases between 2014 and 2019 in the AM and PM peak hours, as well as 0700 to 0800. The graphs indicate that there were then reductions during COVID-19, and many sites are still below the traffic levels seen in 2019. The flows in 2023 are in the main, higher than in 2014 in the AM peak, but more varied in the PM peak.

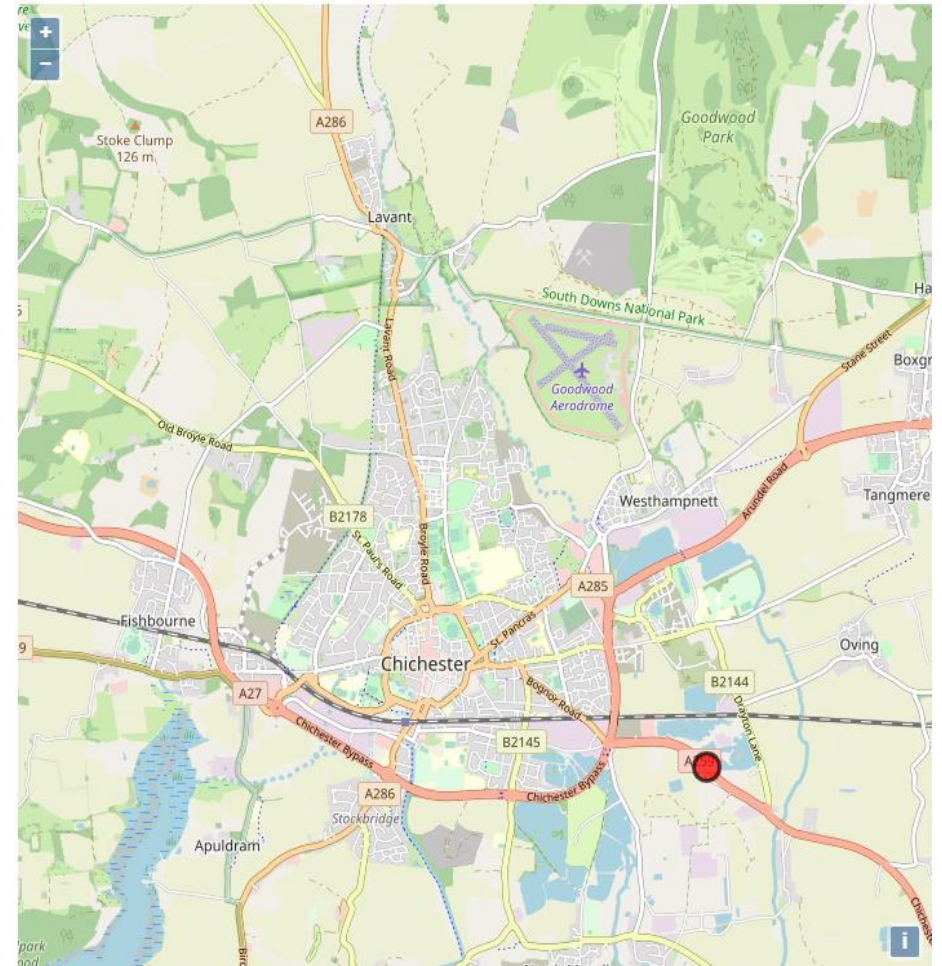
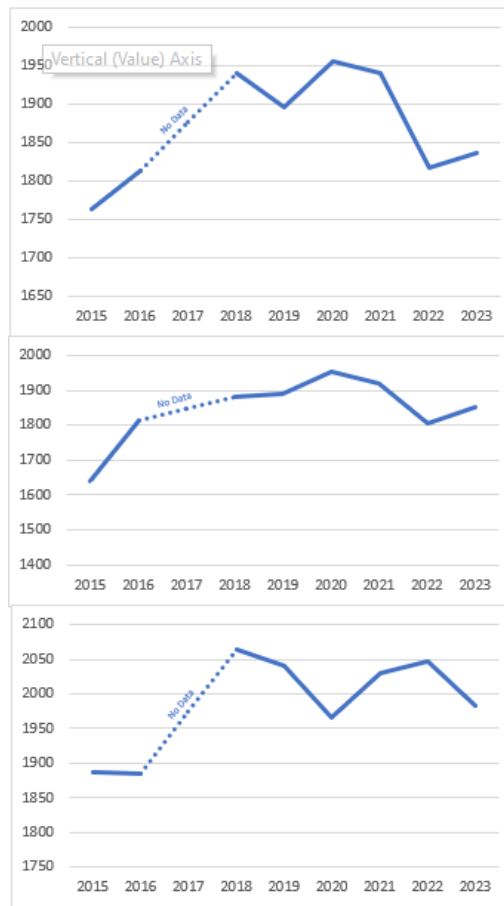
Overall when comparing the National Highways data and the WSCC sites, it can be seen that there was generally more growth in the peak hours on the WSCC network rather than the National Highways network. This could be indicative of the fact that the National Highways network or junctions on the network were already at or close to capacity by 2014 and that some WSCC routes could be carrying additional traffic avoiding junction delays on the A27.

# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 11 A259 Bognor Road Time Series Data Comparison

Oving, A259 BOGNOR RD, JUST W. OF KIVES FARM ENT

October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	1763
	2016	1814
	2017	N/A
	2018	1940
	2019	1897
	2020	1955
	2021	1940
	2023	1837
0800-0900	2015	1641
	2016	1814
	2017	N/A
	2018	1880
	2019	1891
	2020	1952
	2021	1919
	2023	1853
1700-1800	2015	1886
	2016	1884
	2017	N/A
	2018	2065
	2019	2040
	2020	1966
	2021	2030
	2023	1984

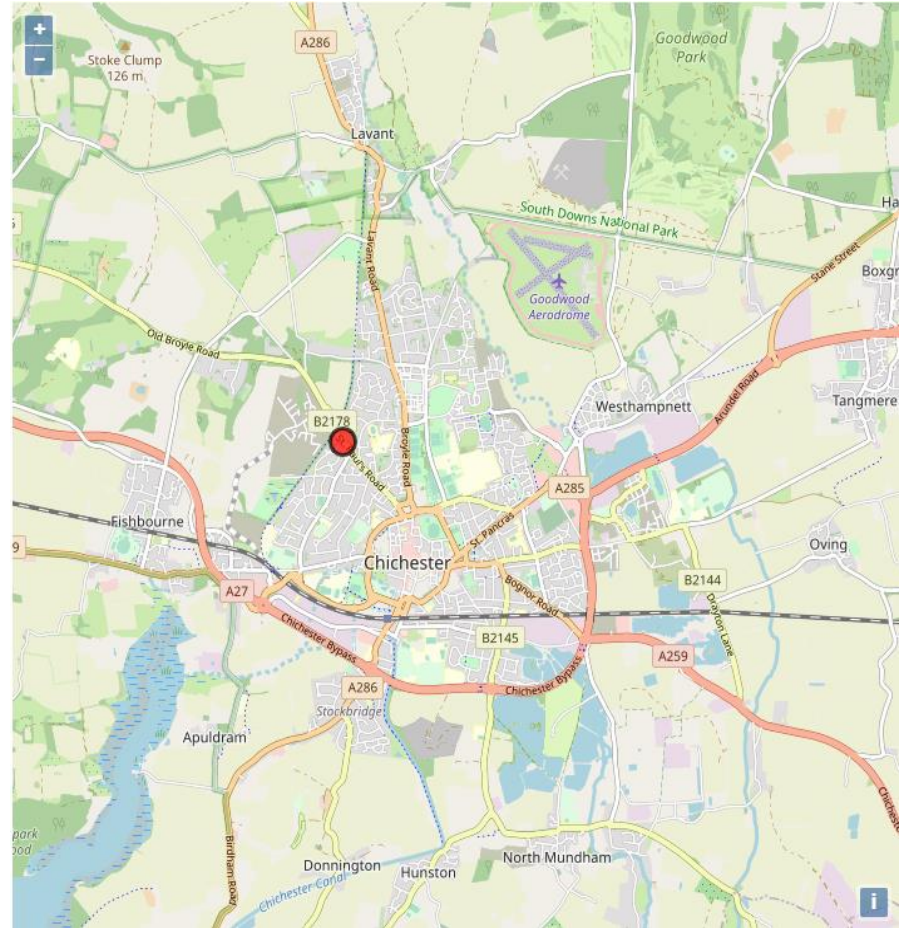
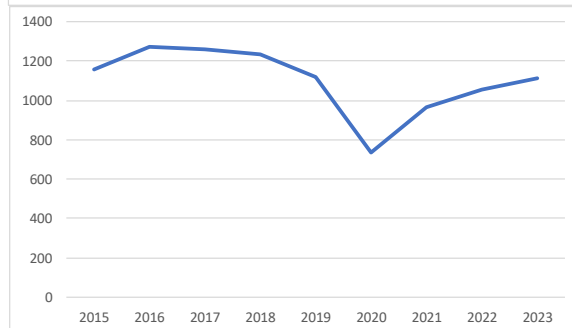
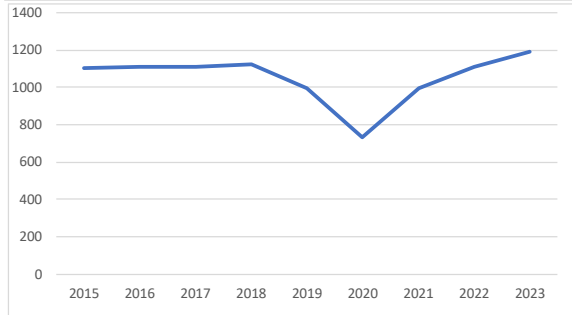
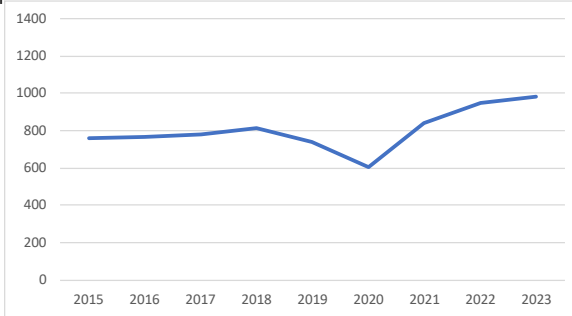


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 12 St Paul's Road Time Seres Data Comparison

CHICHESTER, B2178 ST PAULS RD, N. OF SHERBORNE RD

October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	760
	2016	764
	2017	782
	2018	813
	2019	740
	2020	604
	2021	838
	2022	949
2023	980	
0800-0900	2015	1101
	2016	1111
	2017	1112
	2018	1124
	2019	998
	2020	735
	2021	998
	2022	1110
2023	1190	
1700-1800	2015	1156
	2016	1272
	2017	1260
	2018	1236
	2019	1121
	2020	735
	2021	967
2022	1057	
2023	1111	



