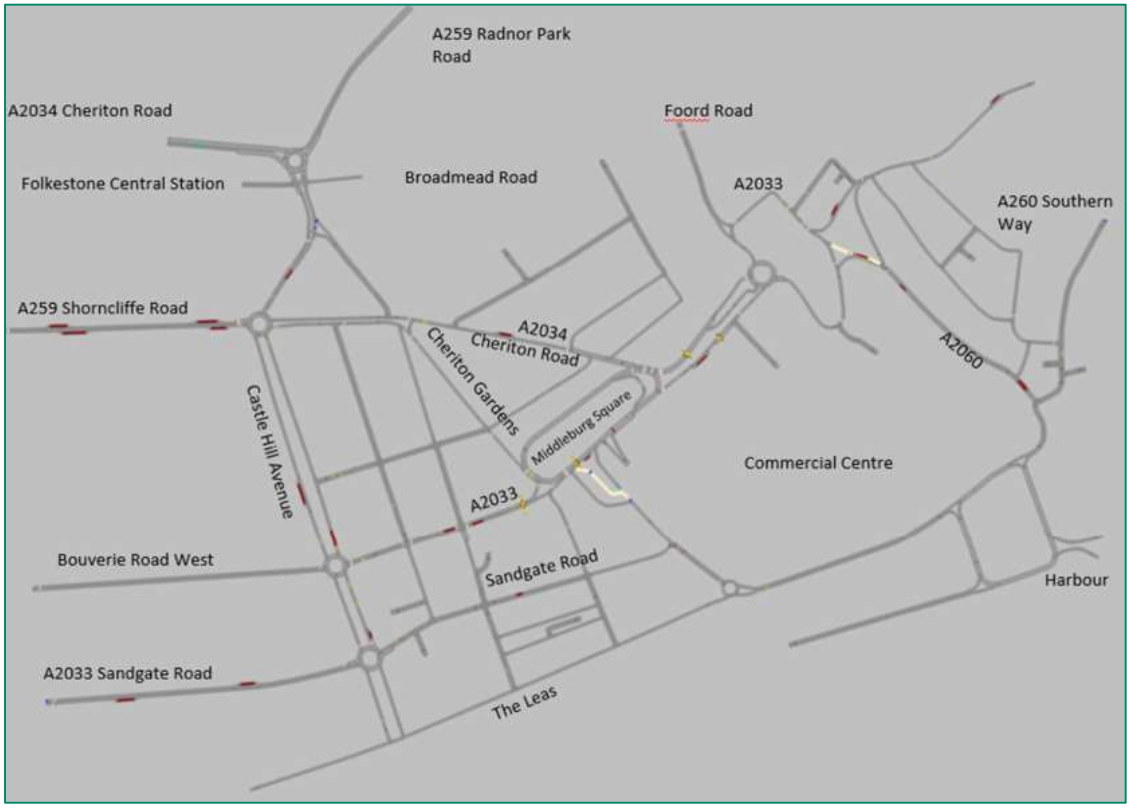
Folkestone VISSIM Modelling Summary

1. Introduction

1.1 AECOM have been commissioned by Kent County Council (KCC) & Folkestone & Hythe District Council (FHDC) to provide support for the Levelling Up funded, “Folkestone – A Brighter Future” scheme.

1.2 This note covers the results of the traffic modelling undertaken for the proposed preferred scheme arrangement and compares it against the previously completed base scenario modelling. The modelling uses a VISSIM base model to represent the traffic scenario for the year 2031, covering the area shown below in **Figure 1**.

Figure 1: VISSIM Modelling Extents



2. Modelling Results (September 2024 Design Update)

2.1 The proposal for the Cheriton Road/Middelburg Square/Foresters Way/Shellons Street junction included converting the junction to a signal-controlled operation with the road layout along this northern part of the gyratory changing from two westbound lanes to one westbound lane and one eastbound lane. The proposal also includes the introduction of three controlled pedestrian crossings on the northern and eastern arms.

2.2 The proposals for the Cheriton Gardens/Middelburg Square junction include converting it into a signal-controlled operation with two controlled pedestrian crossings on the southern and eastern approach arms following the realignment of the existing carriageway and change from a single direction road to a bi-directional carriageway.