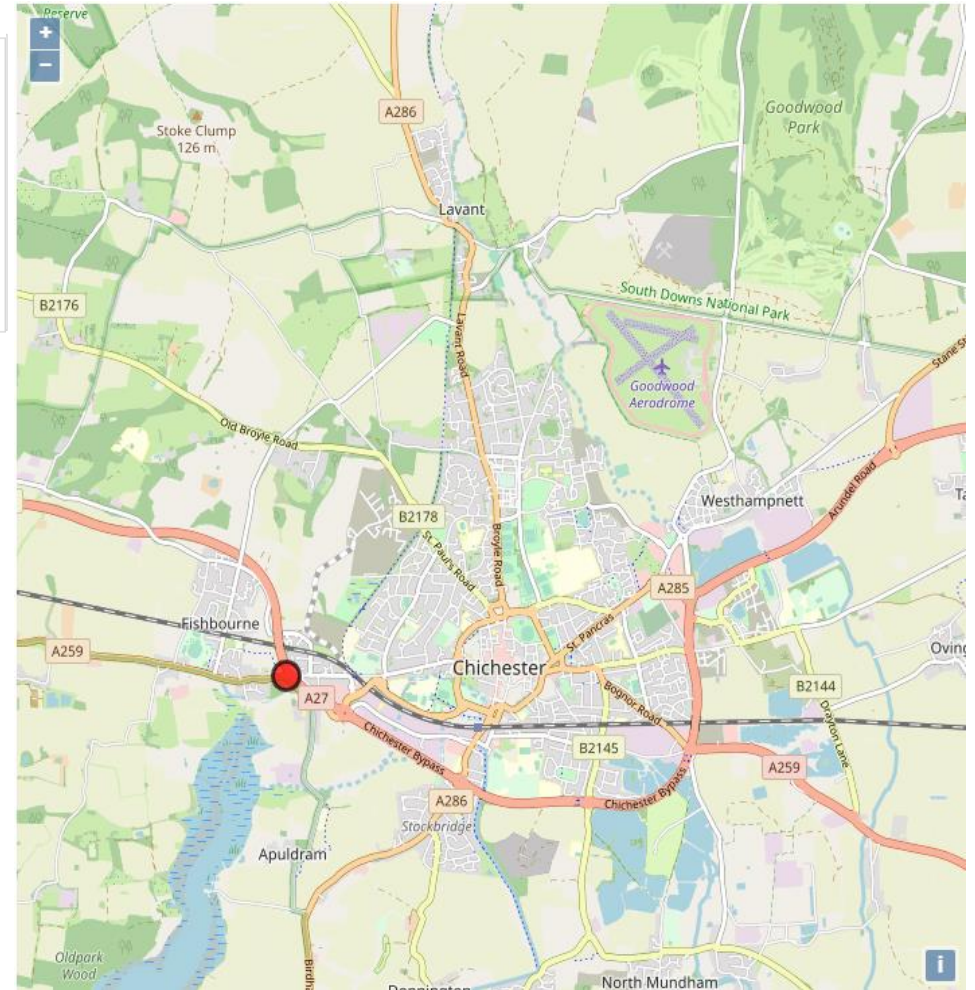
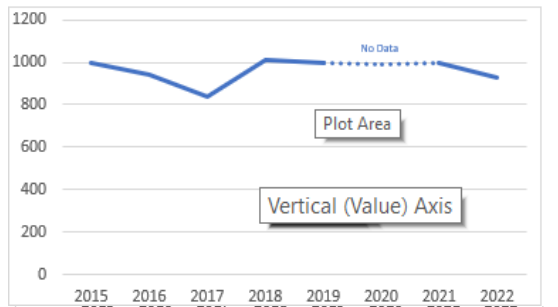
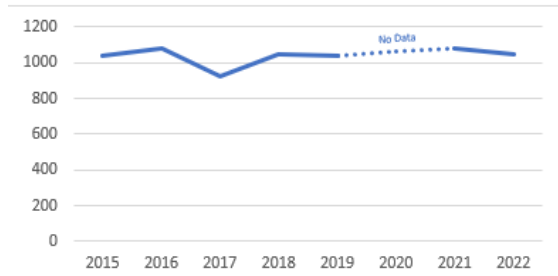
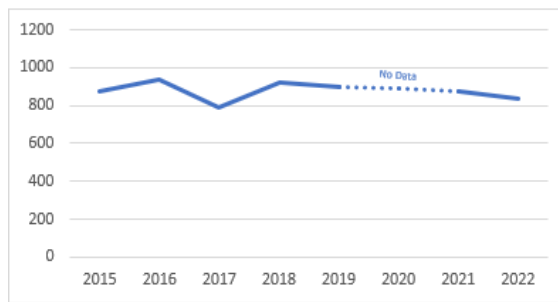


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 13 A259 Fishbourne Time Series Data Comparison

A259 FISHBOURNE, JUST WEST OF ROUNDABOUT

October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	872
	2016	934
	2017	787
	2018	920
	2019	896
	2020	N/A
	2021	879
	2022	837
	2023	N/A
0800-0900	2015	1042
	2016	1081
	2017	920
	2018	1043
	2019	1042
	2020	N/A
	2021	1078
	2022	1046
2023	N/A	
1700-1800	2015	994
	2016	938
	2017	837
	2018	1014
	2019	998
	2020	N/A
	2021	997
	2022	928
2023	N/A	

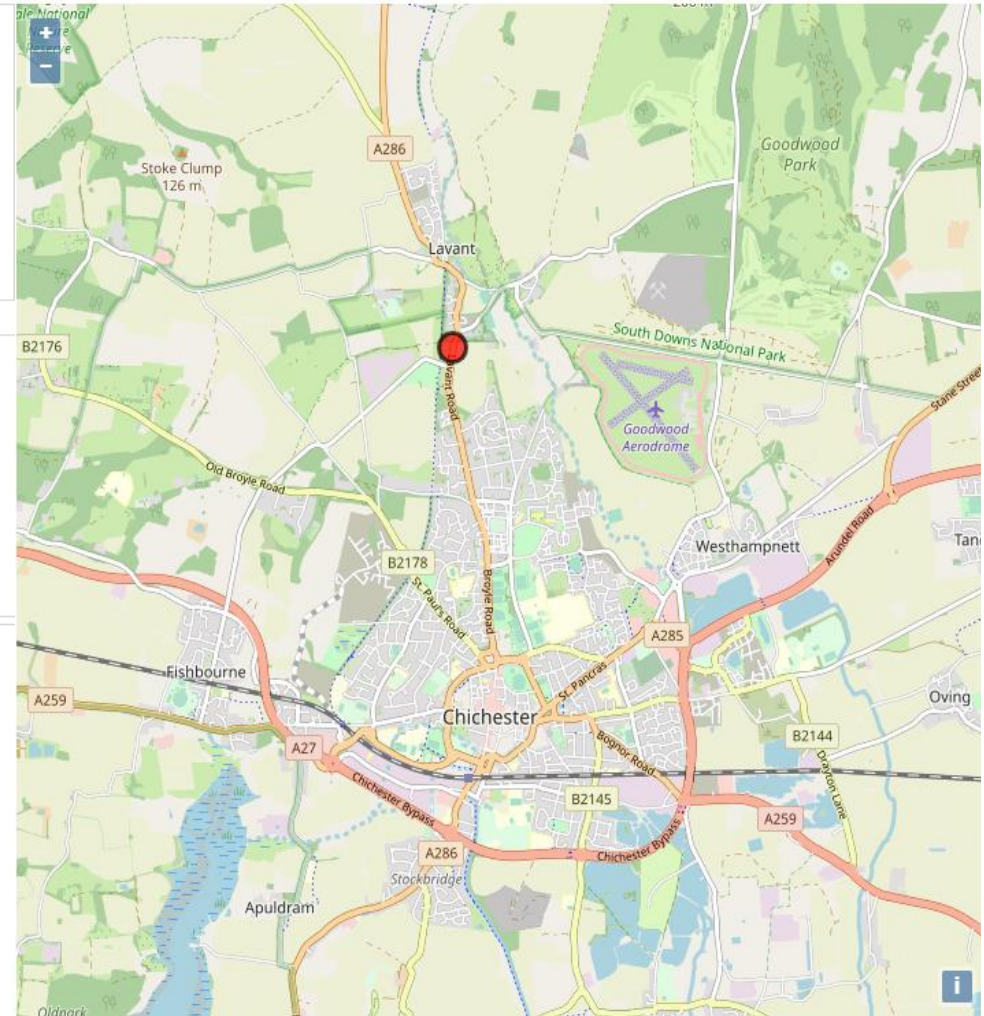
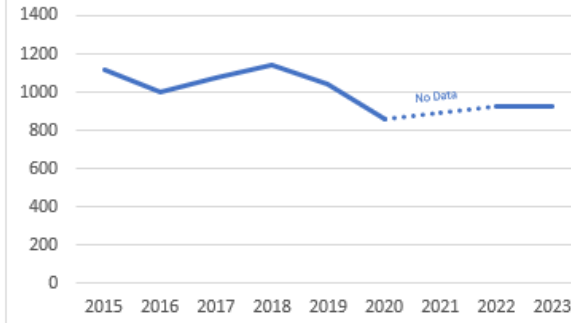
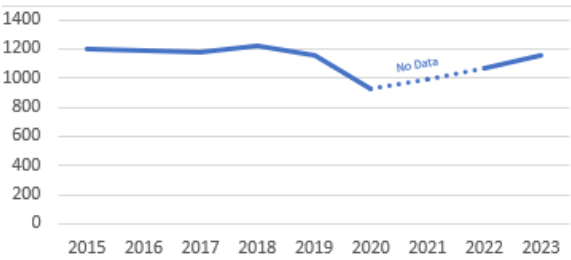
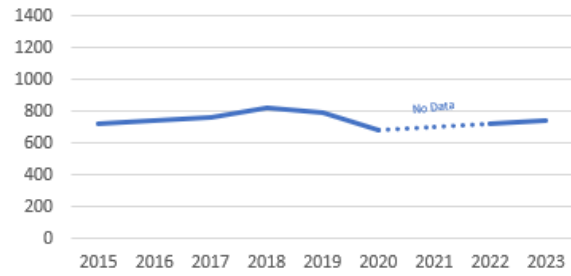


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 14 A286 Lavant Road Time Seres Data Comparison

LAVANT, A286 LAVANT ROAD, SOUTH OF POOK LANE

March (First two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	724
	2016	740
	2017	761
	2018	823
	2019	794
	2020	679
	2021	N/A
	2022	723
0800-0900	2015	1196
	2016	1193
	2017	1173
	2018	1226
	2019	1156
	2020	930
1700-1800	2015	1114
	2016	998
	2017	1079
	2018	1142
	2019	1045
	2020	859
	2021	N/A
2022	923	
2023	929	



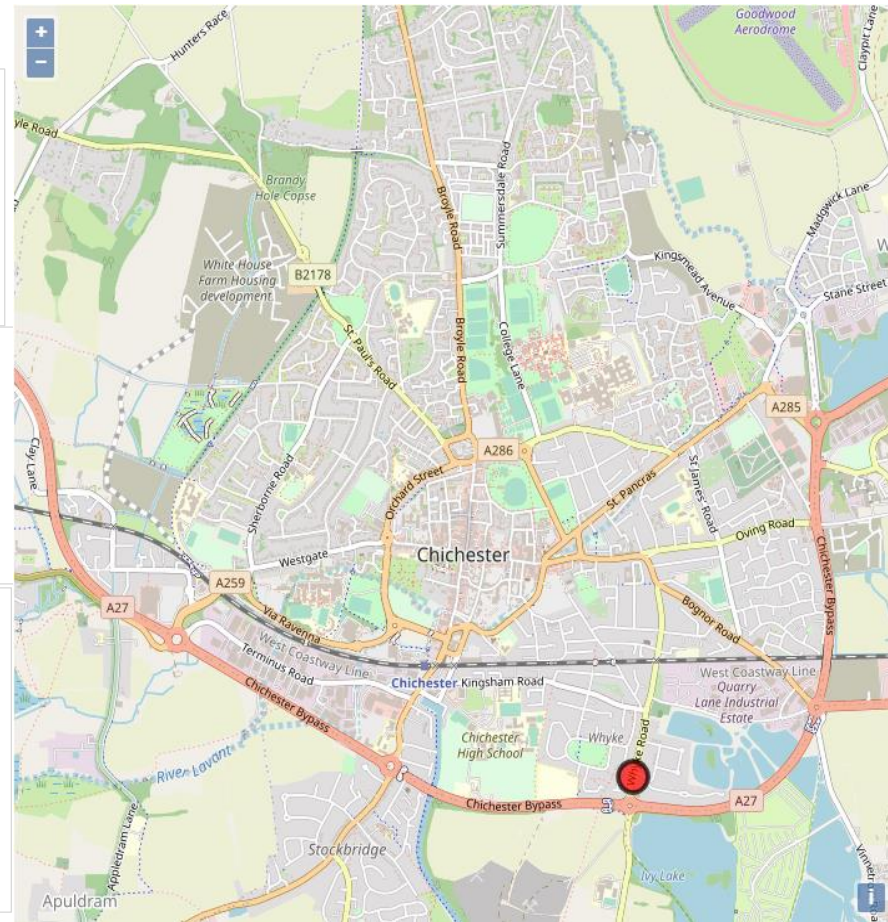
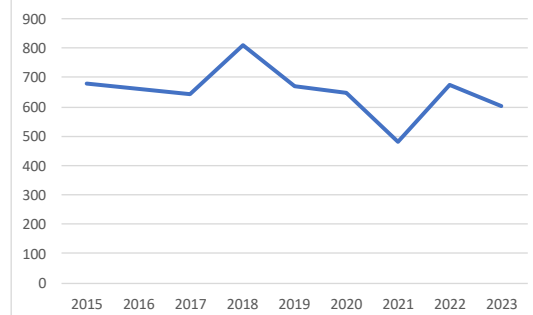
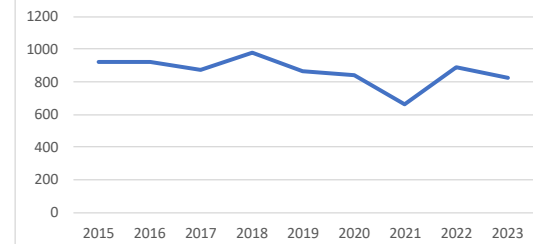
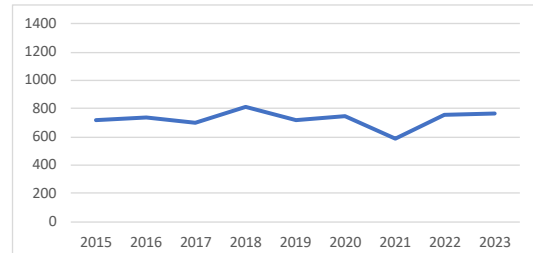


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 15 B2145 Whyke Road Time Series Data Comparison

B2145 CHICHESTER, WHYKE RD S. OF LANGDALE AVE.

March (First two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	714
	2016	734
	2017	703
	2018	813
	2019	715
	2020	747
	2021	582
	2022	754
	2023	766
0800-0900	2015	924
	2016	924
	2017	874
	2018	981
	2019	869
	2020	838
	2021	661
	2022	887
	2023	824
1700-1800	2015	677
	2016	661
	2017	645
	2018	810
	2019	669
	2020	646
	2021	483
	2022	673
	2023	601

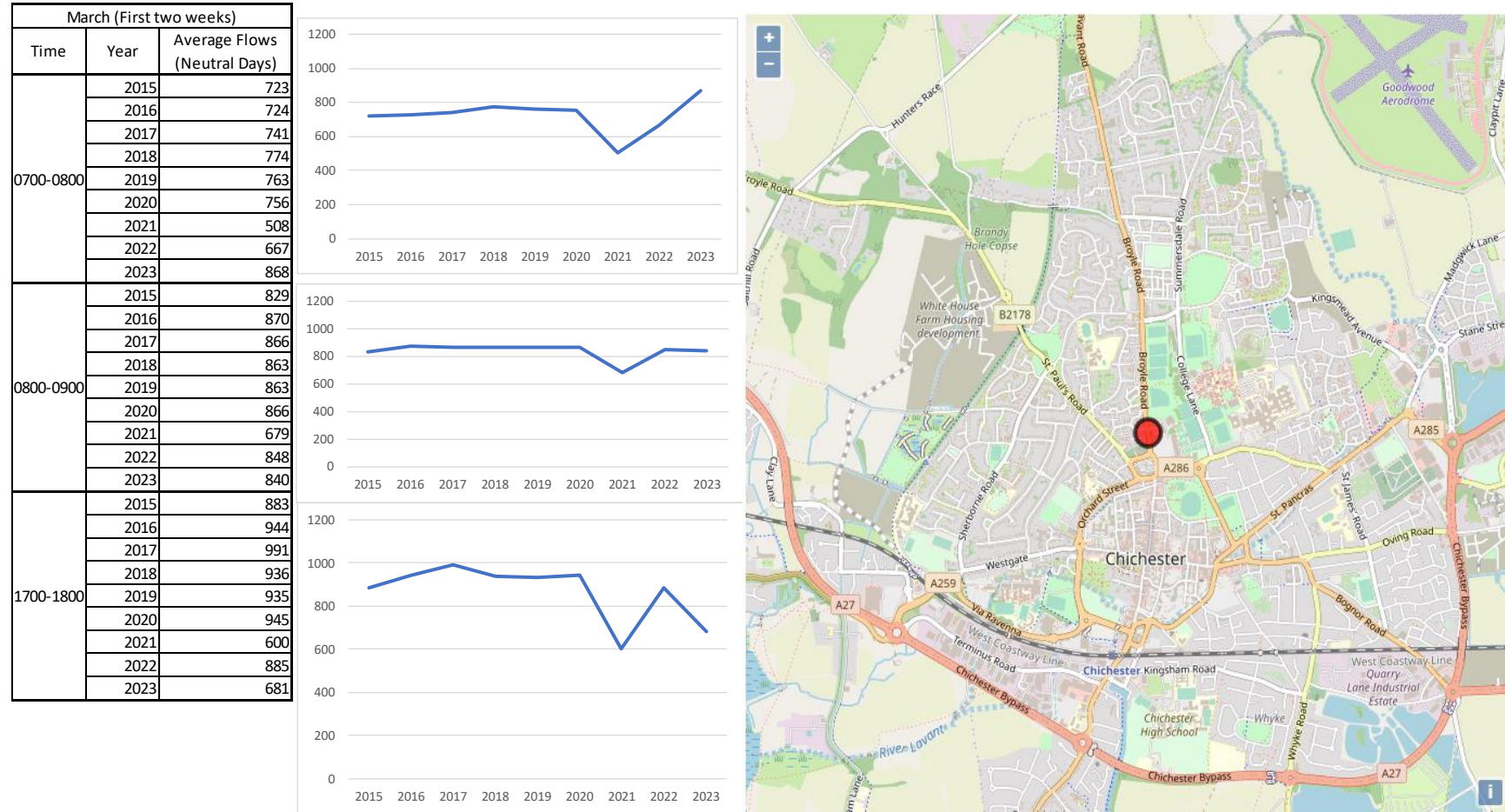




# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 16 A286 Broyle Road Time Seres Data Comparison