2.3 Other key changes to the road network are listed below:

- Three new crossings for pedestrians and cyclists have been added to all arms of The Park Inn roundabout. Two of these are Toucan signalised crossings and one is a parallel crossing (pedestrian and cycle shared crossing). Pedestrian numbers used in the model at these locations have been estimated using existing pedestrian numbers already in the Vissim model.
- The A259 Radnor Park Road (NE Arm) and A259 Cheriton Road (S Arm) approaches at The Park Inn roundabout have been reduced down from two lanes to one lane. The SB exit from the roundabout onto Cheriton Road has been reduced down from two lanes to one lane. This is to facilitate the addition of a segregated cycle lane on these arms.

- On Cheriton Road, just north of Kingsnorth Gardens, a Zebra crossing has been upgraded to a parallel crossing.
- The five-arm junction at Cheriton Road/Cheriton Gardens/Manor Road/Shorncliffe Road has reverted to be priority operation (i.e. it no longer operates as a roundabout as per previous designs, and will now operate as existing). Two new parallel crossings have been provided at this junction, one on Cheriton Road and one on Shorncliffe Road.
- Compared the previous preferred option, an additional stopline has been added due to the addition of an internal stopline at Middleburgh Square East pedestrian crossing.

2.4 The journey time markers, indicating the start and end points for the journey time measurements, are shown below in **Figure 2** and **Figure 3**.

Figure 2: Journey Time Markers

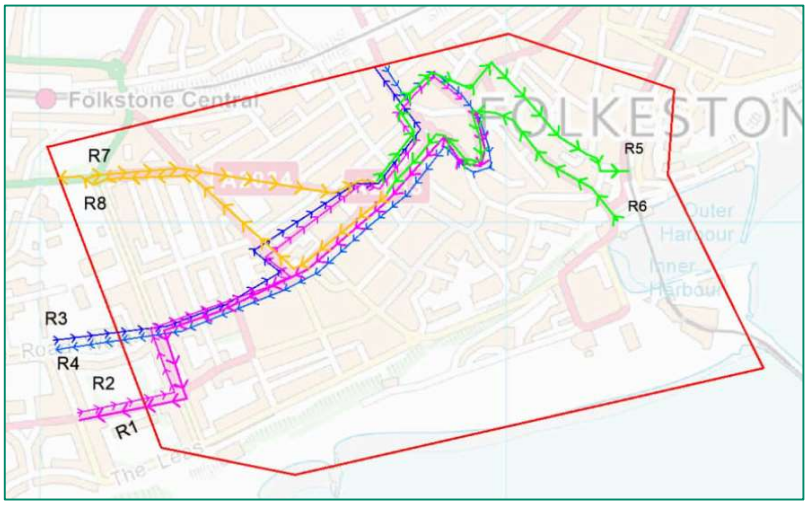
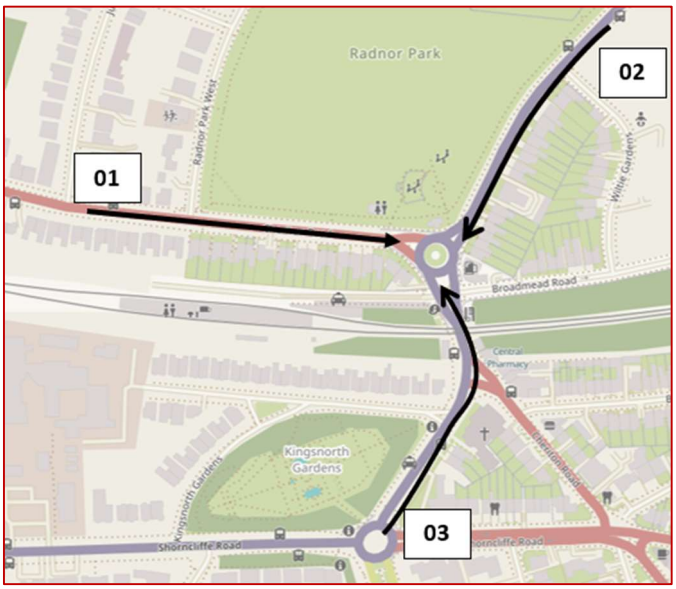
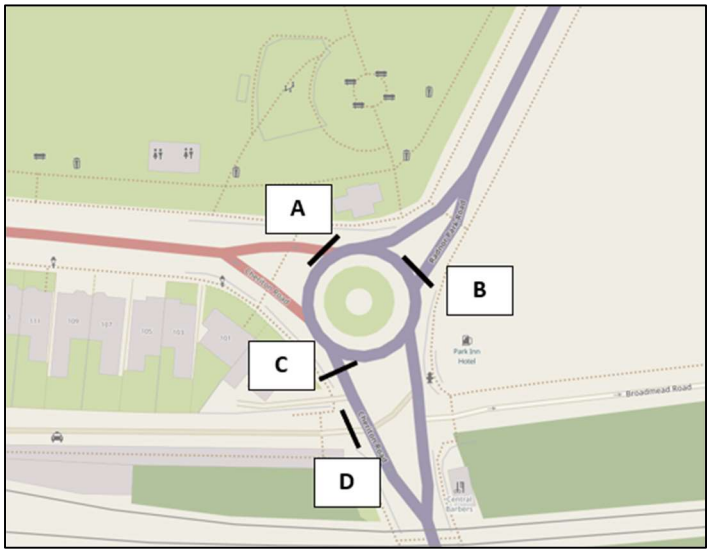