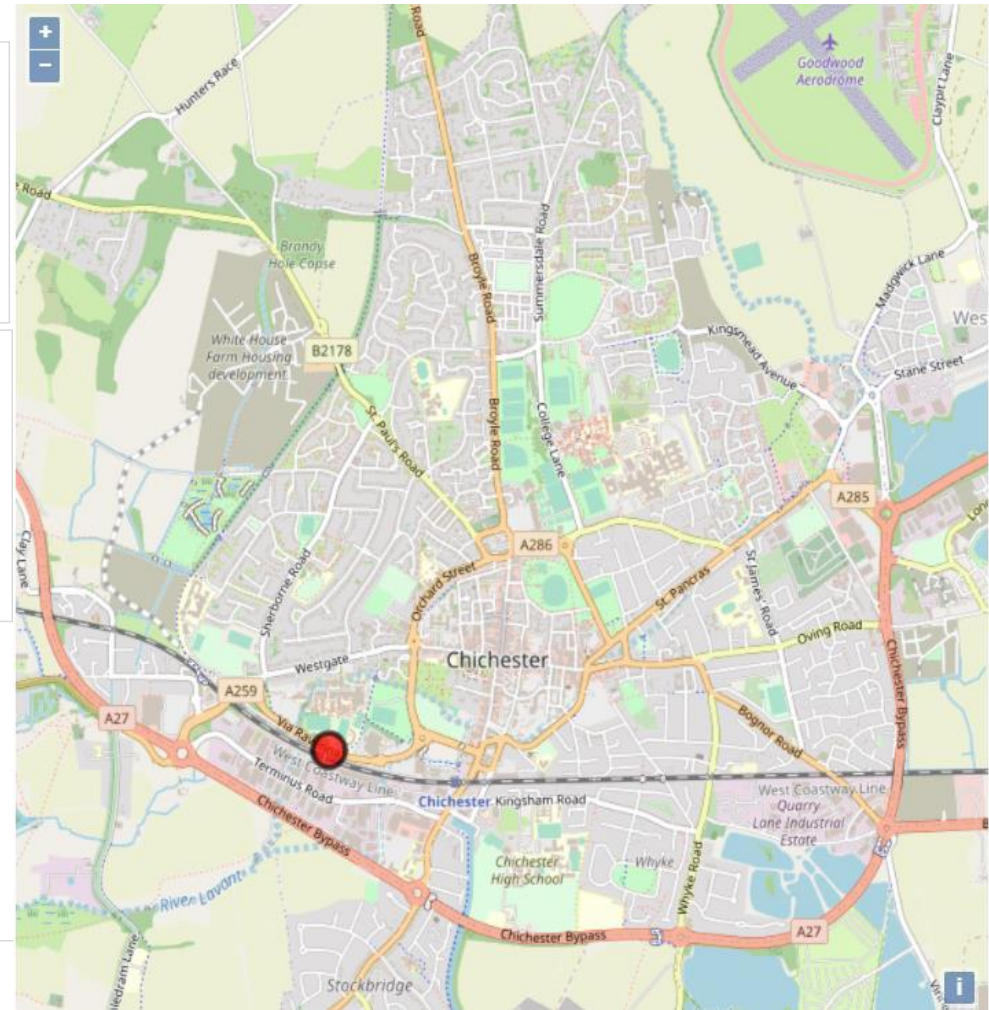
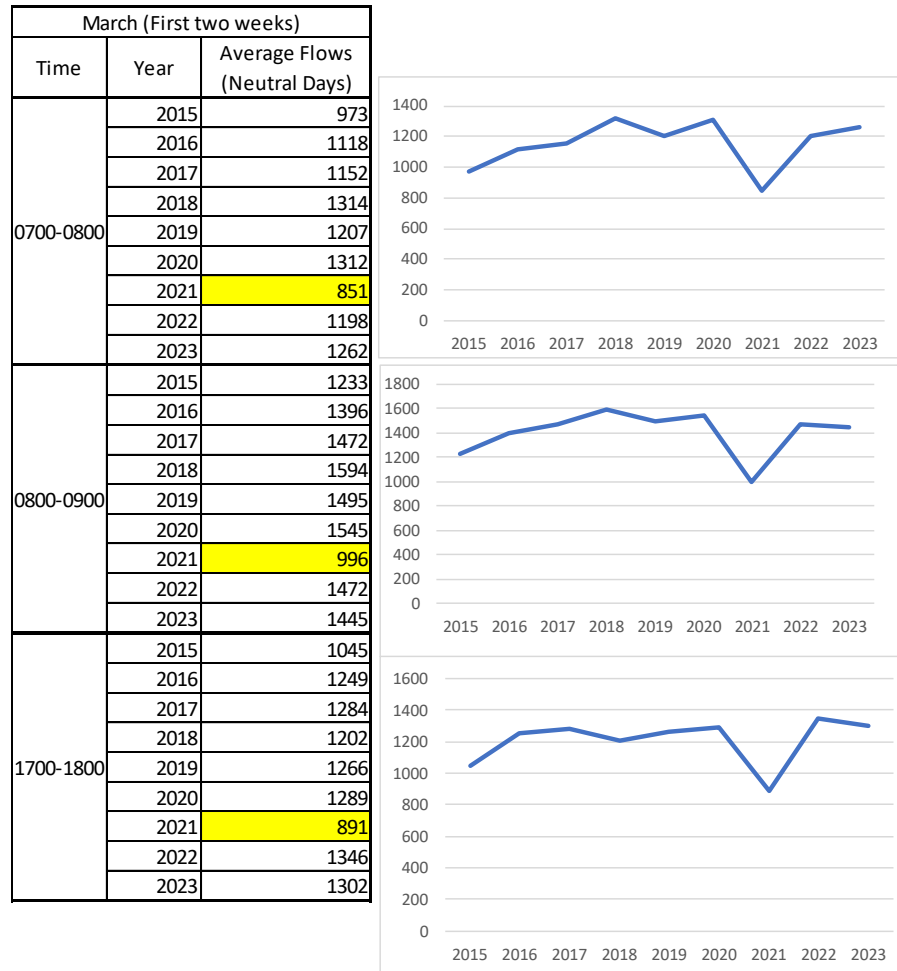
CHICHESTER, A286 BROYLE RD, N. OF THE BELL INN



# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 17 A259 Via Ravenna Time Seres Data Comparison

CHICHESTER, A259 VIA RAVENNA W. OF WESTGATE CENTRE



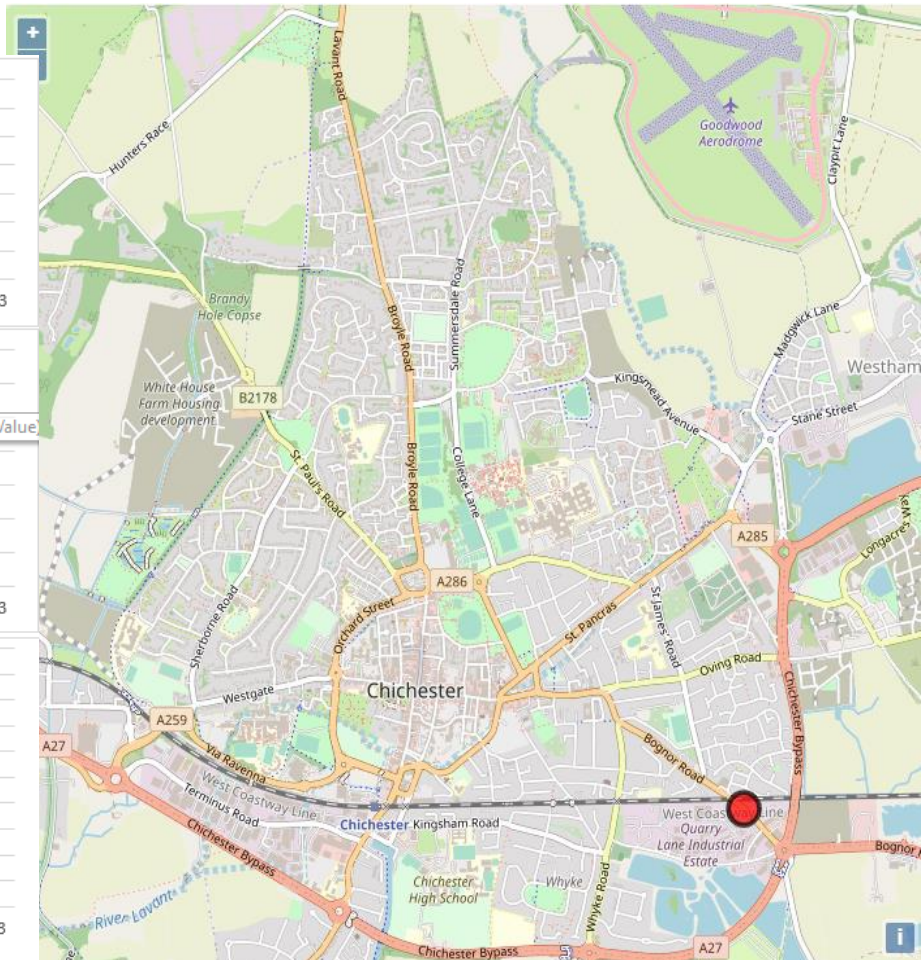
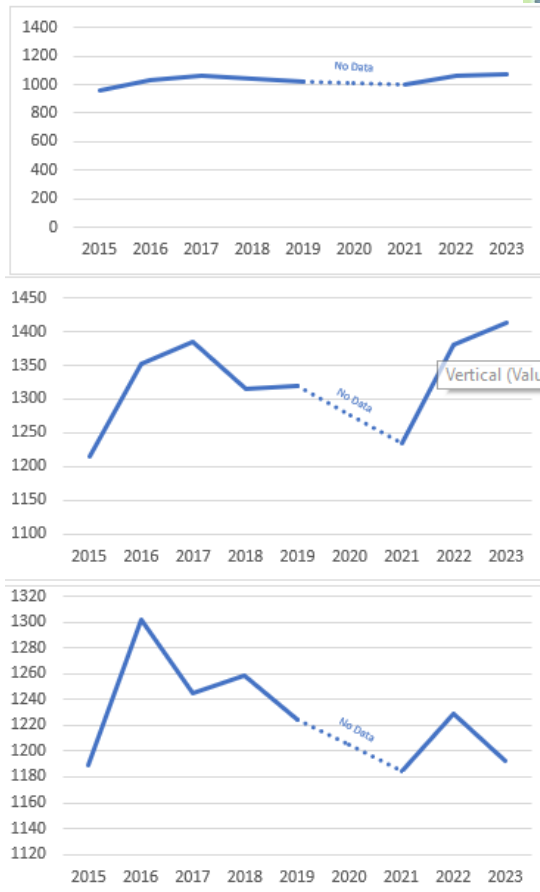


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 18 A259 Bognor Road West of Quarry Lane Time Series Data Comparison

CHICHESTER, A259 BOGNOR RD, W. OF QUARRY LA

October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	957
	2016	1035
	2017	1062
	2018	1040
	2019	1020
	2020	N/A
	2021	1000
0800-0900	2015	1215
	2016	1352
	2017	1385
	2018	1314
	2019	1320
	2020	N/A
	2021	1235
1700-1800	2015	1189
	2016	1302
	2017	1245
	2018	1259
	2019	1225
	2020	N/A
	2021	1185
2022	1230	
2023	1193	