Figure 3: Journey Time Markers



2.5 The queue marker locations, indicating where the start of the queue is measured from, are shown in **Figure 4**.

Figure 4: Queue Markers



2.6 **Table 3** and **Table 4** show the journey time results of the September 2024 Design Update compared with the Base scenario. The model represents traffic flows for the modelled year 2031. The journey times have been shown in seconds.

Table 3: Journey Time Comparison September 2024 Design Update vs Base AM Peak

Route Reference	Route Name	Sept 2024 Design Update (s)	Base (s)	Difference (s)
R1 (Pink WB)	A2033 to Dover Road	273	252	22
R2 (Pink EB)	Dover Road to A2033	270	230	40
R3 (Blue EB)	Bouverie Rd West to Foord Road	232	190	42
R4 (Blue WB)	Foord Rd to Bouverie Rd West	286	264	22
R5 (Green EB)	Middleburg Square to A260	118	112	6
R6 (Green WB)	A260 to Middleburg Square	164	145	19
R7 (Orange EB)	Shorncliffe Rd to Middleburg Square	170	111	59
R8 (Orange (WB)	Middleburg Square to Shorncliffe Road	180	187	-7
01	A2034 Cheriton Road to The Park Inn Roundabout	140	68	72
02	A259 Radnor Park Road to The Park Inn Roundabout	140	63	77
03	Shorncliffe Road to The Park Inn Roundabout	24	20	4

2.7 Overall, an increase is seen in journey times for all routes, except for route R8 (Middleburg Square to Shorncliffe Road), where a decrease of 8 seconds is predicted.

2.8 The journey time impacts are however minimal on the whole, with less than 60 seconds difference in the total travel time on most routes. The exception to this is on routes 01 and 02, where the travel times have increased by 70 seconds and 79 seconds, respectively.

Table 4: Journey Time Comparison September 2024 Design Update vs Base PM Peak

Route Reference	Route Name	Sept 2024 Design Update (s)	Base (s)	Difference (s)
R1 (Pink WB)	A2033 to Dover Road	262	256	6
R2 (Pink EB)	Dover Road to A2033	325	255	71
R3 (Blue EB)	Bouverie Rd West to Foord Road	460	213	247
R4 (Blue WB)	Foord Rd to Bouverie Rd West	273	278	-5
R5 (Green EB)	Middleburg Square to A260	119	127	-8
R6 (Green WB)	A260 to Middleburg Square	131	127	4
R7 (Orange EB)	Shorncliffe Rd to Middleburg Square	145	103	42
R8 (Orange (WB)	Middleburg Square to Shorncliffe Road	156	171	-15
01	A2034 Cheriton Road to The Park Inn Roundabout	64	116	-52
02	A259 Radnor Park Road to The Park Inn Roundabout	84	66	19
03	Shorncliffe Road to The Park Inn Roundabout	28	21	7

2.9 The PM peak comparison shows more mixed results compared to the AM peak, with some routes experiencing an increase in journey times and others experiencing a decrease.

2.10 The most notable increase in journey time is on route R3 (Bouverie Road West to Foord Road), which shows an increase of 247 seconds. This impact is however considered minor for the network in relation to the proposals, this is because the journey time increase occurs only on a small section of road on the outskirts of the study area which is not directly attributable to the proposals. The increase in journey time is likely due to noise in the model, which is caused by how vehicles in the model find gaps in traffic at the Castle Hill roundabout, i.e. due to the original model being coded using 'conflict areas' instead of 'priority rules' within Vissim. For the remainder of R3, the journey times are very similar to the base modelling with no significant increases. The affected section of road is Bouverie Road West (eastbound) on approach to the roundabout with Castle Hill Avenue, which is quite far from the proposed changes.

2.11 The other journey time increases are relatively minor, with journey times increases ranging from 4 seconds to 71 seconds. The decreases in journey times range from 5 seconds to 52 seconds.

2.12 **Table 5** and **Table 6** show the queue results of the September 2024 Design Update compared with the Base scenario. The model represents traffic flows for the modelled year 2031. The queue results have been shown in metres.

Table 5: Queue Comparison September 2024 Design Update vs Base AM Peak

		Average Queue Length (m)			Maximum Queue Length (m)		
Queue ID	Queue Name	Sept 2024 Design	Base	Difference	Sept 2024 Design	Base	Difference
A	A2034 Cheriton Road (W Arm)	90	35	55	284	116	168
B	A259 Radnor Park Road (NE Arm)	120	5	115	375	89	286
C	A259 Cheriton Road (S Arm)	2	1	1	84	32	52
D	Station Approach	0	0	0	10	11	-1

2.13 In the AM peak, an increase is seen in the queue lengths on A2034 Cheriton Road (W Arm) and A259 Radnor Park Road (NE Arm), and to a lesser extent also on A259 Cheriton Road (S Arm). There is virtually no change in queue length predicted on Station Approach.

2.14 It should be noted that whilst the maximum queue lengths are high, it is the average queue lengths that are more important. This is because queues could range from zero metres in length up to the maximum length predicted by the model. The maximum queue length should be considered as the 'worst case scenario' and not the length at which queues would be sustained at during the entire peak hour.

Table 6: Queue Comparison September 2024 Design Update vs Base PM Peak

		Average Queue Length (m)			Maximum Queue Length (m)		
Queue ID	Queue Name	Sept 2024 Design	Base	Difference	Sept 2024 Design	Base	Difference
A	A2034 Cheriton Road (W Arm)	20	73	-53	104	185	-81
B	A259 Radnor Park Road (NE Arm)	32	8	24	170	107	63
C	A259 Cheriton Road (S Arm)	9	2	7	122	62	60
D	Station Approach	2	1	1	28	20	8

2.15 In the PM peak, a decrease in queue length is predicted on A2034 Cheriton Road (W Arm), while the queue lengths are predicted to increase on the A259 Radnor Park Road (NE Arm) and A259 Cheriton Road (S Arm) approaches.

2.16 The increases in queue length in the PM peak are more moderate than the increases seen in the AM peak.

2.17 The changes in queue lengths correlate with more traffic travelling towards the town centre in the AM, and more traffic travelling away from the town centre in the PM.

3. Summary

3.1 The proposed design changes result in both increases and decreases in vehicle journey times within the network. The same applies to the predicted queue lengths, where some are predicted to increase and others are expected to decrease.

3.2 The increases in delay are due to the installation of signal-controlled junctions which incorporate controlled pedestrian and cycle facilities, and due to the installation of Zebra and signalised pedestrian and cycle crossing facilities. This is to facilitate the scheme's aspiration to provide better connections for pedestrians and cyclists who use the network.

3.3 Although there are some disbenefits to journey times and motorised vehicle queue lengths, the proposals would result in encouraging active travel by providing controlled pedestrian and cycle facilities, reducing traffic speeds around the town and creating a more pleasant pedestrian and cycle friendly environment. It should also be noted that where segregated cycle facilities are proposed, cyclists would not be impacted by any increased queuing or journey times.