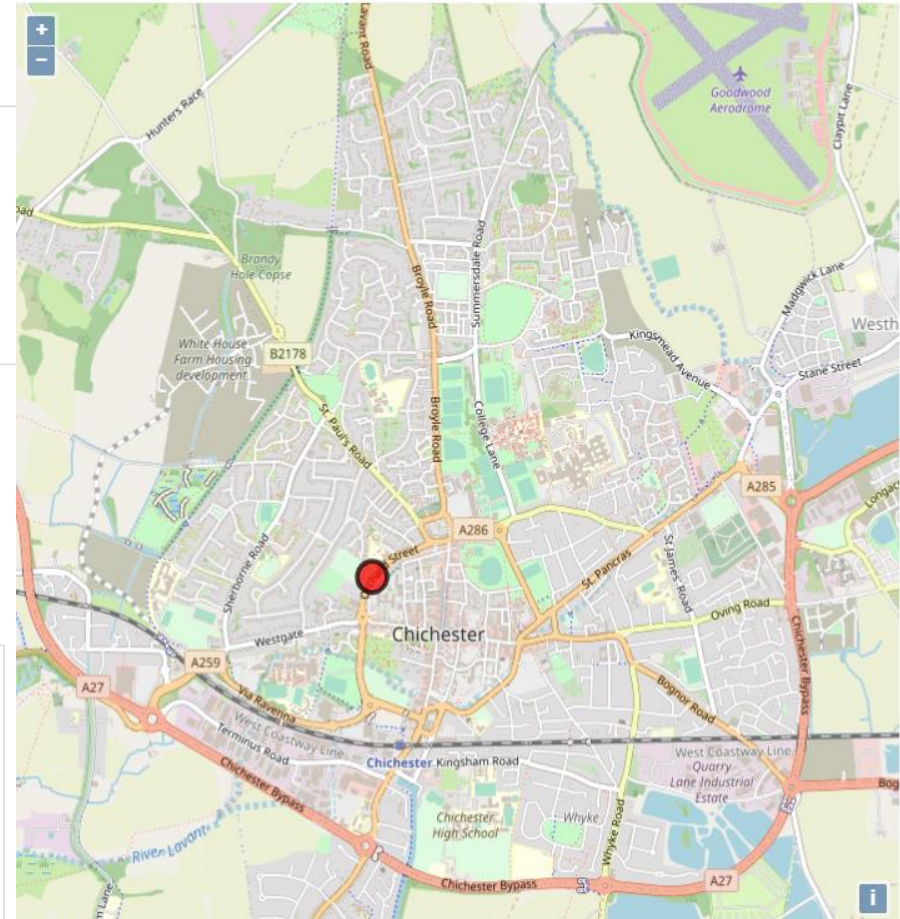
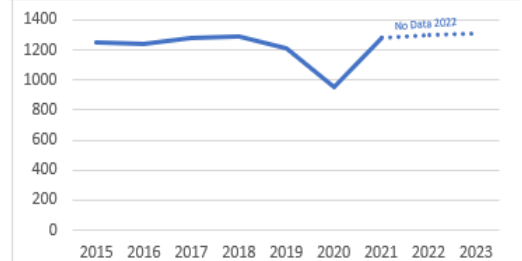
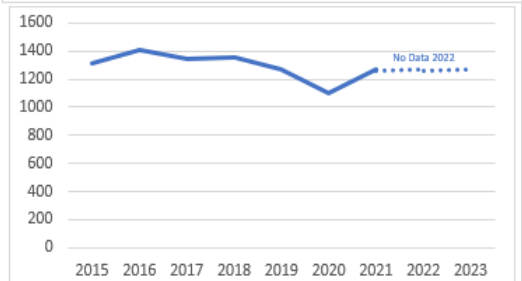
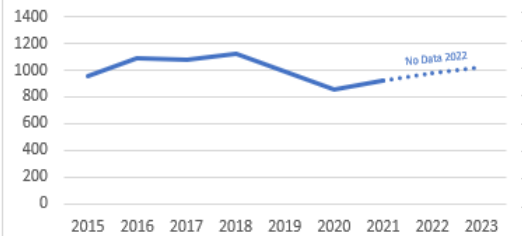


# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 19 A286 Orchard Street Time Series Data Comparison

CHICHESTER, A286 ORCHARD STREET, BY NO.67

October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	956
	2016	1085
	2017	1078
	2018	1120
	2019	992
	2020	852
	2021	922
	2022	N/A
	2023	1026
0800-0900	2015	1313
	2016	1410
	2017	1346
	2018	1350
	2019	1271
	2020	1102
	2021	1268
	2022	N/A
	2023	1270
1700-1800	2015	1252
	2016	1235
	2017	1280
	2018	1287
	2019	1208
	2020	957
	2021	1282
	2022	N/A
	2023	1310



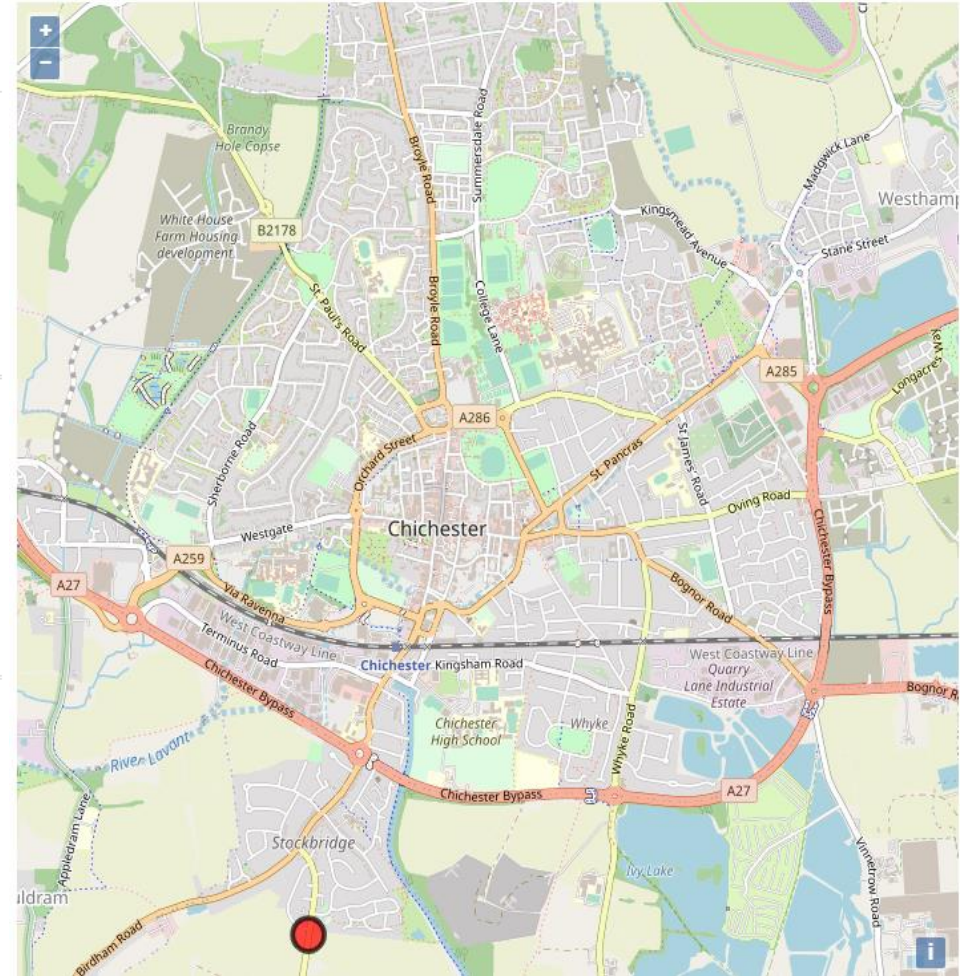
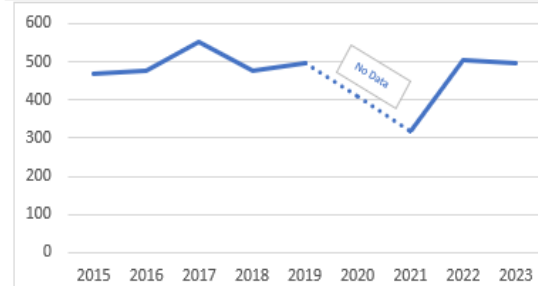
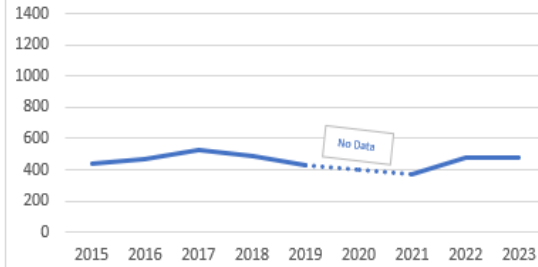


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## Figure 20 B2201 Selsey Road Time Series Data Comparison

CHICHESTER, B2201 SELSEY RD, S. OF NO. 47

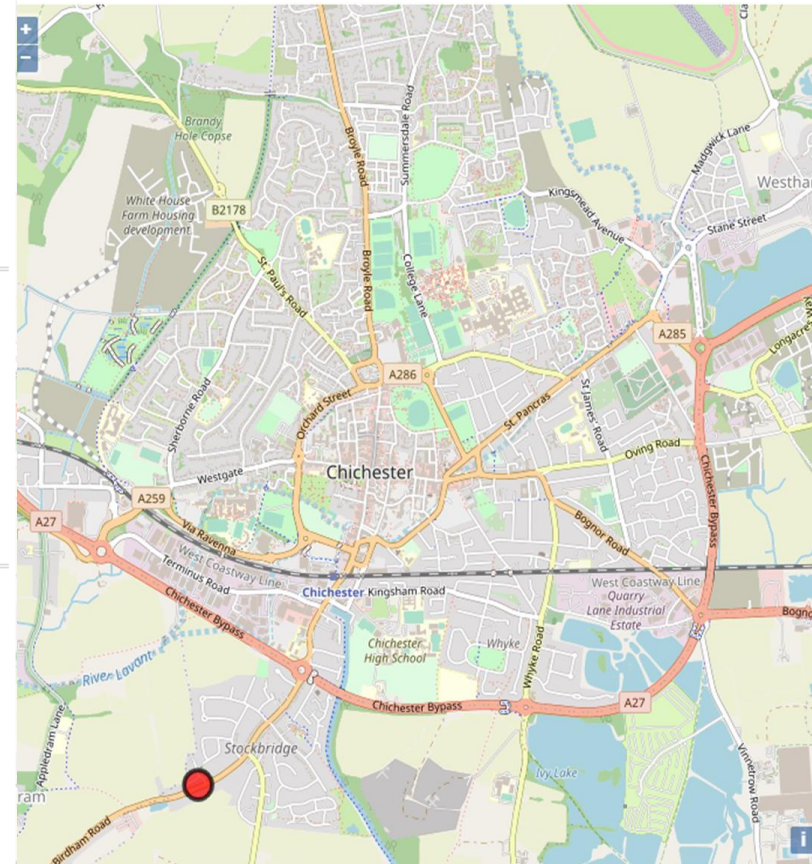
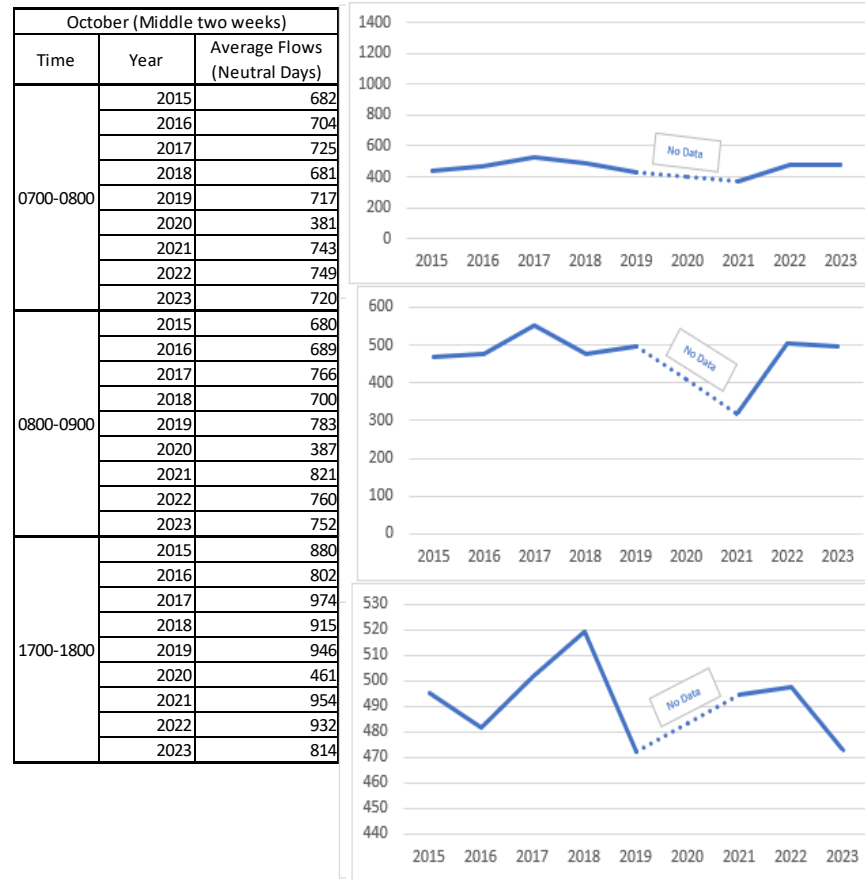
October (Middle two weeks)		
Time	Year	Average Flows (Neutral Days)
0700-0800	2015	437
	2016	465
	2017	530
	2018	487
	2019	425
	2020	N/A
	2021	374
	2023	476
0800-0900	2015	469
	2016	478
	2017	554
	2018	477
	2019	497
	2020	N/A
	2023	498
1700-1800	2015	495
	2016	482
	2017	502
	2018	519
	2019	472
	2020	N/A
	2021	495
	2023	473



# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 21 A286 Birdham Road Time Series Data Comparison

CHICHESTER, A286 BIRDHAM RD, O/S 53

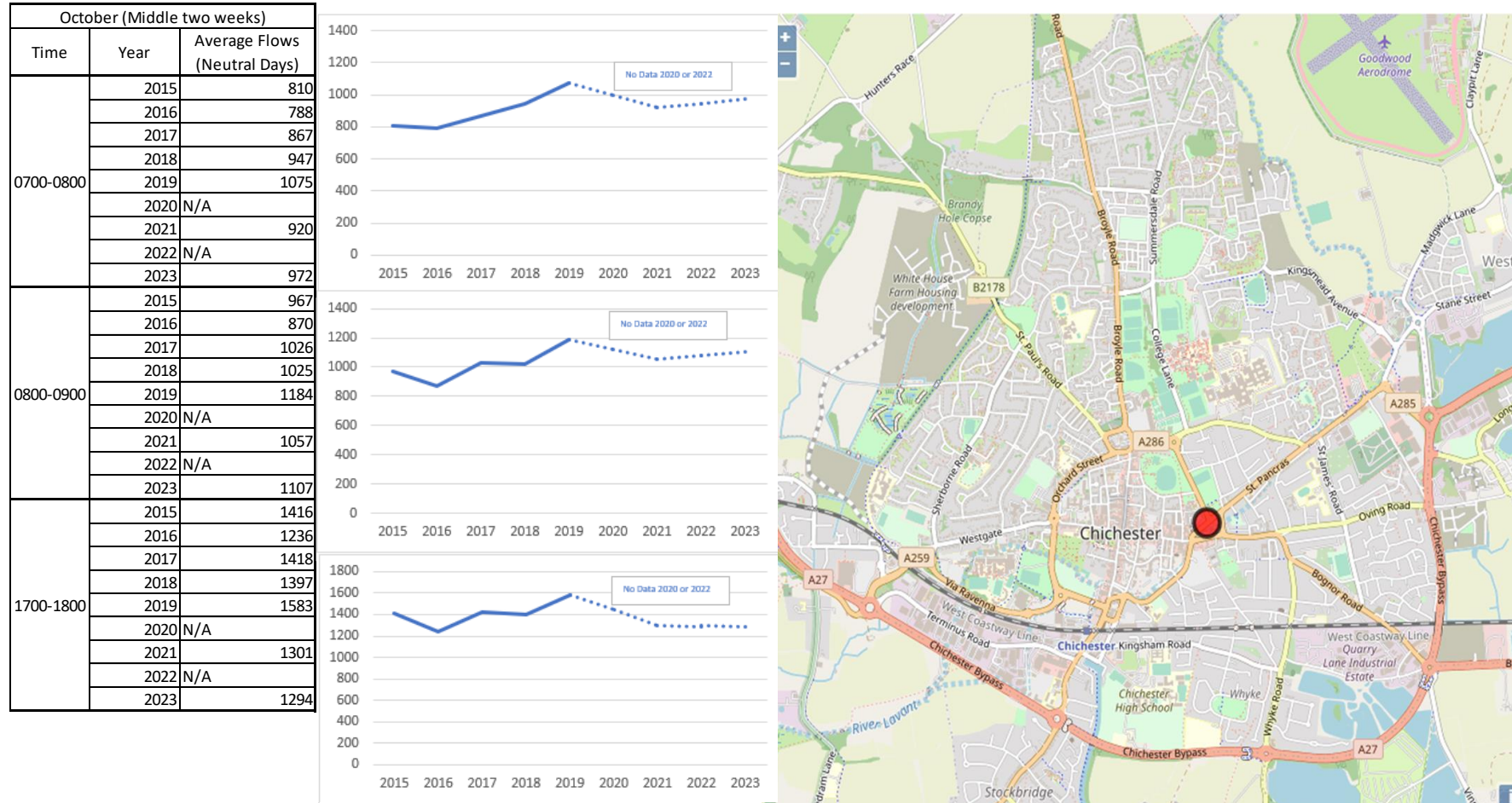




# Chichester Area Traffic Model, Model Verification - Technical Note

## Figure 22 A286 St Pancras Time Series Data Comparison

CHICHESTER, A286 ST PANCRAS, JCT OF NEW PARK RD



### 3.4 Summary

The model comparisons have shown, using the data available, that the 2014 modelled flows are generally comparable with the 2023 count data. The time series data shows that flows generally increased between 2014/15 and 2019 across the peak, however as expected flows fell during the COVID-19 Pandemic, and they are generally comparable with 2014 flows.

Therefore the 2014 model could be deemed to be representative of current traffic levels and used as the basis for further analysis.

## 4 Current Forecast Modelling Outputs

### 4.1 Overview

The next step of the analysis is to identify whether any of the model outputs used within the evidence base to date can be deemed to be robust enough to be used going forward and identify the potential future traffic conditions on the highway network in and around Chichester, with background growth and Local Plan growth added.

### 4.2 Analysis of Forecast Growth in Model

The CATM matrix numbers have been extracted for each model year from the Reference Case models and are presented in Table 27. This shows the matrix trip numbers in the base year, end of Local Plan period 2039 and two intermediate model years of 2026 and 2031 which are available, and all built from the same base model. The growth from 2014 is also shown.

**Table 27 CATM Trips (PCU's) and Growth by Forecast Year**

Forecast Year	AM	PM	AM Growth from 2014	PM Growth from 2014	% AM Growth from 2014	% PM Growth from 2014
2014	57,373	57,712	0	0	0.0%	0.0%
2026	67,575	67,094	10,202	9,382	17.8%	16.3%
2031	75,665	74,765	18,291	17,053	31.9%	29.5%
2039	83,493	81,809	26,120	24,097	45.5%	41.8%

Assuming linear growth between 2014 and 2039, this suggests an annual growth of 1.8% in AM and 1.7% in PM across the 25 years.

The traffic data comparisons undertaken in Section 3 concluded that there has effectively been no growth between 2014 and 2023. If the same level of annual growth were assumed, then the growth from 2023 to 2039 would be 29.1% in the AM and 26.7% in the PM.

The growth between 2014 and 2031 is seen to be 31.9% and 29.5%, so just higher. The current forecast models have used NTEM 7.2 and DfT have subsequently released NTEM 8.1 which has lower levels of growth for the authorities in the model area. It should be noted that NTEM growth is only used in the Reference Case model development in neighbouring authorities where the levels of traffic growth associated with any committed developments included within the uncertainty log are



lower than NTEM level. This does mean that the 2031 model matrices are likely to have more trips in them than a newly created model for 2039, however they are not markedly different, and the 2031 models are a good proxy for the end of plan period.

This indicates that the outputs produced and reported as part of the transport evidence base within Chichester Local Plan Review Short Term Review Transport Modelling, Stantec, May 2022 (Annex C of the Transport Assessment) gives a good guide as to the potential traffic conditions at the end of the plan period and these outputs are discussed further in Section 4.3.

## 5 2031 Model Outputs

### 5.1 Overview

The Local Plan Short Term Review Report deals with an interim assessment of 2026 and 2031 and the possible local plan provision of residential units on the premise of only implementing certain junction mitigation improvements along the A27 corridor. The premise was to define if there is a threshold of development that can be supported by a reduced package of mitigation on the A27 corridor, while seeking to maintain a safety led operation of the A27 corridor.

This arose from dialogue with National Highways. The work was meant to provide an indication to National Highways (NH) on the potential impacts of proposed development on the Strategic Road Network (SRN) i.e., the A27 Chichester Bypass. The transport modelling also included analysis of the side roads, which are in West Sussex County Council's (WSCC) control, mainly at Stockbridge and Whyke Junctions and in the city.

The transport modelling work was based on considerations of capacity constraints by looking at changes in delay in seconds and volume to capacity ratio (V/C%) as a result of flow changes from proposed LP development when compared to the Reference Case. Therefore, Reference Case performance data is available for 2031 which provide a good indication of the network performance and travel conditions at the end of the plan period from background growth alone. The 2031 Local Plan models have taken into account phasing of Local Plan developments by that year based on pro-rata growth, however they still give a good indication of network performance, and outputs are still seen as robust, given the previous reviews of data and the model.

For the 2031 models only committed development indicated in the 'Uncertainty Log' for up to that year is included, with additional background growth using NTEM 7.2 added for neighbouring authorities and other areas outside of Chichester. Only committed development is included within Chichester. There was no adjustment made to the committed scheme assumptions and hence the 2026 and 2031 committed schemes are consistent with those in the Local Plan year Reference Case.

### 5.2 Junction Performance

The junction performance statistics on the A27 junctions are shown in Table 28 and 29.

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Table 28 2031 Junction Performance on A27 – AM Peak

Junction	Metric	V/C%		Delays (Seconds)		Average Queues (PCU's)	
	Approach Arm	Reference Case	LP No Mitigation	Reference Case	LP No Mitigation	Reference Case	LP No Mitigation
Fishbourne	A27 E	86	84	33	32	1	1
	A27W	106	111	137	226	79	131
	A259 Cathedral Way	81	81	25	25	2	2
	Terminus Road	25	27	22	22	0	0
	A259 Fishbourne Road West	122	126	486	554	66	80
Stockbridge	A27 E	94	95	20	21	3	3
	A27W	72	74	18	18	0	1
	Stockbridge Road (S)	116	119	355	398	69	81
	Stockbridge Road (N)	75	80	29	32	2	2
Whyke	A27 E	81	83	15	16	1	1
	A27W	78	79	15	15	0	0
	B2145 (S)	116	119	354	402	83	97
	B2145 (N)	80	88	26	31	2	3
Bognor Road	A27 N	121	124	421	474	148	171
	A27S	108	108	177	175	60	60
	A259 Bognor Road (E)	123	127	466	527	152	166
	A259 Bognor Road (W)	101	102	73	92	15	19
	Vinnetrow Road	123	126	519	573	32	37

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Table 29 2031 Junction Performance on A27 – PM Peak

Junction	Metric Approach Arm	V/C%		Delays (Seconds)		Average Queues (PCU's)	
		Reference Case	LP No Mitigation	Reference Case	LP No Mitigation	Reference Case	LP No Mitigation
Fishbourne	A27 E	85	82	32	31	1	1
	A27W	102	90	75	20	38	2
	A259 Cathedral Way	81	124	25	494	2	106
	Terminus Road	29	184	23	1618	0	86
	A259 Fishbourne Road West	120	113	442	316	62	41
Stockbridge	A27 E	94	99	20	28	3	7
	A27W	74	102	18	63	0	33
	Stockbridge Road (S)	118	116	376	340	73	72
	Stockbridge Road (N)	76	133	31	718	2	29
Whyke	A27 E	84	96	16	20	1	4
	A27W	81	100	15	35	0	11
	B2145 (S)	119	109	403	216	89	56
	B2145 (N)	87	133	31	698	3	44
Bognor Road	A27 N	121	115	416	322	150	123
	A27S	107	111	167	227	57	102
	A259 Bognor Road (E)	124	117	475	359	154	99
	A259 Bognor Road (W)	103	111	96	269	20	44
	Vinnetrow Road	124	111	531	288	32	21

The 2031 Reference Case outputs clearly show that there are capacity constraints and delays in the peak hours at all the junctions. The key findings are:

- Eastbound delays on Fishbourne Road to Fishbourne Roundabout are over 8 minutes in the AM peak and 7 minutes in the PM peak.
  - This will have a negative impact on public transport journey times and reliability, as this is used by the 700 bus route eastbound from Portsmouth to Bognor Regis via Chichester, which is Stagecoaches flagship service in this area.
  - Delays on the approach to Fishbourne on this approach leads to traffic reassigning to the west and north of Chichester and away from the A27. This is both local and longer distance trips using the A27 east of Chichester, which should really be on the A27.
  - The delay on this approach also increases traffic to the west on the A259 in Hampshire (at Emsworth), as traffic uses this route to head west on the A27, rather than getting on the A27 at Fishbourne Roundabout
- Westbound delays from Bognor Road to the Bognor Road Roundabout are close to 8 minutes in both peaks.
  - This will have a negative impact on public transport journey times and reliability, as this is used by the 700 bus route westbound from Bognor Regis to Chichester and beyond, which is Stagecoaches flagship service in this area.
- There are delays of 6 to 8 minutes on the northbound approaches to both Stockbridge and Whyke junctions in both peaks.

With the Local Plan traffic added, the situation in many cases is exacerbated. There do appear to be some counterintuitive results, however this could be a result of the overly congested network. The key outputs are as follows:

- In both peak delays on the two routes use by the 700 bus services see increases in delays, thus making this bus service even more unreliable.
- Delays on the WSCC network increase at Whyke and Stockbridge, with delays on the Chichester city side of both junctions increasing markedly in the PM peak.

### 5.3 Flow Differences

A comparison has been made of the relative traffic flow changes between the base year and 2031 Local Plan models. These are shown in Figure 23 and 24 for AM and PM peak.

Figure 23 Relative Flow Difference Base vs 2031 Local Plan – AM Peak

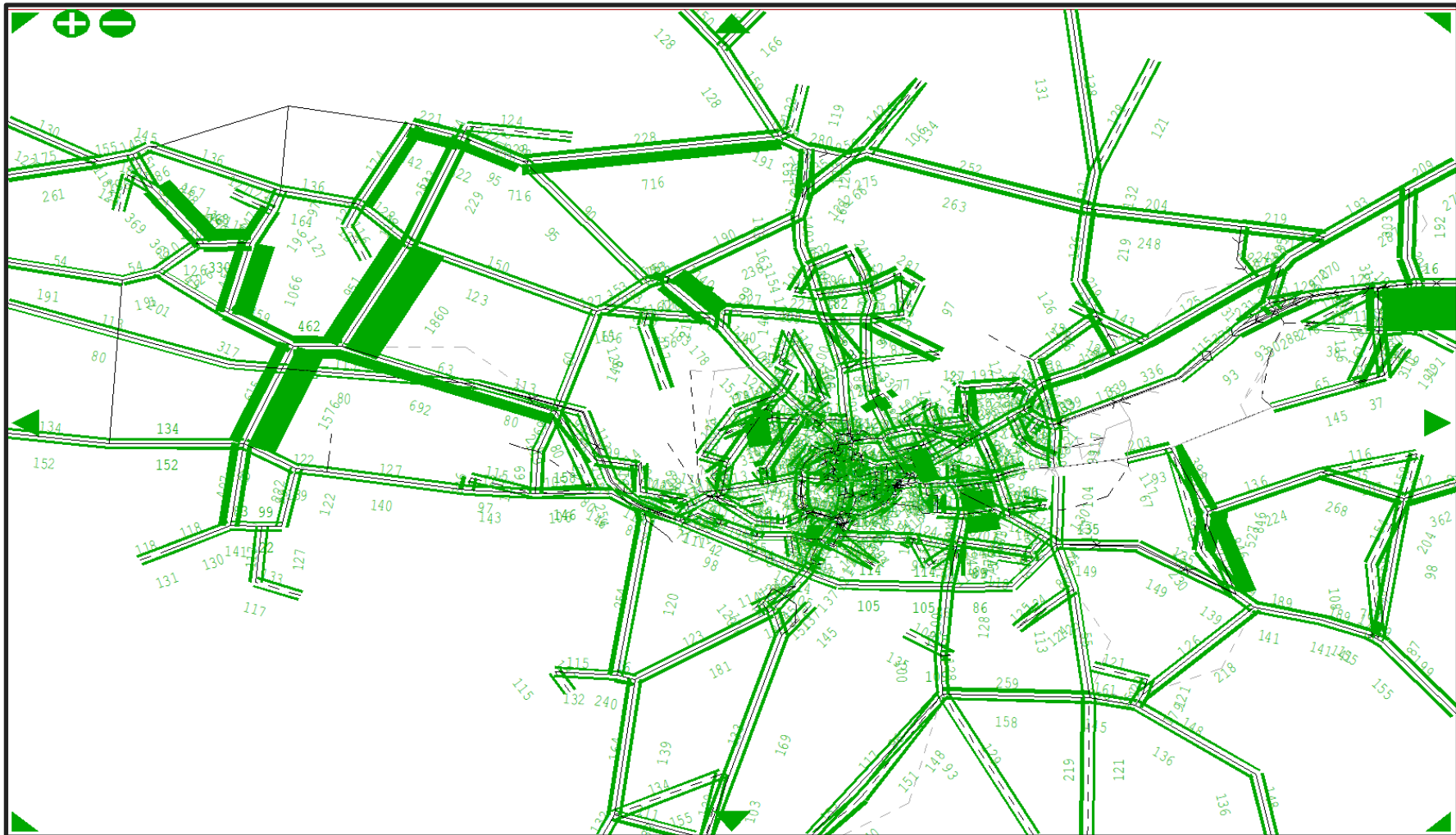
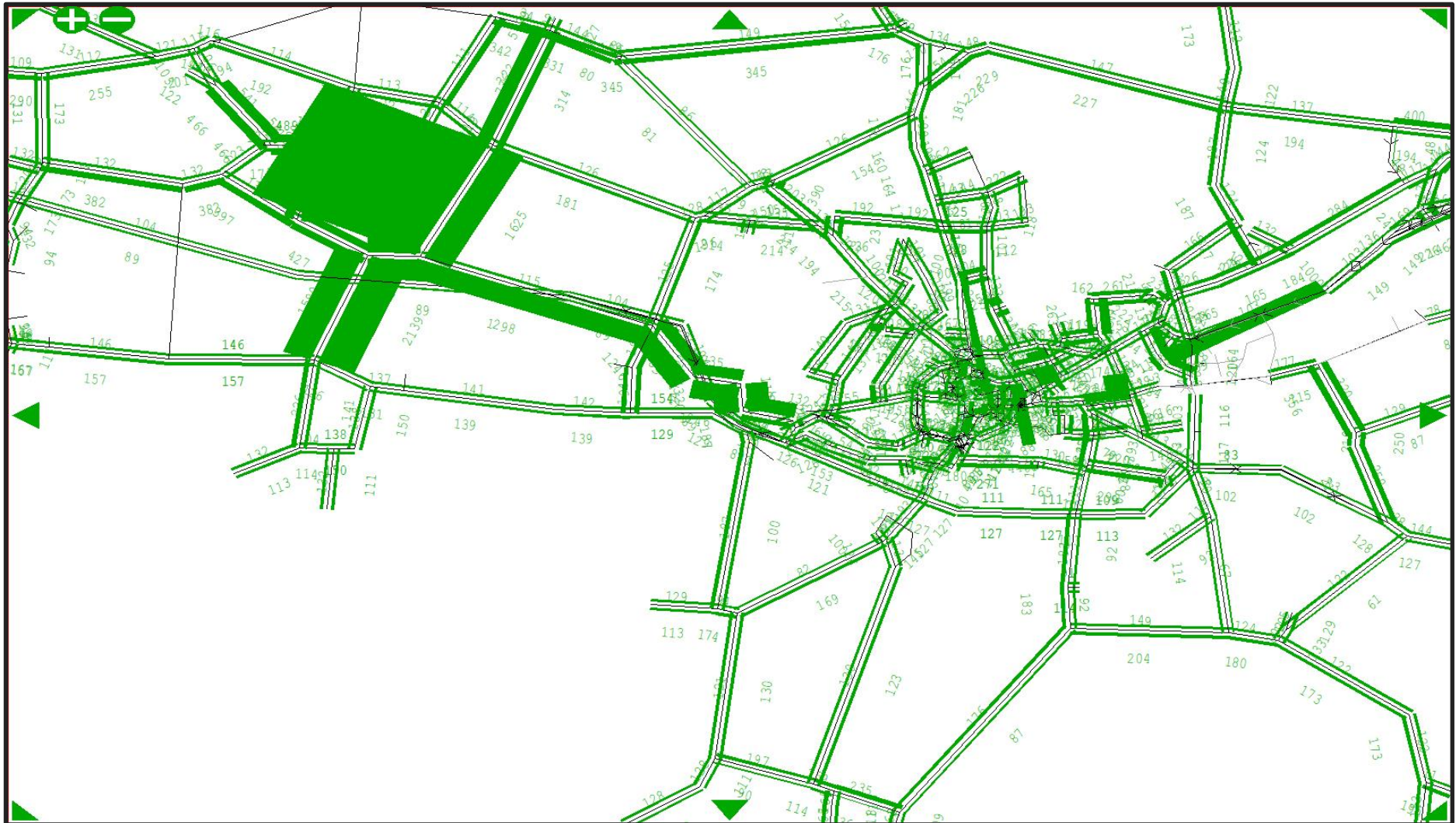


Figure 24 Relative Flow Difference Base vs 2031 Local Plan – PM Peak

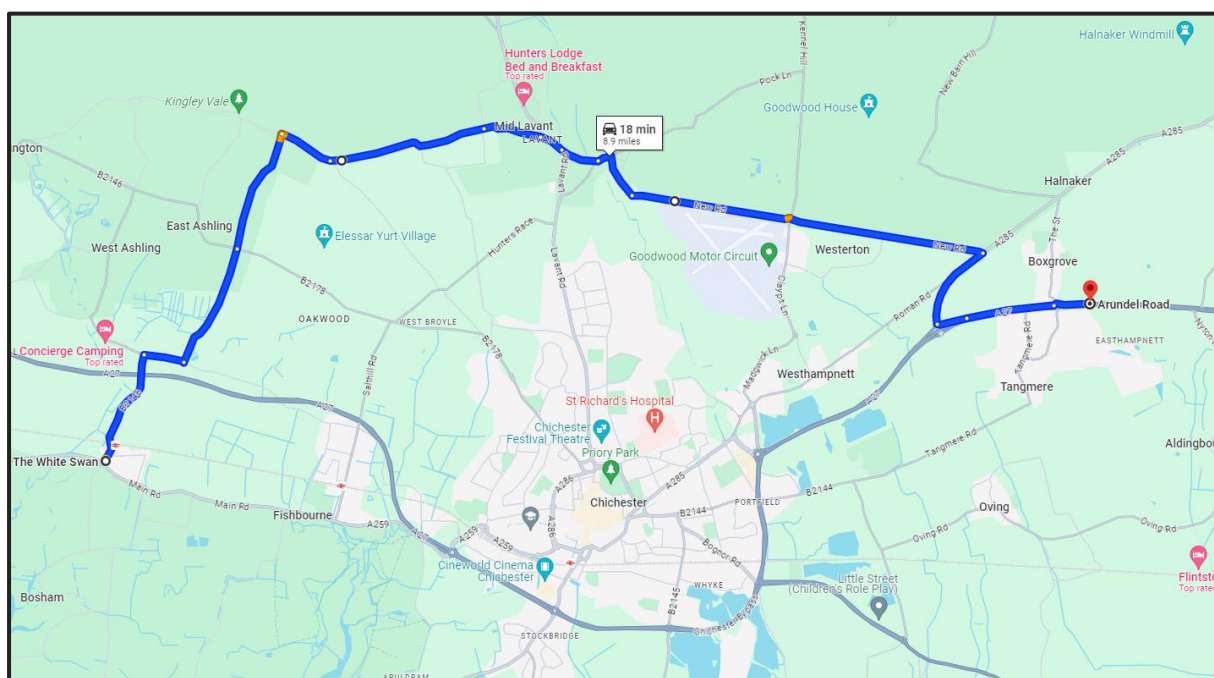




The outputs show that the relative flow differences can be summarised as follows:

- extremely high on roads to the north and northwest of Chichester, and in the main the relative flow differences are greater on the local highway network than they are on the A27.
- This indicates that the route to the north of Chichester as shown on Figure 25 is used by many rather than using the A27, due to delays at the junctions.
- The increase in traffic on this route will have an impact on roads which run within the southern edge of the South Downs National Park and also through villages and on roads which are likely to be unsuitable for such increases in traffic.

**Figure 25 Northern Route around Chichester**



## 5.4 Journey Times

Further analysis has been undertaken to understand route choice and journey times for trips from west of Chichester to east of Chichester that should use the A27. The SATURN 'Tree' function has been used to determine the distance, time and delays for a trip from Nutbourne (west of Chichester on the A259) to east of Fontwell to the east. The 'Tree' function gives the data for all possible route choices used by trips within the model. The outputs have been provided for Commute user class. Each user class may respond differently based on time and distance. This trip is just indicative of trips to and from east of Chichester to the A259 area west of Chichester.

The outputs for routes using the A27 and routes to the north of Chichester are shown in Tables 30 and 31 for the eastbound and westbound journeys, respectively. In some cases a route through the city was an option taken by a few trips, however these were generally longer than going around the bypass, so it was unlikely to be an option used by many.

**Table 30 Route Choice Distance, Time and Delay from Nutbourne to East of Fontwell**

Nutbourne to East of Fontwell	Time period	A27			N of Chichester		
		Distance	Time	Delay	Distance	Time	Delay
Base	AM Peak	21493	1437	364	22940	1256	46
	PM Peak	21493	1334	244	22490	1251	44
2031 Ref	AM Peak	21513	1760	692	23084	1369	116
	PM Peak	21513	1674	606	23608	1726	445
2031 LP	AM Peak	21513	1839	771	23084	1412	160
	PM Peak	21513	1759	691	23608	1809	527

**Table 31 Route Choice Distance, Time and Delay from East of Fontwell to Nutbourne**

East of Fontwell to Nutbourne	Time period	A27			N of Chichester		
		Distance	Time	Delay	Distance	Time	Delay
Base	AM Peak	21581	1344	311	23635	1333	53
	PM Peak	21581	1368	283	23635	1328	24
2031 Ref	AM Peak	22031	1743	708	23689	1613	298
	PM Peak	22031	1459	416	23689	1465	117
2031 LP	AM Peak	22031	1831	796	24511	1680	272
	PM Peak	22031	1518	475	23689	1486	132

The outputs show that in the AM peak the route to the north of Chichester is by far the quicker route in all models in the eastbound direction. Whilst it is a longer distance it was shown to be the main route choice even in the 2014 model where the time difference is around 3 minutes. By 2031 the time differential is far greater with over 5 ½ minute difference in the Reference Case and 7 minutes with the Local Plan development.

In the westbound direction the time differential is only seen by 2031, when the route to the north then becomes an option, with a time saving of just over 2 minutes in the Reference Case scenario and increasing to 2 ½ minutes in the Local Plan scenario.

In the PM peak the time differential is negligible, therefore the A27 remains the main route choice.

One other item of note is the increased level of delays between the base year and 2031 forecasts in all instances, but particularly noticeable in the PM peak in the eastbound direction and AM peak in the westbound direction. There are also significant increases in delays along the A27 route.

As previously noted, the route to the north runs along the southern edge of the South Downs National Parkland also through a number of small villages, such as Lavant, West Stoke and The Ashlings, therefore the increased traffic levels will have a detrimental impact on residents within these villages and the natural environment of the National Park.

## 5.5 Summary

The outputs in this section clearly identify the need for mitigation whether this be through sustainable travel measures or physical highway mitigation. However, the evidence provided clearly shows that the conclusions reached within the Transport Assessment work to date are clearly still relevant.



## 6 Summary and Conclusions

The key conclusions to be drawn from this work are:

- The traffic surveys undertaken in November 2023 are in the main suitable for use for further assessment.
- The data for Portfield Roundabout and journey times between Portfield and Bognor Road Roundabouts are not typical, therefore this data is not used in any further analysis,
- Analysis of the new data, alongside other data has shown that there was growth in traffic between 2014 and 2019, however the Pandemic has had an impact on traffic levels and the analysis indicates that, whilst there are variations, the 2014 and 2023 data is relatively comparable.
- A very high-level approach to growth in the Local Plan has indicated that the 2031 model is a good proxy for the end of the plan period.
- The approach to the provision of new evidence should be taken with the knowledge that there is a commitment to update the model following examination and that the 2031 model is a suitable tool for providing evidence at this time to provide further evidence as to the outcomes of the Transport Assessment work and to support the Local Plan.
- The 2031 model outputs clearly show that there are congestion issues at the A27 junctions, both on the Strategic (A27) and Local highway networks.
- There are some instances of what could be deemed to be inappropriate routing to the north, which will impact on the South Downs National Park and villages to the north and northwest of Chichester.
- Public transport services will be impacted by increased delays on the A259 approaches to Bognor Road Roundabout from the east and Fishbourne Road roundabout from the west, this being the route of the Stagecoach 700 bus service.
- There is a clear need for mitigation which is discussed further in the updated Transport Assessment and Monitor and Manage proposal.

## **Appendix A ATR Traffic Counts**

## **Appendix B   ATR Journey Time Surveys**

## **Appendix C A27 Turning Flow Diagram**